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The Effect of Workload Compression on Audit Quality

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SUMMARY: This study investigates whether workload pressures, as proxied by the audit busy season (i.e., December fiscal year-end date) and auditor workload compression (i.e., relative concentration of companies with the same fiscal year-end date in an auditor's client portfolio), affect audit quality. Using a sample of 8,384 firm-year observations during the period 2006–2009, we find that busy season companies exhibit greater magnitudes of abnormal accruals and are more likely to meet or beat certain earnings benchmarks. Additional tests show that these associations are enhanced by the degree of auditor workload compression. Prior experimental and survey research indicates that workload pressures lead to dysfunctional behaviors and lower audit quality among individual auditors. Our archival findings suggest that these pressures can transcend the quality control mechanisms of a firm, affecting quality at the audit engagement level.

Keywords: audit quality; workload compression; busy season; abnormal accruals; earnings benchmarks.

INTRODUCTION

Every year, the public accounting sector experiences the long hours and compressed workloads of the busy season (Jones et al. 2010). This period is typically marked by an increase in stress and potential degradation in auditor performance (Sweeney and Summers 2002; Jones et al. 2010). Prior experimental and survey research indicates that busy season pressures, such as auditor burnout and time constraints, can reduce audit quality at the individual auditor level (Alderman and Dietrick 1982; Kelley and Margheim 1990; Raghunathan 1991; Willet and Page 1996; Sweeney and Summers 2002; Coram et al. 2004; Cianci and Bierstaker 2009; Agoglia et al. 2010). Despite the importance of such potential effects, there is little archival evidence that documents whether workload pressures ultimately affect the overall quality of an audit. In response, we investigate whether the busy season, as well as the relative concentration of companies with the same fiscal year-end date in an auditor's client portfolio (i.e., auditor workload compression), is associated with indicators of lower audit quality.

The workload pressures of the busy season result from the tension between limited audit resources and the need to complete a high number of audit engagements within a limited time window. The

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potential dysfunctional outcomes of these pressures include impaired professional judgment, acceptance of weak client explanations, and other inappropriate responses to stressful conditions by the audit staff (DeZoort and Lord 1997). Accordingly, the Public Company Accounting Oversight Board (PCAOB) has expressed concerns about the impact of time budget constraints on auditors' ability to adequately supervise and review their portfolios of audit engagements (PCAOB 2010). These conditions raise the question of whether audit quality diminishes when auditors are at their busiest.

We posit that the combination of factors such as time constraints and fatigue impair auditors' capacity to discover and report existing accounting exceptions. This diminished capacity may manifest itself in the form of a less rigorous audit, which increases opportunities for managers to manipulate the financial reporting process. We also posit that increased pressures during the busy season are particularly relevant at the local office level, given the local nature of audit resources and that audits tend to be managed mainly by local office partners (Francis et al. 1999; Bell et al. 2002). Thus, we use office-level client portfolios to develop a proxy for auditor workload compression (Reynolds and Francis 2000; Ferguson et al. 2003; Francis et al. 2005; Gaver and Paterson 2007).

Our sample includes 8,384 firm-year observations during the period 2006–2009. We use abnormal accrual estimates from the Jones (1991) model to proxy for audit quality. We find that busy season companies exhibit greater magnitudes of abnormal accruals. Using a subsample of busy season companies, we find evidence of a positive association between abnormal accruals and the level of auditor workload compression. These findings are consistent with the prediction that compressed workloads impair audit quality and increase management's ability to manipulate reported earnings. Our earnings benchmark tests and other sensitivity tests support our primary results. However, extended analysis only weakly supports the assertion that workload pressures also affect more extreme audit outcomes, such as auditors' going-concern decisions.

This study provides several contributions to the auditing literature. Our investigation offers initial insights into whether factors typically associated with individual auditors (i.e., work stress, time budget constraints) also affect collective audit engagement performance. In contrast with prior experimental and behavioral research, we focus our tests on the effects of workload pressures at the overall audit engagement level. Thus, our study corroborates findings from prior behavioral research via archival methods and provides initial evidence that individual auditor conditions transcend the quality control mechanisms of a firm, affecting the overall quality of an audit. Our findings are relevant in the current operating environment of auditors, which is marked by a greater number of required procedures, as mandated by the Sarbanes-Oxley Act (SOX) (2002), as well as shorter year-end audit windows for some Securities and Exchange Commission (SEC) registrants (SEC 2004; Bierstaker et al. 2006; PCAOB 2010; Lambert et al. 2011). Our results also emphasize the importance of and threats to existing quality control measures, such as the American Institute of Certified Public Accountants' (AICPA) mandate to firms to evaluate annually whether they have the necessary resources to complete their ongoing engagements and ensure that audits meet adequate levels of professional care and competence (AICPA 2003).

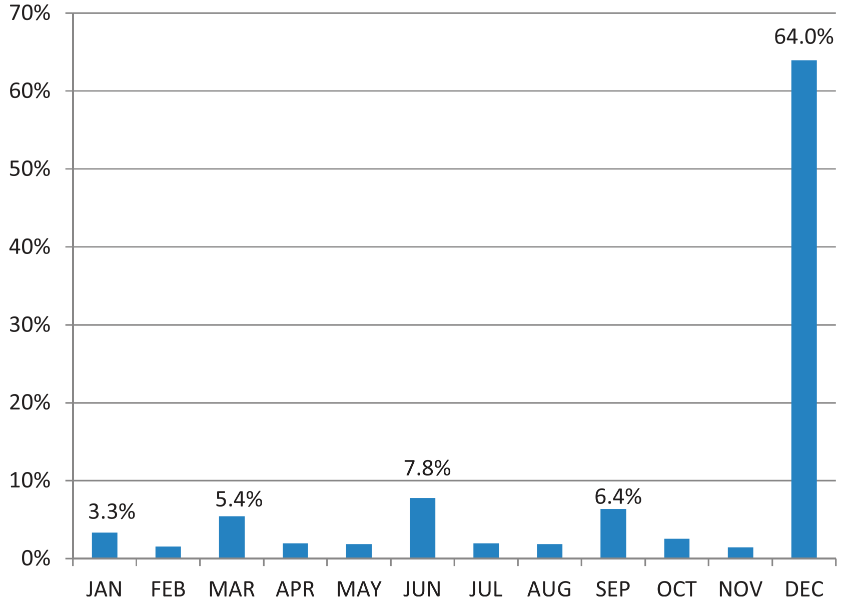
The remainder of this study is organized as follows. We present background information and our research propositions in the next section, followed by a description of the sample selection and research methods. We then provide the empirical results. The last two sections feature discussions of our study conclusions and limitations.

BACKGROUND AND RESEARCH PROPOSITIONS

Busy Seasons, Workload Compression, and the Audit Landscape

Most U.S. publicly traded companies close their fiscal year in December, creating a condition known to auditors as the busy season. As Figure 1 shows, 64.0 percent of all Compustat companies during 1950–2009 had a fiscal year-end date of December. Though relatively minor, additional

FIGURE 1
Distribution of Fiscal Year-Ends by Calendar Month (1950–2009)



fiscal year-end concentrations occurred around January, March, June, and September.[1] The busy season, as well as regulatory and client pressures to meet certain audit deadlines, creates explicit challenges for auditors. A report from the former Public Oversight Board (POB 2000) recognizes the potential impact of such challenges, noting that time pressures can compromise audit quality if audit team members perceive that their individual performance is measured according to their ability to meet deadlines and time budget estimates. The enactment of SOX contributed to these challenges by increasing the testing requirements and reporting responsibilities of auditors (e.g., Section 404 directives). Subsequent to SOX, the SEC adopted rules requiring publicly traded registrants to accelerate the filing of their annual reports (SEC 2002). A main objective of the rule was to increase the timeliness of accounting information; however, accelerated filing also compressed auditors' workloads into a shorter busy season.[2]

To improve the balance in their workloads and respond to the challenges imposed by the ever-increasing regulation, many auditors shift some procedures to earlier interim periods or encourage their clients to implement systems that facilitate the adoption of "continuous auditing" strategies. However, important factors constrain auditors' ability to take advantage of such strategies. For example, certain procedures cannot be performed until the end of the fiscal year period or shortly

[1] In untabulated tests, we estimated the historical proportion of all Compustat companies with a December year-end date for 1950–2009; the proportion of such companies steadily decreases from an overall high of 79.5 percent in 1959 to an overall low of 53.6 percent in 1987.

[2] The SEC received 302 comments in response to the proposal of accelerated filing (SEC 2002), generally representative of two distinct groups: those in support of accelerated filing (6.6 percent) and those who opposed (93.4 percent). More than 70 percent of the respondents expressed concerns about the accuracy and quality of financial reporting after the proposed deadlines had been implemented. The full implementation of accelerated filing was delayed by the SEC more than once, in response to complaints by filers and their auditors. Many respondents noted that the internal control requirements of SOX placed substantial demands on the personnel and systems used to prepare and file periodic reports (SEC 2004).

thereafter (AICPA 2006). In addition, some auditing standards emphasize the importance of year-end evidence as a means to reduce audit risk (AICPA 1983). Thus, the busy season and workload compression remain important challenges for allocating available audit resources.

Prior Research and Primary Research Propositions

Research on the impact of concentrated workloads mainly adopts a behavioral perspective. Most prior studies consider two theoretical workplace constructs commonly associated with the busy season: stress and burnout (Jones et al. 2010). For example, Sweeney and Summers (2002) find that busy season pressures escalate public accountants' burnout and lead to a depersonalization in auditor commitment. Cordes and Dougherty (1993) conclude that stress and burnout reduce individual performance, organizational attachment, and job satisfaction. In addition, anecdotal evidence strongly suggests that the intense workload pressures of the busy season can diminish employee performance and lead to low morale, absenteeism, and high turnover rates in the auditing industry (Johnson-Moreno 2003).

Time budget pressures, an artifact of compressed workloads, also may lead auditors to engage in dysfunctional behaviors or perform substandard work. McDaniel (1990) finds that audit effectiveness decreases with greater time pressure. Recent evidence suggests that such time pressure effects could be robust to materiality and misstatement risk considerations. For example, Coram et al. (2004) find that misstatement risk does not always condition auditor behavior, and auditors may engage in quality reduction acts as a strategic response to their time pressures. Agoglia et al. (2010) find that work pressures are negatively associated with the effectiveness of the audit techniques employed by audit managers and partners.

Despite the advances in experimental and survey literature, DeZoort and Lord (1997) call for additional evidence concerning the collective impact of work pressures, and Sweeney and Summers (2002) consider archival research on such pressures to be virtually nonexistent.[3] Drawing on the theory that workload pressures may lead individual auditors to engage in dysfunctional behaviors and deliver substandard audit work, we question whether these conditions also affect auditors' collective performance. Given the evidence in prior behavioral studies, the busy season should be associated with a decrease in auditors' capacity to discover and report existing accounting exceptions. We also posit that this effect varies according to differences in the level of workload compression at local offices, because local partner choices and local market conditions affect the level of workload compression experienced by auditors. The local offices of the Big 4 firms act as semi-autonomous units, with different risks associated with their client portfolios (Bell et al. 2002; Johnstone and Bedard 2003; Bedard and Johnstone 2004). In addition, resources and capacity are costly to transfer across offices (Francis et al. 1999). Therefore, the study of workload compression pressures appears particularly relevant at the local office level.

