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Relationship between Individual Auditor Characteristics and Audit Report Lag: Evidence from Taiwan

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Abstract

Using Taiwan's unique regulation requiring disclosure of signing audit partners, this study investigates the effects of individual auditor characteristics on audit report lag. These include gender, a master's degree, and accounting major. Audit report lag is the natural logarithm of the time between the fiscal year-end and initial audit report dates. Results suggest that auditors holding a higher degree or majoring in accounting are negatively related to audit lag. Furthermore, there is no trade-off between report lag and audit quality. That is, audit quality is not compromised when auditors hold a higher degree and the audit report lag is short. Similarly, audit quality associated with auditors who majored in accounting does not decrease with shorter audit report lag. This study is a response to the call from academics for more research about individual auditor characteristics. Results may have policy implications for investors, academics, and regulatory authorities.

Keywords: Individual Auditor, Auditor Characteristics, Audit Report Lag

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1. Introduction

This study aims to investigate the effects of individual auditor characteristics on audit report lag. With the increase in documents that regulatory authorities require and the financial-statement quality that investors expect, audit firms' report lags have lengthened (Coates and Srinivasan 2014; Krishnan and Yang 2009). However, regulators and investors still require timely financial information for decision-making. Thus, how these expectations can be met is a crucial question for the auditing profession (Whitworth and Lambert 2014).

In addition, audit report lag has been used as an indicator of auditor-client management negotiations (Salterio 2012) and as a proxy for audit efficiency (Knechel and Payne 2001; Mitra et al. 2015). To provide insights that assist academics, policy makers, and practitioners work toward solutions to reduce these lags, it is important to understand their determinants (Durand 2019).

Prior studies investigate key report-lag determinants. These include firm-specific dimensions such as the identified internal control weaknesses, financial performance, corporate governance provisions, and industry risk (Leventis et al. 2005; Abernathy et al. 2014; Sultana et al. 2015; Durand 2019). Further more, audit-specific dimensions such as the type of auditor, audit fees, non-audit fees, numbers of remarks in the audit report, industry knowledge, and the nature of the audit opinion are also related to audit report lag (Leventis et al. 2005; Knechel and Sharma 2012; Ocak and Özden 2018; Durand 2019).

Management literature argues that individual's characteristics can partly explain corporate policies (Dyreng et al. 2010; Kachelmeier 2010; Ge et al. 2011). In the audit setting, prior studies focus analysis at the firm or office level (see Francis [2004] for a review). Recently, scholars have begun refining this stream of research to individual auditor level (DeFond and Francis 2005; Chen et al. 2008; Chen et al. 2010).

The literature indicates that auditors' personal ability, cognitive style, expertise, risk profile, and independence play important roles in audit decisions (Knechel 2000; Nelson and Tan 2005; Nelson 2009). However, many countries, specifically the United States, do not disclose auditors' names. Taiwan's requirement that auditors' names be disclosed in the audit report allows this study to explore the effects of individual auditor characteristics (Chen et al. 2008; Chi and Chin 2011).

This study differs from prior research in several ways. First, to meet the normal distribution assumption required for ordinary least squares regression, this study uses the natural logarithm of the number of days between the fiscal year-end and audit completion dates as a proxy of audit report lag. Second, because auditors' names must be disclosed in audit reports in Taiwan, it uses the engagement partner's characteristics to explore possible effects on audit report lag. Third, because of the differing nature of Big 4 and Non-big 4 audit firms, the sample is limited to auditors of Big 4 firms. Finally, the sample period is fiscal years 2013 to 2017, using 2,329 firm-year observations representative of an emerging market. Findings suggest that auditors who hold a higher degree or majored in accounting are negatively related to audit lag. However, there is no trade-off between the audit report lag and audit quality.

The rest of this paper is as follows. The next section is the literature review and hypothesis development. Section 3 describes the research design. Section 4 reports the results. The final section contains conclusion.

2. Literature Review and Hypothesis Development

2.1 Audit report lag

The increases in audit document production arising from the promulgation of the Sarbanes-Oxley Act (SOX) and the establishment of the Public Company Accounting Oversight Board has increased the workload for audit firms. In addition, the 2003 SEC requirements that accelerate the filing of 10-K and 10-Q reports for some firms (SEC 2002) have placed pressure on audit firms to shorten the audit report lag in the audit process. These regulatory measures were also mimicked in many other countries (Chi et al. 2013; Choi et al. 2013; Duh et al. 2020), including Taiwan.

