

Organizational resilience of audit firms – evidence from the outbreak of the COVID-19

Resilience of
audit firms

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Abstract

Purpose – This paper examines the organizational resilience of audit firms during the early stages of COVID-19. The unexpected restrictions placed on travel and on-site working created unanticipated barriers for auditors in Hong Kong. The authors expect that auditors with greater organizational resilience can respond to unexpected situations and restore expected performance levels relatively quickly.

Design/methodology/approach – The authors utilize a sample of 1,008 companies listed on Hong Kong Stock Exchange (HKEX) with a financial year-end of December 31. The authors identify five proxies contributing to organizational resilience: auditor size, industry specialization, diversity, geographic proximity to the client and auditing a new client. The authors use audit report timeliness as this study's main dependent variable.

Findings – This study's full-sample results suggest that larger auditors, industry specialists and auditors with closer relationships to clients issued more timely audit reports during the pandemic. The analysis of a subsample of companies that initially published unaudited financial statements reveals that industry expertise and longer auditor-client relationships significantly reduced the need for year-end audit adjustments. Finally, the authors find that larger auditors were more likely to offload clients, whereas industry specialists were more likely to retain clients.

Research limitations/implications – The results of the paper suggests that audit firm characteristics associated cognitive abilities, behavioral characteristics and contextual conditions are associated with audit firm organizational resilience and, consequently, helps auditors respond unexpected changes in the audit environment.

Practical implications – The findings of the paper are informative for those involved in audit firm management or auditor hiring and retention decisions.

Originality/value – This study is the first to link organizational resilience to the performance of audit firms in a time of unexpected events. The authors connect three auditor and two auditor-client dimensions to the organizational resilience of the audit firms.

Keywords Organizational resilience, Audit quality, Audit delay, COVID

Paper type Research paper

1. Introduction

This paper examines the organizational resilience of audit firms following the COVID-19 outbreak. Specifically, we aim to assess which audit firm characteristics enabled the delivery

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of timely audits when the pandemic disrupted the financial statement audits of companies listed on the Hong Kong Stock Exchange (HKEX). The study responds to the unprecedented shock that COVID-19 presented to the audit process when travel restrictions were imposed and client offices, audit offices, cities and entire regions were unexpectedly shut down. These lockdowns imposed unanticipated challenges for auditors in Hong Kong to obtaining and evaluating the evidence necessary for performing audit procedures and forming conclusions.

At the beginning of 2020, auditors of companies listed on the HKEX had to adjust their audit plans and procedures to reflect the evolving pandemic, while continuing to adhere to auditing standards, regulatory requirements and contractual time constraints. In Hong Kong and mainland China, strict and instantaneous travel restrictions were enforced at the end of January 2020, the busy season for 2019 financial statement audits. The HKEX and the Securities and Futures Commission (SFC) were quick to acknowledge the challenges for the work of auditors: in joint statements the [Hong Kong Stock Exchange \(2020a, b\)](#) and the SFC relaxed the listing rules, allowing announcements of unaudited annual results by March 31, 2020 and deferring the publication of audited annual reports to May 15, 2020.

Prior research offers limited insights into how substantial unexpected changes (shocks) to the auditing environment affect auditor performance. However, organizational resilience literature suggests that if an organization is to cope with unexpected, stressful and adverse situations and maintain or quickly resume expected performance levels, it will require a considerable capacity for organizational resilience ([Horne and Orr, 1998](#); [Dutton *et al.*, 2002](#); [Lengnick-Hall and Beck, 2005](#); [Lengnick-Hall *et al.*, 2011](#)). In contrast to other common organizational attributes, such as flexibility, ability and adaptability, the need for resilience is triggered by unexpected events. This paper focuses on the audit firms' organizational resilience to cope with and respond to the disruptions to audits at the time of the COVID-19 outbreak in China and to maintain expected performance levels.

We utilize a sample of 1,008 companies listed on HKEX with a financial year-end of December 31. The auditors serving those companies were forced to adjust their audit plans by travel restrictions and lockdowns imposed in response to the COVID-19 outbreak. We identify five proxies for organizational resilience: auditor size, industry specialization and diversity measure the characteristics of the audit firm, whereas geographic proximity and auditing a new client measures characteristics of the auditor client relationship.

Our main analysis shows that larger auditors, industry specialists and auditors with more client knowledge issued more timely audit reports during the outbreak of the COVID-19 pandemic. Moreover, comparing any audit report delay prior to and during the crisis, we show that the crisis amplified the impact of auditor size and industry-specific and client-specific knowledge. This suggests that audit firm size, together with industry-specific and client-specific knowledge contribute to organizational resilience and auditor performance during the COVID-19 outbreak.

In further analysis, we first use the year-end audit adjustments to study the quality of the audit process following the outbreak of COVID-19. Specifically, we use the unique opportunity to compare the unaudited and audited financial statements for the subsample of companies that took advantage of the regulatory flexibility offered by the regulators and published unaudited financial statements by March 31 and audited financial statements by May 15. We find that industry-specialist auditors reduced both the likelihood of an adjustment and the magnitude of the change in ROA. This finding is consistent with our prediction that audit firms with increased capacity for organizational resilience outperform when substantial unexpected changes occur. Second, we look at auditor resignations after the 2019 year-end audit to examine whether auditors managed their client portfolio after the emergence of the COVID-19 pandemic. We establish that larger auditors are more likely to resign after the 2019 year-end audit, whereas industry specialists were less likely to. These findings suggest that large audit firms rebalance their client portfolio by resigning from some engagements, whereas industry specialists retain clients operating within their area of specialization.

Our study examines the organizational resilience of audit firms and contributes to auditing and organizational resilience literature by connecting organizational resilience theories (Lengnick-Hall and Beck, 2005; Lengnick-Hall *et al.*, 2011) with auditor characteristics and by providing evidence of the impact of audit firm resilience during the outbreak of COVID-19.

The study also contributes to the literature on the timeliness of audited financial reports (e.g. Knechel and Payne, 2001). Under normal circumstances, less timely financial reports are a concern for shareholders, managers and regulators (Bamber *et al.*, 1993; Lambert *et al.*, 2017), and this concern was even greater when COVID-19 struck. We extend the prior literature by documenting how characteristics related to audit firms' organizational resilience are associated with the timeliness of audited financial reports.

Moreover, the findings of the paper may be particularly informative for those involved in auditor hiring and retention decisions, such as, boards and audit committees, but also investors participating in the annual general meeting. Knowledge about audit firm characteristics that affect their capacity for organizational resilience may be a fundamental factor when selecting the auditor, particularly for firms that value the timely publication of audited financial statements under any circumstances. The results document factors affecting the ability of auditors to fulfill their obligations or maintain the required performance levels during unexpected events and support the decision of capital market regulators to allow firms extra time to complete their audited financial reports in March 2020, which should be of interest to regulators worldwide. Finally, audit firms invest in human capital, new technology and leadership to manage and develop processes that support efficient and high-quality audits. The results of this study suggest that audit firms should consider the dimensions of their capacity for resilience to support and develop effective responses to both foreseeable changes in the environment, such as digitalization, and also unexpected shocks, such as the pandemic and forced remote audits.

2. Background and hypotheses development

The COVID-19 pandemic caused a sudden decline in the economic activity of companies, leading to a significant decline in revenues and stock prices (Fahlenbrach *et al.*, 2021; Baqae and Farhi, 2022). During times of extreme information uncertainty, users of financial statements rely on auditors to assure the accuracy of the financial information. While COVID-19 did not impact the earnings of the 2019 financial year, the information uncertainty became significant in early 2020. Consequently, there was a high demand for the financial statements of companies with a financial year-end of December 31, 2019, exacerbating pressure on auditors to deliver timely and high-quality audits.

Paradoxically, the outbreak of the COVID-19 pandemic also hit the audit profession in an unparalleled way. The subsequent travel restrictions, lockdowns and enforced remote working imposed challenges around obtaining and evaluating audit evidence. Auditors had to adjust their audit plans and processes to facilitate remote auditing (Tysiac, 2020), where audit team members were working from home, making face-to-face team meetings, visits to the client, or physical meetings with clients' management impossible. Nevertheless, auditors had to ensure that the audit engagement was conducted according to the audit plan and auditing standards and that the filing of the audit report accorded with relevant regulatory and contractual time constraints. Prior auditing literature reports that input factors, the audit process, audit outcomes and contextual factors affect the success of an audit engagement (see, e.g. Knechel *et al.*, 2013a; Habib *et al.*, 2019).