SAMPLE SELECTION AND RESEARCH METHODS

Sample

We use a pooled cross-sectional sample of company-year observations from 2006–2009. Companies missing the necessary data in Compustat or Audit Analytics to operationalize the regression model variables are excluded from the sample. Financial institutions, utility companies, and other highly regulated industries (standard industrial classification [SIC] codes 6000–6999 and

[3] Some archival studies recognize the busy season as an explanatory factor to different auditing-related issues, but usually from an *ad hoc* perspective. Such studies commonly include an indicator variable to control for the presence of December year-end companies in the sample (e.g., Gul 1999; Gul and Tsui 2001; Ferguson and Stokes 2002; Abbott et al. 2003; Ferguson et al. 2003; Gul et al. 2003; Francis et al. 2005).

4000–4999) are eliminated because they face different regulatory and reporting requirements. We also remove companies that changed their fiscal year-end date to control for possible confounding effects and earnings management opportunities associated with such changes. To control for the dominant role and greater resource base of Big 4 firms, we limit our sample to companies audited by the Big 4 firms. We collect office location and fee data from Audit Analytics; all other data come from Compustat.[4] The final sample consists of 8,384 firm-year observations, comprised of 2,627 different companies across 262 local auditor offices.

Regression Model Development

Our primary regression model intends to capture the effects of the busy season and auditor workload compression on audit quality. We use the magnitude of abnormal accruals as our primary proxy for audit quality, consistent with prior literature.[5] We estimate the following model using ordinary least-squares regression:

$$\begin{aligned} ABS\_DA_{i,t} = {} & \beta_0 + \beta_1[Workload\ Pressure]_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LAFLR_{i,t} + \beta_4 AFLR_{i,t} \\ & + \beta_5 \Delta REVENUES_{i,t} + \beta_6 CFO_{i,t} + \beta_7 LOSS_{i,t} + \beta_8 DEBT_{i,t} + \beta_9 OPSEG_{i,t} \\ & + \beta_{10} GEOSEG_{i,t} + \beta_{11} TENURE_{i,t} + \beta_{12} OFFICE\_SIZE_{i,t} \\ & + \beta_{13} REPORT\_LAG_{i,t} + \beta_{14} INFLUENCE_{i,t} + \beta_{15} NATL\_LEADER_{i,t} \\ & + \beta_{16} CITY\_LEADER_{i,t} + \gamma_j \boldsymbol{YEAR}_j + \delta_k \boldsymbol{SIC2}_k + \varepsilon_{i,t}. \end{aligned} \quad (1)$$

Table 1 summarizes the variables discussed in this section. The dependent variable of interest, *ABS_DA*, is the absolute value of the abnormal component of a company's total accruals, with a minimum value of 0.000 and a maximum winsorized value of 0.999 (Francis and Yu 2009). We use the cross-sectional version of the Jones (1991) discretionary accruals model to estimate *ABS_DA*, and we include all available companies in Compustat with sufficient data to operationalize the model (n = 19,008). The cross-sections are based on fiscal year and the first two digits of the primary SIC code of a company; we require a minimum of ten observations in each cross-section to ensure estimation reliability. Following Kothari et al. (2005), we correct for financial performance by adding return on assets (*ROA*) to the accruals model, as follows:

$$TA_{i,t} = \lambda_0 + \lambda_1(1/ASSETS_{i,t-1}) + \lambda_2 \Delta REV_{i,t} + \lambda_3 PPE_{i,t} + \lambda_4 ROA_{i,t} + \eta_{i,t}, \quad (2)$$

where *TA* is total accruals, estimated as the change in non-cash current assets minus the change in current liabilities excluding the current portion of long-term debt, minus depreciation and amortization, scaled by lagged total assets.[6] In addition, ΔREV is the change in revenues scaled by lagged total assets; *PPE* is gross property, plant, and equipment scaled by lagged total assets; *ROA* is net income divided by total assets; *i* indicates the company; and *t* refers to the fiscal year.

[4] We perform several reliability checks for the auditor location data. The data were corrected for spelling differences (e.g., St. Louis, MO versus Saint Louis, MO), inconsistencies in the names of certain locations (e.g., Orange County, CA versus Irvine, CA), and inconsistencies between auditor locations reported by Audit Analytics and in the companies' 10-K reports.

[5] Audit quality is an unobservable multidimensional construct, and accrual models only approximate some of the different dimensions of it. However, discretionary accruals are commonly used to proxy for audit quality (e.g., Becker et al. 1998; Heninger 2001; Lee and Mande 2003; Myers et al. 2003; Choi et al. 2010; Francis 2011). As Myers et al. (2003) propose, accrual characteristics can provide inferences about audit quality, because high-quality audits mitigate opportunistic management reporting decisions manifested in accounting accruals. We purposefully follow a conventional approach to our main tests, given the experimental nature of our workload compression variable.

[6] In reference to Compustat, *TA* = (Data4 − Data1 − Data5 + Data34 − Data14)/lagged Data6.

TABLE 1

Variable Definitions

Variable	Definition
Variables of Interest	
ABS_DA	= absolute value of performance-adjusted abnormal accruals (see Kothari et al. 2005), with a minimum value of 0.000 and a maximum winsorized value of 0.999;
BUSY_FYE	= 1 if a company has a fiscal year-end date of December, and 0 otherwise; and
AUD_WLC	= relative level of workload compression of a local auditor office during the fiscal year-end month of a client. For each month, we add the audit fees charged to clients with the same fiscal year-end month in each local office; we then divide each monthly sum by the total audit fees collected by the local office for the year.
Company-Related Factors	
SIZE	= natural log of a company's total assets (in millions);
LAFLR	= 1 if market equity capitalization is $700 million or more, and 0 otherwise;
AFLR	= 1 if market equity capitalization is between $75 million and $700 million, and 0 otherwise;
ΔREVENUES	= percentage of change in a company's sales revenue, with a minimum winsorized value of −1.00 and a maximum winsorized value of 2.00;
CFO	= operating cash flows deflated by lagged total assets;
LOSS	= 1 if operating income after depreciation is negative, and 0 otherwise;
DEBT	= total liabilities deflated by total assets;
OPSEG	= number of operating segments, as reported in the Compustat database; and
GEOSEG	= number of geographical segments, as reported in the Compustat database.
Auditor-Related Factors	
TENURE	= 1 if auditor tenure is three years or less, and 0 otherwise;
OFFICE_SIZE	= natural log of the aggregated audit fees (in millions) of a local office;
REPORT_LAG	= log of the number of days between the fiscal year-end date of a company and the date of the auditors' opinion;
INFLUENCE	= ratio of a company's total fees (i.e., audit fees plus nonaudit fees) relative to the aggregate annual fees generated by the local office that audits the company;
NATL_LEADER	= 1 if an audit firm is the top-ranked auditor in a company's industry, and 0 otherwise. Industry leadership is based on the annual aggregated audit fees generated by an auditor in a company's industry; and
CITY_LEADER	= 1 if a local office is the top-ranked auditor in a company's industry, and 0 otherwise. Industry leadership is based on the annual aggregated audit fees generated by an auditor in a company's industry.
Other Factors	
YEAR	= fiscal year indicators; and
SIC2	= industry indicators, based on the first two digits of the SIC code of a company.

We measure our independent variable of interest [*Workload Pressure*] in two ways. In the first variation, *BUSY_FYE* is an indicator that equals 1 if a company has a fiscal year-end date of December, and 0 otherwise. We expect *BUSY_FYE* to have a positive coefficient, which would indicate that the financial statements of December year-end companies carry higher levels of abnormal accruals and lower levels of audit quality. The second variation is represented by *AUD_WLC*, a proxy for the relative level of workload compression of a local auditor office during the fiscal year-end month of a client. To calculate this variable, for each month, we add the audit fees charged to clients with the same fiscal year-end month in each local office; we then divide each monthly sum by the total audit fees collected by the local office for the year.[7,8] Higher values of *AUD_WLC* should be associated with higher concentrations in auditor workloads, because fees reflect the amount of audit effort expended on specific audit engagements (Akono et al. 2011). *AUD_WLC* should display a positive coefficient, such that audit quality decreases as the level of auditor workload compression increases.

Company-Related Factors

The company-related controls aim to capture the potential effects of managers' different opportunities or incentives to manipulate earnings. *SIZE* (−) is the natural log of a company's total assets; larger companies have fewer incentives to manage earnings to avoid litigation (Lang and Lundholm 1993). This variable also controls for the general effects of company size on accrual quality and for the possibility of omitted correlated variables (Davidson and Neu 1993; Becker et al. 1998; Dechow and Dichev 2002). Consistent with the workload issues addressed by our primary research proposition, Lambert et al. (2011) document potentially deleterious audit quality effects associated with the accelerated filing deadlines of the SEC.[9] We define the "large accelerated filers" indicator (*LAFLR*) (+) as equal to 1 if a company has a market capitalization of $700 million or more, and 0 otherwise. Similarly, we define the "accelerated filers" indicator (*AFLR*) (+) as equal to 1 if a company has a market equity capitalization between $75 million and $700 million, and 0 otherwise.

Δ*REVENUES* (+) is the percentage of change in a company's sales revenue and controls for managers' opportunities to manage accruals during periods of high company growth (Lee and Mande 2003). It has a minimum winsorized value of −1.00 and a maximum winsorized value of 2.00 (Francis and Yu 2009). *CFO* (−) is operating cash flows deflated by lagged total assets and controls for the association between accruals and cash flows. *LOSS* (+) is an indicator that equals 1 if operating income after depreciation is negative, and 0 otherwise. It, thus, controls for potential audit quality differences between loss and profit companies (Choi et al. 2007), as well as for the incentive to take a "big bath" during years of poor financial performance. *DEBT* (+) is total liabilities deflated by total assets. Companies with more debt have higher incentives to manage accruals to comply with their debt covenant agreements (DeFond and Jiambalvo 1994; Sweeney 1994). *OPSEG* (+/−) and *GEOSEG* (+/−) are the number of operating and geographical segments reported in the Compustat database, respectively. These variables control for the potential confounding effects of engaging auditors from different offices to complete the audits of companies with multiple operating and geographical segments (Francis and Yu 2009).

Auditor-Related Factors

The auditor-related controls aim to capture auditors' ability to curtail aggressive reporting and perform an effective audit. *TENURE* (+) equals 1 if the auditor has performed an audit for three years or less, and 0 otherwise. Auditors with shorter tenures tend to commit more errors and experience higher litigation risk than other auditors (St. Pierre and Anderson 1984). Myers et al. (2003) also find evidence that longer tenures enable auditors to place greater constraints on aggressive financial reporting.

[7] For example, the client portfolio of a local office contains clients A, B, C, and D. Each client pays $100 in annual audit fees. If clients A, B, and C share a December fiscal year-end date, the office level workload compression for December is 0.75 ($300/$400). *AUD_WLC* does not aim to capture the extent of resources available to any given office; rather, it provides a relative measure of the need for resources, based on the distribution of fiscal year-end dates and the relative size of the engagements in an auditor's client portfolio.

[8] As discussed in the sensitivity tests section, we also estimate the main regression model using an alternative version of *AUD_WLC* based on total fees (i.e., audit fees plus nonaudit fees).

[9] SEC Rule 33-8644 requires "large accelerated filers" to file within 60 days of their fiscal year-end, effective as of December 15, 2006. "Accelerated filers" are subject to a 75-day filing deadline. "Non-accelerated filers" remain subject to the SEC's original 90-day deadline (SEC 2005).

