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Engagement partners participating in auditing standard setting and audit quality*

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ABSTRACT

In this study, we investigate whether engagement partners who participate in the national auditing standard setting can provide better audit quality, and explore the underlying cause in the context of Taiwan, where the name of engagement partners can be identified in audit reports. The empirical results indicate that firms audited by incumbent Auditing Standards Committee (ASC) member auditors are associated with lower discretionary accruals and a lower probability of having small profits. The results support the view that concerns about the impairments of increased reputational capital may be the most likely cause that explains the ASC member auditors' better audit quality. This study also provides the benefits that can arise from the identification of engagement partners.

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Auditing standard setting; partner-level characteristics; reputation risks; earnings management; audit quality

1. Introduction

Over the past decade, following the trend that a growing number of jurisdictions (e.g. Australia, China, the European Union, Japan, and Taiwan) mandate the signature or identification of the engagement partner in the audit report or other documents (Carcello and Li 2013), archival auditing research has begun to study the impact of partner-level characteristics on audit quality. Such characteristics include tenure (Chen, Lin, and Lin 2008), gender (Ittonen, Vähämaa, and Vähämaa 2013), educational background, Big 4[1] audit firm experience, rank in the audit firm, political affiliation (Gul, Wu, and Yang 2013), and aggressiveness (Knechel, Vanstraelen, and Zerni 2015). As Francis (2011, 134) pointed out, 'These archival studies of partner characteristics illustrate the importance of knowing more about the people who do audits and the effect it may have on audit quality.' Based on a unique setting, we extend this stream of research by investigating whether engagement partners who participate in the auditing standard setting (hereafter, 'Auditing Standards Committee (ASC) member auditors' or 'standard setting auditors') provide a different level of audit quality, and more importantly, the underlying cause if they do. Given that there is no ready-made theory that exists at present to explain the potentially distinct audit quality delivered by standard setting auditors; therefore, the arguments and empirical results in this study may help us to further explore some drivers that affect audit quality. Specifically, we present three arguments to explain why the ASC member auditors may provide better audit quality[2]: (1) inherent expertise for appointment as an ASC member, i.e. the appointment as an ASC member

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is just the result of superior audit expertise, not the cause why an ASC member auditor can provide better audit quality; (2) knowledge accumulated through standard setting experience; and (3) concerns about impairments to the auditor's increased reputational capital.

We use a sample of listed companies audited by Big 4 audit firms in Taiwan for three reasons. First, an audit report in Taiwan must be signed by two audit partners, and this requirement makes studies based on the characteristics of individual auditors feasible. Second, the national auditing standard setter in Taiwan, the Auditing Standards Committee (ASC), allows its member to be a practicing auditor.[3] Third, the legal environment in Taiwan minimizes the auditors' litigation risks (Liao, Chi, and Chen 2013; Lin and Lin 2013). To sum up, this setting provides us with unique data to explore our research questions.

The empirical results indicate that, *ceteris paribus*, firms audited by incumbent ASC member auditors are associated with lower absolute and positive values of performance-adjusted current discretionary accruals, and a lower probability of having small profits. This is consistent with the argument that concerns about impairments to increased reputational capital explain the better audit quality delivered by the ASC member auditors in Taiwan. In addition, we conduct a series of sensitivity and robustness tests to confirm the validity of this study's results.

This paper contributes to the existing literature in three ways. First, our results support the notion in auditing theory that increased reputational capital can result in better audit quality. As DeFond and Zhang (2014, 297) stated, 'While it is intuitive that reputation risk provides an incentive for high quality audits, direct evidence that reputation incentives affect audit quality is rare.' Reputational concerns, as one fundamental element of auditor independence, sustain audit quality in addition to litigation and regulation risks (DeFond and Zhang 2014). Although prior studies do identify many negative impacts on audit firms losing their reputations, most of the settings are based on rare and severe events in developed countries, some of them are even confounded by high litigation risks, and the consequences are not related to audit quality *per se* (e.g. Baber, Kumar, and Verghese 1995; Barton 2005; Chaney and Philipich 2002; Skinner and Srinivasan 2012; Weber, Willlenborg, and Zhang 2008).[4] Therefore, our findings provide positive evidence to verify this vested belief directly. Specifically, we fill the gap in the extant literature regarding the effect of reputation on audit quality *per se* by providing evidence in the context of: (1) a positive reputation-increasing event, (2) partner-level, (3) emerging country, and (4) minimum litigation risks. Reputational incentives may become alternative source that can complement the effects of litigation and regulation on audit quality. Therefore, the findings of this study may be especially relevant to regulators and legislators in countries with lower investor protection and auditor litigation risks. Second, many studies have validated the association between partner-level characteristics and audit quality. However, the premise of getting such benefits is the identification of engagement partners. Some regulators, such as the Public Company Accounting Oversight Board (PCAOB) of the USA, are just beginning to mandate the disclosure of the engagement partner and other accounting firms participating in the audit.[5] Our findings, along with those studies described above, should be of interest to regulators, researchers and other stakeholders in global capital markets. Third, recent accounting research begins to investigate the characteristics of the standard setters and their effects on equilibrium outcomes (e.g. Allen and Ramanna 2013). Our study may provide additional insights for this stream of research.