Human resource management (HRM) literature suggests that an organization's ability to respond to shocks (such as the COVID-19) depends on its organizational resilience (Lengnick-Hall *et al.*, 2011). We expect that audit firms' capacity for organizational

resilience stems from three elements: cognitive abilities, behavioral characteristics and contextual conditions (Lengnick-Hall and Beck, 2005; Lengnick-Hall *et al.*, 2011). The cognitive factors of organizational resilience refer to shared values, attitudes and mindsets and creating a capacity for organizational resilience requires investment in human capital and problem-solving (Coutu, 2002). Cognitive factors are vital for the performance of audit engagements (Bonner and Lewis, 1990; Libby and Luft, 1993). In particular, various measures of cognitive ability, motivation, knowledge and problem-solving have been positively associated with audit-task performance (Libby and Luft, 1993; Salterio, 1994; Tan and Libby, 1997; Bol *et al.*, 2018; Gul *et al.*, 2019; Kadous and Zhou, 2019; Kallunki *et al.*, 2019). Moreover, empirical evidence examining audit firm survival (Bröcheler *et al.*, 2004), auditor compensation (Knechel *et al.*, 2013b; Vandenhaute *et al.*, 2020) and promotion (Downar *et al.*, 2021) suggests that audit firms value cognitive abilities in their HRM decisions.

The behavioral elements contributing to the capacity for organizational resilience are factors that help convert cognitive thoughts and mindsets to inventories of useful actions for emerging challenges (Ferrier *et al.*, 1999). Examples include learned resourcefulness and disciplined creativity (Coutu, 2002) as necessary characteristics required for auditors to devise appropriate responses to audit matters that involve unexpected events, information overload and stressful situations (Ashton, 1974; Chewning and Harrell, 1990; Lowe and Reckers, 1997). Moreover, core values and leadership style can improve problem-solving, knowledge-sharing and flexibility, thus contributing to resilience (Lengnick-Hall *et al.*, 2011). Leadership styles and the error management climate in audit firms also positively impact task performance among auditors (Otley and Pierce, 1995; Gold *et al.*, 2014).

Contextual conditions including relationships, processes and networks within and outside the company are the third component needed for the creation of resilience (Lengnick-Hall *et al.*, 2011). Lengnick-Hall and Beck (2005) identify psychological safety, social capital, diffused power, accountability and broad resource networks as conditions supporting the creation of resilient behavior and cognition. To strengthen the contextual dimensions and networks, audit firms invest in client relationship management and communication (Hoang *et al.*, 2019; Koch and Salterio, 2017). The success of audit engagements is dependent on the effectiveness of the interactions and the relationship between auditor and client (e.g. Pentland, 1993; Gibbins *et al.*, 2001; Shaub, 2004), where the form of communication, whether face-to-face or computer-mediated, may also significantly influence the interaction (Guénin-Paracini *et al.*, 2015; Bennett and Hatfield, 2018; Kachelmeier, 2018; Durkin *et al.*, 2021). The geographical distribution of the team can also affect team communication and information sharing and thus have a negative association with engagement performance (Downey *et al.*, 2020). The above findings suggest that the sudden switch to remote auditing could potentially reduce audit quality unless the audit team had strong internal networks and platforms to facilitate communication and information sharing.

2.1 Hypothesis development

We follow the HRM literature (e.g. Lengnick-Hall *et al.*, 2011) and expect audit firms' capacity for organizational resilience to stem from the cognitive abilities, behavioral characteristics and contextual conditions the firms possess. To proxy for audit firms' organizational resilience, we use three dimensions of the audit firm and two dimensions of the auditor-client relationship.

First, we expect that larger audit firms are positively associated with cognitive and behavioral characteristics contributing to the capacity for organizational resilience. Larger audit firms are more likely to have: (1) stronger organizational structures that reduce the

influence of individuals (Hall, 1977; Andiola *et al.*, 2020), (2) more robust control systems and broader networks that improve access to auditing expertise, personnel and broaden their geographic footprint (Francis, 2004; Knechel *et al.*, 2013a; Bills *et al.*, 2016, 2018), (3) greater access to non-accounting specialists (Sherwood *et al.*, 2020) and human capital (Che *et al.*, 2018; Chu *et al.*, 2021), (4) more investments in technology to support the audit process (Rapoport, 2016) and (5) the professional identity is more associated with audit firm processes, whereas smaller firms are more commercially focused (Broberg *et al.*, 2018). As such, we expect larger audit firms to have the cognitive, behavioral and contextual characteristics needed for greater organizational resilience.

Second, we expect that industry specialization is positively associated with organizational resilience in audit firms. Industry expertise originates from a deep client-industry knowledge (Ferguson *et al.*, 2003; Francis *et al.*, 2005), making industry-specialists more resilient because they are more effective at solving complex problems (Coutu, 2002; Aobdia *et al.*, 2021).

Third, we use audit firm diversity as a proxy for organizational resilience. Responses to unexpected challenges benefit from diverse thoughts and options (Lengnick-Hall and Beck, 2009). Workplace diversity in teams and organizations can broaden perspectives, provide alternatives, expedite processing those alternatives, and consequently, bolster the problem-solving, creativity, innovation and adaptability that underpin organizational resilience (Ancona and Caldwell, 1992; Watson *et al.*, 1993; Jackson *et al.*, 2003; Stahl *et al.*, 2010; Cameran *et al.*, 2018).

Fourth, we use auditor-client relationship characteristics, tenure and proximity, as proxies for organizational resilience. Contextual conditions, such as relationships and networks are key to developing a capacity for organizational resilience (Lengnick-Hall *et al.*, 2011). Trust and respectful interactions benefit resilience through improved information sharing, resource exchange and long-term partnerships. The literature acknowledges the positive impact of longer tenures on the efficiency of auditor-client interactions and the auditors' client-specific knowledge (Geiger and Raghunandan, 2002; Ghosh and Moon, 2005). Moreover, empirical evidence suggests that geographic proximity between agents improves communication, social bonds, trust and client knowledge (Torre and Rallet, 2005; Knobben and Orlemans, 2006; Choi *et al.*, 2012; Ittonen and Tronnes, 2015) [1].

Based on the discussion above, we examine the organizational resilience of audit firms in the early stages of the COVID-19 pandemic in Hong Kong. We expect that larger audit firms, industry specialists, firms with more diverse engagement partners and also auditors with closer proximity to and a long relationship with the client would be more resilient and be able to maintain the expected performance level during the unexpected COVID-19 pandemic.

H1. There is a positive association between organizational resilience and the auditor's performance during the COVID-19 pandemic.

3. Research design

This study uses companies listed on the HKEX to study the organizational resilience of audit firms during the outbreak of COVID-19. China, quickly followed by Hong Kong, was the first region to be affected by the pandemic. Because neither companies nor auditors had an opportunity to prepare for the disruption, we use this setting to examine the organizational resilience of audit firms to an unexpected shock. The HKEX was one of the first stock exchanges in the world to alter the rules on the publication of audited annual results due to the COVID-19 outbreak, allowing companies with the fiscal year-end December 31, 2019, to release either audited or unaudited financial statements by March 31, 2020. If financial statements were unaudited at that point, the audited financial statements were to be released no later than May 15, 2020 [2].

3.1 Empirical model

The hypothesis development identifies three auditor and two auditor-client dimensions related to organizational resilience. Based on the HRM literature, we expect these dimensions to be associated with auditor performance during the early stage of the crisis. We specify the following model to test our hypothesis:

$$\begin{aligned} \text{Audit Delay}_i = & \alpha_0 + \beta_1 \text{Big } N_i + \beta_2 \text{Industry Specialist}_i + \beta_3 \text{Auditor Diversity}_i \\ & + \beta_4 \text{Auditor Distance}_i + \beta_5 \text{Auditor Change}_i + \beta \text{Controls}_i + \varepsilon_i. \end{aligned} \quad (1)$$

The OLS estimator is used to estimate the coefficients [3]. We examine three measures of the dependent variable *Audit Delay*, which is our proxy for auditor performance. First, we use an indicator variable for whether the audit report for the fiscal year 2019 was issued after March 31, 2020 (*Audited After March 31*). Our second measure is the *Audit Report Lag*, calculated as the number of days from the fiscal year-end to the issuance of the audit report. The third measure is an indicator variable for whether the audit report for the fiscal year 2019 was issued after May 15, 2020 (*Audited After May 15*), indicating that the auditors were unable to finish the audit despite the 45-day extension provided.

As independent variables, Eq. (1) includes our five proxies for organizational resilience. First, we expect larger audit firms to be more resilient and, as such, we include *Big N*, an indicator variable equal to one if the company is audited by a large auditor [4]. The second independent variable of interest is *Industry Specialist*, an indicator variable equal to one if the company is audited by a firm earning the majority of the audit fees within the industry (as defined by 2-digit SIC). We expect industry-specialist audit firms to have stronger organizational resilience. The third variable is *Auditor Diversity*, defined as the proportion of signing auditors within the audit firm with one of their names classified as an English name [5]. The culture in Hong Kong is a mix between Chinese and western cultures (Chu, 2013). We use the auditor's name to classify their exposure to western culture, Li (1997) documents that western-style English names are common among Hong Kong bilingual and bicultural persons and particularly in white-collar workplaces. As such, we expect that a larger proportion of engagement auditors with western-style or English names will add diversity to the audit firm. We expect more diverse audit firms to issue more timely audit reports. The fourth variable is *Auditor Distance*, the logarithm of the distance (in kilometers) between the client company (address of the headquarters) and the audit firm (where the audit report was signed). Finally, we use an indicator variable equal to one if the 2019 audit is the audit firm's first year (*New Auditor*). We expect a negative association between audit firm resilience and *Auditor Distance* and *New Auditor*.

