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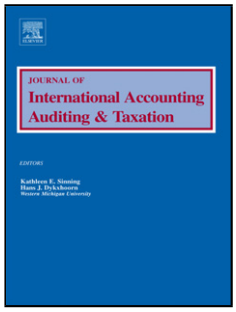

Audit Report Lag, Audit Fees, and Audit Quality Following an Audit Firm Merger: Evidence from Hong Kong

Kam-Wah Lai

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Kam-Wah Lai

Department of Accounting and Banking
Chu Hai College of Higher Education
Tuen Mun
Hong Kong
Email: kwlai@chuhai.edu.hk
Tel: 852 2972 7215
Fax: 852 2972 7245

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ABSTRACT

This paper examines whether the clients of a merged audit firm have shortened report lag, increased audit fees, or reduced audit quality following the merger. These questions are important for a balanced investigation of a firm merger because regulators focus more on the downside of a merger than on its upside. Using a merger of audit firms in Hong Kong as a setting, this paper reports that clients of the merged

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firm have shorter audit report lag post-merger in the property industry in which the merged firm subsequently obtained more than one-half of the market share. Simultaneously, the evidence does not suggest that clients of the merged firm are charged higher audit fees or provided with lower quality audits after the merger. Thus, the results suggest that the merger of audit firms can benefit clients without corresponding disadvantages. Because this is a case study where the market share, industry specialization, expertise, and professional development of the audit firms may be unique, more research is needed on audit firm mergers to determine if these results are generalizable.

Keywords: Audit report lag, audit firm merger, industry specialist, audit fees, audit quality, Hong Kong

Data Availability: Data used in this paper are publicly available from the sources identified in the paper.

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1 INTRODUCTION

When audit firms merge, regulators focus more on the downside of the merger of firms than on its upside, such as whether the merged firm reduces the quality or increases the price of its services.[1] Therefore, prior studies on the mergers of audit firms focused on whether audit quality is reduced, audit fees are increased, or the audit market becomes more concentrated or less competitive following a merger. These studies include Healy and Lys (1986), Tonge and Wootton (1991), Iyer and Iyer (1996), Lawrence and Glover (1998), Choi and Zeghal (1999), Ivancevich and Zarakoohi (2000), Ferguson and Stokes (2002), Sullivan (2002), Firth and Lau (2004), Lee (2005), Chen, Su, and Wu (2010), Chan and Wu (2011), Wang, Liu, and Chang (2011), Ding and Jia (2012), Gong, Li, Lin, and Wu (2016), and Choi, Kim, and Raman (2017).[2] However, the literature (Pong, 1999; Sullivan, 2002) argues that labor productivity may be increased through enhanced economies of scale following a merger. As such, it is reasonable to suggest that the audit report lag may be reduced. For a balanced investigation of an audit firm merger, the current paper examines the audit report lag in addition to audit pricing and audit quality following a merger.

The focus on audit report lag is important for two reasons. First, the timeliness of financial statements is an important issue for investors because ¾ periodic reports contain valuable information for investors«DQG« a lengthy delay before that information becomes available makes the information less valuable to investors´ (Securities and Exchange Commission (SEC), 2002). Bartov and Konichitchki (2017) confirm that late filings at the SEC are accompanied by negative abnormal stock price reactions. Given that financial statements cannot be filed before the audit report date, research on audit report lag is clearly pertinent (Whitworth & Lambert, 2014).

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Second, audit report lag directly indicates whether clients benefit from an audit firm merger because only after the audit of financial statements is completed may clients benefit from their use. Reduced audit hours may result from a merger (Gong et al., 2016). However, they are not in themselves evidence that clients benefit from a merger. In addition, audit report lag is more objectively observed and measured than audit hours, which are not publicly observable and may be under-reported if the performance of the audit staff is evaluated based on the budgeted hours (Bell, Landsman, & Shackelford, 2001).

A related study by Lawrence and Glover (1998) examines report lag of merged firms and do not find that clients of merged firms have shorter audit report lag than the clients of non-merged firms. Hence, no evidence exists that clients of merged audit firms benefit from the merger. This paper improves on Lawrence and Glover (1998) by examining the issue on an industry basis for two reasons. First, the characteristics of errors and irregularities differ by industry (Payne, 2008; Beasley, Carcello, Hermanson, & Lapides, 2000), and their presence is likely to affect the completion of audit. Second, clients in different industries are subject to different operating conditions and regulatory requirements, and auditors specialize along industry lines to enjoy economies of scale in their operations (Yuan, Cheng, & Ye, 2016). If the operational efficiency of audit firms in audits varies by industry, then a pooled cross-sectional regression of audit report lag will have differential intercept coefficients for different industries. The required evidence is unavailable in Lawrence and Glover (1998), as they only perform univariate t-tests of audit report lag of the clients of merged firms versus those of non-merged firms across all industries.

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Using the merger of Deloitte Touche Tohmatsu (Deloitte) in Hong Kong with Kwan Wong Tan & Fong (Kwan), this paper reports that in a pooled regression across industries, Deloitte and Kwan clients do not have shorter audit report lag after the merger. However, results from regressions by industry indicate that those clients have shortened audit report lag in the property industry in which Deloitte, the surviving firm, has more than one-half of the market share after the merger. This finding does not hold for other industries where the post-merger market share of Deloitte is smaller. Hence, the reduced report lag of Deloitte and Kwan clients may not be attributed to economy-wide events. These results are also robust to the use of a constant sample with a change model of audit report lag or the use of a matched sample, and to the control for the merger of Price Waterhouse with Coopers & Lybrand. At the same time, the results of tests using audit fees show that the clients of the merged firm are not charged higher audit fees after the merger. In addition, the results of audit quality tests indicate that clients are not likely to be associated with increased instances of reporting positive net income, having positive changes in net income, or higher levels of discretionary accruals. Thus, the merged firm did not reduce its audit quality or raise the price of its audit services after the merger.

However, some caveats of this study should be noted. First, although industry-specific factors might explain the results (see Section 4.2.1), the generalization of the results from one industry to other industries may be inappropriate. Moreover, the results are from a short window and may not hold for longer terms. While the merged firm charges low audit fees in the short run to avoid criticism, it may raise audit fees in the long term. The DXGLWILUP¶V PDUNHWVKDUHWRJHWKHUZLWKLWV industry specialization, expertise, and professional development may also influence the

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observed merger results. Lastly, while knowledge spillover gained by providing non-audit services may affect how audits are conducted, this was not explored because the disclosure of non-audit fees is not required in Hong Kong.

While acknowledging the above caveats, this paper contributes an interesting case to the literature in several ways. First, this paper contributes to the literature on audit firm merger by investigating broader, different issues than prior studies. The merged audit firm may benefit clients by completing audits promptly without raising audit fees or lowering audit quality. Thus, consolidation in the audit market following an audit firm merger should not automatically be viewed negatively, which is noteworthy given the generally negative views on audit market concentration. Second, this paper contributes to the literature on audit report lag by highlighting the importance of studying report lag by industry after mergers. Such an approach is applied because audit staff utilization is typically along specific industry lines and studying aggregate report lag may mask the results of individual industries. Thus, this study complements the literature on audit report lag following a merger.

The next section of this paper develops the hypotheses and provides the background of the study. The third section discusses the sample and the research methods. The fourth section discusses the results, including those of additional sensitivity analyses. The last section concludes the findings and discusses the limitations of the results as well as suggestions for future research.

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2 HYPOTHESES AND BACKGROUND

2.1 Hypothesis Development

Audit firms provide assurance services on FOLHQWV¶ financial statements by utilizing staff with knowledge in accounting and auditing, and other related areas. Hence, the efficiency of audit work depends on how well personnel with the required knowledge are deployed in audits.

Audit efficiency is achieved through the division of labor in audit firms, as reflected in the gradation of pay scales (Sullivan, 2002). Three factors are important for the utilization of audit staff in conducting audits. The first factor is industry specialization. Audits are used to monitor managers or other insiders on behalf of outsiders and to reduce the agency costs from the separation of ownership and control (Watkins, Hillison, & Morecroft, 2004). These agency costs are likely to vary from industry to industry because each industry has its own characteristics that are likely to give rise to specific accounting and auditing issues (Craswell, Francis, & Taylor, 1995). For instance, mining and extractive industry companies have unique accounting problems with respect to the valuation of reserves and income determination. Similarly, property clients have their own accounting issues in making reliable estimates of future costs and revenues by each stage through to the completion of contracts. Therefore, audit firms are likely to utilize their human resources efficiently along specific lines of industries, and specialize in industries where they can provide high quality audits. Industry specialists in audits are commonly recognized as quality providers (DeFond, Francis, & Wong, 2000; Krishnan, 2003).

The second factor is location. Using a general framework, Jensen and Meckling (1995) distinguish two types of knowledge. The first is general knowledge

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which can be easily acquired by learning (e.g., a subject in science), and is easily transferrable to other situations. The second is specific knowledge, which is about a particular situation (e.g., the working condition of a machine). Specific knowledge is idiosyncratic and is not easily transferrable because only the person involved possesses the information. In the context of auditing, general knowledge comprises knowledge in accounting and auditing standards as well as regulatory requirements, while specific knowledge refers to on-the-job information about the industry, management and accounting practices, and audit environment of the client. Given that local audit staff possesses the required specific knowledge for the audit, relocating staff from one office to another within a national firm may not add to their industry expertise. This is because personnel at the city level accumulate idiosyncratic knowledge about clients in their vicinity to develop their industry expertise (Ferguson, Francis, & Stokes, 2003).

The last factor is the number of clients. Craswell et al. (1995, 301) argue that DV ³DXGLWRUV GHYHORS LQGXVWU\VSHFLDOL]DWLRQ E\LQFUHDVLQJ WKHLU FO specialists could also achieve production economies and become more efficient, lower-FRVWSURGXFHUVRIDXGLWV(2002, 381) also suggests WKDW³DQDXGLWRU with a large client base can support more areas of specialized knowledge and can more efficiently utilize individuals with specialized knowledge than auditors with few FOLHQWV´Therefore, these studies contend that relative to their counterparts with fewer clients, auditors with more clients are exposed to a wider variety of industries and their related accounting and auditing issues. Hence, they should be able to better utilize their human resources over a larger number of clients.

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Moreover, the literature suggests that the merger of audit firms may enhance the utilization of labor. 3RQJDUJXHVWKDW« concentration resulting from mergers may also permit the achievement of economies of scale due to increases in ILUPVL]H´Sullivan (2002, 381) further contends that ³(LQFUHDVLQJWKHVL]HRILWV client base, the merged firm may achieve scale economies through increased labor SURGXFWLYLW\´ because of switching costs, it may be difficult to achieve such scale economies witKRXW D PHUJHU However, when audit firms merge, clients can avoid switching costs if they follow their old audit firm to the merged firm. Equally important, in the words of Tanyi, Raghunandan, and Barua (2010, 676) concerning ex-Andersen clients that follow their old auditor to the merged firm, ³FDQEHYLHZHG as an auditor change in form, but not in substance. This in turn means that the extra audit effort associated with new audit clients should be either non-existent or lower ´« Thus, an audit firm merger enables the merged audit firm to expand its clientele more easily, which allows for the further specialization of labor.

In addition, economic theory suggests that when firms have production economies, the effect applies to all units of production because firms only achieve the lowest possible available costs through a sufficiently large number of products (Bade & Parkin, 2016). Therefore, for the merged audit firm, all clients (including existing clients, those following their auditor, and new clients acquired) may benefit from economies of scale after the audit firm merger. But if the number of clients for a newly merged audit firm becomes too many to efficiently deploy their audit staff, then no economies of scale will be obtained after the merger. However, the extant literature does not have a theory to predict the threshold number of clients required for the efficient utilization of audit staff. Hence, whether economies of scale are gained

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following an audit firm merger is an interesting empirical question. Consequently, shortened audit report lag may or may not be observed. Thus, the following null hypothesis is tested.

Hypothesis 1 (H_{01}): Clients of a merged audit firm do not have longer or shorter audit report lag after the merger than before the merger, compared with clients of other auditors.