OFFICE_SIZE (–) is the natural log of the aggregated audit fees of a local office. Prior studies show that larger local offices provide better audit quality (Francis and Yu 2009; Choi et al. 2010).

Knechel and Payne (2001) find a positive correlation between the length of the audit report lag and busy season audits. *REPORT_LAG* (+) is the log of the number of days between the fiscal year-end date of a company and the date of the auditors' opinion. This variable controls for alternative risk factors that manifest themselves in the timing and extent of the procedures performed for a client, affecting the length of the audit report lag. *INFLUENCE* (+) is the ratio of a company's total fees (i.e., audit fees plus nonaudit fees) relative to the aggregate annual fees generated by the local office that audits the company. This variable controls for a client's financial significance to the local office that performs their audit, as well as for the potential effects of economic bonding (DeAngelo 1981; Francis and Yu 2009). We also control for the potential audit quality effects of using industry-specialist auditors by including *NATL_LEADER* (–) and *CITY_LEADER* (–) (Reichelt and Wang 2009). Both are indicator variables that equal 1 if an auditor is the top-ranked auditor in a company's industry at the national or local city level, respectively.

Other Factors

The regression model includes a set of fiscal year indicators (***YEAR***) to control for the possibility of temporal differences in the reporting environment of companies and their auditors. The model also includes a set of industry indicators (***SIC2***) to control for potential industry-specific factors that could affect accrual reporting. This latter set of indicators is based on the first two digits of a company's primary SIC code.

EMPIRICAL RESULTS

Univariate Statistics

Table 2 contains sample descriptive statistics. The mean value of *BUSY_FYE* in the first set of columns (n = 8,384) indicates that 67.8 percent of the observations come from companies with a fiscal year-end date of December. The mean value of *AUD_WLC* in the second set of columns (n = 5,685) shows that the average level of workload compression during December is 72.5 percent, and the third set of columns (n = 2,699) reveals that the average level of workload compression during any other month is only 15.6 percent. Thus, almost three-quarters of auditors' workloads relate to their busy season clients. The subsample statistics in Table 2 also show that busy season companies have higher levels of abnormal accruals (*ABS_DA*: 0.142 versus 0.116, p-value $\leq$ 0.01). These results offer preliminary evidence of lower audit quality among busy season companies, potentially due to their busier auditors. According to the univariate results for the control variables, busy season companies are less likely to be large accelerated filers (*LAFLR*), experience greater rates of change in their revenues (Δ*REVENUES*), have lower net operating cash flows (*CFO*), are more likely to report a loss (*LOSS*), have higher levels of debt (*DEBT*), have more operating and geographical segments (*OPSEG* and *GEOSEG*), and have their audits performed by larger local auditor offices (*OFFICE_SIZE*). These differences are statistically significant (all p-values $\leq$ 0.01, with the exception of *GEOSEG*, which is only significant at the 0.10 level).

The Pearson correlation coefficients in Table 3 indicate that the highest correlation value is for *BUSY_FYE* and *AUD_WLC* at 79.8 percent. This is an expected condition because 67.8 percent of the observations have a fiscal year-end date of December (see Table 2), which aligns busy season companies with auditors with higher levels of workload compression. The correlations between *ABS_DA* and the two independent variables of interest, *BUSY_FYE* and *AUD_WLC*, are also positive and significant, in preliminary support of our research propositions.

TABLE 2

Descriptive Statistics

Variable	All Observations n = 8,384 Mean	Median	SD	Busy Season Companies (December Year-End) n = 5,685 Mean	Median	SD	Non-Busy Season Companies (Non-December Year-End) n = 2,699 Mean	Median	SD	Test of Difference[a]
ABS_DA	0.134	0.067	0.180	0.142	0.071	0.188	0.116	0.058	0.161	6.57***
BUSY_FYE	0.678	1.000	0.467	1.000	1.000	0.000	0.000	0.000	0.000	∞***
AUD_WLC	0.542	0.635	0.333	0.725	0.765	0.206	0.156	0.086	0.191	125.66***
SIZE	6.582	6.554	1.794	6.567	6.522	1.852	6.614	6.602	1.665	1.18
LAFLR	0.496	0.000	0.500	0.485	0.000	0.500	0.520	1.000	0.500	3.01***
AFLR	0.392	0.000	0.488	0.394	0.000	0.489	0.390	0.000	0.488	0.31
ΔREVENUES	0.108	0.069	0.377	0.124	0.071	0.422	0.076	0.065	0.255	6.56***
CFO	0.061	0.094	0.295	0.049	0.092	0.336	0.088	0.099	0.177	7.19***
LOSS	0.243	0.000	0.429	0.266	0.000	0.442	0.192	0.000	0.394	7.82***
DEBT	0.527	0.493	0.374	0.546	0.506	0.412	0.485	0.473	0.269	8.23***
OPSEG	1.353	1.000	1.283	1.379	1.000	1.343	1.298	1.000	1.143	2.89***
GEOSEG	2.710	2.000	2.334	2.735	2.000	2.436	2.659	2.000	2.101	1.48*
TENURE	0.358	0.000	0.479	0.358	0.000	0.479	0.358	0.000	0.479	0.02
OFFICE_SIZE	17.269	17.457	1.148	17.299	17.466	1.120	17.208	17.384	1.203	3.34***
REPORT_LAG	4.159	4.094	0.270	4.157	4.094	0.242	4.164	4.111	0.322	0.98
INFLUENCE	0.109	0.040	0.184	0.107	0.039	0.184	0.113	0.043	0.183	1.50**
NATL_LEADER	0.305	0.000	0.461	0.294	0.000	0.456	0.329	0.000	0.470	3.25***
CITY_LEADER	0.647	1.000	0.478	0.644	1.000	0.479	0.654	1.000	0.476	0.92

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels (two-tailed), respectively.
[a] Reported test scores of difference in sample means (t-test for continuous variables, difference in proportions test for dichotomous variables).
The variable definitions are in Table 1.

Regression Results: Abnormal Accrual Tests

Table 4 presents the main regression results. All different specifications of the primary regression model are significant (p-value $\leq$ 0.01 for all models) and have adjusted R^2 values ranging between 10.83 and 27.30 percent.[10] The estimated coefficient for *BUSY_FYE* in Model 1 is positive and significant (Coeff. = 0.019, p-value $\leq$ 0.01), indicating that busy season companies report abnormal accruals of greater magnitude than those reported by non-busy season companies. This supports our expectation of lower audit quality among busy season companies. The estimated coefficient for *AUD_WLC* in Model 2 is positive and significant (Coeff. = 0.013, p-value $\leq$ 0.01), indicating that abnormal accruals increase with the concentration of companies with the same fiscal year-end month in an auditor's client portfolio. In turn, this supports our expectation of a negative association between workload compression and audit quality.

Model 3 presents the regression results when we include an interaction between *BUSY_FYE* and *AUD_WLC*. Although *BUSY_FYE* remains positive and significant (Coeff. = 0.021, p-value $\leq$ 0.01), the results do not indicate a significant interaction effect between workload compression and

[10] The t-statistics are adjusted using robust standard errors corrected for heteroscedasticity and company-level clustering (Petersen 2009).

TABLE 3
Correlation Table

Panel A: Variables *ABS_DA* to *DEBT*

	ABS_DA	*BUSY_FYE*	*AUD_ WLC*	*SIZE*	*LAFLR*	*AFLR*	*ΔREV*	*CFO*	*LOSS*	*DEBT*
ABS_DA		0.067	0.041	−0.132	−0.036	0.022	0.107	−0.126	0.086	−0.003
		<0.001	0.020	<0.001	0.001	0.045	<0.001	<0.001	<0.001	0.775
BUSY_FYE	0.067		0.798	−0.012	−0.033	0.003	0.060	−0.063	0.081	0.077
	<0.001		<0.001	0.255	0.003	0.756	<0.001	<0.001	<0.001	<0.001
AUD_WLC	0.041	0.798		0.113	0.045	−0.048	0.035	−0.042	0.009	0.117
	0.020	<0.001		<0.001	<0.001	<0.001	0.001	<0.001	0.420	<0.001
SIZE	−0.132	−0.012	0.113		0.693	−0.422	−0.073	0.302	−0.443	0.108
	<0.001	0.255	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
LAFLR	−0.036	−0.033	0.045	0.693		−0.798	0.032	0.240	−0.376	0.003
	0.001	0.003	<0.001	<0.001		<0.001	0.003	<0.001	<0.001	0.801
AFLR	0.022	0.003	−0.048	−0.422	−0.798		0.018	−0.112	0.183	−0.083
	0.045	0.756	<0.001	<0.001	<0.001		0.089	<0.001	<0.001	<0.001
ΔREV	0.107	0.060	0.035	−0.073	0.032	0.018		−0.046	−0.018	−0.015
	<0.001	<0.001	0.001	<0.001	0.003	0.089		<0.001	0.102	0.163
CFO	−0.126	−0.063	−0.042	0.302	0.240	−0.112	−0.046		−0.407	−0.161
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001		<0.001	<0.001
LOSS	0.086	0.081	0.009	−0.443	−0.376	0.183	−0.018	−0.407		0.024
	<0.001	<0.001	0.420	<0.001	<0.001	<0.001	0.102	<0.001		0.026
DEBT	−0.003	0.077	0.117	0.108	0.003	−0.083	−0.015	−0.161	0.024	
	0.775	<0.001	<0.001	<0.001	0.801	<0.001	0.163	<0.001	0.026	
OPSEG	−0.042	0.029	0.073	0.226	0.136	−0.095	−0.043	0.054	−0.065	0.066
	<0.001	0.006	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
GEOSEG	0.012	0.015	0.022	0.211	0.170	−0.115	−0.049	0.076	−0.105	−0.038
	0.266	0.161	0.041	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
TENURE	−0.058	0.000	0.007	−0.077	−0.013	0.035	0.138	−0.026	−0.006	−0.036
	<0.001	0.982	0.504	<0.001	0.229	0.001	<0.001	0.017	0.568	0.001
OFFICE_SIZE	0.044	0.037	−0.119	0.084	0.083	−0.054	0.032	−0.021	0.062	−0.018
	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.049	<0.001	0.102
REPORT_LAG	0.024	−0.012	−0.043	−0.378	−0.366	0.204	0.017	−0.154	0.241	0.062
	0.027	0.277	<0.001	<0.001	<0.001	<0.001	0.125	<0.001	<0.001	<0.001
INFLUENCE	−0.037	−0.016	0.256	0.340	0.187	−0.138	−0.049	0.061	−0.155	0.110
	0.001	0.135	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
NATL_LEADER	−0.048	−0.035	−0.001	0.106	0.080	−0.052	−0.027	0.042	−0.045	−0.011
	<0.001	0.001	0.953	<0.001	<0.001	<0.001	0.014	<0.001	<0.001	0.323
CITY_LEADER	−0.064	−0.010	0.046	0.174	0.121	−0.087	−0.027	0.037	−0.089	0.045
	<0.001	0.358	<0.001	<0.001	<0.001	<0.001	0.013	0.001	<0.001	<0.001

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TABLE 3 (continued)