The remainder of this paper is organized as follows. In Section 2, we introduce the background information, review the relevant literature and develop our arguments. The research design is then described in Section 3. Section 4 presents the sample selection procedure and sample distribution. Section 5 reports the empirical findings, and Section 6 details the sensitivity tests. Section 7 then presents the conclusion of this work.

2. Background, literature, and arguments

2.1. Background

In Taiwan, the Auditing Standards Committee (ASC) under the Accounting Research and Development Foundation (ARDF) takes the responsibility to promulgate the statements of auditing standards (Taiwan SASs), which stipulate the generally accepted auditing standards (GAAS) auditors should comply with when performing financial statement audit tasks.[6] The Foundation is privately founded and independent of the Taiwanese government. The ASC consists of two primary types of positions – members and consultants. The normal tenure of each member and consultant is three years, and they can be reappointed without restrictions.[7] All members and consultants are part-time and from diverse backgrounds, such as practicing CPAs, university professors, and representatives of government institutions (e.g. National Audit Office, Financial Supervisory Commission, and Ministry of Economic Affairs). Among the CPAs, four are partners representing the Big 4[8], and others represent regional CPA Associations (often, they are partners of non-Big 4 audit firms). Combined with the fact that the audit reports of public companies in Taiwan must be audited and signed by two engagement CPAs, this unique setting provides us with an opportunity to investigate whether and why these ASC member auditors can provide distinct audit quality.[9]

2.2. Literature and arguments

2.2.1. The effects of individual-level characteristics on audit quality

Audited financial statements are jointly determined by client firms and their auditors (Antle and Nalebuff 1991). Therefore, the quality of financial reporting will be naturally influenced by various characteristics of the audit service suppliers. Earlier empirical studies address this issue mainly at the audit firm (or office)-level. These characteristics include national firm size (Big 4/non-Big 4) or city office size (e.g. Becker et al. 1998; Choi et al. 2010; Francis, Maydew, and Sparks 1999; Francis and Yu 2009; Kim, Chung, and Firth 2003), audit firm tenure (Johnson, Khurana, and Reynolds 2002), industry expertise (Reichelt and Wang 2010), and auditor style (Francis, Pinnuck, and Watanabe 2014).[10] Recently, there is a trend in empirical auditing research that pushes the audit quality analysis unit down to the individual-level (e.g. engagement partners) characteristics and attributes. This occurs because more and more jurisdictions (e.g. Australia, China, the European Union, Japan, Taiwan, and recently, the USA) require the signature or identification of the engagement partner in the audit report or other documents (Carcello and Li 2013). As a result, some empirical works complement many experiment-based studies (e.g. see Nelson and Tan 2005 for a review of judgment and decision-making research in auditing). For example, based on a sample of Finnish and Swedish NASDAQ OMX-listed firms, Ittonen, Vähämaa, and Vähämaa (2013) document a negative association between firms audited by female partners and abnormal accruals. Gul, Wu, and Yang (2013), manually collect individual signing auditors' demographic information from the Chinese market, demonstrate that some individual characteristics (e.g. educational background, Big 4 audit firm experience, rank in the audit firm, and political affiliation) can partially explain the differences among individual-level auditors' audit quality. Knechel, Vanstraelen, and Zerni (2015) find that the aggressive or conservative reporting style of audit partners is consistent across clients and over time, and the market recognizes this difference and imposes economic consequences (e.g. worse credit ratings and lower Tobin's Q) on client firms audited by partners with a more aggressive reporting style.[11]

The logic underlying this stream of literature is as follows. First, managerial effect studies have indicated that it is the individual, rather than the organization, makes decisions (Kachelmeier 2010). We believe this also applies to audit procedures,[12] because the engagement partners, through the review and other processes, directly or indirectly make various decisions and finally determine the appropriate type of audit opinions. Second, individual-level characteristics and attributes could influence the objectivity and competence of engagement partners (DeAngelo 1981), and this will naturally influence audit quality. Furthermore, analyses based on individuals can identify many additional characteristics

and attributes that cannot be obtained from groups (e.g. audit groups and audit firms). In contrast to other CPAs, we provide the following arguments for the potentially better earnings quality of firm-year observations audited by the ASC member auditors. We note that these arguments are not necessarily mutually exclusive.