Certainly, with the expended clientele following a merger, the market share of the merged firm also increases. Hence, the concentration of the audit market and the market power of the merged firm increase. Alternatively, clients have reduced choices for service providers and have weaker bargaining power vis-à-vis audit firms. Consequently, they may be more dependent on auditors after the merger. Regulators and critics of mergers often worry that a merged audit firm could harm its clients due to its enhanced market position.

One way clients may suffer from the merger of their auditors is via increased audit fees. Most, if not all, clients of audit firms involved in a merger usually follow their auditors to the new, merged audit firm (Healy & Lys, 1986). If the merged audit firm uses its enlarged market position to extract rents from clients, then it will charge them increased audit fees. As the number of audit service providers is reduced following mergers, switching to an alternative, suitable audit firm that charges more reasonable audit fees may become less feasible for audit clients.

Despite the above concerns, a merged audit firm can frequently enjoy economies of scale after the merger and could pass some of these cost savings to clients. Consequently, its clients may enjoy reduced audit fees after the merger. Furthermore, the extant literature does not generally find that merged audit firms charge clients increased audit fees following a merger (Ferguson & Stokes, 2002). Therefore, the following null hypothesis is tested.

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Hypothesis 2 (H_{02}): Clients of a merged audit firm do not pay higher or lower audit fees after the merger than before the merger, compared with clients of other auditors.

Another way that clients could suffer from the merger of their auditors is via reduced audit quality. A merged audit firm has a larger market share and consequently greater bargaining power over its clients. A more concentrated market could also mean less competition for clients. Consequently, the merged audit firm could keep its clients without maintaining or enhancing the quality of its audit services, and audit quality after the merger may be lower. Hence, clients of the merged firm may suffer.

Nonetheless, a merged audit firm may maintain its audit quality after the merger owing to concern for its reputation. It is because a merged firm, being more dominant in the market after the merger than before, may also attract increased public and regulatory attention. It has plenty to lose if it provides lower audit quality than expected and is caught (Ashbaugh, LaFond, & Mayhew, 2003). In addition, the empirical literature does not suggest that the audit quality of merged firms is lower following a merger (Chan & Wu, 2011; Wang et al., 2011). Thus, the following null hypothesis is tested.

Hypothesis 3 (H_{03}): Audit quality of a merged audit firm is not higher or lower after its merger than before, compared with the audit quality of other auditors.

2.1.1 Measures of Audit Quality

Different measures of audit quality are used in the literature. Two such measures involve the restatement of financial statements and the issuance of modified audit opinions. The former is rare in Hong Kong, and the latter is seldom issued by Hong Kong audit firms to clients.[3] Hence, these measures are not appropriate for this study. Instead, the measures used are net income, its change, and discretionary accruals.

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First, clients generally try to avoid reporting losses or decreases in net income in audited financial statements (Burgstahler & Eames, 2003). However, firms with conservative auditors are more likely to report losses than gains in financial statements and have timelier reporting of losses than gains (Watts, 2003). So if the merged firm reduces its audit quality after the merger, then its clients are likely to be associated with increased instances of reporting positive net income or an increase in net income. Second, the provision of discretionary accruals affects what clients report in financial statements, and auditors have the duty to assure users of financial statements that the results are fairly presented. Therefore, if auditors are likely to provide enhanced quality audits, they are likely to challenge the provision of clientV¶ discretionary accruals (Bauwhede, Willekens, & Gaeremynck, 2003).

2.2 Background

The Hong Kong audit market deserves investigation for several reasons. First, all major audit firms in Hong Kong have one large central office rather than multiple offices scattered throughout Hong Kong. Thus, Hong Kong is one large city-level audit market. Unlike most other jurisdictions, examining the Hong Kong audit market avoids possible differences in market share and industry expertise measured at national and city levels. Second, because all audit staff are deployed from the same office, labor utilization is enhanced and industry expertise is more likely to be developed. This outcome is attributed to the facilitation of the exchange of information and knowledge when staff are based at the same office. Third, as each audit firm has a single office in Hong Kong, it facilitates the enhancement of industry expertise if audit firms merge (Choi et al., 2017). Lastly, unlike in the U.S. or the U.K. where Big 4 auditors dominate the audit market, the Hong Kong audit market at the time period examined had a major non-Big 6 player, namely Kwan. In 1992, Kwan

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was the market leader in the property industry and had more than 10% of the market share in the consolidated enterprise and industrial industries (DeFond et al., 2000).

Before its merger with Deloitte, Kwan was the largest local audit firm in Hong Kong. Kwan was the result of the 1976 merger of two other local audit firms with a long presence before Deloitte established its office in Hong Kong in 1972. Kwan audited many large, listed companies controlled by business tycoons in Hong Kong. It also had many large unlisted Chinese companies as audit clients. One of its senior partners, Peter Wong, was elected by the Hong Kong Society of Accountants[4] to represent the profession in the Hong Kong Legislative Council. Owing to its brand name capital in the audit market, Kwan had its name in Chinese added after the Chinese name of Deloitte following the merger. Moreover, Robert Kwan, a senior partner of Kwan, became chairman of the board of the merged firm.

In April 1997, Deloitte merged with Kwan. Before the merger, the South China Morning Post(Anonymous, 1997a, b, d) reported that both firms were operating at close to full capacity, ob losses were expected to be zero because the firms specialized in different areas and had different markets the merger not spark a price war in the audit market for clients the merged firm expected to work harder (Anonymous, 1997d). The merger was driven by DeloitWH¶ GHVLUH WR HȕDQG DQG grow, and combine the common methodologies and international expertise of Deloitte with the unmatched local expertise of Kwan. The merger was well-received by clients of Deloitte and supported by its international office. The move allowed Deloitte to penetrate the local audit market, thereby contributing to its growth. Following the merger, Deloitte became the largest audit firm at that time by auditing 35% of the listed companies in Hong Kong, including leading banks, trading companies, and property developers[5].

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3 SAMPLE AND RESEARCH METHOD

3.1 Sample

The sample consists of firms listed on the Hong Kong Stock Exchange (HKSE). The HKSE classifies firms into one of seven types of businesses, which it generically calls industries: industrials, property, hotels, utilities, consolidated enterprises, finance, and miscellaneous. The finance industry is excluded from the sample because finance companies have their own audit fee model (Fields, Fraser, & Wilkins, 2004) and loan loss provisions rather than discretionary accruals are a measure of earnings management (Kanagaretnam, Lobo, & Robert, 2004). The utility, hotel, and miscellaneous industries had only 13, 14, and 8 firms, respectively, on December 31, 1996 (The Securities Journal, February 1997)[6], which are not sufficient for reliable or meaningful statistical analyses. Therefore, the sample consists of firms in the property, consolidated enterprise, and industrial industries. Information on audit report date, audit fees, audit opinion, details of subsidiaries, earnings per share, and figures in the cash flow statement are manually extracted from the annual reports of firms. Other data are obtained from the Pacific-Basin Capital Market (PACAP) Databases.

3.2 Audit Report Lag Model (Model 1)

To test the first hypothesis (H_{01}), the following audit report lag model is run by ordinary least squares (OLS) regression.

$$\begin{aligned} LNARL = {} & a_0 + a_1LTA + a_2EPS + a_3LTSUB + a_4FOREIGN + a_5EI + \\ & a_6LOSSBEI + a_7MODIFY + a_8ROA + a_9LEV + a_{10}LIQ + \\ & a_{11}MARCH + a_{12}SWITCH + a_{13}LAF + a_{14}AFTER + a_{15}DTT\&K \\ & + a_{16}AFTER*DTT\&K \end{aligned} \quad (1)$$

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Panel A of Table 1 provides the definitions of the variables. In model (1), the dependent variable is the natural logarithm of audit report lag (LNARL)[7] and the variable of interest is AFTER*DTT&K. AFTER is a dummy variable to denote whether audits are conducted before or after the merger, where 1 represents all observations for financial statements that begin on or after April 1, 1997 (i.e. treated as occurring after the merger because the audits were conducted after the event).[8] DTT&K is a dummy variable where 1 represents firms with Deloitte or Kwan as the auditor. As AFTER and DTT&K are added to facilitate the estimation of higher order term, no sign expectation is formulated for a_{14} and a_{15}. If after the merger clients of Deloitte and Kwan have shorter audit report lag than before compared with other clients, then a_{16} is expected to be negative.

(Insert Table 1 here)

Model (1) includes several control variables. Larger firms (LTA) may be under greater external pressure to report earnings quickly than smaller firms and firms with good news (EPS) may voluntarily release reported earnings promptly (Lee, Mande, & Son, 2009). Thus, such firms may have shorter report lag, and a_1 and a_2 are expected to be negative. In addition, firms with more lines of businesses require more audit effort than firms with fewer lines (Munsif, Raghunandan, & Rama, 2012). This paper expects the same reasoning to hold for firms with more subsidiaries (LTSUB) and more foreign subsidiaries (FOREIGN), so a_3 and a_4 are expected to be positive. Firms with exceptional or extraordinary items (EI)[9] (Mitra, Song, & Yang, 2015) or a reported loss (LOSSBEI) (Munsif et al., 2012) may have more audit problems requiring more work than firms without such items. Consequently, a_5 and a_6 are expected to be positive. Auditors may likewise perform more audit work when clients

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have accounting problems that warrant the issuance of a modified or qualified audit opinion (MODIFY) (Mitra et. al., 2015). Therefore, a_7 is expected to be positive.

The variables ROA (return on assets), LEV (leverage), and LIQ (liquidity) are measures of the ILUP¶ ILQDQFLDOFRQGLWLRQ (Lee et al., 2009). As auditors may expend more resources on financially distressed clients to reduce audit risk, these clients may have a longer audit report lag. Thus, a_8 and a_{10} are expected to be negative, and a_9 is expected to be positive. The variable MARCH[10] is added to control for the resources available to auditors to complete audits at different points of time (Lee et al., 2009; Mitra et al., 2015). No sign expectation is formulated for a_{11}. As new auditors may spend more time on their initial audits, firms that change auditors (SWITCH) may have longer report lag than firms with the same auditor (Ettredge, Li, & Sun, 2006; Munsif et al., 2012). Thus, a_{12} is expected to be positive. Last, audit fees (LAF) are positively related to audit report lag in prior studies (Munsif et al., 2012) and a_{13} is expected to be positive. Model (1) as well as Models (2), (3), and (4) are also run with the addition of dummy variables for each of the other Big 6 auditors. For the sake of parsimony of space, the results of the dummy variables are not tabulated here, but are available upon request from the author.

Model (1) uses a short window, but does not suggest that a reduction in audit report lag will immediately occur following the merger. In fact, no theory in the literature knows the appropriate length of the event window. A longer window could be used, but observations two or more years after the merger may be affected by unknown factors unrelated to the merger. A short window could avoid the potential noise associated with longer windows and make the results more reliable. So the results obtained pertain to the shorter-term but not the longer-term.

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3.3 Audit Fee Model (Model 2)

To test the second hypothesis (H_{02}), the following audit fee model is run by OLS regression.

$$\begin{aligned} LAF = {} & b_0 + b_1LTA + b_2LTSUB + b_3FOREIGN + b_4LOSS + \\ & b_5MODIFY + b_6LNARL + b_7CATA + b_8ROA + b_9LEV + \\ & b_{10}LIQ + b_{11}MARCH + b_{12}SWITCH + b_{13}AFTER + \\ & b_{14}DTT\&K + b_{15}AFTER*DTT\&K \end{aligned} \quad (2)$$

Panel B of Table 1 provides the definitions for the variables LOSS (net income loss) and CATA (current ratio). The other variables are defined in Table 1, Panel A. In model (2), the variable of interest is AFTER*DTT&K. As in model (1), no expectation is formulated for the sign of the parameter of AFTER and DTT&K (i.e., b_{13} and b_{14}, respectively). As clients of Deloitte or Kwan may or may not have higher or lower audit fees after the merger, no expectation sign is formulated for b_{15}

Other variables are added as controls in model (2).[11] In line with prior studies, b_1, b_2, and b_3 are expected to be positive because larger (LTA) or more complex (LTSUB and FOREIGN) firms necessitate greater audit effort than do smaller or less complex firms (DeFond et al., 2000). Firms with a reported loss (LOSS) or a modified or qualified audit opinion (MODIFY) increase the litigation risk of the audit firms (Cahan & Sun, 2015), so b_4 and b_5 are expected to be positive. In addition, firms with longer audit report lag (LNARL) are likely to have more audit effort expended on the audit (Whisenant, Sankaraguruswamy, & Raghunandan, 2003). Accordingly, b_6 is also expected to be positive. Given that mRUHFXUUHQWDVVHWVLQWKHILUPV¶DVVHWFRPSRVLV (CATA) increase audit risk (DeFond et al., 2000), b_7 is expected to be positive.