After the passage of SOX, Taiwan amended the Securities and Exchange Act in 2002, requiring companies to evaluate their internal control over financial reporting. Regulatory authorities also revised rules in 2003 to a more rigorous examination when listed companies that are audited by the same audit partners for five consecutive years. Statement of Auditing Standards (SAS) No. 43 "The Auditor's Responsibility to Consider Fraud in an Audit of Financial Statements" and SAS No. 44 "Quality Control for Audits of Historical Financial Information" were issued in 2006 and 2007, respectively. No. 46 "Quality Control for Audit Firms" was revised in 2008. Those are mirrors of U.S. standards. In addition, listed companies, starting in 2012, are required to file their audited financial reports with the Financial Supervisory Commission within three months of the fiscal year end, a deadline of four months previously. Thus, the question of how to meet the expectations of regulators and investors for more timely financial information is important for audit firms (Whitworth and Lambert 2014).

There is a vast body of literature that investigates the key determinants of audit report lag. Using data from Athens, Leventis et al. (2005) find that type of auditor, audit fees, number of remarks in the audit report, the presence of extraordinary items, and an expression of uncertainty in the audit report are associated with audit report lag. They suggest that audit report lag is improved by appointing international audit firms or paying premium audit fees but is extended by potentially bad news. Knechel and Sharma (2012) also find that, before SOX, non-audit fees shortened the audit report lag, however, this phenomenon is not reported after the implementation of SOX.

Sultana et al. (2015) study whether audit committee compositional features are associated with audit report lag in Australian firms. Their results show that audit committee members with financial expertise, prior audit committee experience, and those who are independent are associated with shorter audit report lag. Knechel and Payne (2001) show that the simultaneous provision of management consulting services by audit firms helps to improve audit report lag, but the simultaneous provision of tax services does not.

Abernathy et al. (2014) summarize the determinants of audit report lag in international literature. They divide determinants of audit report lag along two primary dimensions, firm-specific and audit-specific. In the firm-specific category, audit report lag is shorter for more successful, large companies and for companies with strong corporate governance mechanisms. Conversely, companies with poor financial performance and identified internal control weaknesses have a longer audit report lag. In the audit-specific category, the audit report lag is associated with industry knowledge, audit firm size, and the audit opinion issued.

The importance of individual auditor levels in determining audit report lag has recently received increasing attention. Because related data on the characteristics of individual auditors are not available in the United States and other major markets, researchers use experiments or questionnaires to collect data (Donnelly et al. 2003; Endaya and Hanefah 2016). However, Taiwan requires that auditors' names must be disclosed in the audit report, which facilitates the study of audit issues at an individual auditor level.

2.2 Individual auditor characteristics

Recent literature extends research from the audit firm level to the individual auditor level, because audit quality and audit report lag may differ between individual auditors (DeFond and Francis 2005; Chen et al. 2008; Chen et al. 2010). Besides, research indicates that individual characteristics can partly explain corporate policies (Kachelmeier 2010). For example, Bertrand and Schoar (2003) suggest that executives influence corporate investment, financial, and organizational practice decisions. Ge et al. (2011) show that CFO factors influence financial reporting practices. They also examine whether executive characteristics such as gender, education, and experience can explain managerial effects. Dyreng et al. (2010) show that executives affect companies' tax avoidance and conclude that managers' characteristics are important in explaining companies' decisions.

Knechel (2000) points out that the audit performance is determined by the auditors' judgment and decisions, which ultimately depend on the individual auditor's characteristics. Nelson and Tan (2005) and Nelson (2009) argue that auditors' personal knowledge, profession, personality, and cognitive style play an important role in audit decisions. Similarly, Vera-Munoz et al. (2006) also suggest that personal traits such as knowledge, ability, and motivation all have important influences on the audit process in accounting firms. Ye et al. (2014) investigate the effects of individual auditor's characteristics on audit failures. Their findings suggest that an individual auditor's experience and educational background are negatively related to audit failures. Gul et al. (2013) also find that individual auditor's characteristics, such as educational background, Big N audit firm experience, rank in the audit firm, and political affiliation partly explain audit quality.

However, the importance of auditors' characteristics has not been widely examined, possibly because of the lack of related data on individual auditors' characteristics in the United States (Nelson and Tan 2005). Consequently, DeFond and Francis (2005) indicate that research at the individual auditor level is necessary depending on the availability of data.

2.3 Hypothesis development

The study uses several demographic characteristics of individual auditors that may relate to audit report lag, including gender and educational background.