In addition to the above, we add the following control variables that capture geographical, client and industry differences. The COVID-19 outbreak began in Wuhan, China and early travel restrictions affected Hubei province. Those travel restrictions are expected to have significantly challenged the audit process (HKICPA, 2020). Therefore, we expect companies further away from Wuhan to be less severely affected by the restrictions and, as a result, to have made more timely audit report submissions. The variable *Wuhan Distance* is a logarithm of the distance (in kilometers) between Wuhan and the client's headquarters. Second, for the reasons given above, we include a control variable for whether the company's headquarters are in China (*China HQ*).

Under normal circumstances, companies listed on the HKEX Main Board and growth enterprise market (GEM) have different audit report deadlines. We control for this heterogeneity by including *Main Board*, an indicator variable taking the value one if the company is listed on the Main Board. To control for client characteristics, we use *Log (Total Assets)* to control for size and *Asset Turnover* (sales divided by total assets) to control for the

proportion of sales. We include *Inventory* (inventory divided by total assets) and *Receivables* (receivable divided by total assets) since information acquisition regarding accounts inventory and accounts receivables are impacted by travel restrictions (ICAEW, 2020). We expect both variables to be positively associated with audit delays. Under normal circumstances, Jaggi and Tsui (1999) report that companies facing more financial risk have greater audit report lags. Moreover, financial flexibility has been valuable during the COVID-19 crisis (Fahlenbrach et al., 2021). To capture these aspects of the client company, we add three control variables: *Leverage*, *Cash* and *Z-score*. Less financial flexibility increases financial risk and we therefore expect *Leverage* (*Cash* and *Z-score*) to be positively (negatively) associated with audit delays. We include *ROA* and *Loss* in our model because auditors of less profitable and loss-making firms exhibit higher litigation risk. For that reason, we expect a negative (positive) association between *ROA* (*Loss*) and our measures of audit delay. We also include *Log (Audit Fees)* to control for auditor effort. Finally, we include industry indicators based on the Fama and French 12-industry classification to control for industry fixed effects. We provide a detailed description of the variables in Appendix 2.

4. Sample

To examine the organizational resilience of audit firms and audit report timeliness we compile a sample of companies listed on the HKEX [6]. The data originate from three sources: we retrieve accounting data from Worldscope, stock price data from Datastream, and the remaining variables were manually collected from company financial statements, accessible on the HKEX homepage (www.hkexnews.hk/search). Table 1 details our sample selection. We begin with all observations on Datastream's Hong Kong research list (2,350 companies) [7]. We retained all active companies with a fiscal year-end of December 31, 2019 (1,347 companies). We manually collected data on 1,307 companies that had financial statements available [8]. We further excluded companies from financial industries with SIC-codes 6000–6999 (the remaining firms numbering 1,104). As a final step, we excluded all observations with missing data for any of our variables in Eq. (1), and, consequently, our full sample includes 1,008 companies [9].

4.1 Descriptive statistics

Panel A of Table 2 presents descriptive statistics for variables used in the estimation of Eq. (1). An average of 22% of firms were audited after March 31, 2020, and the average *Audit Report Lag* is 95.21 days while four percent of the companies were audited after May 15. Approximately 66% of the firms are audited by *Big N* and 26% by *Industry Specialist* auditors. Moreover, the average *Auditor Diversity* was 0.33 and eight percent of the

	Company obs
Companies with a primary listing on the Hong Kong Stock Exchange	2,350
Less: Inactive companies and companies with a fiscal year-end different from December 31st, 2019	(1,003)
Less: Companies without data from the manual collection procedure	(40)
Less: Companies from financial industries	(203)
Less: Companies with missing data for Eq. (1) variables	(96)
Final sample	1,008

Note(s): Table 1 reports the impact of the sample selection process on the number of observations

Source(s): Table created by author

Table 1.
Sample selection

Panel A						
Variable	Observations	Mean	Median	Std. Dev	Min	Max
<i>Audited after March 31</i>	1,008	0.22	0.00	0.41	0.00	1.00
<i>Audit report lag</i>	1,008	95.21	87.00	26.85	42.00	335.00
<i>Audited after May 15</i>	1,008	0.04	0.00	0.20	0.00	1.00
<i>Big N</i>	1,008	0.66	1.00	0.47	0.00	1.00
<i>Industry specialist</i>	1,008	0.26	0.00	0.44	0.00	1.00
<i>Auditor diversity</i>	1,008	0.33	0.30	0.14	0.00	1.00
<i>Auditor distance</i>	1,008	3.29	1.81	2.82	0.00	9.47
<i>New auditor</i>	1,008	0.08	0.00	0.28	0.00	1.00
<i>Wuhan distance</i>	1,008	6.83	6.84	0.55	0.00	9.40
<i>China HQ</i>	1,008	0.35	0.00	0.48	0.00	1.00
<i>Main board</i>	1,008	0.85	1.00	0.35	0.00	1.00
<i>Log (total assets)</i>	1,008	14.80	14.60	2.04	9.92	20.31
<i>Asset turnover</i>	1,008	0.66	0.52	0.58	0.01	3.22
<i>Inventory</i>	1,008	0.10	0.04	0.15	0.00	0.67
<i>Receivables</i>	1,008	0.24	0.20	0.22	0.00	0.84
<i>Leverage</i>	1,008	0.24	0.19	0.21	0.00	1.16
<i>Cash</i>	1,008	0.22	0.18	0.18	0.00	0.82
<i>Z-score</i>	1,008	2.79	2.10	3.60	-7.07	18.87
<i>ROA</i>	1,008	0.00	0.03	0.16	-0.84	0.34
<i>Loss</i>	1,008	0.37	0.00	0.48	0.00	1.00
<i>Log (audit fees)</i>	1,008	7.78	7.70	0.92	5.65	12.41

Panel B						
Variable	<i>Audited</i> <i>After March 31 = 0</i>		<i>Audited</i> <i>After March 31 = 1</i>		Diff	<i>t</i> -statistic
	Observations	Mean	Observations	Mean		
<i>Big N</i>	788	0.73	220	0.44	-0.28***	(-8.12)
<i>Industry specialist</i>	788	0.30	220	0.14	-0.15***	(-4.69)
<i>Auditor diversity</i>	788	0.34	220	0.27	-0.07***	(-6.11)
<i>Auditor distance</i>	788	3.28	220	3.33	0.05	(0.22)
<i>New auditor</i>	788	0.06	220	0.15	0.09***	(4.08)
<i>Wuhan distance</i>	788	6.87	220	6.68	-0.19***	(-4.53)
<i>China HQ</i>	788	0.35	220	0.37	0.02	(0.65)
<i>Main board</i>	788	0.87	220	0.81	-0.06**	(-2.15)
<i>Log (total assets)</i>	788	14.88	220	14.48	-0.41***	(-2.64)
<i>Asset turnover</i>	788	0.66	220	0.65	-0.01	(-0.23)
<i>Inventory</i>	788	0.10	220	0.11	0.01	(0.73)
<i>Receivables</i>	788	0.19	220	0.25	-0.07***	(-4.01)
<i>Leverage</i>	788	0.32	220	0.21	0.10***	(6.48)
<i>Cash</i>	788	0.24	220	0.15	-0.09***	(-7.11)
<i>Z-score</i>	788	3.12	220	1.62	-1.51***	(-5.57)
<i>ROA</i>	788	0.01	220	-0.07	-0.08***	(-6.80)
<i>Loss</i>	788	0.31	220	0.59	0.28***	(7.86)
<i>Log (audit fees)</i>	788	7.83	220	7.58	-0.25***	(-3.59)

Note(s): Table 2 reports the descriptive statistics for the 1,008 companies listed in Hong Kong. Variables are defined in Appendix 2. Panel A shows the summary statistics for all variables used in Eq. (1). Panel B compares the difference in means of the independent variables in Eq. (1) between companies audited before or on March 31 and firms audited afterward. Tests for differences in means are based on *t*-tests. ***, **, * indicate statistical significance at the 1%, 5% and 10% levels, respectively

Table 2.
Descriptive statistics

Source(s): Table created by author

companies had hired a new auditor for the fiscal year 2019 (*New Auditor*). Of the companies in our sample, 35% have headquarters in China [10]. In Panel B of Table 2, we compare the characteristic of companies audited before and after March 31. The proportions of companies audited by *Big N* and *Industry Specialist* auditors are significantly lower for those audited after 31 March, 2020. Companies audited later also use an audit firm with less diversity among its engagement auditors.

An untabulated correlation matrix revealed significant correlations between the variables *Big N*, *Industry Specialist* and *Auditor Diversity*. Those correlations highlight that these variables contain some overlapping information. The correlations between the three variables range from 0.40 to 0.51. Other highly correlated variables are *Big N*, *Log (Total Assets)* and *Log (Audit Fees)*.