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Firms with low accounting return (ROA), high leverage (LEV), or low liquidity (LIQ), are more risky operationally or financially (Whisenant et al., 2003). Thus, b_8 is expected to be negative, b_9 positive, and b_{10} negative. The variable MARCH captures possible pricing differences at peak versus non-peak seasons of audit firms (DeFond et al., 2000). No expectation is formulated for the sign of b_{11}. Firms that change auditors (SWITCH) are likely to have lower audit fees due to the practice of lowballing (Whisenant et al., 2003). Thus, b_{12} is expected to be negative.

3.4 Net Income Model (Model 3)

To test the third hypothesis (H_{03}) using net income or its change, the following model is used.

$$\text{POSINC or INCCHG} = c_0 + c_1\text{LTA} + c_2\text{ASSGTH} + c_3\text{LEV} + c_4\text{LTSUB} + c_5\text{LAF} + c_6\text{AFTER} + c_7\text{DTT\&K} + {}_8\text{AFTER*DTT\&K} \quad (3)$$

The variables are all used previously, except for POSINC, INCCHG, and ASSGTH (see panel C of Table 1 for definition). When POSINC (for firms with positive net income) is the dependent variable, then logistic regression is run. If INCCHG that measures changes in net income is the dependent variable, then OLS regression is run. As larger (LTA) or growing firms (ASSGTH) are more likely to be profitable (Beatty, Ke, & Petroni, 2002), c_1 and c_2 are expected to be positive. Firms with higher leverage (LEV) may have greater incentives to manage earnings (Cahan & Sun, 2015) and may also have greater business risks that lead to lower net income. Thus, no expectation is formulated for the sign of c_3. LTSUB controls for the ILUPV¶ opportunity to manage net income arising from higher firm complexity, and as income can be managed upwards or downwards, no prediction is made for the sign of c_4. Lastly, LAF controls for the economic dependence of auditors on clients (Ashbaugh et

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al., 2003). If auditors are likely to be more lenient towards clients who pay them higher audit fees, then c_5 is expected to be positive. The variable of interest AFTER*DTT&K is expected to have a positive coefficient if Deloitte offers lower audit quality after the merger. As in model (1), no expectation is formulated for the sign of the parameter of AFTER and DTT&K (i.e., c_6 and c_7, respectively).

3.5 Discretionary Accrual Model (Model 4)

To test the third hypothesis (H_{03}) using discretionary accruals, the following OLS regression model is used.

$$\begin{aligned} ABSDA = {} & d_0 + d_1 ABSAC + d_2 CHNI + d_3 LEV + d_4 ASSGTH + d_5 CFLOW \\ & + d_6 ROA1 + d_7 LTA + d_8 LOSS + d_9 AFTER + d_{10} DTT\&K + \\ & d_{11} AFTER*DTT\&K \end{aligned} \quad (4)$$

The variable of interest AFTER*DTT&K is expected to have a positive coefficient if Deloitte offers lower audit quality after the merger. No expectation is formulated for the sign of d_9 and d_{10} because AFTER and DTT&K are added to facilitate the estimation of higher order term.

Several control variables are added, and all variables not previously used are defined in panel D of Table 1. Firms with more total accruals (in their absolute value, ABSAC) and firms with larger fluctuation in net income (CHNI) have higher flexibility in the provision of accruals (Krishnan, 2003). Thus, these firms may have higher discretionary accruals and d_1 and d_2 are expected to be positive. Firms with higher levels of debt (LEV) may be associated with higher likelihood of earnings management (Cahan & Sun, 2015) and so d_3 is expected to be positive. Firms with higher asset growth (ASSGTH) are more complex and as accruals can be manipulated

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upwards or downwards (see Lai, 2009), no expectation is formulated for the sign of d_4.

Operating cash flow (CFLOW) is added to control for possible correlation with discretionary accruals (Cahan & Sun, 2015), and no expectation is formulated its sign. ROA1 is added as a control for firm performance because Kothari, Leone, & Wasley (2005) suggest that discretionary accruals may not measure earnings management accurately for poorly performing firms. Hence, no expectation is formulated for the sign of d_6. The variable LTA (for firm size) may proxy for possible unknown omitted variables (Lai, 2009), so no expectation is formulated for its sign. Finally, as in .ULVKQDQ DFRQWURO IRU ILUP¶V financial condition (LOSS) is used and there is no expected sign for d_8.

4 RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 2 explains the sample selection. The initial sample consists of 961 observations after a search for annual reports of firms to classify observations as before or after the merger event. By merging this sample with observations on the PACAP Databases, a few observations were lost. After deleting observations in each industry that were more than four standard deviations from the mean of the continuous variables to control for the effect of possible outliers, the final sample consists of 875 observations. This sample is used for all models except model (4). As two firms did not produce cash flow statements and one firm missed details on accounts receivable for a prior year (one is a consolidated enterprise and the other two are industrial firms), the sample for model (4) consists of 872 observations.

(Insert Table 2 here)

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Table 3 shows the auditor clientele shares in the three industries. Panel A provides the composition before the merger event. In the property industry, Kwan has 25 clients out of a total of 72 firms (a 35% market share), and Deloitte is the second largest auditor with 14 clients. In the consolidated enterprise industry, the three largest auditors are Ernst & Young, Deloitte, and Price Waterhouse, with 45, 36, and 22 clients, respectively. In the industrial industry, Deloitte and Ernst & Young are the leaders with 48 and 38 clients, respectively. In both the consolidated enterprise and industrial industries, Kwan has 14 clients and approximately a 9% market share.

(Insert Table 3 here)

Panel B shows the client composition after the merger event.[12] In the property industry, Deloitte becomes the dominant auditor with 46 clients (a 53% market share), and the next largest auditor is Ernst & Young with 12 clients. In the consolidated enterprise industry, Ernst & Young and Deloitte have nearly the same number of clients at 53 and 51, respectively, followed by Price Waterhouse with 22 clients. In the industrial industry, Deloitte has 89 clients, followed by Ernst & Young with 61 clients.

A comparison of the results in panels A and B reveals that Deloitte dramatically increased its market share in the property industry after its merger with Kwan (from 19% to 53%). Its market share increases less in the other two industries (from 22% to 28% in the consolidated enterprise industry, and from 31% to 39% in the industrial industry).[13]

Table 4 presents descriptive statistics for sample variables with 875 observations.[14] Panel A shows information for the continuous variables. Firms in the property industry have longer audit report lag in days (ARL), lower (i.e., more

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negative) changes in EPS (EPS), but more foreign subsidiaries (FOREIGN) after than before the event. They also have smaller income changes (INCCHG) and asset growth (ASSGTH). Firms in the consolidated enterprise industry have lower ROA after the event, and apart from the longer report lag, smaller changes in EPS, net income, and asset growth. Finally, while firms in the industrial industry also have lower ROA after the event, no other variables have significant differences exist between observations before and after the event. Across the three industries, no significant changes occur in client size (LTA), complexity (LTSUB), leverage (LEV), liquidity (LIQ), audit fees (in millions of dollars, AF), and asset composition (CATA) over the event period.

Panel B presents information for the dummy variables. For both the property and consolidated enterprise industries, a higher proportion of firms have exceptional or extraordinary items (EI), a reported loss before those items (LOSSBEI), or a modified audit opinion (MODIFY) after than before the event. In the industrial industry, a higher percentage of firms have a modified audit opinion after than before the event. For the three industries, a higher (lower) proportion of firms have a reported net loss, LOSS (positive income change, POSINC) over the event period.

(Insert Table 4 here)

Table 5 compares the clients of Deloitte and Kwan with the clients of other audit firms. In the property industry, clients of Deloitte and Kwan have no significant differences from clients of other audit firms, except for asset growth (ASSGTH) in panel A. In the consolidated enterprise industry, Deloitte and Kwan clients have a longer audit report lag (ARL) than other auditor clients, and they are smaller (LTA) and pay lower audit fees (LAF). In the industrial industry, clients of Deloitte and Kwan only differ from other auditor clients in that they are smaller (LTA), have fewer

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foreign subsidiaries (FOREIGN), and have lower audit fees (LAF). Panel B shows that Deloitte and Kwan have a higher proportion of clients with exceptional or extraordinary items (EI) in the property and consolidated enterprise industries. They also have more clients with a reported loss before those items (LOSSBEI) or with March year ends (MARCH) in the consolidated enterprise industry.

(Insert Table 5 here)

4.2 Results ±Report Lag

Table 6 reports the results of regressions on Model 1.[15] For the three industries combined, LTA is significantly negative, whereas LTSUB, FOREIGN, LOSSBEI, MODIFY, LEV, and MARCH are significantly positive. These results suggest that firms under external pressure to release audited financial statements are likely to complete their audits promptly, whereas risky firms and firms requiring more audit work are likely to take more time doing the audit. The variable of interest AFTER*DTT&K is insignificant. So for all three industries combined, the evidence does not suggest that clients of Deloitte and Kwan have shorter audit report lag after the merger. The results of industry dummy variables (not tabulated) shows that the property industry variable is statistically significant, whereas the consolidated enterprise industry variable is not. Therefore, investigating the issue by industry is warranted. When the sample is broken down by industry, the results show that AFTER*DTT&K is negative and significant only in the property industry. Hence, pooling observations across industries may mask the results of individual or specific industries. Table 6 shows that the clients of Deloitte and Kwan in the property industry have shorter audit report lag following the merger. The average reduction in

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audit report lag after the merger is 19%, calculated by $1 \pm e^{-z}$ where z is the estimated parameter value of AFTER*DTT&K in the fitted regression for the property industry.

(Insert Table 6 here)

4.2.1 Explanation and Discussion

Certain factors could potentially explain the reported results. The first is audit market structure. As discussed in Section 4.1, the increase in size of Deloitte after the merger is larger in the property industry than in the other two industries. Before the merger, Kwan was nearly double in size than Deloitte in the property industry, but Deloitte was more than double and triple than Kwan in the consolidated enterprise and industrial industries, respectively. Therefore, a smaller (larger) firm Deloitte merges with a larger (smaller) firm Kwan in the property industry (other two industries). In addition, Kwan and Deloitte are the leader in the property and industrial industries, respectively. Neither firm is a leader in the consolidated enterprise industry. Therefore, Deloitte achieves a substantial increase in size by merging with a larger specialist in the property industry. The larger size enables further division of labor by the specialist (now within the merged firm) to enhance specialization and reap the benefits of greater economies of scale, possibly resulting in a shortened report lag.

The second factor is the accounting standards requirements. The principal activities of property clients are the development and investment of properties and hotel operation.[16] Depending on the intended usage of a property by a client, the property could be accounted for as (1) property, plant, and equipment when it is developed for use by the client itself, (2) a construction project when it is developed on behalf of a third party, (3) inventory when it is intended for sales in the ordinary course of business, or (4) an investment property when it is developed or held to earn

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rental income. Furthermore, it is common that a property is partly held for different purposes, and the intended usage of a property may later change. Hence, auditing property clients calls for in-depth knowledge of FOLHQWV¶RSHUDWLRQDO and specialization.

The last factor is professional judgement on valuation. Both owner-occupied properties and investment properties are stated at market value if the clients so choose. Given the volatility of the property market, the valuation of properties may present a challenge to auditors. Furthermore, the accounting standard for construction contracts requires employing the percentage method of completion to recognize profit on contracts. This method involves substantial estimates on the ultimate profit or loss of the whole contract and the degree of completion of the contracts. So the development of industry expertise for auditing property clients is essential and germane.