Gender

Prior research suggests that men and women behave differently in various decision-making tasks (Gold et al. 2009; Hardies et al. 2010) because their problem-solving abilities, risk preferences, and cognitive styles are different (Hardies et al. 2010).

Fellner and Maciejovsky (2007) find that women are generally more risk-averse and more conservative in finance-related matters than men. Gold et al. (2009) indicate that female auditors are more influenced by male CFOs and less influenced by female CFOs than male auditors. In addition, Srinidhi et al. (2011) suggest that U.S. companies with female directors have higher earnings quality.

Because they have high ethical standards, are more risk averse, and are more conservative in audit-related matters (Gul et al. 2013), women are more willing to spend more time than male auditors on audit

work to make decision and complete this work more slowly (Ocak and Özden 2018). These findings lead to the first hypothesis:

H1: Female auditors have longer audit report lags as compared with males.

Education

Auditors' educational backgrounds may affect their knowledge and risk preference. Education can facilitate acquisition of related knowledge necessary to make a judgment (Bonner and Walker 1994; Libby 1995) and to perform audit work more efficiently (Koh et al. 2009). Prior research documents a positive association between auditors' education levels and their career advancement (Siegel et al. 1992). Two educational background measures are pertinent. The first is whether they hold a master's degree, which contributes to their knowledge and professional capabilities (Ye et al. 2014). Sutaryo and Lase (2015) show that auditors holding a graduate degree have an inverse effect on the audit timeliness in Indonesia. Consequently, more highly educated auditors are likely to have shorter audit report lags related to audit failure. This leads to the second hypothesis:

H2: A higher degree by an auditor is negatively associated with the audit report lag.

The second educational background measure is whether an auditor majored in accounting during her/his college education. Auditors with more accounting education should complete audits on time as compared with other majors because they are familiar with financial statements (Sutaryo and Lase 2015), and are assumed to be more competent, as well as better equipped with the skills and required knowledge to perform audit tasks (Bonner and Pennington 1991; Hitt et al. 2001). They also gain solid business-related knowledge and skills, and accordingly may produce shorter report lags. This leads to the third hypothesis:

H3: An auditor who majored in accounting has the shortest audit report lag as compared with other majors.

3. Research Design

3.1 Sample selection and data

The auditors' demographic information is collected from CPA firm websites, CPA Associations of Taiwan, and Taiwan's Market Observation Post System. Because of the lack of data availability, auditor observations are restricted to Big 4 partners. The sample includes 249 partners. Taiwan have required listed companies to prepare financials statements in accordance with International Financial Reporting Standards (IFRS) since 2013. The audit client sample is restricted to audit clients from 2013 to 2017 to avoid the possible confounding effect of the IFRS. Financial services and banking firms are excluded because they have a unique accounting system and are highly regulated. The final sample comprises 2,329 firm-year observations.

3.2 Measurement of main variables

The dependent variable is the audit report lag, which is measured as the natural logarithm of the number of days between the fiscal year-end and initial audit report dates (*LN_LAG*) (Ashton et al. 1987; Ashton et al. 1989; Krishnan and Yang 2009; Knechel et al. 2012; Knechel and Sharma 2012; Duh et al. 2020). The test variables include gender (*GENDER*), master's degree (*MASTER*), and university major (*MAJOR*). Engagement auditors lead the audit team for audit planning, establishing an audit strategy, supervision of audit members, and make important decisions in the audit process. Therefore, this study uses the characteristics of engagement partners as the basis of analysis. *GENDER* is equal to 1 if engagement auditors are male, and 0 otherwise. *MASTER* is equal to 1 if engagement auditors hold a master's degree, and 0 otherwise. *MAJOR* is equal to 1 if engagement auditors majored in accounting, and 0 otherwise.

3.3 Empirical model

To examine the effect of auditors' characteristics on audit report lag, the study develops an ordinary least square (OLS) regression model, controlling for factors that could possibly affect audit lag. The model is expressed as:

$$LN_LAG_t = \alpha_0 + \alpha_1 GENDER_t + \alpha_2 MASTER_t + \alpha_3 MAJOR_t + \alpha_4 LEV_t + \alpha_5 CACL_t + \alpha_6 SIZE_t + \alpha_7 GROWTH_t + \alpha_8 LOSS_t + \alpha_9 OPINION_t + \alpha_{10} RESTATE_t + \alpha_{11} AGE_t + \alpha_{12} FIRMTEN_t + \alpha_{13} LEADTEN_t + \alpha_{14} CONTEN_t + \alpha_{15} IMPORT_t + \alpha_{16} SGM_t + \varphi \cdot YEAR + \varepsilon_t \quad (1)$$

Where the dependent variable is *LN_LAG*. The engagement partner attributes are identified to evaluate the effect on the audit report lag. Test variables are *GENDER*, *MASTER*, and *MAJOR*.