5. Results

Table 3 provides the results on audit firms' organizational resilience and audit report delays. Panel A of Table 3 reports the results of an LPM regression with *Audited After March 31* as the dependent variable. Columns (1) and (2) of Panel A show that *Big N* and *Industry Specialist* auditors are significantly negatively associated with *Audited After March 31*. The coefficient for *Big N* is -0.15 (t -statistic = -4.10) and the coefficient for *Industry Specialist* is -0.11 (t -statistic = -4.69) suggesting that firms with *Big N* auditors or industry specialists are less likely to file a delayed audit report. Column (3) of Panel A reports the results for *Auditor Diversity*. We find a negative relationship with the variable and *Audited After March 31* (coef. -0.33 , t -statistic = -3.22). The information presented in columns (4) and (5) of Panel A indicate that the contextual conditions of organizational resilience are related to audit report delays, *Auditor Distance* and *New Auditor* are significantly positively associated with a delayed audit report [11]. The estimated coefficients for Eq. (1), including all five proxies for organizational resilience, are reported in Column (6). Four of the proxies remain statistically significant, the exception being *Auditor Diversity* [12]. The results in Panel A of Table 3 as a whole support our hypothesis that more resilient audit firms are associated with stronger auditor performance (i.e. more timely audit reports) during the COVID-19 outbreak. The estimated coefficient for most of our control variables is consistent with our expectations. In all specifications, the coefficients for *Leverage* and *Loss* are positive and statistically significant. *Wuhan Distance* and *Cash* have negative coefficients, suggesting fewer complications in the audit process for companies further away from Wuhan and for companies with greater cash holdings in relation to total assets.

Panel B of Table 3 reports the results when *Audit Report Lag* is the dependent variable. We observe the same pattern in Panel B as in Panel A. Companies audited by *Big N* auditors have a 12.03 (t -statistic -4.43) days shorter *Audit Report Lag*. The association is of economic importance since the coefficient for *Big N* corresponds to 46% of a standard deviation in *Audit Report Lag*. Columns (2) and (3) report that firms with an *Industry Specialist* auditor or an audit firm with more *Auditor Diversity* also have a shorter *Audit Report Lag*. However, in Column (4), the association between *Audit Report Lag* and *Auditor Distance* is insignificant. Column (5) reports that a *New Auditor* is associated with a longer *Audit Report Lag* (coef. 10.37, t -statistic 2.04). Column (6) reflects that in the model with all proxies for organizational resilience, *Big N*, *Industry Specialization* and *New Auditor* are significantly associated with the *Audit Report Lag*. In addition, Panel B reports that client company size is negatively related to *Audit Report Lag*.

In Panel C of Table 3, we use *Audited After May 15* as the dependent variable. According to the statement issued by HKEX on March 16, 2020, the deadline for releasing an audited financial statement for the fiscal year 2019 was May 15, 2020 (for companies with a fiscal year-end of December 31, 2019). Columns (1), (2) and (6) of Panel C confirm previous findings

	Panel A					
	<i>Audited After March 31</i>					
<i>Big N</i>	-0.15*** (-4.10)					-0.10** (-2.21)
<i>Industry specialist</i>		-0.11*** (-4.69)				-0.07*** (-2.81)
<i>Auditor diversity</i>			-0.33*** (-3.22)			-0.12 (-1.02)
<i>Auditor distance</i>				0.01* (1.94)		0.01** (2.23)
<i>New auditor</i>					0.13** (2.25)	0.09* (1.69)
<i>Wuhan distance</i>	-0.10*** (-6.41)	-0.11*** (-6.31)	-0.11*** (-6.56)	-0.12*** (-7.04)	-0.11*** (-6.94)	-0.12*** (-6.72)
<i>China HQ</i>	0.07** (2.37)	0.07** (2.19)	0.07** (2.10)	-0.01 (-0.18)	0.06* (1.77)	-0.00 (-0.01)
<i>Main board</i>	-0.01 (-0.32)	-0.04 (-0.92)	-0.04 (-0.93)	-0.04 (-0.83)	-0.03 (-0.83)	-0.02 (-0.47)
<i>Log (total assets)</i>	0.00 (0.10)	0.00 (0.33)	0.00 (0.19)	0.01 (0.51)	0.01 (0.52)	0.00 (0.13)
<i>Asset turnover</i>	0.01 (0.49)	-0.00 (-0.05)	-0.00 (-0.14)	0.00 (0.15)	0.00 (0.21)	0.01 (0.31)
<i>Inventory</i>	-0.03 (-0.38)	-0.05 (-0.69)	-0.04 (-0.53)	-0.06 (-0.79)	-0.04 (-0.64)	-0.02 (-0.26)
<i>Receivables</i>	0.01 (0.22)	0.01 (0.11)	0.01 (0.19)	0.02 (0.30)	0.02 (0.34)	0.01 (0.09)
<i>Leverage</i>	0.20** (2.62)	0.20*** (2.79)	0.20*** (2.72)	0.20*** (2.76)	0.19** (2.57)	0.19** (2.45)
<i>Cash</i>	-0.38*** (-4.75)	-0.42*** (-5.19)	-0.39*** (-4.78)	-0.42*** (-5.40)	-0.42*** (-5.26)	-0.37*** (-4.48)
<i>Z score</i>	0.00 (0.29)	0.00 (0.34)	0.00 (0.21)	0.00 (0.09)	0.00 (0.19)	-0.00 (-0.02)
<i>ROA</i>	-0.17* (-1.71)	-0.21** (-2.11)	-0.20* (-1.99)	-0.22** (-2.20)	-0.20* (-1.89)	-0.16 (-1.64)
<i>Loss</i>	0.12*** (3.66)	0.14*** (4.25)	0.13*** (4.05)	0.14*** (4.07)	0.14*** (4.24)	0.13*** (3.90)
<i>Log (audit fees)</i>	-0.00 (-0.22)	-0.03 (-1.22)	-0.02 (-1.24)	-0.05** (-2.38)	-0.04** (-2.15)	0.00 (0.22)
<i>Constant</i>	1.00*** (4.66)	1.11*** (5.12)	1.21*** (5.67)	1.28*** (6.25)	1.17*** (5.91)	1.06*** (4.72)
Industry FE	YES	YES	YES	YES	YES	YES
R-squared	0.177	0.171	0.169	0.160	0.165	0.190
Observations	1,008	1,008	1,008	1,008	1,008	1,008

Table 3.
Main results

(continued)

	Panel B					
	<i>Audit Report Lag</i>					
<i>Big N</i>	-12.03*** (-4.43)					-10.62*** (-3.14)
<i>Industry specialist</i>		-6.30*** (-4.26)				-3.80*** (-2.43)
<i>Auditor diversity</i>			-13.69* (-1.80)			5.24 (0.56)
<i>Auditor distance</i>				0.31 (0.56)		0.29 (0.58)
<i>New auditor</i>					10.37** (2.04)	8.19* (1.72)
<i>Wuhan distance</i>	-4.27*** (-5.06)	-4.43*** (-5.06)	-4.42*** (-5.09)	-4.71*** (-4.30)	-4.62*** (-5.09)	-4.77*** (-4.58)
<i>China HQ</i>	4.26*** (2.80)	3.72** (2.33)	3.54** (2.13)	1.73 (0.50)	3.11* (1.85)	2.71 (0.88)
<i>Main board</i>	3.22 (0.85)	1.24 (0.32)	1.12 (0.28)	1.29 (0.33)	1.52 (0.39)	3.29 (0.93)
<i>Log (total assets)</i>	-2.07** (-2.47)	-1.78** (-2.20)	-1.83** (-2.17)	-1.65* (-2.00)	-1.61** (-2.08)	-1.97** (-2.59)
<i>Asset turnover</i>	-0.47 (-0.28)	-1.34 (-0.86)	-1.38 (-0.84)	-1.15 (-0.75)	-0.98 (-0.65)	-0.40 (-0.23)
<i>Inventory</i>	-0.26 (-0.07)	-2.11 (-0.58)	-1.80 (-0.47)	-2.56 (-0.69)	-1.62 (-0.45)	0.14 (0.04)
<i>Receivables</i>	6.96* (1.76)	6.71 (1.65)	7.10* (1.71)	7.38* (1.82)	7.56* (1.85)	6.83* (1.70)
<i>Leverage</i>	8.82 (1.52)	8.86 (1.58)	8.57 (1.57)	8.90 (1.60)	7.99 (1.41)	8.08 (1.37)
<i>Cash</i>	-24.31*** (-4.99)	-27.37*** (-5.49)	-26.33*** (-5.06)	-27.77*** (-5.77)	-26.94*** (-5.75)	-24.34*** (-4.79)
<i>Z-score</i>	-0.09 (-0.41)	-0.08 (-0.43)	-0.11 (-0.56)	-0.11 (-0.62)	-0.13 (-0.69)	-0.13 (-0.64)
<i>ROA</i>	-14.91*** (-3.23)	-18.37*** (-3.95)	-18.13*** (-3.83)	-18.97*** (-3.94)	-17.23*** (-3.39)	-14.12*** (-3.00)
<i>Loss</i>	9.23*** (4.34)	10.66*** (5.01)	10.22*** (4.80)	10.57*** (4.81)	10.73*** (5.08)	9.65*** (4.80)
<i>Log (audit fees)</i>	3.82* (1.90)	1.68 (1.04)	1.41 (0.96)	0.46 (0.30)	0.84 (0.55)	4.03** (2.15)
<i>Constant</i>	123.64*** (8.51)	134.44*** (9.80)	139.97*** (9.94)	141.61*** (9.77)	136.68*** (10.58)	121.32*** (7.91)
Industry FE	YES	YES	YES	YES	YES	YES
R-squared	0.192	0.173	0.168	0.164	0.174	0.201
Observations	1,008	1,008	1,008	1,008	1,008	1,008

(continued)

Table 3.