4.3 Robustness Tests ±Report Lag

4.3.1 Merger of Price Waterhouse

On July 1, 1998, following a worldwide merger, Price Waterhouse Hong Kong merged with Coopers & Lybrand to form PwC. This merger took place after the merger of Deloitte with Kwan in April 1997. So the sample period after the merger of Deloitte includes clients of Price Waterhouse, Coopers & Lybrand, and PwC. Thus, the effect of the Price Waterhouse merger is only partially reflected in the post-merger period of Deloitte, and it may not be greatly affecting the reported results, a priori.

To control for any effect of the PwC merger, the variables PCL and AFTER*PCL are added in Model 1 with the replacement of the related auditor dummy variables. PCL equals to 1 for clients with Price Waterhouse, Coopers & Lybrand, or PwC as the auditor, and 0 otherwise. The regression results (not tabulated

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but available from the author) show that AFTER*PCL is insignificant in regressions for all three industries. More importantly, the variable AFTER*DTT&K is only negative and significant in the property industry regression (p = 0.011). Thus, the results reported in Table 6 are robust to the control for the possible effect of the PwC merger.

4.3.2 Constant Sample and Change Model

Thus far, the results reported are for all clients before and after the merger event. Using all clients to investigate the first hypothesis is necessary because auditors are likely to economize their audit effort over their entire clientele within the same industry. At the same time, the composition of clients may change due to the changes in the audit market. To control for any effect of different sample compositions on the reported results, a constant sample was constructed from the Table 3 sample by choosing the same firms before and after the event. The resultant sample consists of 63, 139, and 140 pairs of observations for the property, consolidated enterprise, and industrial industries, respectively. Then a change model of audit report lag is used for the constant sample to further control for any potential confounding effects of possibly omitted variables that correlate with time (e.g., change in the economic condition of firms following the Asian Financial Crisis). The OLS regression change model is as follows.

$$\begin{aligned} \hat{u}\,\mathrm{LNARL} = {} & e_0 + e_1\hat{u}\ \mathrm{TA} + e_2\hat{u}\,\mathrm{EPS} + e_3\ddot{\imath}76\ \ \mathrm{UB} + e_4\ddot{y}25(,*1\ \ + \\ & e_5\ddot{o}2\$\ \ + e_6\ddot{\imath}(9\ \ + e_7\hat{u}\ \ \mathrm{IQ} + e_8\ddot{\imath}\$\ \ + e_9\mathrm{PEI} + e_{10}\mathrm{EI} + \\ & e_{11}\mathrm{PLOSSBEI} + e_{12}\mathrm{LOSSBEI} + e_{13}\mathrm{PMODIFY} + \\ & e_{14}\mathrm{MODIFY} + e_{15}\mathrm{PSWITCH} + e_{16}\mathrm{SWITCH} + \\ & e_{17}\mathrm{MARCH} + e_{18}\mathrm{DTT\&K} \end{aligned} \qquad (5)$$

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The variables new to Model 5 are defined in panel E of Table 1. In Model 5, all the continuous variables are their changes over year t ± 1 (before the event) to year t (after the event) with prediction for them being the same as in Model 1 except for EPS which does not have definite prediction. [17] For example, firms with an increase in their number of subsidiaries are likely to be associated with an increase in audit report lag. The dummy variables MARCH and DTT&K do not change over the event period. As in Model 1, no prediction is made for the variable MARCH. The variable of interest DTT&K is expected to be negatively related to ǻ1$/ if clients of Deloitte and Kwan have shorter audit report lag after the event. Other dummy variables are measured both before and after the event. They may be positively or negatively related to change in report lag.

Table 7 reports the results of regressions on Model 5. Across the regressions, ǻ OA and PLOSSBEI are significantly negative, whereas MODIFY, SWITCH, MARCH, and ǻ(36 are significantly positive. The variable DTT&K is not significant in the regressions for the combined sample, the consolidated enterprise, and industrial industries. However, it is negative as expected and significant in the property industry regression. Thus, the results again suggest that pooling observations across industries does not provide the same insight as obtained from a by-industry analysis. Hence, the results using the level model are corroborated.

(Insert Table 7 here)

4.3.3 Matched Sample

7R IXUWKHU FRQWURO IRU FOLHQWV¶ FKDUDFWHULVWLFV that may affect the results, a matched sample is used. Each client of Kwan or Deloitte before the merger was matched with a client of another auditor on the basis of industry and a 15% limit on

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the propensity score. Each client of Deloitte after the merger (its own clients and clients taken up from Kwan) was similarly matched. The propensity score is estimated using the following probit regression.

$$\begin{aligned} DTT\&K = {} & f_0 + f_1LTA + f_2EPS + f_3LTSUB + f_4FOREIGN + f_5EI + \\ & f_6LOSSBEI + f_7MODIFY + f_8ROA + f_9LEV + f_{10}LIQ + \\ & f_{11}MARCH + f_{12}SWITCH + f_{13}LAF \end{aligned} \quad (6)$$

The variables in Model 6 are all previously defined. The purpose of propensity score matching is to minimize as much as possible the differences between the clients of Deloitte and Kwan and other auditor clients (Shipman, Swanquist, & Whited, 2017).[18] The resultant sample consists of 90, 194, and 262 observations for the property, consolidated enterprise, and industrial industries, respectively. The regression results (untabulated but available from the author) show that AFTER*DTT&K is negative and significant in the regression for the property industry ($p = 0.025$) and insignificant in other regressions.[19] Thus, the results in Table 6 are corroborated.

4.4 Additional Analyses ±Report Lag

4.4.1 Types of Clients

To investigate whether the clients of Kwan, Deloitte, or both have shorter audit report lag after the merger than before, Model 1 is re-run using two new dummy variables. FOLLOW is for clients of Kwan taken up by Deloitte and DOTHER for is 'HORLWWHV RWKHU DXGLWHGWV. FOLLOW interaction term with AFTER is used in place of DTT&K. The regression results (not tabulated but available from the author) show that AFTER*FOLLOW and AFTER*DOTHER are negative and significant ($p = 0.038$ and $p = 0.034$ respectively) for the property industry. Thus, all property clients

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of Deloitte, including clients of Kwan who follow Deloitte after the merger, have shorter audit report lag after the event than before. This suggests that the merger is beneficial to clients of both firms. Consistent with the insignificant results of AFTER*DTT&K in Table 6 for the consolidated enterprise and industrial industries, AFTER*FOLLOW and AFTER*DOTHER are insignificant in the regressions for these two industries.

4.4.2 Second-Year Effect

To determine whether the reduction in audit report lag persists for a longer period, observations in the second year after the merger event were collected from the annual reports of firms and the PACAP Databases. These observations substituted for the first-year observations after the merger event. The sample selection process was repeated and the final sample consists of 166, 333, and 387 observations for the property, consolidated enterprise, and industrial industries, respectively. A new variable SECONDY replaces AFTER in Model 1. SECONDY equals to 1 for observations in the second year after the merger, and 0 otherwise. The regression results (not tabulated but available from the author) show that the interaction term SECONDY*DTT&K is negative and significant ($p = 0.068$) only for the property industry. Thus, the evidence suggests that a longer-term effect exists on the audit report lag for property clients of Deloitte and Kwan after the merger.

4.5 Results ±Audit Fees

Table 8 reports the results of regressions for the audit fee model (Model 2). Across the regressions, the variables LTA, LTSUB, FOREIGN, LOSS, LNARL, CATA, and MARCH are positive and significant, whereas ROA and LIQ are negative and significant. These results are consistent with prior studies and suggest that large,

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complex, or risky firms have high audit fees. An anomalous result is LEV that is significantly negative (positive) in the regression for the consolidated enterprise (industrial) industry. The fact that the leverage variable does not consistently produce the expected results is noted earlier by both Hay, Knechel, and Wong (2006) and Halperin and Lai (2015). More importantly, AFTER*DTT&K is insignificant in all regressions. Thus, the evidence suggests that Deloitte does not charge its clients higher audit fees after the merger and that the enlarged market share of Deloitte after the merger does not harm its clients.

(Insert Table 8 here)

4.5.1 Additional Tests - Audit Fees

To investigate further the effect of the merger on audit fees of clients, the variables FOLLOW and DOTHER (as defined in Section 4.4.1) and their interaction term with AFTER substitute DTT&K in Model 2. The regression results (not tabulated but available from the author) show that AFTER*FOLLOW and AFTER*DOTHER are insignificant for all three industry regressions. Therefore, clients of Deloitte and Kwan do not pay increased audit fees after the merger. The evidence does not suggest that the merger is harmful to clients through higher prices for audit services.

4.6 Results ±Audit Quality

4.6.1 Net Income and Change

Table 9 reports the results of regressions using net income and its change (Model 3). Panel A uses POSINC and panel B uses INCCHG as the dependent variable. Large firms (LTA) and firms with high growth (ASSGTH) are likely to report positive net income or positive change in net income. By contrast, firms with

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high leverage (LEV) or high audit fees (LAF) are less likely to be associated with the reporting of positive net income or increase in net income. The last result suggests that auditors do not lose their independence because of economic dependence on fee income. More importantly, the variable of interest AFTER*DTT&K is insignificant across the regressions for the three industries. Thus, the evidence does not suggest that Deloitte reduces its audit quality after its merger with KWAN by allowing its clients to avoid reporting losses or decreases in net income.

(Insert Table 9 here)

4.6.2 Discretionary Accruals

Table 10 reports the results of regressions using discretionary accruals (Model 4). Except for CHNI, the control variables are significant in at least one of the regressions. The variable of interest AFTER*DTT&K is insignificant in the regressions for the property and industrial industries. It is negative and significant in the consolidated enterprise industry regression. Thus, audit quality of Deloitte increases after the merger because its clients have lower discretionary accruals than before. The overall evidence suggests that the clients of Deloitte and Kwan do not suffer from reduced audit quality after the merger.

(Insert Table 10 here)

4.6.2.1 Additional Tests ± Discretionary Accruals

To investigate audit quality further, two alternative measures of discretionary accruals are used. The first is the performance-DGMXVWHG -RQHV¶PRGHO[29] As suggested by Guay, Kothari, and Watts WKH -RQHV¶PRGHO DQG WKH PRGLILHG -RQHV¶ PRGHO DUH EHWWHU WKDQ other models in measuring discretionary accruals. The results of using the performance-DGMXVWHG -RQHV¶

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model (not tabulated but available from the author) show that, as in Table 10, AFTER*DTT&K is negative and significant in the regression for the consolidated enterprise industry ($p = 0.096$) and insignificant in the regressions for the other two industries. This evidence does not suggest that Deloitte offers lower audit quality after its merger.

Second, signed discretionary accruals are used. Although the unsigned measure captures the extent of earnings management better than the signed alternative, auditors may sometimes be more concerned about income-increasing discretionary accruals than income-decreasing accruals. This is because income-increasing discretionary accruals increase ROA, which is positively related to the likelihood of auditor litigation (Shu, 2000). The results using signed discretionary accruals (with also signed total accruals, available from the author) show that AFTER*DTT&K is insignificant across the regressions for the three industries. Thus, the clients of Deloitte and Kwan do not appear to suffer from reduced audit quality after the merger.

5 CONCLUSION

This paper investigates whether the clients of a merged audit firm after the merger have a shortened audit report lag, increased audit fees, and reduced audit quality. These questions are important and worthy of a thorough investigation of firm mergers because regulators focus more on the downside of mergers than on their upside. If clients of merged firms have more promptly audited financial statements, no increased audit fees, or reduced audit quality, then audit firm mergers should be viewed positively.

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Using the merger of Deloitte with Kwan in Hong Kong as a setting, this paper reports that the clients of Deloitte and Kwan in the property industry have shortened audit report lag after the merger in which Deloitte¶VPDUNHWVKDUHLQWKDWLQGXVWU\JUHZ to over 50% (H_1). The results are robust to the control for the merger of Price Waterhouse with Coopers & Lybrand, to the use of a constant sample with a change model of audit report lag, and to a matched sample. Simultaneously, the results do not show that Deloitte charges its clients higher audit fees (H_2) after the merger or reduces audit quality by allowing its clients to more frequently report positive net income, a positive change in net income, or higher levels of discretionary accruals (H_3). Overall, this paper provides evidence suggesting that the merger of Deloitte and Kwan benefited their clients directly by reducing audit report lag.