Panel B: Variables *OPSEG* to *CITY_LEADER*

	OPSEG	*GEOSEG*	*TENURE*	*OFFICE _SIZE*	*REPORT _LAG*	*INFLUENCE*	*NATL_ LEADER*	*CITY_ LEADER*
ABS_DA	−0.042	0.012	−0.058	0.044	0.024	−0.037	−0.048	−0.064
	<0.001	0.266	<0.001	<0.001	0.027	0.001	<0.001	<0.001
BUSY_FYE	0.029	0.015	0.000	0.037	−0.012	−0.016	−0.035	−0.010
	0.006	0.161	0.982	0.001	0.277	0.135	0.001	0.358
AUD_WLC	0.073	0.022	0.007	−0.119	−0.043	0.256	−0.001	0.046
	<0.001	0.041	0.504	<0.001	<0.001	<0.001	0.953	<0.001
SIZE	0.226	0.211	−0.077	0.084	−0.378	0.340	0.106	0.174
	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
LAFLR	0.136	0.170	−0.013	0.083	−0.366	0.187	0.080	0.121
	<0.001	<0.001	0.229	<0.001	<0.001	<0.001	<0.001	<0.001
AFLR	−0.095	−0.115	0.035	−0.054	0.204	−0.138	−0.052	−0.087
	<0.001	<0.001	0.001	<0.001	<0.001	<0.001	<0.001	<0.001
ΔREV	−0.043	−0.049	0.138	0.032	0.017	−0.049	−0.027	−0.027
	<0.001	<0.001	<0.001	0.003	0.125	<0.001	0.014	0.013
CFO	0.054	0.076	−0.026	−0.021	−0.154	0.061	0.042	0.037
	<0.001	<0.001	0.017	0.049	<0.001	<0.001	<0.001	0.001
LOSS	−0.065	−0.105	−0.006	0.062	0.241	−0.155	−0.045	−0.089
	<0.001	<0.001	0.568	<0.001	<0.001	<0.001	<0.001	<0.001
DEBT	0.066	−0.038	−0.036	−0.018	0.062	0.110	−0.011	0.045
	<0.001	<0.001	0.001	0.102	<0.001	<0.001	0.323	<0.001
OPSEG		0.067	−0.017	0.020	−0.068	0.113	0.075	0.068
		<0.001	0.122	0.065	<0.001	<0.001	<0.001	<0.001
GEOSEG	0.067		−0.042	0.129	−0.063	0.080	0.056	0.032
	<0.001		<0.001	<0.001	<0.001	<0.001	<0.001	0.003
TENURE	−0.017	−0.042		0.000	0.152	−0.022	−0.018	−0.021
	0.122	<0.001		0.968	<0.001	0.041	0.102	0.052
OFFICE_SIZE	0.020	0.129	0.000		−0.014	−0.596	0.111	−0.101
	0.065	<0.001	0.968		0.191	<0.001	<0.001	<0.001
REPORT_LAG	−0.068	−0.063	0.152	−0.014		−0.065	−0.040	−0.072
	<0.001	<0.001	<0.001	0.191		<0.001	<0.001	<0.001
INFLUENCE	0.113	0.080	−0.022	−0.596	−0.065		0.004	0.191
	<0.001	<0.001	0.041	<0.001	<0.001		0.741	<0.001
NATL_LEADER	0.075	0.056	−0.018	0.111	−0.040	0.004		0.128
	<0.001	<0.001	0.102	<0.001	<0.001	0.741		<0.001
CITY_LEADER	0.068	0.032	−0.021	−0.101	−0.072	0.191	0.128	
	<0.001	0.003	0.052	<0.001	<0.001	<0.001	<0.001	

The variable definitions are in Table 1. The first row in each column presents the Pearson correlation coefficient, and the second row presents the p-value for two-tailed test of significance. Pearson correlation coefficients are estimated using all available company-year observations in the sample (n = 8,384).

TABLE 4

Ordinary Least-Squares Regression of Abnormal Accruals

$$ABS\_DA_{i,t} = \beta_0 + \beta_1[Workload\ Pressure]_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LAFLR_{i,t} + \beta_4 AFLR_{i,t} + \beta_5 \Delta REVENUES_{i,t} + \beta_6 CFO_{i,t} + \beta_7 LOSS_{i,t} + \beta_8 DEBT_{i,t} + \beta_9 OPSEG_{i,t} + \beta_{10} GEOSEG_{i,t} + \beta_{11} TENURE_{i,t} + \beta_{12} OFFICE\_SIZE_{i,t} + \beta_{13} REPORT\_LAG_{i,t} + \beta_{14} INFLUENCE_{i,t} + \beta_{15} NATL\_LEADER_{i,t} + \beta_{16} CITY\_LEADER_{i,t} + \gamma_j \boldsymbol{YEAR}_j + \delta_k \boldsymbol{SIC2}_k + \varepsilon_{i,t}.$$

		Model 1 All Obs.		Model 2 All Obs.		Model 3 All Obs.		Model 4 Busy Season		Model 5 Non-Busy Season	
Variable	**Pred. Sign**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**
Intercept		−0.102	−2.18**	−0.095	−2.04**	−0.066	−1.33*	−0.050	−2.32**	−0.077	−2.56***
BUSY_FYE	+	0.019	5.09***			0.021	2.39***				
AUD_WLC	+			0.013	4.57***	−0.023	−1.01	0.027	3.33***	0.079	0.085
BUSY × WLC	+					0.005	0.23				
SIZE	−	−0.023	−11.27***	−0.023	−11.21***	−0.014	−7.93***	−0.024	−9.25***	−0.010	−3.53***
LAFLR	+	0.055	6.04***	0.054	5.91***	0.049	5.92***	0.058	5.13***	0.024	1.82**
AFLR	+	0.020	2.81***	0.019	2.71***	0.026	3.98***	0.020	2.31***	0.009	0.89
ΔREVENUES	+	0.061	8.13***	0.062	8.26***	0.051	9.36***	0.059	7.56***	0.071	6.40***
CFO	−	−0.051	−3.79***	−0.051	−3.80***	−0.037	−5.04***	−0.050	−3.76***	−0.032	−1.81**
LOSS	+	−0.003	−0.44	−0.002	−0.27	−0.020	−3.91***	−0.003	−0.36	−0.017	−2.12**
DEBT	+	0.004	0.48	0.004	0.58	0.040	7.69***	0.007	0.91	0.022	1.99**
OPSEG	?	−0.001	−0.86	−0.001	−0.79	0.000	−0.30	0.000	−0.10	−0.002	−0.59
GEOSEG	?	0.003	3.65***	0.003	3.78***	0.001	1.33*	0.001	1.32	0.001	0.73
TENURE	+	0.009	1.15	0.009	1.16	0.016	2.46***	0.009	0.90	0.006	0.59
OFFICE_SIZE	−	0.017	7.20	0.017	7.26	0.002	0.94	0.016	5.06	0.003	0.79
REPORT_LAG	+	−0.002	−0.29	−0.003	−0.40	−0.013	−1.75**	0.000	−0.03	−0.010	−1.16
INFLUENCE	+	0.094	5.98***	0.088	5.48***	0.021	1.37*	0.105	5.12***	0.086	2.39***
NATL_LEADER	−	−0.014	−3.73***	−0.015	−3.91***	−0.003	−0.88	−0.011	−2.23**	−0.006	−1.00
CITY_LEADER	−	−0.013	−3.23***	−0.013	−3.22***	−0.001	−0.16	−0.008	−1.56*	−0.002	−0.26

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TABLE 4 (continued)

Variable	Pred. Sign	Model 1 All Obs. β	Model 1 All Obs. t-stat	Model 2 All Obs. β	Model 2 All Obs. t-stat	Model 3 All Obs. β	Model 3 All Obs. t-stat	Model 4 Busy Season β	Model 4 Busy Season t-stat	Model 5 Non-Busy Season β	Model 5 Non-Busy Season t-stat
YEAR	?	(included)		(included)		(included)		(included)		(included)	
SIC2	?	(included)		(included)		(included)		(included)		(included)	
n =		8,384		8,384		8,384		5,685		2,699	
Adjusted R^2		11.02%		10.83%		27.30%		11.01%		25.43%	
F-Statistic		56.92		55.83		48.04		38.88		16.26	
		(<0.001)		(<0.001)		(<0.001)		(<0.001)		(<0.001)	

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels, respectively, based on one-tailed tests for directional predictions, and two-tailed tests otherwise.
The variable definitions are in Table 1. All t-statistics are adjusted, using robust standard errors corrected for heteroscedasticity and company-level clustering.

audit quality. We note potential multicollinearity issues between *BUSY_FYE* and *AUD_WLC* in the discussion of Table 3, which complicate the inferences drawn from Model 3.[11] In response to this concern, we partition the sample into busy season versus non-busy season companies, following the approach of prior studies (e.g., Bradshaw et al. 2004; Covrig et al. 2007; Brazel et al. 2010). The estimated coefficient for *AUD_WLC* in Model 4 remains positive and significant (Coeff. = 0.027, p-value < 0.01), consistent with the view that audit quality suffers as workload compression increases among busy season clients. Model 5 does not support an association between workload compression and audit quality for non-busy season clients. However, lack of significance in this model may be reflective of low average levels of workload compression among non-busy season clients, as evidenced by *AUD_WLC* in Table 2. In summary, the results in Table 4 indicate that the magnitude of abnormal accruals reported by busy season companies increases with the level of auditor workload compression. Of the control variables, *SIZE*, *LAFLR*, *AFLR*, *ΔREVENUES*, *CFO*, *GEOSEG*, *INFLUENCE*, *NATL_LEADER*, and *CITY_LEADER* all exhibit coefficients in the expected directions, with varying levels of statistical significance.

We also partition the sample according to the sign of abnormal accruals to test for possible differences introduced as a result of auditors' conservative biases (Abbott et al. 2006). Table 5, Panel A, contains the regression results for the subsample of companies with positive abnormal accruals, and Panel B for the subsample of companies with negative abnormal accruals. All models in both panels are significant (p-value $\leq$ 0.01 for all models), with adjusted R^2 values ranging between 15.64 and 39.05 percent. The estimated coefficient for *BUSY_FYE* in Model 1 of Panel A is positive and significant (Coeff. = 0.013, p-value $\leq$ 0.05), indicating that busy season companies report income-increasing accruals of greater magnitude than those reported by non-busy season companies. Similarly, the estimated coefficient for *AUD_WLC* in Model 2 is positive and significant (Coeff. = 0.003, p-value $\leq$ 0.05). Therefore, the opportunities for income-increasing earnings management increase with the concentration of companies with the same fiscal year-end month in an auditor's client portfolio. Consistent with the results in Table 4, Model 3 fails to support a significant relation between workload compression and audit quality when we include an interaction term for *BUSY_FYE* and *AUD_WLC*. However, the workload compression effect persists if we estimate the model using a subsample of December year-end companies (Model 4: *AUD_WLC* Coeff. = 0.034, p-value $\leq$ 0.05).

The results based on the absolute value of negative abnormal accruals in Panel B of Table 5 show that the estimated coefficient for *BUSY_FYE* is positive and significant in Model 1 (Coeff. = 0.020, p-value $\leq$ 0.01). That is, busy season companies report more income-decreasing accruals than those reported by non-busy season companies. Although this result could be interpreted as a sign of conservatism, income-decreasing abnormal accruals create "cookie jar" reserves that can be released during periods of poor financial performance (Levitt 2000). From this perspective, larger negative abnormal accruals would be consistent with lower audit quality. The estimated coefficient for *AUD_WLC* in Model 2 of this panel is positive and significant (Coeff. = 0.016, p-value $\leq$ 0.05), which implies that opportunities for income-decreasing earnings management increase with the concentration of companies with the same fiscal year-end month in an auditor's client portfolio. Similar to the results in Panel A, the workload compression effect persists when we estimate the model using a subsample of December year-end companies (Model 4: *AUD_WLC* Coeff. = 0.019, p-value $\leq$ 0.05). Overall, Table 5 provides evidence that our main audit quality inferences are not sensitive to the possibility of differences associated with the direction of abnormal accruals.