	Panel C					
	<i>Audited After May 15</i>					
<i>Big N</i>	-0.06*** (-3.87)					-0.07*** (-3.04)
<i>Industry specialist</i>		-0.03*** (-2.82)				-0.02* (-1.71)
<i>Auditor diversity</i>			-0.02 (-0.35)			0.09 (1.21)
<i>Auditor distance</i>				-0.00 (-0.47)		-0.00 (-0.64)
<i>New auditor</i>					0.04 (1.18)	0.03 (0.93)
<i>Wuhan distance</i>	-0.01 (-1.25)	-0.01 (-1.29)	-0.01 (-1.25)	-0.01 (-0.85)	-0.01 (-1.32)	-0.01 (-0.87)
<i>China HQ</i>	0.02 (1.23)	0.01 (1.00)	0.01 (0.86)	0.02 (0.86)	0.01 (0.75)	0.03 (1.27)
<i>Main board</i>	0.01 (0.18)	-0.01 (-0.17)	-0.01 (-0.18)	-0.01 (-0.18)	-0.00 (-0.13)	0.01 (0.25)
<i>Log (total assets)</i>	-0.00 (-0.37)	-0.00 (-0.11)	-0.00 (-0.06)	-0.00 (-0.04)	0.00 (0.01)	-0.00 (-0.28)
<i>Asset turnover</i>	0.00 (0.10)	-0.00 (-0.36)	-0.00 (-0.31)	-0.00 (-0.29)	-0.00 (-0.21)	0.00 (0.24)
<i>Inventory</i>	-0.05 (-1.57)	-0.06* (-1.86)	-0.07* (-1.79)	-0.07* (-1.89)	-0.06* (-1.78)	-0.05 (-1.51)
<i>Receivables</i>	0.12*** (3.25)	0.12*** (3.18)	0.12*** (3.31)	0.12*** (3.29)	0.12*** (3.33)	0.12*** (3.25)
<i>Leverage</i>	0.03 (0.47)	0.03 (0.48)	0.03 (0.49)	0.03 (0.50)	0.02 (0.43)	0.03 (0.47)
<i>Cash</i>	-0.13*** (-3.50)	-0.14*** (-3.95)	-0.14*** (-3.75)	-0.14*** (-4.08)	-0.14*** (-4.01)	-0.13*** (-3.45)
<i>Zscore</i>	-0.00 (-0.64)	-0.00 (-0.64)	-0.00 (-0.68)	-0.00 (-0.59)	-0.00 (-0.75)	-0.00 (-0.55)
<i>ROA</i>	-0.14** (-2.50)	-0.16*** (-2.78)	-0.16*** (-2.74)	-0.16*** (-2.79)	-0.16** (-2.53)	-0.14** (-2.31)
<i>Loss</i>	0.07*** (4.14)	0.08*** (4.51)	0.08*** (4.44)	0.08*** (4.50)	0.08*** (4.60)	0.07*** (4.40)
<i>Log (audit fees)</i>	0.02 (1.34)	0.00 (0.36)	-0.00 (-0.07)	-0.00 (-0.21)	-0.00 (-0.09)	0.02 (1.42)
<i>Constant</i>	-0.00 (-0.02)	0.06 (0.73)	0.08 (1.01)	0.07 (0.83)	0.07 (0.90)	-0.05 (-0.59)
Industry FE	YES	YES	YES	YES	YES	YES
R-squared	0.121	0.111	0.108	0.108	0.111	0.126
Observations	1,008	1,008	1,008	1,008	1,008	1,008

Note(s): Table 3 reports ordinary least squares estimations of Eq. (1). In Panel A, the dependent variable is an indicator variable taking the value one if the company was audited after 31 March 2020 (*Audited After March 31*). In Panel B, the dependent variable is the number of days between the date of the audit report and the fiscal year-end (*Audit Report Lag*). In Panel C, the dependent variable is an indicator variable taking the value one if the company was audited after May 15, 2020 (*Audited After May 15*). *T*-statistics, reported in the parentheses, are based on standard errors clustered at the industry level (2-digit sic). Variables are defined in Appendix 2. ***, **, * indicate statistical significance at the 1%, 5% and 10% levels, respectively

Table 3.

Source(s): Table created by author

that companies with a *Big N* and *Industry Specialist* auditors are less likely to be audited late, in this case after May 15, 2020. Panel C provides no statistically significant results connecting *Audited After May 15* and the organizational resilience proxies, *Auditor Diversity*, *Auditor Distance* and *New Auditor*.

The results in Table 3 support our hypothesis. There is substantial evidence that *Big N* and *Industry Specialist* auditors were better equipped to issue timely audit reports during the early stages of the COVID-19 pandemic and that new auditors struggled to issue timely audit reports during the pandemic. Moreover, we find weak evidence that auditors further away from their clients and that audit firms with a less diverse workforce were more prone to audit report delays.

5.1 Change in audit report lag

In Table 4, we extend the main analysis by examining whether the difference in audit report delay between crisis and normal periods (Δ *Audit Report Lag*) is associated with the audit firm's organizational resilience. The difference in audit report delay is calculated as the audit report delay for the fiscal year 2019 minus the audit report delay for the fiscal year 2018. Throughout the study, we argue that the importance of organizational resilience was amplified when COVID-19 appeared. As such, we expect a smaller Δ *Audit Report Lag* for companies audited by a more resilient audit firm. Removing impact from the normal audit delay level facilitates a focus on the incremental impact from the pandemic.

In Panel A of Table 4, we report the descriptive statistics for Δ *Audit Report Lag*. The mean of the variable indicates the audit report delays averaged 12.64 days longer for the audit report for the fiscal year 2019, compared to 2018. However, the minimum value of -225 shows that even pre-pandemic some companies' audit report submissions are substantially delayed. In Panel B, we tabulate the estimates with Δ *Audit Report Lag* as the dependent variable and the independent variables from Eq. (1). The first two columns report that *Big N* and *Industry Specialist* auditors are significantly negatively associated with Δ *Audit Report Lag*. The coefficient for *Big N* is -8.26 (t -statistic -2.33) and the coefficient for *Industry Specialist* is -3.83 (t -statistic -2.42). In columns (3) and (4) of Panel B, the coefficients of *Auditor Diversity* and *Auditor Distance* have the expected sign but are insignificant. Column (5) presents figures suggesting that *New Auditor* is associated with an increase in the audit report delay. The economic magnitude of the coefficient suggests that companies with a new auditor averaged a 10.37 days greater increase in audit report delay than their counterparts without a new auditor. In Column (6), we estimate a model with all our audit firm's organizational resilience factors. The two factors that remain statistically significant are *Big N* and *New Auditor*. Turning to the control variables, overall, their coefficients have signs and significances corresponding to those in Table 3. The exception is *Inventory*, which has a negative and significant coefficient for all specifications in Table 4. The coefficients suggest that the audit report delay was shorter for companies with more inventories during the COVID-19 pandemic than prior to it. We expected the opposite relationship because a firm's inventory is often audited during on-site visits, but the findings suggest that auditors have other efficient methods to obtain evidence to assure management assertions. In summary, Table 4 provides further evidence that larger audit firms with more industry knowledge and longer relationships with clients performed more timely audits during the pandemic.

5.2 Audit adjustments

This section examines whether our audit firm resilience measures are associated with year-end audit adjustments. To obtain the audit adjustments, we use the unique opportunity provided by the temporary regulation in Hong Kong and manually compare unaudited with audited financial statements for companies that initially filed unaudited financial statements