5.1 Limitations

This study has some limitations. First, the results are from one industry, so generalizing the results to other industries must be done with caution. Moreover, the results are from a short window and might not occur in the long term. If the merged firm charges low audit fees in the short run to avoid criticism, it may raise audit fees in the long run. The DXGLWILUP¶VPDUNHWVKDUHWRJHWKHUZLWKLWV industry specialisation, expertise, and professional development may likewise impact the results as these factors are specific to this merger. Also, while knowledge spillover gained by providing non-audit services may affect the conduct of audits, they were not examined because non-audit fees are not required disclosures in Hong Kong. Finally, the unavailability of several potential measures of audit quality may have affected the results.

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5.2 Future Research

Future research could look at the mechanisms of audit firm mergers, if internal data are available. For example, information on the arrangement of audit personnel could shed light on knowledge spillover or the further development of industry specialism following a merger. Specifically, the job assignments of audit partners and managers would provide such useful insight. Another area of potential interest is the change, if any, of audit programs or procedures following a merger. Integrating the audit approaches of the two firms in a merger could considerably facilitate the conduct of audits. A third area is the sharing or combining of common resources, especially the Information Technology (IT) resources required to perform audits. Audit efficiency could be reasonably enhanced if the merged firm could efficiently or effectively use those resources.

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Appendix

This study uses the performance-DGMXVWHG PRGLILHG -RQHV¶PRGHO WR estimate discretionary accruals (Bauwhede et al., 2003) as follows.

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TA = $_0$ $_1$(CHSALES ± &+5(& $_2$33($_3$,%0 (7)

where

TA	=	total accruals in year t, measured as net income before extraordinary item and discontinued operation less cash flow from operation net of extraordinary item and discontinued operation
CHSALES	=	sales revenue in year t minus sales revenue in year t ± 1
CHREC	=	net receivable in year t minus net receivable in year t ± 1
PPE	=	gross property, plant, and equipment in year t
IB	=	net income before extraordinary items and discontinued operation in year t
0	=	discretionary accruals

Following Jones (1991), all terms in model (7) are scaled by the preceding HDU¶V WRWDO DVVHWV WR UHGXFH WKH SUREOHP of heteroskedasticity. Model (7) is run for each industry both before and after the merger. Discretionary accruals are then HVWLPDWHG E\ WKH HUURU WHUP 0 LQ PRGHO (7), i.e., the difference between actual total accruals and predicted total accruals calculated by the estimated parameters of model (7). The absolute value of discretionary accruals is used as a measure of audit quality in model (4).

Reference

Anonymous. (1997a). Merger creates audit king. *South China Morning Post* (January 4).

Anonymous. (1997b). Deloitte wins contacts and Kwan Wong gets big name. *South China Morning Post* (January 12).

Anonymous. (1997c). Deloitte Touche Tohmatsu and Kwan Wong Tan and Fong announce merger. *PR Newswire* (April 25).

Journal Pre-proof

Journal Pre-proof

Anonymous. (1997d). Accounting giants close merger deal. South China Morning Post (April 29).

Anonymous. (2011). Accounting services - quarterly update 12/19/2011. Hoovers Inc., Austin, Texas, United States.

Ashbaugh, H., LaFond, R., & Mayhew, B. W. (2003). Do non-audit services compromise auditor independence? Further evidence. The Accounting Review, 78(3), 611-639.

Bade, R., & Parkin, M. (2016). Foundations of Economics, 8th Edition, Prentice-Hall.

Bartov, E., & Konichitchki, Y. (2017). SEC filings, regulatory deadlines, and capital market consequences. Accounting Horizons, 31(4), 109-131.

Bauwhede, H. V., Willekens, M., & Gaeremynck, A. (2003). Audit firm size, public ownership, and firms' discretionary accruals management. The International Journal of Accounting, 38(1), 1-22.

Beasley, M. S., Carcello, J. V., Hermanson D. R., & Lapides, P. (2000). Fraudulent financial reporting: Consideration of industry rates and corporate governance mechanism. Accounting Horizons, 14(4), 441-454.

Beatty, A. L., Ke B., & Petroni, K. R. (2002). Earnings management to avoid earnings declines across publicly and privately held bank. The Accounting Review, 77(3), 547-570.

Bell, T. B., Landsman W. R., & Shackelford, D. A. (2001). $XGLWRUV¶SHUFHLYHG business risk and audit fees: Analysis and evidence. Journal of Accounting Research, 39(1), 35-43.

Burgstahler D. C., & Eames, M. (2003). Earnings management to avoid losses and earnings decreases. Contemporary Accounting Research, 20(2), 253-294.

Cahan. S. F., & Sun, J. (2015). The effect of audit experience on audit fees and audit quality. Journal of Accounting, Auditing and Finance, 30(1), 78-100.

Chan, K. H., & Wu, D. (2011). Aggregate quasi rents and auditor independence: Evidence from audit firm mergers in China. Contemporary Accounting Research, 28(1), 175-213.

Journal Pre-proof

Chen, J. P. C., Su X. & Wu X. (2010). Auditor changes following a Big 4 merger with a local Chinese firm: A case study. Auditing: A Journal of Practice and Theory, 29(1), 41-72.

Choi, J.-H., Kim, S., & Raman, K. K. (2017). Did the 1998 merger of Price Waterhouse and Coopers & Lybrand increase audit quality? Contemporary Accounting Research, 34(2), 1071-1102.

Choi, M.-S., & Zeghal, D. (1999). The effect of accounting firm mergers on international markets for accounting services. Journal of International Accounting, Auditing and Taxation, 8(1), 1-22.

Craswell, A. T., Francis, J. R., & Taylor, S. L. (1995). Auditor brand name reputations and industry specialization. Journal of Accounting and Economics, 20(3), 297-322.

DeFond, M. L., Francis J. R., & Wong, T. J. (2000). Auditor industry specialization and market segmentation: Evidence from Hong Kong. Auditing: A Journal of Practice and Theory, 19(1), 49-66.

Ding, R. & Jia, Y. (2012). Auditor mergers, audit quality and audit fees: Evidence from the PricewaterhouseCoopers merger in the UK. Journal of Accounting and Public Policy, 31(1), 69-85.

Ettredge, M. L., Li C., & Sun, L. (2006). The impact of SOX Section 404 Internal Control Quality Assessment on audit delay in the SOX era. Auditing: A Journal of Practice and Theory, 25(2), 1-23.

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

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

Fields, L. P., Fraser, D. R., & Wilkins, M. S. (2004). An investigation of the pricing of audit services for financial institutions, Journal of Accounting and Public Policy 23(1), 53-77.

Journal Pre-proof

Firth, M., & Lau, T. (2004). Audit pricing following mergers of accounting practices: Evidence from Hong Kong. Accounting and Business Research, 34(3), 201-213.

Gong, Q., Li, O. Z., Lin, Y., & Wu, L. (2016). On the benefits of audit market consolidation: Evidence form merged audit firms. The Accounting Review, 91(2), 463-488.

Guay, W. R., Kothari, S. P., & Watts, R. L. (1996). A market-based evaluation of discretionary accrual models. Journal of Accounting Research, 34(Supplement), 83-105.

Halperin, R., & Lai, K.-W. (2015). The relation between auditor-provided tax service fees and audit fees after the Sarbanes-Oxley Act: From the perspective of cross-selling of services. Journal of Accounting, Auditing and Finance, 30(3), 341-372.

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

Healy, P., & Lys, T. (1986). Auditor changes following Big Eight mergers with non-Big Eight audit firms. Journal of Accounting and Public Policy, 5(4), 251-265.

Herz, R. (2011). Renewed focus on mandatory auditor rotation. Compliance Week (November), 1, 38-39.

Ivancevich, S. H., & Zarakoohi, A. (2000). An exploratory analysis of the 1989 accounting firm megamergers. Accounting Horizons, 14(4), 389-401.

Iyer, V., & Iyer, G. (1996). Effect of Big 8 mergers on audit fees: Evidence from the United Kingdom. Auditing: A Journal of Practice and Theory, 15(2), 123-132.

Jensen, M. C., & Meckling, W. H. (1995). Specific and general knowledge, and organizational structure. Journal of Applied Corporate Finance, 8(2), 4-18.

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

Kanagaretnam, K., Lobo. G., & Robert, M. (2004). Earnings management to reduce earnings variability: Evidence from bank loan loss provisions. Review of Accounting and Finance, 3(1), 128-148.

Journal Pre-proof

Knechel, W. R., & Sharma, D. S. (2012). Auditor-provided nonaudit services and audit effectiveness and efficiency: Evidence from pre- and post-SOX audit report lags. Auditing: A Journal of Practice and Theory, 31(4), 85-114.

Knechel, W. R., & Sharma, D. S., & Sharma, V. D. (2012). Non-audit services and knowledge spillovers: Evidence from New Zealand. Journal of Business Finance and Accounting, 39(1&2), 60-81.

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched Discretionary accrual measures. Journal of Accounting and Economics, 39(1), 163-197.

Krishnan, G. V. (2003). Does Big 6 auditor industry expertise constrain earnings management? Accounting Horizons, 17(Supplement), 1-16.

Krishnan, J., & Yang, J. S. (2009). Recent trends in audit report and earnings announcement lags. Accounting Horizons, 23(3), 265-288.

Lai, K. -W. (2009). Does audit quality matter more for firms with high investment opportunities? Journal of Accounting and Public Policy, 28(1), 33-50.

Lawrence, J. E., & Glover, H. D. (1998). The effect of audit firm mergers on audit delay. Journal of Managerial Issues, 10(2), 151-164.

Lee, D. S. (2005). The impact of the Big 8 mergers on market power: Evidence from Hong Kong Market. Journal of International Financial Management and Accounting, 16(1), 69-96.

Lee, H.-Y., Mande, V. & Son, M. (2009). Do lengthy auditor tenure and the provision of non-audit services by the external auditor reduce audit report lag? International Journal of Auditing, 13(2), 87-104.

Mitra, S., Song, H., & Yang, J. S. (2015). The effect of Auditing Standard No. 5 on audit report lags. Accounting Horizons, 29(3), 507-527.

Munsif, V., Raghunandan, K., & Rama, D. V. (2012). Internal control reporting and audit report lags: Further evidence. Auditing: A Journal of Practice and Theory, 31(3), 203-218.

Journal Pre-proof

Payne, J. L. (2008). 7KH LQIOXHQFH RI DXGLW ILUP VSHFLDOL]DWLRQ RQ DQDOVWV¶ RUH errors. Auditing: A Journal of Practice and Theory, 27(2), 109-136.

Pong, C. K. M. (1999). Auditor concentration: A replication and extension for the UK audit market 1991-1995. Journal of Business Finance and Accounting, 26(3and4), 451-475.

Securities and Exchange Commission (2002). Acceleration of periodic report filing dates and disclosure concerning website access to reports, Release No. 33-8128. Washington, D.C.

Shipman, J. E., Swanquist, Q. T., & Whited, R. L. (2017). Propensity score matching in accounting research. The Accounting Review, 92(1), 213-244.

Shu, S. Z. (2000). Auditor resignations: Clientele effects and legal liability. Journal of Accounting and Economics, 29(2), 173-205.

Sullivan, M. W. (2002). The effect of the Big Eight accounting firm mergers on the market for audit services. Journal of Law and Economics, 45(2), 375-399.

Tanyi, P., Raghunandan, K., & Barua, A. (2010). Audit report lags after voluntary and involuntary auditor change. Accounting Horizons, 24(4), 671-688.

Tonge, S., & Wootton, C. (1991). Auditor concentration and competition among the large public accounting firms: Post-merger status and future implications. Journal of Accounting and Public Policy, 10(2), 157-172.

Wang, T., Liu, C., & Chang, C.-H. J. (2011). CPA-firm merger: An investigation of audit quality. European Accounting Review, 20(4), 727-761.

Watkins, A. L., Hillison, W., & Morecroft, S. E. (2004). Audit quality: A synthesis of theory and empirical evidence, Journal of Accounting Literature, 23, 153-193.

Watts, R. L. (2003). Conservatism in Accounting Part I: Explanations and Implications. Accounting Horizons, 17(3), 207-221.