[11] The variance inflation factor (VIF) for the interaction variable is 20.58, well above the commonly accepted threshold of ten. We also estimated Model (3) using mean-centering, based on the yearly means and the grand mean. The VIFs for the variables of interest were as high as 13.31 after mean-centering. Except for the interaction models, the VIFs for all variables in the rest of this study were less than ten. The interpretation and significance of the estimated regression coefficients remain unchanged in these alternative tests.

TABLE 5

Ordinary Least-Squares Regression on Positive and Negative Abnormal Accruals

$$ABS\_DA_{i,t} = \beta_0 + \beta_1[Workload\ Pressure]_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LAFLR_{i,t} + \beta_4 AFLR_{i,t} + \beta_5 \Delta REVENUES_{i,t} + \beta_6 CFO_{i,t} + \beta_7 LOSS_{i,t} + \beta_8 DEBT_{i,t} + \beta_9 OPSEG_{i,t} + \beta_{10} GEOSEG_{i,t} + \beta_{11} TENURE_{i,t} + \beta_{12} OFFICE\_SIZE_{i,t} + \beta_{13} REPORT\_LAG_{i,t} + \beta_{14} INFLUENCE_{i,t} + \beta_{15} NATL\_LEADER_{i,t} + \beta_{16} CITY\_LEADER_{i,t} + \gamma_j \boldsymbol{YEAR}_j + \delta_k \boldsymbol{SIC2}_k + \varepsilon_i.$$

Panel A: Positive Abnormal Accruals Subsample

		Model 1 All Obs.		Model 2 All Obs.		Model 3 All Obs.		Model 4 Busy Season		Model 5 Non-Busy Season	
Variable	**Pred. Sign**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**	**β**	**t-stat**
Intercept		−0.064	−2.83***	−0.058	−2.08**	−0.126	−1.48*	0.011	3.11***	−0.113	−3.68***
BUSY_FYE	+	0.013	2.18**			0.003	0.23				
AUD_WLC	+			0.003	2.24**	−0.009	−0.33	0.034	1.92**	0.019	0.41
BUSY × WLC	+					0.004	0.13				
SIZE	−	−0.021	−6.62***	−0.021	−6.58***	−0.013	−4.95***	−0.022	−5.51***	−0.011	−2.43***
LAFLR	+	0.035	2.64***	0.033	2.52***	0.012	1.08	0.033	1.96**	0.008	0.43
AFLR	+	0.011	1.09	0.009	0.97	0.002	0.24	0.001	0.10	0.011	0.76
ΔREVENUES	+	0.016	1.94**	0.017	2.05**	0.010	1.66**	0.019	2.18**	0.017	1.09
CFO	−	−0.126	−4.60***	−0.127	−4.59***	−0.138	−9.29***	−0.118	−4.41***	−0.249	−8.71***
LOSS	+	−0.018	−1.79	−0.017	−1.70	−0.023	−3.23***	−0.024	−2.04	−0.017	−1.45*
DEBT	+	0.000	0.03	0.001	0.10	0.023	3.70***	0.002	0.21	0.002	0.17
OPSEG	?	0.000	−0.19	0.000	−0.15	0.000	−0.04	0.002	0.59	0.002	0.62
GEOSEG	?	0.004	2.78***	0.004	2.87***	−0.003	−2.70***	0.002	1.33	−0.004	−1.60*
TENURE	+	0.002	0.17	0.002	0.21	−0.006	−0.60	−0.001	−0.07	−0.027	−1.71**
OFFICE_SIZE	−	0.017	4.45	0.017	4.55	0.004	1.29*	0.015	3.24	0.010	2.07**
REPORT_LAG	+	−0.002	−0.15	−0.003	−0.27	−0.013	−1.16	−0.003	−0.22	−0.016	−1.14
INFLUENCE	+	0.095	3.74***	0.095	3.65***	0.022	0.97	0.107	3.35***	0.080	1.49*
NATL_LEADER	−	−0.013	−2.22**	−0.013	−2.27**	−0.003	−0.52	−0.013	−1.73**	−0.007	−0.80
CITY_LEADER	−	−0.020	−3.13***	−0.020	−3.13***	−0.012	−2.16**	−0.017	−2.08**	−0.023	−2.61***

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TABLE 5 (continued)

Variable	Pred. Sign	Model 1 All Obs. β	Model 1 t-stat	Model 2 All Obs. β	Model 2 t-stat	Model 3 All Obs. β	Model 3 t-stat	Model 4 Busy Season β	Model 4 t-stat	Model 5 Non-Busy Season β	Model 5 t-stat
YEAR	?	(included)		(included)		(included)		(included)		(included)	
SIC2	?	(included)		(included)		(included)		(included)		(included)	
n =		3,801		3,801		3,801		2,637		1,164	
Adjusted R^2		16.77%		16.67%		34.81%		17.13%		39.05%	
F-Statistic		37.63		37.36		28.13		26.64		12.52	
		(<0.001)		(<0.001)		(<0.001)		(<0.001)		(<0.001)	

Panel B: Absolute Negative Abnormal Accruals Subsample

Variable	Pred. Sign	Model 1 All Obs. β	Model 1 t-stat	Model 2 All Obs. β	Model 2 t-stat	Model 3 All Obs. β	Model 3 t-stat	Model 4 Busy Season β	Model 4 t-stat	Model 5 Non-Busy Season β	Model 5 t-stat
Intercept		−0.208	−3.47***	−0.204	−3.38***	−0.011	−4.14***	−0.185	−2.24**	−0.038	−4.37***
BUSY_FYE	+	0.020	4.18***			0.023	2.19***				
AUD_WLC	+			0.016	2.17**	0.012	0.54	0.019	2.04**	0.001	0.04
BUSY × WLC	+					−0.029	−1.23				
SIZE	−	−0.022	−8.06***	−0.022	−8.02***	−0.010	−4.68***	−0.023	−6.89***	−0.008	−2.26**
LAFLR	+	0.041	3.31***	0.040	3.23***	0.014	1.37*	0.047	3.07***	0.008	0.47
AFLR	+	0.015	1.53*	0.015	1.50**	0.004	0.52	0.021	1.71**	0.003	0.22
ΔREVENUES	+	0.094	8.24***	0.096	8.33***	0.070	9.28***	0.095	7.51***	0.064	4.43***
CFO	−	0.259	6.38	0.260	6.38	0.350	7.08	0.247	5.19	0.436	8.92
LOSS	+	0.038	4.72***	0.039	4.84***	0.028	4.44***	0.044	4.40***	0.018	1.70**
DEBT	+	0.022	2.08**	0.023	2.16**	0.046	6.41***	0.030	2.54***	0.015	0.90
OPSEG	?	−0.002	−1.13	−0.002	−1.09	−0.002	−1.19	−0.002	−0.69	−0.001	−0.43
GEOSEG	?	0.003	2.80**	0.003	2.88**	−0.002	−2.50**	0.001	1.15	−0.001	−0.35
TENURE	+	0.009	0.91	0.008	0.88	0.008	1.07	0.010	0.79	0.000	−0.02
OFFICE_SIZE	−	0.019	6.35	0.019	6.37	0.001	0.28	0.018	4.61	0.002	0.56
REPORT_LAG	+	0.001	0.10	0.001	0.07	0.002	0.28	0.003	0.25	0.000	−0.03
INFLUENCE	+	0.108	5.43***	0.100	4.94***	0.018	0.99	0.121	4.47***	0.032	0.75

(continued on next page)

TABLE 5 (continued)

Variable	Pred. Sign	Model 1 All Obs. β	Model 1 All Obs. t-stat	Model 2 All Obs. β	Model 2 All Obs. t-stat	Model 3 All Obs. β	Model 3 All Obs. t-stat	Model 4 Busy Season β	Model 4 Busy Season t-stat	Model 5 Non-Busy Season β	Model 5 Non-Busy Season t-stat
NATL_LEADER	–	−0.014	−2.85***	−0.015	−3.01***	0.001	0.16	−0.009	−1.40*	0.000	0.03
CITY_LEADER	–	−0.008	−1.53**	−0.008	−1.53	0.006	1.43*	−0.001	−0.13	0.006	0.80
YEAR	?	(included)		(included)		(included)		(included)		(included)	
SIC2	?	(included)		(included)		(included)		(included)		(included)	
n =		4,583		4,583		4,583		3,048		1,535	
Adjusted R^2		16.00%		15.82%		35.19%		15.64%		37.30%	
F-Statistic		52.32		51.67		41.89		34.80		17.43	
		(<0.001)		(<0.001)		(<0.001)		(<0.001)		(<0.001)	

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels, respectively, based on one-tailed tests for directional predictions, and two-tailed tests otherwise.
All t-statistics are adjusted, using robust standard errors corrected for heteroscedasticity and company-level clustering. The variable definitions are in Table 1.

Alternative Earnings Management Tests

Prior research suggests that companies with small earnings increases and those that just meet or beat analysts' earnings forecasts are more likely to engage in earnings management (Burgstahler and Dichev 1997; Ashbaugh et al. 2003; Gul et al. 2009). Using the benchmark models from Gul et al. (2009, 283), we extend our analysis by investigating the association between auditor workload compression and the likelihood that a company can attain certain earnings benchmarks. Specifically, we test the potential association between workload compression and the likelihood of reporting a small increase in earnings (*INCREASE*) and of meeting or beating analysts' earnings forecast (*SURPRISE*) by estimating the following logistic regression model:

$$\begin{aligned} Prob[INCREASE/SURPRISE]_{i,t} \\ = \beta_0 + \beta_1 AUD\_WLC_{i,t} + \beta_2 TENURE_{i,t} + \beta_3 LITIGATION_{i,t} + \beta_4 MB_{i,t} + \beta_5 LnMVE_{i,t} \\ + \beta_6 LOSS_{i,t} + \beta_7 TDA_{i,t} + \beta_8 OFFICE\_SIZE_{i,t} + \beta_9 LAFLR_{i,t} + \beta_{10} AFLR_{i,t} \\ + \beta_{11} NATL\_LEADER_{i,t} + \beta_{12} CITY\_LEADER_{i,t} + \gamma_j \boldsymbol{YEAR}_j + \delta_k \boldsymbol{SIC2}_k + \varepsilon_{i,t}, \end{aligned} \tag{3}$$

where:

INCREASE (+) = an indicator that equals 1 if a company reports an increase in net income of up to 2 percent of total assets, and 0 otherwise;
SURPRISE (+) = an indicator that equals 1 if a company reports earnings that meet or beat the analysts' forecast consensus by up to one cent, and 0 otherwise;
LITIGATION = 1 if a company operates in a litigious industry (i.e., SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370), and 0 otherwise;
MB = the market-to-book ratio;
LnMVE = the log of the market value of equity; and
TDA = the raw value of performance-adjusted discretionary accruals (see definition of *ABS_DA*).

We incorporate *OFFICE_SIZE*, *LAFLR*, *AFLR*, *NATL_LEADER*, and *CITY_LEADER* from the main regression model to control for other factors that may affect the association between workload compression and the earnings benchmarks tested.