	Panel A					
	Observations	Mean	Median	Std. Dev	Min	Max
Δ Audit report lag	919	12.64	4	29.00	-225	256
	Panel B					
	Δ Audit Report lag					
<i>Big N</i>	-8.26** (-2.33)					-8.08* (-1.97)
<i>Industry specialist</i>		-3.83** (-2.42)				-2.54 (-1.42)
<i>Auditor diversity</i>			-3.50 (-0.40)			11.67 (1.14)
<i>Auditor distance</i>				0.17 (0.30)		0.05 (0.09)
<i>New auditor</i>					10.06* (1.91)	9.19* (1.78)
<i>Wuhan distance</i>	-4.84*** (-4.58)	-4.90*** (-4.63)	-4.84*** (-4.75)	-4.97*** (-4.14)	-5.04*** (-4.86)	-5.07*** (-4.34)
<i>China HQ</i>	1.85 (0.88)	1.42 (0.68)	1.20 (0.56)	0.26 (0.07)	1.01 (0.48)	1.46 (0.42)
<i>Main board</i>	-3.33 (-0.84)	-4.51 (-1.12)	-4.59 (-1.14)	-4.49 (-1.11)	-4.25 (-1.06)	-2.88 (-0.79)
<i>Total assets</i>	0.05 (0.05)	0.28 (0.29)	0.33 (0.33)	0.38 (0.40)	0.44 (0.48)	0.21 (0.23)
<i>Asset turnover</i>	-0.16 (-0.09)	-0.74 (-0.44)	-0.73 (-0.42)	-0.67 (-0.40)	-0.47 (-0.29)	0.16 (0.09)
<i>Inventory</i>	-17.78*** (-3.35)	-19.14*** (-4.05)	-19.20*** (-4.03)	-19.39*** (-4.12)	-18.62*** (-4.03)	-17.57*** (-3.35)
<i>Receivables</i>	10.33** (2.03)	10.12* (1.99)	10.43** (2.03)	10.45* (1.99)	10.65** (2.05)	10.44** (2.01)
<i>Leverage</i>	12.51* (1.89)	12.43* (1.93)	12.50* (1.97)	12.55* (1.96)	11.30* (1.69)	11.54* (1.68)
<i>Cash</i>	-22.48*** (-3.66)	-24.47*** (-3.89)	-24.41*** (-3.65)	-24.72*** (-4.00)	-24.17*** (-3.98)	-22.92*** (-3.61)
<i>ZSCORE</i>	0.26 (0.89)	0.25 (0.88)	0.25 (0.89)	0.24 (0.87)	0.17 (0.61)	0.19 (0.65)
<i>ROA</i>	-13.60** (-2.07)	-16.33** (-2.64)	-16.45*** (-2.68)	-16.71*** (-2.69)	-15.10** (-2.45)	-12.72** (-2.01)
<i>Loss</i>	5.48** (2.27)	6.48** (2.66)	6.36** (2.61)	6.45** (2.64)	6.60*** (2.82)	5.97** (2.62)
<i>log(audit fees)</i>	0.65 (0.26)	-0.87 (-0.43)	-1.43 (-0.78)	-1.71 (-0.89)	-1.35 (-0.72)	0.60 (0.26)
<i>Constant</i>	41.09*** (3.16)	48.07*** (3.93)	51.39*** (4.19)	52.14*** (4.11)	48.37*** (4.20)	36.48*** (2.72)
Industry FE	YES	YES	YES	YES	YES	YES
R-squared	0.110	0.101	0.098	0.098	0.107	0.119
Observations	919	919	919	919	919	919

Note(s): Table 4 reports the descriptive statistics for the change in audit report lag and the association between the change in audit report lag and the auditor resilience characteristics. Panel A reports descriptive statistics for the change in audit report lag (Δ Audit Report Lag). Panel B reports the result for an ordinary least squares estimation with the change in audit report lag as the dependent variable. *T*-statistics, reported in the parentheses, are based on standard errors clustered at the industry level (2-digit SIC). Variables are defined in Appendix 2. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively

Source(s): Table created by author

Table 4.
Change in audit
report lag

by March 31st and the audited financial statements later. Any difference between the unaudited and audited financial statements indicates that the auditor has required an adjustment. It is in the companies' interest to avoid publicly announced financial statements errors, such as financial restatements or publicly announced audit adjustments [13]. Palmrose *et al.* (2004) show that the announcement of financial restatements results in a substantial loss of market value. Further, Karpoff *et al.* (2008) report that companies that have to disclose financial misrepresentations publicly also suffer a reputation loss, leading to lower sales and higher contracting and financing costs. Given that companies and auditors work together to avoid public audit adjustments, we view the absence of audit adjustments as a sign of superior auditor performance. Audit firms of clients issuing fewer, smaller and less-income-decreasing audit adjustments were able to maintain a high-performance level, despite not issuing the audit report before March 31st.

Panel A of Table 5 reports the descriptive statistics for the audit adjustments. In our full sample, 220 companies first filed unaudited financial statements and subsequently their audited financial statements. In 93 of 220 filings (42.2%), the audited financial statements contained an audit adjustment. Contemporary studies on audit adjustments often rely on samples of Chinese companies. Lennox *et al.* (2016) do so and report that 68.4% of the companies had year-end audit adjustments with 68.9% of those being income-decreasing. We found 75.3% of audit adjustments were income-decreasing in our sample. The means of $|ROA\ Change|$ and $ROA\ Change$ were 0.03 and -0.02 . Panel B of Table 5 considers the association between audit firm organizational resilience and the likelihood of the client having a year-end audit adjustment. Columns (2) and (5) of Panel B report that firms with industry-specialist auditors and longer auditor-client relationships were less likely to experience a year-end audit adjustment. Columns (1), (3) and (4) show no statistically significant coefficients for *Big N*, *Auditor Diversity* and *Auditor Distance*. Due to the limited number of observations in the regression, all columns include only a subset of the control variables from Eq. (1) [14]. Column (6) confirms our findings regarding *Industry Specialist* and *New Auditor*, but it also reports a positive and statistically significant association between *Auditor Diversity* and audit adjustments. Regarding the control variables, the coefficient for *Cash* is significantly negative and the coefficient for *Loss* is significantly positive.

Panels C and D of Table 5 reflect whether the magnitude and directions of these audit adjustments vary with our organizational resilience proxies. We find that companies audited by an industry-specialist auditor have smaller (coef. -0.02 , t -statistic -2.74) and less income-decreasing audit adjustments (coef. 0.02 , t -statistic 2.80). The information in Table 5 shows support for our expectation that industry-specialist auditors are able to maintain their performance level and, thus, have the material misstatements in the clients' financial statements corrected in a timelier manner, in this case in the *unaudited* financial reports. We also find weak evidence that new auditors are more likely to issue year-end audit adjustments.

5.3 Auditor resignations

Next, we examined auditor-initiated changes (resignations) after the 2019 fiscal year audit. Auditor resignations occur for various reasons, for example, because of auditor-client misalignment, auditor capacity constraints and the rebalancing of client portfolio risk by the auditor (DeFond, 1992; Landsman *et al.*, 2009). Crises, like the COVID-19 outbreak, could have revealed risks or weaknesses in the auditors' client portfolios or capacity constraints. Rama and Read (2006) studied the post-Enron/SOX period and found that large audit firms actively resigned from clients to reduce the risk in their client portfolios. Accordingly, we expect audit firms to have actively managed their client portfolios after the 2019 fiscal year audit. However, the client portfolio adjustments can vary depending on audit firm and audit-client relationship characteristics. Considering larger audit firms, Bockus and Giger (1998) argue

	Observations	Panel A				
		Mean	Median	Std. Dev	Min	Max
<i>Adjustment</i>	220	0.42	0.00	0.50	0.00	1
<i> ROA Change </i>	220	0.03	0.00	0.07	0.00	0.44
<i>ROA Change</i>	220	-0.02	0.00	0.07	-0.44	0.07

	Panel B					
	<i>Adjustment</i>	<i>Adjustment</i>	<i>Adjustment</i>	<i>Adjustment</i>	<i>Adjustment</i>	<i>Adjustment</i>
<i>Big N</i>	-0.09 (-1.37)					0.04 (0.53)
<i>Industry specialist</i>		-0.33*** (-3.94)				-0.34*** (-3.44)
<i>Auditor diversity</i>			0.04 (0.20)			0.35* (1.95)
<i>Auditor distance</i>				0.00 (0.11)		-0.00 (-0.18)
<i>New auditor</i>					0.25** (2.55)	0.26*** (2.75)
<i>Wuhan distance</i>	0.02 (0.87)	-0.00 (-0.00)	0.02 (0.93)	0.02 (0.86)	0.01 (0.60)	-0.00 (-0.04)
<i>China HQ</i>	-0.03 (-0.47)	-0.03 (-0.65)	-0.05 (-0.86)	-0.06 (-0.38)	-0.05 (-0.94)	-0.04 (-0.26)
<i>Main board</i>	-0.08 (-1.01)	-0.08 (-1.05)	-0.07 (-0.83)	-0.07 (-0.90)	-0.09 (-1.20)	-0.05 (-0.72)
<i>Log (total assets)</i>	-0.03 (-0.93)	-0.02 (-0.83)	-0.03 (-0.92)	-0.03 (-0.93)	-0.02 (-0.56)	-0.01 (-0.33)
<i>Receivables</i>	0.30 (1.62)	0.30 (1.67)	0.29 (1.61)	0.29 (1.60)	0.31* (1.69)	0.31 (1.64)
<i>Cash</i>	-0.51* (-1.83)	-0.52* (-1.76)	-0.55* (-1.90)	-0.55* (-1.91)	-0.54* (-1.91)	-0.53* (-1.74)
<i>Loss</i>	0.17** (2.20)	0.18** (2.45)	0.18** (2.28)	0.17** (2.27)	0.18** (2.20)	0.20** (2.59)
<i>Log (audit fees)</i>	0.02 (0.29)	0.02 (0.34)	-0.01 (-0.22)	-0.01 (-0.18)	-0.02 (-0.28)	-0.02 (-0.27)
<i>Constant</i>	0.52 (1.20)	0.60 (1.10)	0.72 (1.53)	0.73 (1.52)	0.61 (1.30)	0.55 (1.12)
Industry FE	YES	YES	YES	YES	YES	YES
R-squared	0.153	0.193	0.148	0.148	0.177	0.226
Observations	220	220	220	220	220	220