Audit firm and firm-specific characteristics are also included. *LEV* and *LOSS* are included to control for the effects of companies’ financial distress (Ashton et al. 1987; Ashton et al. 1989; Knechel and Sharma 2012), where *LEV* is the ratio of debt to total assets, and *LOSS* is equal to 1 if net income is negative, and 0 otherwise. *CACL* is measured by the ratio of current assets to current liabilities and controls for the effect of liquidity (Knechel and Payne 2001). *SIZE*, measured by the natural logarithm of total assets, controls for the size of the client firm (Krishnan and Yang 2009). *GROWTH* controls for the effects of firm’s growth (Durand 2019), measured by the percentage increase in net sales over the previous year. *OPINION* equals one if the firm had not unqualified audit report, zero otherwise (Ashton et al. 1989; Bamber et al. 1993). *RESTATE* is the number of times that the company has previously reported a financial restatement (Knechel and Sharma 2012; Duh et al. 2020). *AGE* is measured by natural logarithm of the number of years in which the company is listed (Duh et al. 2020). This study also controls for many auditors’ attributes including *FIRMTEN*, *LEADTEN*, and *CONTEN* to control for the tenure of an audit firm, an engagement partner and a concurrent partner, respectively (Ocak and Özden 2018). Client importance, *IMPORT*, is measured by the ratio of total client assets to total assets audited by the same audit firm (Duh et al. 2020). *SGM* is measured as the number of business segments (Knechel and Sharma 2012). It is also controlled for the year fixed effect.

Based on hypotheses H1, H2, and H3, the coefficients of *GENDER*, *MASTER*, and *MAJOR* are expected to be negative, negative, and negative, respectively.

4. Results

4.1 Descriptive statistics

Table 1 shows the descriptive statistics of the dependent and independent variables. *LN_LAG* is 4.41 on average (equivalent to 82 days), ranging from 3.78 to 4.51 (equivalent to 44 days to 90 days), consistent with prior research in the United States (e.g., Bronson et al. 2011; Whitworth and Lambert 2014) and Taiwan (e.g., Duh et al. 2020). Approximately 89.23% of auditors are male, 72% hold a master’s degree, and 98.11% majored in accounting during their university education.

The average debt ratio (*LEV*) and current ratio (*CACL*) are 40.31% and 288.74%, respectively. Firms’ total assets (*SIZE*) are equivalent to 4.8 billion (equivalent to USD 160 million) and they show 6.8% growth in net sales. Approximately 21% suffered from loss (*LOSS*) and 19.96% do not receive an unqualified audit opinion (*OPINION*). Only 4.76% restate their financial statements. The average number of years since the company listed is 11 years. In the auditors’ tenure, the average tenure of the firm (*FIRMTEN*), lead partner (*LEADTEN*), and concurrent partner (*CONTEN*) are 13.89, 4.01, and 3.33, respectively. *IMPORT* is 24.26% and *SGM* is 2.53.

Table1 Descriptive statistics

	Mean	SD	Max	Min
<i>LN_LAG</i>	4.4087	0.1386	4.5109	3.7842
<i>GENDER</i>	0.8923	0.3101	1.0000	0.0000
<i>MASTER</i>	0.7197	0.4492	1.0000	0.0000
<i>MAJOR</i>	0.9811	0.1361	1.0000	0.0000
<i>LEV</i>	40.3090	17.9430	81.9600	5.1000
<i>CACL</i>	288.7429	310.8761	2249.8300	57.1300
<i>SIZE</i>	15.3599	1.4457	19.8677	12.4725
<i>GROWTH</i>	6.8004	38.0433	253.5400	-71.8400
<i>LOSS</i>	0.2090	0.4067	1.0000	0.0000
<i>OPINION</i>	0.1996	0.3998	1.0000	0.0000