The logistic regressions presented in Table 6 are significant as a whole (p-value $\leq$ 0.01 for all models) and have pseudo R^2 values ranging between 8.43 and 18.17 percent. *AUD_WLC* in Model 1 is positive and significant (Coeff. = 0.178, p-value $\leq$ 0.05), consistent with a higher likelihood of a small increase in the reported earnings of December year-end companies whose audits are performed by auditors with greater levels of workload compression. This finding implies lower audit quality in the face of management's attempts to avoid reporting a loss. In addition, *AUD_WLC* is positive and significant in Model 2 (Coeff. = 0.061, p-value $\leq$ 0.05), consistent with a higher likelihood of meeting or beating analysts' forecast consensus among December year-end companies whose audits are performed by auditors with greater levels of workload compression. Similar to Model 1, this finding suggests lower audit quality among workload compressed engagements. Consistent with prior tables, the results in Model 3 and Model 4 do not suggest that workload compression is a significant determinant of audit quality among non-busy season engagements.

Extended Analysis: Going-Concern Opinions

Our primary tests show that workload compression leads to lower audit quality in the form of diminished financial reporting quality. It is important to consider whether such pressures are also associated with extreme audit opinion outcomes, such as going-concern decisions. We extend our tests to investigate the potential association between workload compression and the likelihood of issuing a going-concern opinion by estimating the following logistic regression model:

TABLE 6

Logistic Regression of Earnings Benchmark Tests

$$Prob[INCREASE/SURPRISE]_{i,t} = \beta_0 + \beta_1 AUD\_WLC_{i,t} + \beta_2 TENURE_{i,t} + \beta_3 LITIGATION_{i,t} + \beta_4 MB_{i,t} + \beta_5 LnMVE_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 TDA_{i,t} + \beta_8 OFFICE\_SIZE_{i,t} + \beta_9 LAFLR_{i,t} + \beta_{10} AFLR_{i,t} + \beta_{11} NATL\_LEADER_{i,t} + \beta_{12} CITY\_LEADER_{i,t} + \gamma_j \boldsymbol{YEAR}_j + \delta_k \boldsymbol{SIC2}_k + \varepsilon_{i,t}.$$

	Busy Season Subsample				Non-Busy Season Subsample			
	Model 1 *INCREASE*		Model 2 *SURPRISE*		Model 3 *INCREASE*		Model 4 *SURPRISE*	
Variable	β	χ^2-stat	β	χ^2-stat	β	χ^2-stat	β	χ^2-stat
Intercept	−2.255	6.71***	−0.310	7.09***	−2.930	3.34*	−0.880	9.01***
AUD_WLC	0.178	3.04**	0.061	3.70**	0.256	0.60	0.950	0.15
TENURE	−0.165	1.32	−0.424	5.69**	−0.329	2.58	−0.535	4.31**
LITIGATION	−0.543	14.37***	−0.056	0.13	−0.519	7.95***	0.384	3.35*
MB	0.000	0.29	−0.002	3.19*	0.007	1.20	−0.004	0.37
LnMVE	0.151	7.89***	0.435	39.59***	0.254	24.68***	0.223	13.15***
LOSS	−1.194	66.80***	−0.263	3.88**	−1.225	38.25***	−0.378	3.41*
TDA	0.005	0.00	−0.060	0.10	−0.863	8.97***	−0.301	0.86
OFFICE_SIZE	−0.094	7.66***	−0.078	3.95**	−0.043	0.59	−0.123	3.36*
LAFLR	0.350	1.96	−0.229	0.68	0.344	1.22	−0.230	0.30
AFLR	0.226	1.17	−0.211	0.87	0.305	1.45	−0.241	0.44
NATL_LEADER	0.000	0.00	−0.102	1.13	0.002	0.00	−0.053	0.18
CITY_LEADER	−0.034	0.18	−0.026	0.08	−0.176	2.59	−0.059	0.22
YEAR	(included)		(included)		(included)		(included)	
SIC2	(included)		(included)		(included)		(included)	
n =	5,287		5,010		2,458		2,349	
Pseudo R^2	18.17%		8.43%		16.75%		9.84%	
Likelihood ratio	477.52		190.29		327.28		143.15	
	(<0.001)		(<0.001)		(<0.001)		(<0.001)	

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels, respectively, based on one-tailed tests for *AUD_WLC*, and two-tailed tests for all other variables.
All other variables are as defined in Table 1.

Variable Definitions:
INCREASE = 1 if a company reports an increase in net income of up to 2 percent of total assets, and 0 otherwise;
SURPRISE = 1 if a company reports earnings that meet or beat the analysts' forecast consensus by up to one cent (based on I/B/E/S mean forecast values), and 0 otherwise;
LITIGATION = 1 if a company operates in a litigious industry (i.e., SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370), and 0 otherwise;
MB = market-to-book ratio;
LnMVE = log of the market value of equity; and
TDA = raw value of the performance-adjusted discretionary accruals (see definition of *ABS_DA*).

$$
\begin{aligned}
&Prob[GCONCERN]_{i,t} \\
&\quad = \beta_0 + \beta_1 AUD\_WLC_{i,t} + \beta_2 TENURE_{i,t} + \beta_3 LITIGATION_{i,t} + \beta_4 MB_{i,t} + \beta_5 LnMVE_{i,t} \\
&\qquad + \beta_6 LOSS_{i,t} + \beta_7 TDA_{i,t} + \beta_8 OFFICE\_SIZE_{i,t} + \beta_9 LAFLR_{i,t} + \beta_{10} AFLR_{i,t} \\
&\qquad + \beta_{11} NATL\_LEADER_{i,t} + \beta_{12} CITY\_LEADER_{i,t} + \gamma_j \boldsymbol{YEAR}_j + \delta_k \boldsymbol{SIC2}_k + \varepsilon_{i,t}, \qquad (4)
\end{aligned}
$$

where *GCONCERN* (−) is an indicator that equals 1 if a company receives a going-concern opinion, and 0 otherwise. All other variables are as defined in Table 1. The control variables proxy for the underlying financial health of the company, going-concern reporting incentives, and auditor characteristics. Consistent with our earlier tests, we estimate this model using subsamples of busy season and non-busy season companies. In order to identify companies with a more salient risk of a going-concern decision, we also consider reduced subsamples of financially distressed companies (i.e., *LOSS* = 1).

The logistic regression results in Table 7 are significant as a whole (p-value ≤ 0.01 for all models) and have pseudo R^2 values ranging between 41.55 and 56.00 percent. The estimated coefficient for *AUD_WLC* in Model 1 is negative and marginally significant (Coeff. = −1.053, p-value ≤ 0.10). The direction of this coefficient is consistent with a lower likelihood of a going-concern opinion among December year-end companies whose audits are performed by auditors with greater levels of workload compression. However, the estimated coefficients for *AUD_WLC* in the rest of the models in Table 7 are negative, but not statistically significant. While our main tests suggest that workload compression negatively affects audit quality, it appears that going-concern opinions are relatively unaffected.

Sensitivity Tests and Additional Robustness Checks

Abnormal Accrual Definitions and Outliers

We investigate whether the results are sensitive to different variations of the discretionary accruals model and different outlier treatments. Specifically, we estimate the regressions in Table 4 using the "raw" value of discretionary accruals (n = 8,384); the cash flows approach to estimate the Jones (1991) model (i.e., *TA* equals earnings before interest and taxes minus operating cash flows) (n = 8,594); the modified Jones (1991) model (Dechow et al. 1995) (n = 8,341); and the modified Jones (1991) model using the cash flows approach (n = 8,533). The estimated coefficients for *AUD_WLC* range between 0.008 and 0.023; all p-values are below 0.10. We also estimate the models after winsorizing abnormal accruals at the 1st and 99th percentiles (based on their "raw" values) (n = 8,384), after eliminating observations below the 1st percentile and above the 99th percentile (n = 8,218), and after eliminating observations with *ABS_DA* values greater than 0.999 (n = 8,344). The main results are not affected by these alternative outlier procedures. For the latter set of tests, the estimated coefficients for *AUD_WLC* range between 0.011 and 0.018; all p-values remain below 0.10.

Audit Fees and Workload Compression Proxy

Although audit fees should capture audit production costs and efforts, they also could capture other elements, such as competitive market pressures or audit fee premiums.[12] We partially control for the potential noise introduced by these elements by limiting our sample to audits conducted by the Big 4 firms. We also empirically assess the sensitivity of the results to the selection of audit fees as a weighting factor by estimating the *AUD_WLC* variable using total fees (i.e., audit fees plus nonaudit fees), net sales audited, and total assets audited. Similar to audit fees, these alternative

[12] We acknowledge an anonymous reviewer for highlighting the potential limitations of calculating the workload compression variable based solely on audit fees.

TABLE 7

Logistic Regression of Going-Concern Tests

$$Prob[GCONCERN]_{i,t} = \beta_0 + \beta_1 AUD\_WLC_{i,t} + \beta_2 TENURE_{i,t} + \beta_3 LITIGATION_{i,t} + \beta_4 MB_{i,t} + \beta_5 LnMVE_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 TDA_{i,t} + \beta_8 OFFICE\_SIZE_{i,t} + \beta_9 LAFLR_{i,t} + \beta_{10} AFLR_{i,t} + \beta_{11} NATL\_LEADER_{i,t} + \beta_{12} CITY\_LEADER_{i,t} + \gamma_j \boldsymbol{YEAR}_j + \delta_k \boldsymbol{SIC2}_k + \varepsilon_{i,t}.$$

	Busy Season Subsample				**Non-Busy Season Subsample**			
	Model 1 All Obs.		**Model 2 *LOSS* = 1**		**Model 3 All Obs.**		**Model 4 *LOSS* = 1**	
Variable	**β**	**χ^2-stat**	**β**	**χ^2-stat**	**β**	**χ^2-stat**	**β**	**χ^2-stat**
Intercept	−9.909	0.00	−7.129	0.00	−16.232	0.00	−11.582	0.00
AUD_WLC	−1.053	1.79*	−1.047	0.98	−4.470	0.66	−3.568	0.78
TENURE	0.108	0.16	−0.115	0.13	0.044	0.00	−0.117	0.02
LITIGATION	−1.180	12.17***	−0.444	1.14	−0.014	0.00	−0.222	0.01
MB	−0.002	1.38	−0.017	4.80**	0.029	4.93**	0.031	5.38**
LnMVE	−0.827	21.82***	−0.832	9.50***	−0.761	7.88***	−1.062	6.08***
LOSS	1.232	18.08***			3.604	12.17***		
TDA	1.338	16.86***	1.466	9.12***	1.922	5.72**	2.081	5.95**
OFFICE_SIZE	0.150	3.76**	0.157	2.85*	0.367	3.18*	0.380	3.07*
LAFLR	−0.971	2.43	−1.491	1.74	−8.078	0.33	−4.832	0.09
AFLR	−0.403	2.29	−0.342	1.19	−0.632	1.19	−0.002	0.00
NATL_LEADER	0.055	0.08	−0.016	0.01	−0.550	1.20	−0.433	0.61
CITY_LEADER	−0.027	0.02	−0.011	0.00	−0.583	1.80	−0.423	0.81
YEAR	(included)		(included)		(included)		(included)	
SIC2	(included)		(included)		(included)		(included)	
n =	5,685		1,513		2,699		530	
Pseudo R^2	49.10%		41.55%		56.00%		45.10%	
Likelihood ratio	902.02 (<0.001)		381.43 (<0.001)		243.62 (<0.001)		111.27 (<0.001)	

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels, respectively, based on one-tailed tests for *AUD_WLC*, and two-tailed tests for all other variables.
All other variables are as defined in Table 1.