Whisenant, S., Sankaraguruswamy, S., & Raghunandan, K. (2003). Evidence on the joint determination of audit and non-audit fees. Journal of Accounting Research, 41(4), 721-744.

Journal Pre-proof

White, H. (1980). A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. Econometrica, 48(4), 817-838.

Whitworth, J. D., & Lambert, T. A. (2014). Office-level characteristics of the Big 4 and audit report timeliness. Auditing: A Journal of Practice and Theory, 33(3), 129-152.

Yuan, R., Cheng, Y., & Ye, K. (2016). Auditor industry specialization and discretionary accruals: The role of client strategy. The International Journal of Accounting, 51(2), 217-239.

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Table 1

Definition of the Variables

Panel A: Variables for Model 1		
LNARL	=	Audit report lag; natural logarithm of the number of days between fiscal year end and audit report date
LTA	=	Total assets; natural logarithm of total assets (in thousands)
EPS	=	Earnings per share change; ratio of EPS in year t minus EPS in year t ± 1 to the absolute value of EPS in year t ± 1
LTSUB	=	Total subsidiaries; natural logarithm of total number of subsidiaries
FOREIGN	=	Foreign subsidiaries; percentage of subsidiaries that are foreign
EI	=	Exceptional or extraordinary item; 1 if firm reports an exceptional or extraordinary item, otherwise 0
LOSSBEI	=	Net income loss before exceptional and extraordinary items; 1 if net income before exceptional and extraordinary items < 0, otherwise 0
MODIFY	=	Modified opinion; 1 if firm receives a modified audit opinion, otherwise 0
ROA	=	Return on assets; ratio of net income to total assets
LEV	=	Leverage; ratio of total debts to total assets
LIQ	=	Liquidity; ratio of current assets to current liabilities
MARCH	=	March year end; 1 if firm has a March year end, otherwise 0
SWITCH	=	Switched auditors; 1 if firm changes auditor in year t, otherwise 0
LAF	=	Audit fees; natural logarithm of audit fees (in dollars)
AFTER	=	After merger; 1 if financial statements begin on or after 1 April 1997, otherwise 0
DTT&K	=	Audit firm; LIILUP¶VDXGLWRULV'HORLWWH7RXFKH67KDV Wong Tan & Fong, otherwise 0
Panel B: Additional variables first used in Model 2		
LOSS	=	Net income loss; 1 if net income < 0, otherwise 0
CATA	=	Current ratio; ratio of current assets to total assets
Panel C: Additional variables first used in Model 3		
POSINC	=	Positive net income; 1 if net income => 0, otherwise 0
INCCHG	=	Actual change in net income; ratio of net income in year t minus net income in year t ± 1 to absolute value of net income in year t ± 1
ASSGTH	=	Asset growth; ratio of total assets in year t minus total assets in year t ± 1 to total assets in year t ± 1
Panel D: Additional variables first used in Model 4		

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ABSDA	=	Discretionary accruals; absolute value of discretionary accruals HVWLPDWHGEWKHPRGLILHG-RQHV¶PRGHOVHH$SHQGL[
ABSAC	=	Total accruals; absolute value of total accruals
CHNI	=	Relative change in net income;1 if absolute value of change in net income (before extraordinary item and discontinued operation) is in the top two deciles, or otherwise 0, where change in net income equals net income in year t minus net income in year t ± 1
CFLOW	=	Operating cash flow ratio; ratio of cash flow from operation to total assets
ROA1	=	Adjusted return on assets; ratio of net income before extraordinary items and discontinued operation to total assets in year t ± 1

Panel E: Additional variables for Model 5

û LNARL	=	Audit report lag change; natural logarithm of number of days between fiscal year end and audit report date in year t minus natural logarithm of number of days between fiscal year end and audit report date in year t ± 1
ƒ7$	=	Total assets change; natural logarithm of total assets in year t (in thousands) minus natural logarithm of total assets in year t ± 1 (in thousands)
û EPS	=	Earnings per share change prior year; ratio of EPS in year t minus EPS in year t ± 1 to absolute value of EPS in year t ± 1 minus ratio of EPS in year t ± 1 minus EPS in year t ± 2 to absolute value of EPS in year t ± 2
ƒ768%	=	Total subsidiaries change; natural logarithm of total number of subsidiaries in year t minus natural logarithm of total number of subsidiaries in year t ± 1
ƒ25(,*1	=	Foreign subsidiaries percentage change; proportion of foreign subsidiaries in year t minus proportion of foreign subsidiaries in year t ± 1
ƒ52$	=	Return on assets change; ratio of net income to total assets in year t minus ratio of net income to total assets in year t ± 1
ƒ(9	=	Leverage change; ratio of total debts to total assets in year t minus ratio of total debts to total assets in year t ± 1
ƒ4	=	Liquidity change; ratio of current assets to current liabilities in year t minus ratio of current assets to current liabilities in year t ± 1
ƒ$	=	Audit fee change; natural logarithm of audit fees (in dollars) in year t minus natural logarithm of audit fees (in dollars) in year t ± 1
PEI	=	Exceptional or extraordinary item prior year; 1 if the firm reports an exceptional or extraordinary item in year t ± 1, otherwise 0
PLOSSBEI	=	Net income loss before exceptional and extraordinary items prior year; 1 if net income before exceptional and extraordinary item in year t ± 1 < 0, otherwise 0
PMODIFY	=	Modified opinion prior year; 1 if the firm receives a modified audit

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		opinion in year t ± 1, otherwise 0
PSWITCH	=	Switched auditors prior year; 1 if the firm changes auditor in year t ± 1, otherwise 0

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Table 2

Sample Selection

Annual reports identified to classify observations		961
After merging with PACAP Databases		
Less		
firms with two classes of ordinary shares	8	
firm with two identify numbers in Databases	2	
firms with missing prior year EPS figure or zero subsidiaries	21	
firms with joint auditors in last year	5	
firms with audit report lag exceeding 365 days	5	
potential outliers	45	86
Final sample for all models except model (4)		875
Less firms without details in cash flow statements or for accounts receivable		3
Final sample for model (4)		872

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Table 3
Industry Composition by Auditors in Hong Kong ¶ V 7 K U H H / D U J H V W , Q G X V W U L H V

Property			Consolidated Enterprise			Industrial		
Auditor	Number of clients	Percentage	Auditor	Number of clients	Percentage	Auditor	Number of clients	Percentage
Panel A : Before the merger event								
Kwan	25	34.72	Ernst & Young	45	28.30	Deloitte	48	31.37
Deloitte	14	19.45	Deloitte	36	22.64	Ernst & Young	38	24.84
Ernst & Young	9	12.50	Price Waterhouse	22	13.84	Price Waterhouse	15	9.80
Price Waterhouse	8	11.11	Kwan	14	8.81	Kwan	14	9.15
Coopers & Lybrand	7	9.72	KPMG	14	8.81	KPMG	13	8.50
KPMG	5	6.94	Coopers & Lybrand	13	8.17	Arthur Andersen	10	6.54
Arthur Andersen	1	1.39	Arthur Andersen	8	5.03	Coopers & Lybrand	9	5.88
Three others	3	4.17	Six others	7	4.40	Five others	6	3.92
Total	72	100.00		159	100.00		153	100.00
Panel B : After the merger event								
Deloitte	46	53.49	Ernst & Young	53	29.28	Deloitte	89	39.73
Ernst & Young	12	13.95	Deloitte	51	28.18	Ernst & Young	61	27.23
KPMG	8	9.30	Price Waterhouse	22	12.16	PwC	18	8.04
Price Waterhouse	7	8.14	KPMG	15	8.29	Arthur Andersen	17	7.59
PwC	4	4.65	Coopers & Lybrand	13	7.18	KPMG	16	7.14
Coopers & Lybrand	3	3.49	PwC	13	7.18	Price Waterhouse	9	4.02
Arthur Andersen	3	3.49	Arthur Andersen	8	4.42	Coopers & Lybrand	8	3.57
Three others	3	3.49	Six others	6	3.31	Five others	6	2.68
Total	86	100.00		181	100.00		224	100.00

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Table 4

Selected Descriptive Statistics of Sample Variables Partitioned by Event

	Property			Consolidated Enterprise			Industrial		
Panel A: Mean and standard deviation (in parentheses) of continuous variables with t-tests performed on the difference between means									
Variable	(a) Before the merger event (n = 72)	(b) After the merger event (n = 86)	(c) = (a) ± (b) Difference between means	(d) Before the merger event (n = 159)	(e) After the merger event (n = 181)	(f) = (d) ± (e) Difference between means	(g) Before the merger event (n = 153)	(h) After the merger event (n = 224)	(i) = (g) ± (h) Difference between means
ARL	111.000	120.300	-9.300**	116.400	123.900	-7.500**	124.100	122.300	1.800
	(23.271)	(26.456)		(26.771)	(30.695)		(23.456)	(28.347)	
LTA	15.095	14.913	0.182	14.102	14.065	0.037	13.875	13.739	0.136
	(1.603)	(1.552)		(1.437)	(1.469)		(1.068)	(1.237)	
EPS	-0.255	-1.584	1.329**	-0.848	-2.072	1.224**	-0.822	-0.973	0.151
	(1.835)	(4.320)		(4.022)	(5.594)		(7.479)	(6.567)	
LTSUB	3.364	3.304	0.060	3.012	2.985	0.027	2.723	2.660	0.063
	(0.885)	(0.839)		(0.781)	(0.779)		(0.793)	(0.661)	
FOREIGN	0.282	0.362	-0.080**	0.443	0.452	-0.009	0.546	0.565	-0.019
	(0.204)	(0.275)		(0.221)	(0.246)		(0.257)	(0.241)	
ROA	0.022	-0.311	0.333	0.045	-0.049	0.094***	0.032	-0.021	0.053***
	(0.097)	(2.561)		(0.119)	(0.248)		(0.104)	(0.226)	
LEV	0.160	0.196	-0.036	0.203	0.218	-0.015	0.240	0.220	0.020
	(0.129)	(0.146)		(0.155)	(0.167)		(0.138)	(0.230)	
LIQ	2.151	1.819	0.332	1.759	1.794	-0.035	1.477	1.600	-0.123
	(1.958)	(1.941)		(1.074)	(1.526)		(0.789)	(0.940)	
AF	1.592	1.429	0.163	2.417	2.286	0.131	1.725	1.579	0.146
	(1.534)	(1.249)		(5.655)	(4.303)		(1.682)	(1.456)	
CATA	0.245	0.249	-0.004	0.511	0.483	0.028	0.519	0.510	0.009
	(0.190)	(0.202)		(0.246)	(0.244)		(0.170)	(0.195)	

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INCCHG	-0.277	-2.213	1.936**	-0.596	-2.576	1.980***	-1.046	-1.260	0.214
	(1.981)	(6.669)		(2.802)	(7.055)		(7.099)	(7.709)	
ASSGTH	0.253	-0.048	0.301**	0.189	0.034	0.155***	0.195	0.609	-0.414
	(1.160)	(0.356)		(0.369)	(0.405)		(0.734)	(7.631)	

Panel B: Number and proportion (in parentheses) of firms having categorical variables designated as 1 with chi-square tests performed on the difference between proportions

Variable	(a) Before the merger event (n = 72)	(b) After the merger event (n = 86)	(c) = (a) ± (b) Difference between proportions	(d) Before the merger event (n = 159)	(e) After the merger event (n = 181)	(f) = (d) ± (e) Difference between proportions	(g) Before the merger event (n = 153)	(h) After the merger event (n = 224)	(i) = (g) ± (h) Difference between proportions
EI	36	56	-0.151**	84	129	-0.184***	74	121	-0.057
	(0.500)	(0.651)		(0.528)	(0.712)		(0.483)	(0.540)	
LOSSBEI	11	25	-0.138**	38	74	-0.170***	41	68	-0.036
	(0.152)	(0.290)		(0.238)	(0.408)		(0.267)	(0.303)	
MODIFY	1	8	-0.080**	6	22	-0.084***	12	32	-0.064*
	(0.013)	(0.093)		(0.037)	(0.121)		(0.078)	(0.142)	
MARCH	21	24	0.012	69	72	0.036	73	98	0.040
	(0.291)	(0.279)		(0.433)	(0.397)		(0.477)	(0.437)	
SWITCH	2	2	0.004	10	9	0.013	5	7	0.001
	(0.027)	(0.023)		(0.062)	(0.049)		(0.032)	(0.031)	
LOSS	9	29	-0.212***	37	81	-0.215***	37	73	-0.084*
	(0.125)	(0.337)		(0.232)	(0.447)		(0.241)	(0.325)	
POSINC	63	57	0.213***	122	100	0.215***	116	151	0.084*
	(0.875)	(0.662)		(0.767)	(0.552)		(0.758)	(0.674)	

*, **, and *** designate statistical significance at the 0.10, 0.05, and 0.01 level, respectively.
Variables defined in Table 1, except for ARL and AF, which are audit report lag (in days) and audit fees (in millions), respectively.