<i>RESTATE</i>	0.0476	0.2130	1.0000	0.0000
<i>AGE</i>	2.3650	0.7781	4.0254	0.0000
<i>FIRMTEN</i>	13.8880	7.9372	35.0000	1.0000
<i>LEADTEN</i>	4.0133	2.1395	11.0000	1.0000
<i>CONTEN</i>	3.3296	1.9466	11.0000	1.0000
<i>IMPORT</i>	0.2426	0.1124	0.7500	0.0000
<i>SGM</i>	2.5339	1.3934	11.0000	1.0000

Variable definitions: *GENDER*=1 if engagement auditors are male, and 0 otherwise. *MASTER*=1 if engagement auditors hold a master’s degree, and 0 otherwise. *MAJOR*=1 if engagement auditors majored in accounting, and 0 otherwise. *LEV*= the ratio of debt to total assets. *CACL*= the ratio of current assets to current liabilities. *SIZE*= the natural logarithm of total assets. *GROWTH* = the percentage increase in net sales over the previous year. *LOSS*= 1 if net income is negative, and 0 otherwise. *OPINION*=1 if the firm do not receive an unqualified audit report, 0 otherwise. *RESTATE*= the number of times that the company has previously reported a financial restatement. *AGE*= natural logarithm of the number of years in which the company is listed. *FIRMTEN* = the tenure of audit firms. *LEADTEN* = the tenure of engagement partners. *CONTEN*= the tenure of concurrent partners. *IMPORT*= the ratio of total client assets to total assets audited by the same audit firm. *SGM*= the number of business segments.

4.2 Correlation analysis

The correlation matrices are presented in Table 2. Based on the two-tailed tests, *GENDER* is positively but insignificantly associated with *LN_LAG* ($p = 0.41$). However, *MASTER* and *MAJOR* are both negatively and significantly associated with *LN_LAG* ($p = 0.01$; $p = 0.02$). These findings provide preliminary evidence that if auditors hold a higher degree or an accounting major, the audit report lag is shorter before considering the effect of control variables. In addition, *LN_LAG* is positively related to *LEV*, *LOSS*, and *CONTEN*, but negatively associated with *SIZE* and *GROWTH*.

The absolute values of the correlation coefficients of all the control variables are less than 0.7, suggesting that multicollinearity is not a concern (Anderson et al. 1999). The results of the multiple regression and multivariate tests are reported below.

Table 2 Correlation matrix (n = 2,329)