Variable Definitions:
GCONCERN = 1 if a company receives a going-concern opinion, and 0 otherwise;
LITIGATION = 1 if a company operates in a litigious industry (i.e., SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370), and 0 otherwise;
MB = market to book ratio;
LnMVE = log of the market value of equity; and
TDA = raw value of the performance-adjusted discretionary accruals (see definition of *ABS_DA* for more details).

weighting factors have distinct design trade-offs. For example, companies operating in capital-intensive industries or with significant off-balance sheet assets could be over- or under-represented in an estimation of the regression model with *AUD_WLC* based on total assets. The estimated regression coefficients for *AUD_WLC* based on total fees, net sales audited, and total assets audited range between 0.009 and 0.021; all p-values are below 0.10. Thus, the results are robust to the alternative specifications of *AUD_WLC* discussed in this section.

Definition of Busy Season Window

In Table 2, the vast majority of sample companies have a fiscal year-end date of December, which creates a well-defined busy season period. However, the audits of companies with a January fiscal year-end date could be affected by auditor fatigue or delays due to overruns by December year-end clients. Similarly, companies with a November fiscal year-end date could be subject to a less rigorous examination by preoccupied auditors who have already started to perform interim tests for their December year-end clients. To investigate the sensitivity of the results to these conditions, we estimate the main regression model using alternative versions of *BUSY_FYE* and *AUD_WLC*. Specifically, we estimate the model using the following expanded busy season windows: December–January, November–December, and November–January. The estimated coefficients for *BUSY_FYE* range from 0.007 to 0.010, and those for *AUD_WLC* range from 0.014 to 0.020. For both variables, the estimated coefficients are significant with p-values below 0.10. In general, the regression results are similar to those from our main regression analyses.

Supplemental Analysis

As supplemental analysis, we consider whether auditor-related characteristics moderate the relation between workload compression and audit quality.[13] For parsimony, Table 8 provides the results by busy season and non-busy season companies for the abnormal accrual model. Consistent with earlier tests, the estimated coefficient for *AUD_WLC* for the busy season subsample in Model 1 is positive and significant (Coeff. = 0.490, p-value $\leq$ 0.05). We find a significant interaction between workload compression and auditor tenure, *TENURE* $\times$ *AUD_WLC* (Coeff. = –0.051, p-value $\leq$ 0.05). This suggests that the effects of workload compression are less pervasive among long-tenure auditors. This could be the result of improved auditor performance in clients with longer tenures, despite the conflicting workload pressures experienced by their auditors. We also find that the estimated coefficient for *CITY_LEADER* $\times$ *AUD_WLC* is positive and significant. Consistent with potential audit market-demand effects, this indicates that city leadership positively moderates the relation between workload compression and audit quality.

In Model 2, the estimated coefficient for *AUD_WLC* is not significant (Coeff. = 0.055). The only significant interaction in this latter model is for *TENURE* $\times$ *AUD_WLC* (Coeff. = 0.058, p-value $\leq$ 0.05). Thus, for non-busy season companies, workload compression appears to be a significant audit quality determinant only among auditors with longer tenures. While our main analysis supports a detrimental workload compression effect, the supplemental analysis in this section suggests that this effect could be subject to some environmental contexts. More research is warranted to further our understanding of these contexts; such research could help audit firms improve their quality control systems and staffing decisions at the local and national levels.

CONCLUSIONS AND LIMITATIONS

The busy season and its concentrated workload demands are longstanding challenges for public accounting firms. Prior experimental and survey research indicates that the associated pressures can lead to dysfunctional behaviors and lower audit quality at the individual auditor level. Yet, different regulatory bodies and audit firms themselves have developed quality control mechanisms to protect the overall quality of the financial audit process. Auditors also have strong motivations to maintain optimal levels of performance because of the high reputational costs associated with audit failures. We, therefore, investigate whether individual auditor effects documented in prior experimental research ultimately affect the collective performance of auditors.

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[13] We thank an anonymous reviewer for suggesting this analysis.

TABLE 8

Supplemental Analyses of Moderating Effects

$$ABS\_DA_{i,t} = \beta_0 + \beta_1 AUD\_WLC_{i,t} + \beta_2 TENURE_{i,t} + \beta_3 OFFICE\_SIZE_{i,t} + \beta_4 REPORT\_LAG_{i,t} + \beta_5 INFLUENCE_{i,t} + \beta_6 NATL\_LEADER_{i,t} + \beta_7 CITY\_LEADER_{i,t} + \beta_8 TENURE_{i,t} \times AUD\_WLC_{i,t} + \beta_9 OFFICE\_SIZE_{i,t} \times AUD\_WLC_{i,t} + \beta_{10} REPORT\_LAG_{i,t} \times AUD\_WLC_{i,t} + \beta_{11} INFLUENCE_{i,t} \times AUD\_WLC_{i,t} + \beta_{12} NATL\_LEADER_{i,t} \times AUD\_WLC_{i,t} + \beta_{13} CITY\_LEADER_{i,t} \times AUD\_WLC_{i,t} + \beta_{14} SIZE_{i,t} + \beta_{15} LAFLR_{i,t} + \beta_{16} AFLR_{i,t} + \beta_{17} \Delta REVENUES_{i,t} + \beta_{18} CFO_{i,t} + \beta_{19} LOSS_{i,t} + \beta_{20} DEBT_{i,t} + \beta_{21} OPSEG_{i,t} + \beta_{22} GEOSEG_{i,t} + \gamma_j \boldsymbol{YEAR}_j + \delta_k \boldsymbol{SIC2}_k + \varepsilon_{i,t}.$$

		Model 1 Busy Season		**Model 2 Non-Busy Season**	
Variable	**Pred. Sign**	**β**	**t-stat**	**β**	**t-stat**
Intercept		0.423	1.85**	0.067	0.62
AUD_WLC	+	0.490	1.68**	0.055	0.18
Auditor-Related Controls:					
TENURE	+	0.057	3.06***	−0.005	−0.43
OFFICE_SIZE	−	−0.007	−0.75	0.004	0.87
REPORT_LAG	+	−0.057	−1.69	−0.010	−0.91
INFLUENCE	+	−0.096	−0.95	0.087	1.31*
NATL_LEADER	−	−0.004	−0.19	−0.004	−0.51
CITY_LEADER	−	−0.031	−1.79**	−0.003	−0.36
Auditor-Related Interactions:					
TENURE × AUD_WLC	?	−0.051	−2.21**	0.058	1.98**
OFFICE_SIZE × AUD_WLC	?	0.012	0.99	−0.008	−0.60
REPORT_LAG × AUD_WLC	?	0.060	1.34	−0.003	−0.08
INFLUENCE × AUD_WLC	?	0.121	1.13	−0.023	−0.30
NATL_LEADER × AUD_WLC	?	0.000	0.00	−0.012	−0.40
CITY_LEADER × AUD_WLC	?	0.043	1.82*	0.008	0.17
Company-Related Controls:					
SIZE	−	−0.015	−6.29***	−0.010	−3.10***
LAFLR	+	0.057	5.34***	0.023	1.70**
AFLR	+	0.030	3.66***	0.008	0.75
ΔREVENUES	+	0.047	8.33***	0.071	6.45***
CFO	−	−0.039	−4.66***	−0.033	−1.86**
LOSS	+	−0.020	−3.10	−0.018	−2.16
DEBT	+	0.044	7.25***	0.021	1.87**
OPSEG	?	−0.001	−0.29	−0.001	−0.49
GEOSEG	?	−0.002	−1.63*	0.001	0.73
Other Controls:					
YEAR	?	(included)		(included)	
SIC2	?	(included)		(included)	
n =		5,685		2,699	
Adjusted R^2		27.26%		25.41%	
F-Statistic		31.13		14.88	
		(<0.001)		(<0.001)	

(continued on next page)

TABLE 8 (continued)

*, **, *** Denote significance at the 0.10, 0.05, and 0.01 levels, respectively, based on one-tailed tests for directional predictions, and two-tailed tests otherwise.
All t-statistics reported are on an adjusted basis, using robust standard errors corrected for heteroscedasticity and company-level clustering. Variables are as defined in Table 1.

Busy season companies and the relative concentration of busy season engagements in the client portfolio of an auditor are both associated with reductions in audit quality. Specifically, we find that busy season companies exhibit higher levels of absolute abnormal accruals, which imply lower levels of audit quality. In addition, the magnitude of the abnormal accruals reported by busy season companies increases with the level of auditor workload compression. We find similar patterns of audit quality degradation in other proxies for audit quality, including estimates of a company's propensity to meet or beat certain earnings benchmarks. Thus, workload compression is an important determinant of performance at the audit engagement level. Our findings are robust to alternative tests of abnormal accruals, measures of workload compression, and specifications of the busy season window.

The findings are subject to certain limitations. First, the distribution of non-public companies in an auditor's client portfolio is virtually unobservable. Non-public companies could affect the estimation of the workload compression proxy if the distribution of their fiscal year-end dates differs from that of public companies, which would limit our ability to measure the full extent of auditor workload compression. This limitation is common among studies that use data from publicly traded companies to operationalize variables that depend on the relative importance of individual companies to the overall operations of their auditors, such as the market share-based measures in the industry specialization literature. We address this limitation by restricting the sample to audits performed by the Big 4 firms because these firms are likely to have a more homogenous proportion of public companies in their client portfolios. We also estimate the models using a subsample of local offices with ten or more public company clients and obtain consistent results.

Second, we cannot observe the interim procedures performed by auditors, which also may affect workload compression because the objective of such procedures is to distribute auditor workloads more effectively over time. However, the high concentration of December year-end companies represents a binding constraint for auditors, and some standards limit the type and amount of procedures auditors can perform in advance (AICPA 2006). Assuming that the opportunities to perform interim procedures are the same for all auditors, the intercept of our models could be biased, but the estimated regression coefficients for the workload compression variables would remain the same. The literature would benefit from research aimed at investigating the impact of interim procedures on factors such as audit quality and the length of the auditor report lag. Future research also may consider the association between workload compression and other areas of concern to the audit profession, such as inspection findings and reports on internal control weaknesses.

REFERENCES

Abbott, L. J., S. Parker, and G. F. Peters. 2006. Earnings management, litigation risk, and asymmetric audit fee responses. *Auditing: A Journal of Practice & Theory* 25 (1): 85–98.

Abbott, L. J., S. Parker, G. F. Peters, and K. Raghunandan. 2003. The association between audit committee characteristics and audit fees. *Auditing: A Journal of Practice & Theory* 22 (2): 17–32.

Agoglia, C. P., J. F. Brazel, R. C. Hatfield, and S. B. Jackson. 2010. How do audit workpaper reviewers cope with the conflicting pressures of detecting misstatements and balancing client workloads? *Auditing: A Journal of Practice & Theory* 29 (2): 27–43.

Akono, J. H., J. Hranaiova, A. Vinelli, and M. Stein. 2011. *Audit Production and Market: Evidence from Publicly Traded U.S. Firms*. White Paper, Public Company Accounting Oversight Board. Presented at the 2011 PCAOB Academic Conference (April). Washington, DC: PCAOB.