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Table 5

Selected Descriptive Statistics of Sample Variables Partitioned by Auditor Clients

	Property			Consolidated Enterprise			Industrial		
Panel A: Mean and standard deviation (in parentheses) of continuous variables with t-tests performed on the difference between means									
Variable	(a) DTT&K clients (n = 85)	(b) Other auditor clients (n = 73)	(c) = (a) ± (b) Difference between means	(d) DTT&K clients (n = 101)	(e) Other auditor clients (n = 239)	(f) = (d) ± (e) Difference between means	(g) DTT&K clients (n = 151)	(h) Other auditor clients (n = 226)	(i) = (g) ± (h) Difference between means
ARL	115.600	116.600	-1.000	127.400	117.400	10.000***	124.100	122.300	1.800
	(22.170)	(28.879)		(26.919)	(29.573)		(27.584)	(25.705)	
LTA	15.174	14.788	0.386	13.824	14.192	-0.368**	13.572	13.942	-0.370***
	(1.671)	(1.435)		(1.131)	(1.557)		(1.155)	(1.162)	
EPS	-0.931	-1.033	0.102	-1.590	-1.461	-0.129	-1.398	-0.587	-0.811
	(2.888)	(4.072)		(4.130)	(5.269)		(9.993)	(3.703)	
LTSUB	3.417	3.232	0.185	2.926	3.028	-0.102	2.729	2.657	0.072
	(0.847)	(0.865)		(0.789)	(0.775)		(0.673)	(0.746)	
FOREIGN	0.328	0.323	0.005	0.428	0.456	-0.028	0.516	0.585	-0.069***
	(0.228)	(0.270)		(0.224)	(0.238)		(0.225)	(0.257)	
ROA	-0.289	-0.007	-0.282	-0.026	0.003	-0.029	-0.012	0.008	-0.020
	(2.576)	(0.154)		(0.215)	(0.198)		(0.233)	(0.152)	
LEV	0.183	0.177	0.006	0.228	0.204	0.024	0.235	0.223	0.012
	(0.137)	(0.142)		(0.174)	(0.155)		(0.220)	(0.181)	
LIQ	1.779	2.193	-0.414	1.812	1.763	0.049	1.620	1.503	0.117
	(1.668)	(2.226)		(1.586)	(1.213)		(0.966)	(0.821)	
AF	1.540	1.461	0.079	1.367	2.762	-1.395***	1.442	1.769	-0.327**
	(1.268)	(1.516)		(1.174)	(5.838)		(1.043)	(1.799)	
CATA	0.246	0.249	-0.003	0.516	0.487	0.029	0.514	0.513	0.001
	(0.206)	(0.186)		(0.244)	(0.245)		(0.182)	(0.187)	

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INCCHG	-1.277	-1.393	0.116	-1.689	-1.634	-0.055	-1.563	-0.913	-0.650
	(3.734)	(6.492)		(4.524)	(5.971)		(10.912)	(3.663)	
ASSGTH	-0.029	0.226	-0.255*	0.146	0.090	0.056	0.841	0.174	0.667
	(0.254)	(1.190)		(0.449)	(0.371)		(9.286)	(0.694)	

Panel B: Number and proportion (in parentheses) of firms having categorical variables designated as 1 with chi-square tests performed on the difference between proportions

Variable	(a) DTT&K clients (n = 85)	(b) Other auditor clients (n = 73)	(c) = (a) ± (b) Difference between proportions	(d) DTT&K clients (n = 101)	(e) Other auditor clients (n = 239)	(f) = (d) ± (e) Difference between proportions	(g) DTT&K clients (n = 151)	(h) Other auditor clients (n = 226)	(i) = (g) ± (h) Difference between proportions
EI	56	36	0.165**	70	143	0.095*	81	114	0.032
	(0.658)	(0.493)		(0.693)	(0.598)		(0.536)	(0.504)	
LOSSBEI	18	18	-0.035	42	70	0.123**	45	64	0.015
	(0.211)	(0.246)		(0.415)	(0.292)		(0.298)	(0.283)	
MODIFY	3	6	-0.047	9	19	0.010	22	22	0.048
	(0.035)	(0.082)		(0.089)	(0.079)		(0.145)	(0.097)	
MARCH	28	17	0.097	50	91	0.115*	74	97	0.061
	(0.329)	(0.232)		(0.495)	(0.380)		(0.490)	(0.429)	
SWITCH	1	3	-0.030	7	12	0.019	6	6	0.007
	(0.011)	(0.041)		(0.069)	(0.050)		(0.039)	(0.026)	
LOSS	22	16	0.039	41	77	0.083	41	69	-0.034
	(0.258)	(0.219)		(0.405)	(0.322)		(0.271)	(0.305)	
POSINC	63	57	-0.039	60	162	-0.083	110	157	0.034
	(0.741)	(0.780)		(0.594)	(0.677)		(0.728)	(0.694)	

DTT&K stands for Deloitte Touche Tohmatsu and Kwan Wong Tan & Fong

*, **, and *** designate statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

Variables defined in Table 1, except for ARL and AF, which are audit report lag (in days) and audit fees (in millions), respectively.

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Table 6
Results of Regressions on Audit Report Lag Model
(Model 1 where dependent variable is natural logarithm of audit report lag, LNARL)

		Parameter estimate (p-value)			
Variable	Predicted Sign	Combined (n = 875)	Property (n = 158)	Consolidated Enterprise (n = 340)	Industrial (n = 377)
Intercept	not applicable	4.953 (0.000)***	4.517 (0.000)***	5.107 (0.000)***	4.859 (0.000)***
LTA	-	-0.051 (0.000)***	-0.080 (0.000)***	-0.070 (0.000)***	-0.028 (0.189)
EPS	-	-0.001 (0.282)	0.000 (0.853)	-0.000 (0.775)	-0.003 (0.129)
LTSUB	+	0.034 (0.005)***	-0.025 (0.332)	0.051 (0.014)**	0.038 (0.052)*
FOREIGN	+	0.129 (0.000)***	0.210 (0.001)***	0.141 (0.046)**	0.069 (0.238)
EI	+	0.022 (0.192)	0.012 (0.699)	0.013 (0.620)	0.044 (0.070)*
LOSSBEI	+	0.072 (0.000)***	0.072 (0.080)*	0.078 (0.026)**	0.074 (0.013)**
MODIFY	+	0.125 (0.000)***	0.065 (0.371)	0.165 (0.001)***	0.121 (0.025)**
ROA	-	0.006 (0.548)	0.002 (0.745)	-0.016 (0.824)	0.130 (0.359)
LEV	+	0.106 (0.036)**	0.282 (0.024)**	0.350 (0.000)***	-0.050 (0.683)
LIQ	-	0.000 (0.967)	0.009 (0.217)	0.004 (0.690)	-0.014 (0.355)
MARCH	?	0.097 (0.000)***	0.082 (0.023)**	0.106 (0.000)***	0.059 (0.010)**
SWITCH	+	0.048 (0.245)	0.206 (0.041)**	0.050 (0.304)	-0.029 (0.639)
LAF	+	0.013 (0.433)	0.081 (0.015)**	0.016 (0.474)	0.001 (0.954)
AFTER	?	0.015 (0.455)	0.137 (0.005)***	0.019 (0.551)	-0.022 (0.455)
DTT&K	?	0.084 (0.027)**	0.212 (0.003)***	0.031 (0.630)	0.128 (0.040)**
AFTER*DTT&K	-	-0.038 (0.252)	-0.175 (0.005)***	-0.000 (0.988)	-0.024 (0.598)
F-value for the model (p-value)		11.050 (0.000)***	6.270 (0.000)***	7.190 (0.000)***	3.920 (0.000)***
Adjusted R^2		0.209	0.413	0.277	0.140

All regressions include dummy variables for each Big 6 auditor other than Deloitte Touche Tohmatsu. In addition, the regression for the combined sample includes industry dummy variables whose results are not tabulated. Variables defined in Table 1.
*, **, and *** designate 2-tailed statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

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Table 7
Results of Regressions on Change in Audit Report Lag Model with Constant Sample
(Model 5 where dependent variable is difference in natural logarithm of audit report lag, ûLNARL)

		Parameter estimate (p-value)			
Variable	Predicted Sign	Combined (n = 342)	Property (n = 63)	Consolidated Enterprise (n = 139)	Industrial (n = 140)
Intercept	not applicable	-0.011 (0.734)	0.083 (0.118)	0.013 (0.819)	-0.126 (0.026)**
ûLTA	-	0.022 (0.407)	-0.036 (0.515)	-0.033 (0.471)	0.073 (0.120)
ûEPS	-	-0.000 (0.722)	0.012 (0.032)**	0.000 (0.984)	-0.002 (0.291)
ûLTSUB	+	0.012 (0.627)	-0.025 (0.730)	0.033 (0.432)	-0.004 (0.918)
ûFOREIGN	+	0.021 (0.752)	-0.020 (0.884)	0.048 (0.708)	0.017 (0.861)
ûROA	-	-0.142 (0.014)**	-0.242 (0.203)	-0.162 (0.075)*	-0.121 (0.279)
ûLEV	+	0.029 (0.662)	0.080 (0.656)	0.202 (0.170)	-0.119 (0.206)
ûLIQ	-	0.006 (0.393)	0.002 (0.803)	0.011 (0.354)	-0.008 (0.688)
ûLAF	+	-0.039 (0.231)	-0.012 (0.857)	0.034 (0.586)	-0.086 (0.109)
PEI	?	-0.019 (0.394)	0.022 (0.539)	-0.050 (0.224)	-0.023 (0.561)
EI	?	-0.001 (0.947)	0.009 (0.804)	0.003 (0.936)	0.021 (0.561)
PLOSSBEI	?	-0.074 (0.011)**	-0.102 (0.139)	-0.072 (0.184)	-0.036 (0.396)
LOSSBEI	?	0.018 (0.499)	0.005 (0.938)	0.011 (0.806)	0.022 (0.612)
PMODIFY	?	-0.050 (0.386)	-0.094 (0.563)	-0.085 (0.489)	-0.027 (0.714)
MODIFY	?	0.079 (0.044)**	0.049 (0.581)	0.077 (0.250)	0.150 (0.027)**
PSWITCH	?	0.039 (0.447)	-0.140 (0.239)	0.032 (0.689)	0.096 (0.303)
SWITCH	?	0.177 (0.002)***	0.387 (0.001)***	0.104 (0.276)	0.047 (0.635)
MARCH	?	0.031 (0.166)	-0.025 (0.560)	0.030 (0.464)	0.076 (0.026)**
DTT&K	-	0.004 (0.887)	-0.099 (0.036)**	0.038 (0.476)	0.043 (0.427)
F-value for the model (p-value)		2.990 (0.000)***	3.270 (0.000)***	1.980 (0.010)**	1.250 (0.221)
Adjusted R^2		0.113	0.434	0.135	0.038

All regressions include dummy variables for each Big 6 auditor other than Deloitte Touche Tohmatsu. In addition, the regression for the combined sample includes industry dummy variables whose results are not tabulated. Variables defined in Table 1.
*, **, and *** designate 2-tailed statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

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Table 8
Results of Regressions on Audit Fee Model
(Model 2 where dependent variable is natural logarithm of audit fees, LAF)