	<i>LN_LAG</i>	<i>GENDER</i>	<i>MASTER</i>	<i>MAJOR</i>	<i>LEV</i>	<i>CACL</i>	<i>SIZE</i>	<i>GROWTH</i>	<i>LOSS</i>	<i>OPINION</i>	<i>RESTATE</i>	<i>AGE</i>	<i>FIRMTEN</i>	<i>LEADTEN</i>	<i>CONTEN</i>	<i>IMPORT</i>
<i>LN_LAG</i>	1															
<i>GENDER</i>	0.017 (0.41)	1														
<i>MASTER</i>	-0.051 (0.01)	0.014 (0.49)	1													
<i>MAJOR</i>	-0.049 (0.02)	-0.048 (0.02)	0.103 (0.00)	1												
<i>LEV</i>	0.110 (0.00)	-0.032 (0.13)	-0.003 (0.90)	0.003 (0.88)	1											
<i>CACL</i>	-0.027 (0.19)	0.007 (0.72)	-0.028 (0.17)	0.023 (0.26)	-0.588 (0.00)	1										
<i>SIZE</i>	-0.059 (0.00)	-0.034 (0.10)	-0.008 (0.71)	-0.004 (0.86)	0.352 (0.00)	-0.261 (0.00)	1									
<i>GROWTH</i>	-0.035 (0.09)	-0.008 (0.70)	0.035 (0.09)	-0.003 (0.88)	0.072 (0.00)	-0.030 (0.15)	0.015 (0.46)	1								
<i>LOSS</i>	0.111 (0.00)	0.022 (0.29)	0.006 (0.78)	-0.037 (0.07)	0.033 (0.11)	0.046 (0.03)	-0.213 (0.00)	-0.108 (0.00)	1							
<i>OPINION</i>	-0.009 (0.66)	0.042 (0.04)	0.037 (0.08)	0.014 (0.50)	-0.020 (0.33)	0.013 (0.52)	0.011 (0.59)	0.021 (0.30)	-0.014 (0.51)	1						
<i>RESTATE</i>	-0.012 (0.57)	0.013 (0.54)	-0.004 (0.85)	0.016 (0.43)	-0.016 (0.44)	0.015 (0.48)	0.001 (0.98)	-0.028 (0.18)	-0.011 (0.60)	0.110 (0.00)	1					
<i>AGE</i>	-0.021 (0.30)	0.040 (0.05)	0.029 (0.16)	0.011 (0.59)	-0.042 (0.04)	-0.008 (0.69)	-0.026 (0.21)	0.010 (0.62)	0.049 (0.02)	0.162 (0.00)	0.029 (0.17)	1				
<i>FIRMTEN</i>	-0.021 (0.32)	0.024 (0.25)	-0.012 (0.55)	0.000 (1.00)	-0.019 (0.36)	0.005 (0.82)	-0.038 (0.07)	-0.005 (0.80)	0.040 (0.06)	0.077 (0.00)	0.010 (0.63)	0.558 (0.00)	1			
<i>LEADTEN</i>	-0.008 (0.69)	0.004 (0.84)	-0.045 (0.03)	0.011 (0.59)	0.019 (0.35)	-0.005 (0.80)	-0.021 (0.31)	0.013 (0.54)	0.015 (0.47)	-0.014 (0.49)	0.001 (0.98)	-0.166 (0.00)	-0.023 (0.27)	1		
<i>CONTEN</i>	0.050 (0.02)	-0.006 (0.78)	0.062 (0.00)	0.015 (0.46)	0.026 (0.21)	-0.019 (0.36)	0.011 (0.60)	0.023 (0.27)	-0.029 (0.16)	-0.064 (0.00)	-0.066 (0.00)	-0.094 (0.00)	0.015 (0.47)	0.153 (0.00)	1	
<i>IMPORT</i>	-0.029 (0.17)	-0.007 (0.75)	0.169 (0.00)	0.004 (0.84)	0.003 (0.88)	-0.002 (0.93)	0.006 (0.79)	0.023 (0.26)	0.015 (0.47)	0.135 (0.00)	-0.002 (0.91)	0.102 (0.00)	0.074 (0.00)	0.011 (0.58)	0.026 (0.22)	1
<i>SGM</i>	0.033 (0.12)	-0.003 (0.89)	-0.019 (0.37)	-0.058 (0.01)	0.028 (0.18)	0.005 (0.83)	-0.007 (0.74)	-0.009 (0.65)	0.049 (0.02)	0.132 (0.00)	0.016 (0.45)	0.252 (0.00)	0.163 (0.00)	-0.068 (0.00)	-0.025 (0.24)	0.037 (0.08)

See Table 1 for variable definitions.

4.3 Regression analysis

The OLS model is estimated to test the association between audit report lag and the various auditors' characteristics. Table 3 presents the regression analysis of audit report lag from 2013 to 2017.

The results show that *GENDER* is positively but insignificantly associated with *LN_LAG* ($p = 0.408$), H1 is not supported. *MASTER* is negatively and significantly associated with *LN_LAG* ($p < 0.05$), suggesting that auditors who hold a higher degree improve audit report lag, supporting H2. Further, *MAJOR* is also negatively and significantly associated with *LN_LAG* ($p < 0.05$), indicating that an accounting major shortens the audit report lag as compared with other majors. This result supports H3. In addition, the results for control variables are generally consistent with prior work (Ashton et al. 1987; Ashton et al. 1989; Knechel and Payne 2001; Krishnan and Yang 2009; Knechel and Sharma 2012; Ocaik and Özden 2018; Duh et al. 2020). *LN_LAG* is positively associated with financial stress (*LEV*, *LOSS*) and concurrent partner's tenure. It is negatively associated with client company size (*LN_TA*) and firm growth (*GROWTH*).

Table 3 Auditor characteristics and audit report lag

Variables	Estimate	t-value	p-value
<i>Intercept</i>	4.5286	104.420	<0.001
<i>GENDER</i>	0.0076	0.830	0.408
<i>MASTER</i>	-0.0143	-2.210	0.027
<i>MAJOR</i>	-0.0414	-1.980	0.048
<i>LEV</i>	0.0013	6.180	0.000
<i>CACL</i>	0.0000	1.630	0.103
<i>SIZE</i>	-0.0087	-4.020	<0.001
<i>GROWTH</i>	-0.0001	-1.660	0.097
<i>LOSS</i>	0.0275	3.800	<0.001
<i>OPINION</i>	0.0009	0.120	0.908
<i>RESTATE</i>	-0.0049	-0.350	0.727
<i>AGE</i>	-0.0015	-0.330	0.745
<i>FIRMTEN</i>	-0.0004	-1.010	0.311
<i>LEADTEN</i>	-0.0016	-1.170	0.241
<i>CONTEN</i>	0.0042	2.820	0.005
<i>IMPORT</i>	-0.0269	-1.040	0.300
<i>SGM</i>	0.0027	1.260	0.208
<i>YEAR</i>	Yes	Yes	Yes
Observations		2,329	
Adjusted R ²		3.44%	
F-value		5.15 ^{***}	

See Table 1 for variable definitions.