	Panel C					
	<i> ROA Change </i>					
<i>Big N</i>	-0.02** (-2.27)					-0.02 (-1.45)
<i>Industry specialist</i>		-0.03*** (-2.73)				-0.02*** (-2.74)
<i>Auditor diversity</i>			0.03 (0.65)			0.06 (1.40)
<i>Auditor distance</i>				0.00 (0.28)		0.00 (0.09)
<i>New auditor</i>					0.02 (1.14)	0.02 (0.84)

Table 5.
Year-end audit
adjustment

(continued)

	$ ROA$ $Change $	$ ROA$ $Change $	Panel C $ ROA$ $Change $	$ ROA$ $Change $	$ ROA$ $Change $	$ ROA$ $Change $
Control variables	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
R-squared	0.191	0.190	0.179	0.176	0.183	0.213
Observations	220	220	220	220	220	220

	ROA $Change$	ROA $Change$	Panel D ROA $Change$	ROA $Change$	ROA $Change$	ROA $Change$
<i>Big N</i>	0.02 (1.52)					0.01 (0.89)
<i>Industry specialist</i>		0.02** (2.47)				0.02*** (2.80)
<i>Auditor diversity</i>			-0.03 (-0.85)			-0.06 (-1.47)
<i>Auditor distance</i>				-0.00 (-0.23)		-0.00 (-0.07)
<i>New auditor</i>					-0.01 (-0.82)	-0.01 (-0.70)
Control variables	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
R-squared	0.180	0.184	0.178	0.173	0.176	0.202
Observations	220	220	220	220	220	220

Note(s): Table 5 reports the descriptive statistics for year-end audit adjustments and the association between year-end audit adjustments and the auditor resilience characteristics. Panel A reports descriptive statistics for the year-end audit adjustment variables. Panel B reports the result for a linear probability model with an indicator variable for audit adjustment (*Adjustment*) as the dependent variable. Panel C reports the results for a regression with the absolute value of the ROA change ($|ROA\ Change|$) as the dependent variable. Panel D reports the results for a regression with the change in ROA ($ROA\ Change$) as the dependent variable. *T*-statistics, reported in the parentheses, are based on standard errors clustered at the industry level (2-digit sic). Variables are defined in Appendix 2. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively

Source(s): Table created by author

Table 5.

that such firms have more incentives to avoid risky clients and also have the resources necessary to detect hidden risks. Hence, we expected larger audit firms to have resigned more often from clients after the 2019 fiscal year audit. Cenker and Nagy (2008) argue that audit firm industry specialization reduces auditor-client misalignment and litigation risk. The industry-specialist audit firms also favor clients within their specialization over clients outside their specialization when making resignation decisions. Consequently, we expect fewer resignations from industry-specialist auditors if audit firms managed their client portfolios after the 2019 fiscal year audits.

We proposed that more diverse audit firms have higher organizational resilience, as such, these audit firms performed better during the crisis and are in less need to rebalance their client portfolio. With regards to geographical proximity, Choi *et al.* (2012) find that auditor-client proximity is associated with higher audit quality because closer proximity enables auditors to obtain better information and enhance monitoring. Following a similar logic as with industry specialism, we expect an auditor with closer proximity to the client be less likely to resign

because there is less auditor-client misalignment. Finally, we expect new auditors to be less likely to resign because the first-year audits are more costly and require investment and, thus, auditors seek a longer tenure to cover the investment costs and eventually profit from the engagement (Hoang *et al.*, 2019).

To examine determinants of auditor resignations, we use a LPM with an indicator variable for auditor resignation as the dependent variable. The independent variables are the audit firms' resilience characteristics, the control variables from Eq. (1) and an indicator variable for whether the company was audited after March 31. Panel A of Table 6 provides descriptive statistics for auditor resignations in our sample. In our sample, eight percent of the companies experienced auditor resignations. After the 2019 fiscal year audit, 109 of our sample firms changed auditor, among which were 75 auditor resignations [15]. Panel B reports the determinants of auditor resignations and potential associations with audit firm organizational resilience. Our results, in Column (1) of Table 6, show that *Big N* auditors initiate resignations more frequently. Columns (2) to (5) report no significant coefficients for our resilience characteristics. In Column (6), we again find a positive association between *Big N* and auditor resignation. In addition, we also show that *Industry Specialist* and *Auditor Diversity* are significantly negatively associated with the probability of auditor resignations. The results also suggest that auditor resignations are more common for companies *Audited after March 31* which is consistent with Bédard and Johnstone (2004),

	Panel A					
	Observations	Mean	Median	Std. Dev	Min	Max
<i>Auditor resignation</i>	974	0.08	0.00	0.27	0.00	1
	Panel B					
	<i>Auditor Resignation</i>					
<i>Big N</i>	0.09*** (3.65)					0.13*** (4.37)
<i>Industry specialist</i>		-0.03 (-1.63)				-0.05** (-2.32)
<i>Auditor diversity</i>			-0.06 (-1.04)			-0.15* (-1.96)
<i>Auditor distance</i>				-0.00 (-0.86)		-0.00 (-1.00)
<i>New auditor</i>					0.01 (0.30)	0.02 (0.66)
<i>Audited after March 31</i>	0.10*** (4.24)	0.09*** (3.72)	0.09*** (3.61)	0.09*** (3.84)	0.09*** (3.84)	0.10*** (4.29)
Control variables	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES
R-squared	0.102	0.090	0.089	0.088	0.088	0.115
Observations	974	974	974	974	974	974

Note(s): Table 6 reports the descriptive statistics for auditor resignations and the association between auditor resignations and auditor resilience characteristics. Panel A reports descriptive statistics for the auditor resignations. Panel B reports the result for a linear probability model with an indicator variable taking the value one (0 otherwise) if the company's auditor resigned after the 2019 fiscal year audit as the dependent variable. The independent variables are *Audited After March 31* and the independent variables from Eq. (1). *T*-statistics in parentheses are based on standard errors clustered at the industry level (2-digit sic). Variables are defined in Appendix 2. ***, ** and * indicate statistical significance at the 1%, 5% and 10% levels, respectively

Table 6.
Auditor resignations

Source(s): Table created by author

who show that auditors resign from clients with higher audit risk characteristics. The coefficients for the untabulated control variables suggest that following the outbreak of COVID-19, auditor resignations were less common among larger companies and companies located further from Wuhan. In summary, the findings in [Table 6](#) suggest that larger audit firms are more likely to resign, whereas the increased organizational resilience of *Industry Specialists* and diversified audit firms helps them reduce the need for rebalancing.

5.4 Market reactions

The HKEX and the SFC issued a statement with instructions for listed companies and their auditors on two occasions in early 2020, on February 4 and March 16. In untabulated results, we examine whether investor reaction to these releases varied based on the proxies for audit firms' organizational resilience. The impact of the new statements from the regulators on the company's market value depends on the effect of benefits versus the costs of the statements. We do not find any consistent evidence that auditor characteristics associated with resilience would impact investor reactions to regulatory changes related to financial statement and audit report filing deadlines.

5.5 Earnings quality

[Lambert et al. \(2017\)](#) show that increased time pressure on auditors negatively impacts earnings quality, arguably due to reduced audit quality. An alternative explanation for our main finding might be that more resilient audit firms take less time to complete their audits because they reduced audit quality. To examine this possibility, we estimate abnormal accruals following [Kothari et al. \(2005\)](#). We study the existence of an association between our measures of audit delay and absolute abnormal accruals and signed abnormal accruals. In untabulated results, we find no evidence that more timely audit reports are associated with lower earnings quality either in terms of higher absolute or signed abnormal accruals. As such, it is unlikely that the timely audit reports issued by more resilient auditors result from reducing audit quality.

6. Conclusion

Using a sample of 1,008 companies listed on HKEX, we provide initial evidence on the association between audit firm organizational resilience and audit firm performance during the early phases of the COVID-19 pandemic. We use audit report timeliness as our main measure of auditor performance. We anticipate that the organizational resilience of the audit firm is important during unexpected shocks, such as that associated with the outbreak of COVID-19. We find that auditor and auditor-client dimensions related to organizational resilience are associated with more timely audit reports. To support these findings, we also report that audit firms with more industry knowledge can maintain their performance level and avoid year-end audit adjustments to clients' financial reports. Regarding safeguarding capacity and performance, we find that larger audit firms are more likely to resign as auditors. In contrast, industry specialists are less likely to resign.

Our study links organizational resilience to the performance of audit firms. The HRM literature suggests that organizational resilience arises from organizations' cognitive abilities, behavioral characteristics and contextual conditions ([Lengnick-Hall and Beck, 2005](#); [Lengnick-Hall et al., 2011](#)). Our study connects three auditor and two auditor-client dimensions to the organizational resilience factors. We argue that larger, industry-specialist and more diverse audit firms have cognitive and behavioral characteristics that create a capacity for organizational resilience. Similarly, our two auditor-client dimensions, auditor proximity and new auditor are contextual conditions leading to improved organizational

resilience. Throughout the study, we examine the association between these characteristics and audit report timeliness, year-end audit adjustments and auditor resignations. Overall, our results are consistent with the expectation that audit firms with more organizational resilience performed better during the early stages of the COVID-19 pandemic.