		Parameter estimate (p-value)		
			Consolidated	
	Predicted	Property	Enterprise	Industrial
Variable	Sign	(n = 158)	(n = 340)	(n = 377)
Intercept	not applicable	3.439 (0.004)***	5.161 (0.000)***	7.044 (0.000)***
LTA	+	0.442 (0.000)***	0.498 (0.000)***	0.436 (0.000)***
LTSUB	+	0.221 (0.000)***	0.247 (0.000)***	0.203 (0.000)***
FOREIGN	+	0.110 (0.520)	0.209 (0.109)	0.338 (0.000)***
LOSS	+	0.102 (0.311)	0.165 (0.035)**	0.048 (0.423)
MODIFY	+	-0.232 (0.201)	0.048 (0.671)	0.022 (0.778)
LNARL	+	0.634 (0.002)***	0.144 (0.219)	0.020 (0.818)
CATA	+	0.571 (0.014)**	0.923 (0.000)***	0.229 (0.066)*
ROA	-	0.027 (0.228)	-0.380 (0.044)**	-0.428 (0.007)***
LEV	+	0.437 (0.180)	-0.514 (0.010)**	0.272 (0.041)**
LIQ	-	-0.019 (0.388)	-0.097 (0.000)***	0.022 (0.426)
MARCH	?	0.151 (0.099)*	-0.060 (0.346)	0.048 (0.311)
SWITCH	-	-0.104 (0.678)	-0.024 (0.849)	-0.106 (0.377)
AFTER	?	-0.189 (0.128)	-0.003 (0.959)	-0.027 (0.624)
DTT&K	?	-0.334 (0.066)*	0.081 (0.525)	-0.078 (0.482)
AFTER*DTT&K	?	0.209 (0.187)	0.009 (0.940)	0.026 (0.757)
F-value for the model (p-value)		24.520 (0.000)***	43.650 (0.000)***	36.150 (0.000)***
Adjusted R^2		0.749	0.715	0.651

All regressions include dummy variables for each Big 6 auditor other than Deloitte Touche Tohmatsu. Results of dummy variables are not tabulated. Variables defined in Table 1.
*, **, and *** designate 2-tailed statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

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Table 9

Results of Reporting Positive Net Income and Positive Change in Net Income (Model 3)

Panel A

$$POSINC = c_0 + c_1LTA + c_2ASSGTH + c_3LEV + c_4LTSUB + c_5LAF + c_6AFTER + c_7DTT\&K + c_8AFTER*DTT\&K$$

Parameter Expected sign	c_0 n.a.	c_1 +	c_2 +	c_3 ?	c_4 ?	c_5 +	c_6 ?	c_7 ?	c_8 ?	Pseudo R^2 sig.level
Property (n = 158)										
Estimate	-8.053	1.089	0.558	-2.871	-0.449	-0.244	-1.614	-0.869	0.497	0.249
p-value	0.087*	0.000***	0.440	0.090*	0.281	0.614	0.061*	0.460	0.639	0.000***
Consolidated enterprise (n = 340)										
Estimate	-0.108	0.692	2.814	-1.896	-0.187	-0.502	-0.840	-1.005	0.254	0.252
p-value	0.965	0.000***	0.000***	0.031**	0.394	0.057*	0.013**	0.119	0.665	0.000***
Industrial (n = 377)										
Estimate	1.438	0.926	-0.038	-3.949	-0.074	-0.860	-0.685	0.415	0.536	0.157
p-value	0.629	0.000***	0.133	0.000***	0.715	0.008***	0.039**	0.512	0.311	0.000***

Panel B

$$INCCHG = c_0 + c_1LTA + c_2ASSGTH + c_3LEV + c_4LTSUB + c_5LAF + c_6AFTER + c_7DTT\&K + c_8AFTER*DTT\&K$$

Parameter Expected sign	c_0 n.a.	c_1 +	c_2 +	c_3 ?	c_4 ?	c_5 +	c_6 ?	c_7 ?	c_8 ?	Adj. R^2 F-value sig.level
Property (n = 158)										0.106
Estimate	3.702	1.627	0.179	-5.363	-0.449	-1.758	-2.176	-2.287	1.319	2.430
p-value	0.626	0.001***	0.722	0.085*	0.518	0.040**	0.093*	0.231	0.429	0.005***
Consolidated enterprise (n = 340)										0.071
Estimate	7.871	0.736	2.263	0.623	-0.242	-1.203	-2.264	-2.547	1.788	3.000
p-value	0.126	0.030**	0.003***	0.736	0.587	0.026**	0.002***	0.062*	0.171	0.000***

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Industrial (n = 377)										0.000
Estimate	-7.645	0.703	0.017	-4.771	0.808	-0.316	-0.553	-0.419	1.028	1.010
p-value	0.397	0.186	0.790	0.018**	0.156	0.740	0.589	0.837	0.522	0.444

All regressions include dummy variables for each Big 6 auditor other than Deloitte Touche Tohmatsu. Variables defined in Table 1. n.a. means not applicable.
*, **, and *** designate 2-tailed statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

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Table 10
Results of Regressions on Discretionary Accrual Model
(Model 4 where dependent variable is absolute value of discretionary accruals, ABSDA)

		Parameter estimate (p-value)		
			Consolidated	
Variable	Predicted Sign	Property (n = 158)	Enterprise (n = 339)	Industrial (n = 375)
Intercept	not applicable	0.161 (0.060)*	0.072 (0.276)	0.190 (0.001)***
ABSAC	+	0.187 (0.001)***	0.388 (0.000)***	0.516 (0.000)***
CHNI	+	0.008 (0.616)	-0.022 (0.135)	-0.010 (0.416)
LEV	+	0.022 (0.630)	0.030 (0.355)	0.051 (0.013)**
ASSGTH	?	0.010 (0.201)	0.080 (0.000)***	-0.005 (0.000)***
CFLOW	?	-0.163 (0.042)**	-0.033 (0.387)	0.091 (0.007)***
ROA1	?	0.181 (0.001)***	-0.077 (0.041)**	-0.020 (0.486)
LTA	?	-0.006 (0.235)	-0.003 (0.439)	-0.010 (0.005)***
LOSS	?	0.027 (0.139)	-0.018 (0.174)	-0.026 (0.015)**
AFTER	?	-0.031 (0.137)	0.014 (0.247)	0.030 (0.002)***
DTT&K	?	-0.019 (0.519)	0.032 (0.144)	-0.032 (0.098)*
AFTER*DTT&K	?	0.023 (0.381)	-0.035 (0.097)*	-0.003 (0.813)
F-value for the model (p-value)		2.180 (0.008)***	19.880 (0.000)***	28.690 (0.000)***
Adjusted R^2		0.107	0.472	0.542

All regressions include dummy variables for each Big 6 auditor other than Deloitte Touche Tohmatsu. Results of dummy variables are not tabulated. Variables defined in Table 1.
*, **, and *** designate 2-tailed statistical significance at the 0.10, 0.05, and 0.01 level, respectively.

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Endnotes

[1] An example is the merger of two software providers of online tax preparation that was blocked by court in an antitrust suit filed by the Department of Justice (Anonymous, 2011). Similarly, regulators consider that the audit market for public clients is undesirably concentrated by the Big 4 firms (Herz, 2011) and the Sarbanes-Oxley Act requested the General Accounting Office to study whether the high audit market concentration of the Big 4 reduced audit quality.

[2] Healy and Lys (1986) and Chen et al. (2010) examine the choice for new auditors by the clients of non-Big N auditors who merge with Big N firms. Iyer and Iyer (1996), Ferguson and Stokes (2002), Firth and Lau (2004), and Lee (2005) investigate the audit pricing of audit firms following the mergers that create the Big N firms. Using the Big N mergers, Tonge and Wootton (1991) study market share and FRQFHQWUDWLRQ,YDQFHYLFKDQG=DUDNRRKL HDPLQHWKHFKDQJHVLQDXGLWILU characteristics, and Sullivan (2002) investigates competition for new clients by auditors. Chan and Wu (2011) analyze the issuance of modified audit opinions and Gong et al. (2016) study audit hours following audit firm mergers in China. Ding and Jia (2012) study earnings quality and Choi et al. (2017) investigate audit quality following the merger of Price Waterhouse with Coopers & Lybrand. Choi and Zeghal (1999) examine market concentration using mergers in ten countries and Wang et al. (2011) investigate discretionary accruals of clients using an audit firm merger in Taiwan.

[3] The issuance of a going-concern opinion is relevant only for firms in financial distress. In the sample, there are 68, 158, and 142 such clients in the property, consolidated enterprise, and industrial industries, respectively. A search for the annual reports reveals that 7, 23, and 36 firms exist with modified audit opinions (of all types) for these three business classifications.

[4] It is now called the Hong Kong Institute of Certified Public Accountants.

[5] See firm history on the website of Deloitte Touche Tohmatsu (www.deloitte.com.hk).

[6] The Journal was a monthly publication of the Hong Kong Stock Exchange.

[7] The natural logarithm is used following Krishnan and Yang (2009), Knechel, Sharma, and Sharma (2012), Knechel and Sharma (2012), and Whitworth and Lambert (2014) because it more likely fits the normality assumption of OLS regression than the raw data. However, the results are robust when raw report lag is the dependent variable.

[8] In general, the year 1997, being the year of merger, is omitted from the sample, and observations for 1996 (1998) are classified as before (after) the event. However, year 1995 observations are classified as before the event if the audit of the 1996 financial statements was completed after April 1, 1997 when Deloitte merged with Kwan. (Listed companies in Hong Kong then had a statutory limit of five months from the year end to file audited financial statements.) In addition, year 1999 observations are classified as after the event for firms with January or February year end because financial statements ending in January or February 1998 began before April 1, 1997.

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[9] Exceptional and extraordinary items were required to be reported in financial statements under Statement oI 6WDQGDUG $FFRXQWLQJ 3UDFWLFH 1R ¶WUDRUGLQDU\ ,WHPVDQG3ULRU3HULRGV&MXVWPHQWVLQIRUFHDWWKHWLPHQRZUHSHDOHG

[10] From the experience of the author and a discussion with a colleague who worked previously in a Big 4 firm, companies in Hong Kong commonly have a March financial year end.

[11] A possibly omitted variable in model (2) is non-audit fees, which were not required to be disclosed by companies in Hong Kong. However, Whisenant et al. (2003) show that no association exists between audit and non-audit fees after controlling for factors that could jointly determine audit and non-audit fees. More importantly, their results also show that the inferences of other determinants of audit fees are not substantially affected.

[12] During 1998, Price Waterhouse merged with Coopers & Lybrand to form PwC. Hence, their clients were audited by the three audit firms in 1998 (i.e., after the merger event).

[13] All listed clients of Kwan in the sample were taken up by Deloitte following the merger.

[14] In the correlation matrix of sample variables by industry (available from the author), the variables significantly correlated with LNARL are in the predicted direction for model (1) except for LTSUB for the property industry, and LAF for all three industries. DTT&K has significant correlations with variables consistent with the results reported in Table 5.

[15] The null hypothesis of homoskedasticity is not rejected at 10%, or lower, level of significance in the regressions reported in the paper except for the regressions for the consolidated enterprise and industrial industries in Table 6, the t-statistics of which is therefore adjusted for heteroskedasticity (see White, 1980).

[16] 6HHWKHGLUHFWRUV¶UHSRUWRI$VLD2ULHQW+ROGLQJV/LPLWHG

[17] For example, if earnings per share is -10 and -8 in year t ± 1 and year t respectively, ûEPS is 2. Hence, e_2 is expected to be negative because the negative change in EPS shrinks. However, the firm actually has bad news over the years. Thus, e_2 could also be positive.

[18] Shipman et al. (2017) suggest that propensity score matching is best suited to tackle functional form misspecification in regression (when the relation between the dependent variable Y and the control variables Xs is incorrectly specified). Nonetheless, the technique has the inherent appeal of controlling for differences between treatment and control groups to enhance the estimation of the treatment effect.

[19] A simple match on firm size yields a larger sample (146, 202, and 298 observations for the property, consolidated enterprise, and industrial industries, respectively) and

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substantially the same results (p = 0.004 for AFTER*DTT&K in the property industry regression).

[20] 7KH-RQHV¶RGHO omits the term CHREC from model (7).

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