***denotes significance at <1 % level.

4.4 Additional analysis

After finding that the effects of auditors' characteristics on audit report lag are significant, this study further examines whether improvement in audit report lag decreases audit quality.

Based on Knechel and Sharma (2012) and Duh et al. (2020), the current paper regresses absolute discretionary accruals (*absDA*) on *MASTER*, *SHORTLAG*, and their interactions along with the control variables, where *SHORTLAG* equals one if *LN_LAG* is less than the median, and zero otherwise. The study also regresses *absDA* on *MAJOR*, *SHORTLAG*, and their interactions along with the control variables. The models are expressed as:

$$\begin{aligned}
 absDA_t = & \beta_0 + \beta_1 GENDER_t + \beta_2 MASTER_t + \beta_3 SHORTLAG_t + \beta_4 MASTER \times SHORTLAG_t + \beta_5 MAJOR_t \\
 & + \beta_6 LEV_t + \beta_7 SIZE_t + \beta_8 GROWTH_t + \beta_9 BVMV_t + \beta_{10} LOSS_t + \beta_{11} AGE_t + \beta_{12} CYCLE_t \\
 & + \beta_{13} CAPINT_t + \beta_{14} PRI_DA_t + \beta_{15} FIRMYEN_t + \beta_{16} LEADTEN_t + \beta_{17} CONTEN_t \\
 & + \beta_{18} IMPORT_t + \varphi \cdot YEAR + \varepsilon_t \quad (2)
 \end{aligned}$$

$$absDA_t = \gamma_0 + \gamma_1 GENDER_t + \gamma_2 MASTER_t + \gamma_3 SHORTLAG_t + \gamma_4 MAJOR_t + \gamma_5 MAJOR \times SHORTLAG_t + \gamma_6 LEV_t + \gamma_7 SIZE_t + \gamma_8 GROWTH_t + \gamma_9 BVMV_t + \gamma_{10} LOSS_t + \gamma_{11} AGE_t + \gamma_{12} CYCLE_t + \gamma_{13} CAPINT_t + \gamma_{14} PRI_DA_t + \gamma_{15} FIRMYEN_t + \gamma_{16} LEADTEN_t + \gamma_{17} CONTEN_t + \gamma_{18} IMPORT_t + \varphi \cdot YEAR + \varepsilon_t \quad (3)$$

Discretionary accruals (*DA*) are measured by the following formulas:

$$TA_{it}/A_{it-1} = \delta_0 + \delta_1(1/A_{it-1}) + \delta_2[(\Delta REV_{it} - \Delta REC_{it})/A_{it-1}] + \delta_3(PPE_{it}/A_{it-1}) + \delta_4 ROA_{it-1} + \varepsilon_{it} \quad (4)$$

$$DA_{it} = TA_{it}/A_{it-1} - \{\widehat{\delta}_0 + \widehat{\delta}_1(1/A_{it-1}) + \widehat{\delta}_2[(\Delta REV_{it} - \Delta REC_{it})/A_{it-1}] + \widehat{\delta}_3(PPE_{it}/A_{it-1}) + \widehat{\delta}_4 ROA_{it-1}\} \quad (5)$$

Where total accruals (*TA*) are defined as net income before extraordinary items minus operating cash flows; *A* is natural logarithm of total assets; ΔREV is the change in net sales; ΔREC is the change in accounts receivable; *PPE* is gross property, plant, and equipment; *ROA* is return on total assets; and ε is the error term. Consistent with Kothari et al. (2005), this study uses performance-adjusted discretionary accruals and estimate model (4) in cross-section in each year with at least ten companies in every industry. The residuals in Model (5) are estimated to obtain discretionary accruals (*DA*). Following prior research (Chen et al. 2008), this study uses absolute abnormal accruals (*absDA*) as a proxy for audit quality.