Alderman, C. W., and J. W. Dietrick. 1982. Auditors' perceptions of time budget pressures and premature sign-offs: A replication and extension. *Auditing: A Journal of Practice & Theory* 1 (2): 54–68.

American Institute of Certified Public Accountants (AICPA). 1983. *Omnibus Statement on Auditing Standards*. Statement on Auditing Standards No. 45. New York, NY: AICPA.

American Institute of Certified Public Accountants (AICPA). 2003. *Acceptance and Continuance of Clients and Engagements*. Practice Alert 2003-3. New York, NY: AICPA.

American Institute of Certified Public Accountants (AICPA). 2006. *Performing Audit Procedures in Response to Assessed Risks and Evaluating the Audit Evidence Obtained*. Statement on Auditing Standards No. 110. New York, NY: AICPA.

Ashbaugh, H., R. LaFond, and B. W. Mayhew. 2003. Do nonaudit services compromise auditor independence? Further evidence. *The Accounting Review* 78 (3): 611–639.

Becker, C. L., M. L. DeFond, J. Jiambalvo, and K. R. Subramanyam. 1998. The effect of audit quality on earnings management. *Contemporary Accounting Research* 15 (1): 4–24.

Bedard, J. C., and K. Johnstone. 2004. Earnings manipulation risk, corporate governance risk, and auditors' planning and pricing decisions. *The Accounting Review* 79 (2): 277–304.

Bell, T. B., J. C. Bedard, K. M. Johnstone, and E. F. Smith. 2002. KRisk^{SM}: A computerized decision aid for client acceptance and continuance risk assessments. *Auditing: A Journal of Practice & Theory* 21 (2): 97–113.

Bierstaker, J., R. Houston, and A. Wright. 2006. The impact of competition on audit planning, review, and performance. *Journal of Accounting Literature* 25 (1): 1–58.

Bradshaw, M. T., B. J. Bushee, and G. S. Miller. 2004. Accounting choice, home bias, and U.S. investment in non-U.S. firms. *Journal of Accounting Research* 42 (5): 795–841.

Brazel, J. F., T. D. Carpenter, and J. G. Jenkins. 2010. Auditors' use of brainstorming in the consideration of fraud: Reports from the field. *The Accounting Review* 85 (4): 1273–1301.

Burgstahler, D., and I. D. Dichev. 1997. Earnings management to avoid earnings decreases and losses. *Journal of Accounting and Economics* 24: 99–126.

Choi, J. H., C. Kim, J. B. Kim, and Y. Zang. 2010. Audit office size, audit quality, and audit pricing. *Auditing: A Journal of Practice & Theory* 29 (1): 73–97.

Choi, J. B., A. Qiu, and Y. Zang. 2007. *Auditor Locality, Audit Quality and Audit Pricing*. Working paper, Singapore Management University.

Cianci, A. M., and J. L. Bierstaker. 2009. The impact of positive and negative mood on hypothesis generation and ethical judgments of auditors. *Auditing: A Journal of Practice & Theory* 28 (2): 119–144.

Coram, P., J. Ng, and D. R. Woodliff. 2004. The effect of risk of misstatement on the propensity to commit reduced audit quality acts under time budget pressure. *Auditing: A Journal of Practice & Theory* 23 (2): 159–167.

Cordes, C. L., and T. W. Dougherty. 1993. A review and an integration of research on job burnout. *Academy of Management Review* 18 (4): 621–656.

Covrig, V. M., M. L. DeFond, and M. Y. Hung. 2007. Home bias, foreign mutual fund holdings, and the voluntary adoption of international accounting standards. *Journal of Accounting Research* 45 (1): 41–70.

Davidson, R. A., and D. Neu. 1993. A note on the association between audit firm size and audit quality. *Contemporary Accounting Research* 9 (2): 479–488.

DeAngelo, L. E. 1981. Auditor independence, "low balling," and disclosure regulation. *Journal of Accounting and Economics* 3 (2): 113–127.

Dechow, P. M., and I. D. Dichev. 2002. The quality of accruals and earnings: The role of accrual estimation errors. *The Accounting Review* 77 (Supplement): 35–59.

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

DeFond, M., and J. Jiambalvo. 1994. Debt covenant violation and manipulation of accruals. *Journal of Accounting and Economics* 17: 145–176.

DeZoort, F. T., and A. T. Lord. 1997. A review and synthesis of pressure effects research in accounting. *Journal of Accounting Literature* 16: 28–85.

Ferguson, A., J. R. Francis, and D. J. Stokes. 2003. The effects of firm-wide and office-level industry expertise on audit pricing. *The Accounting Review* 78 (2): 429–448.

Ferguson, A., and D. J. Stokes. 2002. Brand name audit pricing, industry specialization and leadership premiums post-Big 8 and Big 6 mergers. *Contemporary Accounting Research* 19 (1): 77–110.

Francis, J. R. 2011. A framework for understanding and researching audit quality. *Auditing: A Journal of Practice & Theory* 29 (1): 247–260.

Francis, J., K. Reichelt, and D. Wang. 2005. The pricing of national and city-specific reputations for industry expertise in the U.S. audit market. *The Accounting Review* 80 (1): 113–136.

Francis, J., D. J. Stokes, and D. Anderson. 1999. City markets as a unit of analysis in audit research and the re-examination of Big 6 market shares. *Abacus* 35 (2): 185–206.

Francis, J., and M. D. Yu. 2009. Big 4 office size and audit quality. *The Accounting Review* 84 (5): 1521–1552.

Gaver, J. J., and J. S. Paterson. 2007. The influence of large clients on office-level auditor oversight: Evidence from the property-casualty insurance industry. *Journal of Accounting and Economics* 43 (2-3): 299–320.

Gul, F. A. 1999. Audit prices, product differentiation and economic equilibrium. *Auditing: A Journal of Practice & Theory* 18 (1): 90–100.

Gul, F. A., C. J. P. Chen, and J. S. L. Tsui. 2003. Discretionary accounting accruals, managers' incentives, and audit fees. *Contemporary Accounting Research* 20 (3): 441–464.

Gul, F. A., S. Y. K. Fung, and B. Jaggi. 2009. Earnings quality: Some evidence on the role of auditor tenure and auditors' industry expertise. *Journal of Accounting and Economics* 47: 265–287.

Gul, F. A., and J. S. L. Tsui. 2001. Free cash flow, debt monitoring, and audit pricing: Further evidence on the role of director equity ownership. *Auditing: A Journal of Practice & Theory* 20 (2): 71–85.

Heninger, W. G. 2001. The association between auditor litigation and abnormal accruals. *The Accounting Review* 76 (1): 111–126.

Johnson-Moreno, H. 2003. To your health. *Journal of Accountancy* 196 (3): 65–68.

Johnstone, K. M., and J. C. Bedard. 2003. Risk management in client acceptance decisions. *The Accounting Review* 78 (4): 1003–1025.

Jones, A., C. S. Strand, and B. Wier. 2010. Healthy lifestyles as a coping mechanism for role stress in public accounting. *Behavioral Research in Accounting* 22 (1): 21–41.

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

Kelley, T., and L. Margheim. 1990. The impact of time budget pressure, personality, and leadership variables on dysfunctional auditor behavior. *Auditing: A Journal of Practice & Theory* 9 (2): 21–42.

Knechel, W. R., and J. L. Payne. 2001. Additional evidence on audit report lag. *Auditing: A Journal of Practice & Theory* 20 (1): 137–146.

Kothari, S. P., A. J. Leone, and C. E. Wasley. 2005. Performance matched discretionary accrual measures. *Journal of Accounting and Economics* 39 (1): 163–197.

Lambert, T. A., K. L. Jones, and J. F. Brazel. 2011. *Unintended Consequences of Accelerated Filings: Are Mandatory Reductions in Audit Delay Associated with Reductions in Earnings Quality?* Working paper, University of Massachusetts Amherst, George Mason University, and North Carolina State University.

Lang, M., and R. Lundholm. 1993. Cross-sectional determinants of analyst ratings of corporate disclosures. *Journal of Accounting Research* 3 (2): 246–271.

Lee, H. Y., and V. Mande. 2003. The effect of the Private Securities Litigation Reform Act of 1995 on accounting discretion of client managers of Big 6 and Non-Big 6 auditors. *Auditing: A Journal of Practice & Theory* 22 (1): 93–108.

Levitt, A. 2000. *Renewing the Covenant with Investors*. Remarks delivered at NYU Center for Law and Business, New York, NY. Available at: http://www.sec.gov/news/speech/spch370.htm

McDaniel, L. S. 1990. The effects of time pressure and audit program structure on audit performance. *Journal of Accounting Research* 28: 267–285.

Myers, J. N., L. A. Myers, and T. C. Omer. 2003. Exploring the term of the auditor-client relationship and the quality of earnings: A case for mandatory auditor rotation? *The Accounting Review* 78 (3): 779–799.

Petersen, M. A. 2009. Estimating standard errors in finance panel data sets: Comparing approaches. *Review of Financial Studies* 22 (1): 435–480.

Public Company Accounting Oversight Board (PCAOB). 2010. *Engagement Quality Review*. PCAOB Auditing Standard No. 7. Washington, DC: PCAOB.

Public Oversight Board (POB). 2000. *Panel on Audit Effectiveness Report and Recommendations* (August 31). New York, NY: POB.

Raghunathan, B. 1991. Premature signing-off of audit procedures: An analysis. *Accounting Horizons* 5 (2): 71–79.

Reichelt, K. J., and D. Wang. 2009. National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research* 48 (3): 644–686.

Reynolds, J. K., and J. R. Francis. 2000. Does size matter? The influence of large clients on office-level auditor reporting decisions. *Journal of Accounting and Economics* 30 (3): 375–400.

Securities and Exchange Commission (SEC). 2002. *Summary of Comments Relating to Proposed Amendments to Accelerate Periodic Report Filing Dates and Disclosure Concerning Website Access to Reports*. Release Nos. 33-8089, 34-35741; File No. S7-08-02. Washington, DC: Government Printing Office.

Securities and Exchange Commission (SEC). 2004. *Final Rule: Acceleration of Periodic Report Filing Dates and Disclosure Concerning Website Access to Reports*. Release Nos. 33-8128, 34-46464; File No. S7-08-02. Washington, DC: Government Printing Office.

Securities and Exchange Commission (SEC). 2005. *Revisions to Accelerated Filer Definition and Accelerated Filer Deadlines for Filing Periodic Reports*. Release Nos. 33-8644, 34-52989; File No. S7-08-05. Washington, DC: Government Printing Office.

St. Pierre, K., and J. A. Anderson. 1984. An analysis of the factors associated with lawsuits against public accountants. *The Accounting Review* 59 (2): 242–263.

Sweeney, A. P. 1994. Debt-covenant violations and managers' accounting responses. *Journal of Accounting and Economics* 17 (3): 281–308.

Sweeney, J. T., and S. L. Summers. 2002. The effect of the busy season workload on public accountants' job burnout. *Behavioral Research in Accounting* 14: 223–245.

U.S. House of Representatives. 2002. The Sarbanes-Oxley Act of 2002. Public Law 107-204 [H. R. 3763]. Washington, DC: Government Printing Office.

Willet, C., and M. Page. 1996. A survey of time budget pressure and irregular auditing practices among newly qualified U.K. chartered accountants. *British Accounting Review* 28 (2): 101–120.