We contribute to the literature by analyzing audit firm performance during a time of sudden lockdowns and travel restrictions, which created unanticipated challenges for auditors in Hong Kong seeking to obtain and evaluate evidence central to audit procedures. Our findings show the importance of organizational resilience for audit firms in Hong Kong during the COVID-19 outbreak. One caveat is that our evidence is from a very specific location and period, which may reduce the generalizability of our study. However, to the extent that our findings can be generalized to audit firms in other countries, the evidence has implications for our comprehension of the pivotal role of organizational resilience for audit firms.

We acknowledge some limitations of our study. First, we are not able to provide causal evidence, as such, an alternative explanation for our results is that resilient audit firms select clients that are better prepared for sudden disruptions. Second, our auditor and auditor-client dimensions probably capture more information than organizational resilience alone. Future researchers may develop more refined measures of organizational resilience of audit firms.

Notes

1. The positive effect of proximity on communication between the audit firm and client might not dissipate when all audits are conducted remotely. In fact, the audit plans of non-local clients may have been planned in advance to a larger extent around web-based communication, and data sharing and, thus, the lockdowns and remote audits may have had a smaller impact on the audit plans of those engagements.
2. See [Appendix 1](#) for a description of the HKEX's special audit regulations during the COVID-19 outbreak.
3. The OLS estimator is also used for the two models with a limited dependent variable. In those specifications, our model is a linear probability model (LPM), used for its simplicity and because it provides the best linear approximation. We acknowledge the limitation of the assumption of uniform probability distribution. Our results remain qualitatively unchanged if we use a Logistic or a Probit estimator (untabulated).
4. We define large auditors as Deloitte, EY, KPMG and PwC.
5. For example, in 2019 Deloitte audited the financial statements of AAC Technologies. The engagement partner and signing auditor was Chu Johnny Chun Yin. He is a signing auditor with one of his names (Johnny) classified as an English name.
6. Companies listed on HKEX are mainly from mainland China and Hong Kong, as such the organizations and institutional environments may differ from companies listed in western countries ([La Porta et al., 1999](#)). For example, highly concentrated family ownership is more common for companies listed on the HKEX than for companies listed in the western countries ([Jaggi and Leung, 2007](#)).
7. We use the research list WSCOPEHK, which consists of firms with primary listing in Hong Kong.
8. We were unable to collect data for 40 firms and ten of these 1,307 firms had not issued an audit report by the end of 2020.
9. Of the ten companies without an audit report by the end of 2020 nine belonged to financial industries or had other missing data items. The remaining observation was also excluded from our sample.
10. This proportion is larger than the proportion of H-share companies listed in Hong Kong. H-share companies are incorporated in mainland China but listed in Hong Kong. Our sample also contains Red-chip companies, which are firms incorporated outside mainland China but controlled by the Chinese Government.

11. We also investigated whether audit firm tenure is associated with audit report delays. In untabulated results we investigate whether audit firm tenure is associated with audit report delays. We found no evidence of an association between these variables. Together, this suggests that contextual factors reduce the capacity for organizational resilience, particularly during the first-year audit.
12. We reason, based on the positive correlation, that the impact from *Auditor Diversity* was subsumed by *Big N* and *Industry Specialist*.
13. The current audit adjustment literature often relies on non-publicly available data from the Chinese Ministry of Finance (Lennox *et al.*, 2016).
14. Our results remain qualitatively unchanged if we include all control variables in Eq. (1).
15. Further, 34 client companies initiated the auditor change. All companies that initiated an auditor change have been removed from the sample in Table 6. This reduces the observations from 1,008 to 974. The proportion of auditor-initiated changes, 68.8%, is high compared to the 13.1% reported by Francis *et al.* (2017) for a U.S. sample, but we expect greater client portfolio rebalancing to occur after the pandemic.

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Appendix 1

On January 23 2020, as a response to the COVID-19 outbreak, the central government of China imposed a lockdown in Wuhan and other large cities in the Hubei province. Five days later, the Chief Executive of Hong Kong, Carrie Lam, announced that on January 30, 2020, Hong Kong would restrict travel from mainland China to Hong Kong. On February 4, 2020, the Hong Kong Stock Exchange (HKEX) and the Securities and Futures Commission (SFC) issued a statement with instructions for listed companies and their auditors affected by the travel restrictions (HKEX 2020a). The statement acknowledged the unique situation for all companies and demanded that companies should, among other things, provide the HKEX with a description of how the auditing and reporting process was affected by the travel restrictions. The statements also mentioned that companies should publish preliminary results for the financial year 2019 even without the agreement of the auditors on or before the deadlines. The HKEX's listing rules require Main Board companies with a fiscal year-end of December 31, 2019, to issue their audited annual report by April 30 and Growth Enterprise Market companies with a fiscal year-end of December 31, 2019, to issue the audited annual report by March 31. On March 16, 2020, the HKEX and the SFC issued new guidance for listed companies with a December 31, 2019 fiscal year-end (HKEX 2020b). The new guidance stated that a company could defer the publication of its annual report until May 15, 2020, as long as the company issued either audited preliminary results or unaudited preliminary results for 2019 no later than March 31, 2020. The guidance also mentions that the HKEX would consider applications for a further extension on a case-by-case basis.

Appendix 2

Variable name	Variable description	Source
<i>Audit delay variables</i>		
<i>Audited after March 31</i>	An indicator taking the value one if the company's auditor report was signed after March 31, 2020	Hand-collected (hkexnews.hk)
<i>Audit report lag</i>	The number of days between the date on which the company's auditor report was signed and the fiscal year-end date	Hand-collected (hkex.com)
<i>Audited after May 15</i>	An indicator taking the value one if the company's auditor report was signed after May 15, 2020	Hand-collected (hkexnews.hk)
<i>Audit firm organizational resilience variables</i>		
<i>Big N</i>	An indicator variable taking the value one if the company was audited by a Big N auditor. Big N auditors are Deloitte, EY, KPMG, and PwC	Hand-collected (hkexnews.hk)
<i>Industry specialist</i>	An indicator variable taking the value one if the company was audited by the auditor collecting most audit fee with the 2-digit SIC industry	Worldscope and hand-collected (hkexnews.hk)
<i>Auditor diversity</i>	The proportion of signing auditors within the audit firm with one of their names classified as an English name	Hand-collected (hkexnews.hk)
<i>Auditor distance</i>	Logarithm of the distance in kilometers between the company's headquarters and the location of the signing auditor	Hand-collected (hkexnews.hk)
<i>New auditor</i>	An indicator variable taking the value one if the company was audited by a different auditor for the fiscal year 2019 than for the fiscal year 2018	Worldscope and hand-collected (hkexnews.hk)
<i>Control variables</i>		
<i>Wuhan distance</i>	Logarithm of the distance in kilometers between the company's headquarters and Wuhan, China	Hand-collected (hkexnews.hk)
<i>China HQ</i>	An indicator variable taking the value one if the company's headquarters are in China	Hand-collected (hkexnews.hk)

Table A1.
Variable definitions

(continued)

Variable name	Variable description	Source
<i>Main board</i>	An indicator variable taking the value one if the company is listed on the main board	Provided by HKEX
<i>Log (total assets)</i>	Logarithm of total assets (WC02999)	Worldscope
<i>Asset turnover</i>	Net sales (WC01051) divided by total assets (WC02999)	Worldscope
<i>Inventory</i>	Inventory (WC02101) divided by total assets (WC02999)	Worldscope
<i>Receivables</i>	Receivables (WC02051) divided by total assets (WC02999)	Worldscope
<i>Leverage</i>	Total debt divided by total assets (WC02999)	Worldscope
<i>Cash</i>	Cash and short-term investments (WC02001) divided by total assets (WC02999)	Worldscope
<i>Z-score</i>	Calculate as defined by Altman (1968)	Worldscope
<i>ROA</i>	Net income (WC01751) divided by total assets (WC02999)	Worldscope
<i>Loss</i>	An indicator variable taking the value 1 if income before extraordinary items (WC01751) is negative	Worldscope
<i>Log (audit fee)</i>	Natural logarithm of audit fees in thousands of HKD	Hand-collected (hkexnews.hk)
Additional test variables		
<i>ΔAudit report lag</i>	The difference in <i>Audit Report Lag</i> for fiscal year 2019 and 2018	Hand-collected (hkexnews.hk)
<i>Adjustments</i>	An indicator variable taking the value one if the company's net income for the audited financial statement differs from the net income in the unaudited financial statement	Hand-collected (hkexnews.hk)
<i>ROA change</i>	Unaudited net income minus audited net income divided by audited total assets	Hand-collected (hkexnews.hk)
<i> ROA Change </i>	The absolute value of <i>ROA Change</i>	Hand-collected (hkexnews.hk)
<i>Auditor resignation</i>	An indicator variable taking the value one if the company's auditor resigned after the 2019 fiscal year audit	Hand-collected (hkexnews.hk)

Source(s): Created by author

Table A1.

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