Table 4 presents these results. It shows that the coefficient for *SHORTLAG* is insignificant ($p > 0.1$) in both models. Furthermore, the coefficient for the interaction of *MASTER* and *SHORTLAG* is insignificant ($p > 0.1$). The coefficient for the interaction of *MAJOR* and *SHORTLAG* is also insignificant ($p > 0.1$). Both results suggest that for auditors who hold a master’s degree or majored in accounting the possible trade-off between audit report lag and audit quality does not decrease. In other words, the joint test of *MASTER* and *SHORTLAG* is not significant, suggesting that audit quality is not compromised when auditors hold a higher degree and the audit report lag is short. The joint test of *MAJOR* and *SHORTLAG* is also not significant; indicating that the higher audit quality associated with auditors who majored in accounting as compared with other majors does not decrease with a shorter audit report lag.

Table 4 Interaction effects of master/major and shortlag on audit quality

Absolute discretionary accruals			Absolute discretionary accruals		
Variables	Estimate	p-value	Variables	Estimate	p-value
<i>Intercept</i>	-2.4623	<0.001	<i>Intercept</i>	-2.3848	<0.001
<i>GENDER</i>	-0.0225	0.548	<i>GENDER</i>	-0.0224	0.551
<i>MASTER</i>	0.0703	0.053	<i>MASTER</i>	0.0684	0.010
<i>SHORTLAG</i>	0.0047	0.915	<i>SHORTLAG</i>	-0.1932	0.272
<i>MASTER</i> × <i>SHORTLAG</i>	-0.0029	0.955	<i>MAJOR</i>	-0.1863	0.083
<i>MAJOR</i>	-0.1138	0.186	<i>MAJOR</i> × <i>SHORTLAG</i>	0.1992	0.262
<i>LEV</i>	-0.0002	0.770	<i>LEV</i>	-0.0002	0.755
<i>SIZE</i>	0.1876	<0.001	<i>SIZE</i>	0.1876	<0.001
<i>GROWTH</i>	-0.0003	0.390	<i>GROWTH</i>	-0.0003	0.376
<i>BVMV</i>	-0.0523	0.051	<i>BVMV</i>	-0.0531	0.047
<i>LOSS</i>	0.1093	<0.001	<i>LOSS</i>	0.1097	<0.001
<i>AGE</i>	0.0018	0.921	<i>AGE</i>	0.0016	0.932
<i>CYCLE</i>	0.0010	0.934	<i>CYCLE</i>	0.0005	0.970
<i>CAPINT</i>	-0.0291	0.124	<i>CAPINT</i>	-0.0297	0.116
<i>PRI_DA</i>	-0.0640	0.001	<i>PRI_DA</i>	-0.0637	0.001
<i>FIRMTEN</i>	0.0012	0.499	<i>FIRMTEN</i>	0.0012	0.503
<i>LEADTEN</i>	-0.0030	0.589	<i>LEADTEN</i>	-0.0030	0.597
<i>CONTEN</i>	-0.0013	0.834	<i>CONTEN</i>	-0.0012	0.845
<i>IMPORT</i>	0.0117	0.912	<i>IMPORT</i>	0.0112	0.916
<i>YEAR</i>	Yes		<i>YEAR</i>	Yes	
Observations	2,329		Observations	2,329	
Adjusted R ²	18.17%		Adjusted R ²	18.21%	

F-value	24.50 ^{***}	F-value	24.57 ^{***}
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See Table 1 for variable definitions.

^{***} denotes significance at <1 % level.

5. Conclusion

This study investigates the importance of individual auditor characteristics in determining audit report lag in Taiwan, where audit reports are required to disclose the names of auditors. The results suggest that auditors who hold a higher degree or majored in accounting are negatively related to audit lag, indicating that individual auditor characteristics do affect audit timeliness. However, there is no trade-off between audit report lag and audit quality. Audit quality is not compromised by auditors holding a master's degree and a shortened report lag. Similarly, the audit quality associated with auditors who majored in accounting does not decrease with a shorter audit report lag.

This study has some limitations that could suggest future research. First, the sample is restricted to Big 4 audit firms. Future research should consider using medium-sized or small audit firms and comparing their outcomes. Second, audit firms are all located in Taiwan. Future studies may replicate this study to assess the generalizability of the findings to the United States or other countries. Finally, this study only explores gender, master's degree, and accounting major, constituting only a small subset of the numerous individual auditor characteristics that may be relevant to audit report lag. Future studies should investigate whether other characteristics contribute to the variation in audit report lag across auditors. Despite these limitations, findings should be of interest to the regulators, audit profession, and other researchers.

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