2.2.2. Argument 1: inherent expertise for appointment as an ASC member

The previous literature indicates that experience and training may create knowledge, and knowledge together with innate ability make up the expertise that determines an auditor's performance (Bonner and Lewis 1990; Libby and Luft 1993; Nelson and Tan 2005). For example, Libby and Tan (1994) find that the performance of auditors is affected by both knowledge and innate ability. Auditing standard setting bodies, such as the ASC, are authorized to promulgate the GAAS as the baseline for audit procedures. Given the high professionalism and complexity of audit tasks, and the segregation of duties within the committee, an auditor appointed as an ASC member may stand out in terms of their expertise with audit tasks. As mentioned in note 8, some of them assume important positions in their respective audit firms. Therefore, it may not be the membership of the ASC that confers such expertise, but rather an auditor's expertise that leads to the appointment in such a position. If Argument 1 is correct, then better audit quality should be provided *before, during,* and *after* (i.e. abdicates from that position) an engagement partner serves as an ASC member.

2.2.3. Argument 2: knowledge accumulated through the experience of setting auditing standards

Another potential reason for better audit quality is the accumulation of the latest auditing-related knowledge through the setting of auditing standards. As mentioned earlier, experience is one factor that creates knowledge. For example, Libby and Frederick (1990) find that experienced auditors exhibit more complete and accurate knowledge of financial statement errors and error occurrence rates. Similarly, Kaplan, O'Donnell, and Arel (2008) find that experienced senior auditors can better evaluate the reliability of the client firms' internal controls. Therefore, if the knowledge arising from the experience of auditing standard setting does increase audit expertise, a positive association is expected between the accumulated time spent as an ASC member and audit quality. Alternatively, framed in a binary form, better audit quality should appear *during* and *after* an engagement partner serves as an ASC member.

2.2.4. Argument 3: concerns about the impairments of increased reputational capital

Reputation risks may be concerns that lead to better audit quality provided by the ASC member auditors. Auditing theory indicates that if losses of reputation will result in a decrease in clients and accompanying audit fees, then auditors will have greater incentives to keep their reputations by providing better audit quality. Concerns about reputations are especially evident in large audit firms (such as the Big 4), because these have 'more to lose' from delivering poor audit quality (DeAngelo 1981). In the context of our study, once an engagement partner is appointed as an ASC member, the associated reputation risks may skyrocket (even when holding the number of clients or amount of audit fees constant after the appointment) due to the increase in his/her reputational capital (having become a rule-maker in the professional field). For example, Dyck, Volchkova, and Zingales (2008) argue that the media can increase the probability that the various audiences receive reputation-destroying information. In addition, the media can increase the reputational costs by spinning the news. Therefore, ASC member auditors may have greater incentives to implement audit tasks per the related auditing standards more thoroughly and conservatively. Our study based on Taiwan's data therefore provides a good setting that tests the effect of a reputation-increasing *positive* event on audit quality, in contrast to prior empirical studies primarily investigating the consequences of reputation-destroying *negative* events, such as audit failures (e.g. Cahan, Emanuel, and Sun 2009; Skinner and Srinivasan 2012; Weber, Willenborg, and Zhang 2008). If Argument 3 holds, better audit quality should be delivered *during*,

and *at most for a few periods of time after* an engagement partner serves as an ASC member, because public attention should significantly decrease after an auditor leaves the ASC.

2.2.5. Auditors' litigation risks in Taiwan

Litigation risks are another sources that affect audit quality (DeFond and Zhang 2014). However, compared with common-law countries, code-law countries like Taiwan are generally characterized as having less investor protection and lower auditor litigation risks (Francis and Wang 2008; La Porta et al. 1998). Lin and Lin (2013), review Taiwan-based auditing research from 2000 to 2011, also find that investors in Taiwan are less able to file for civil action against auditors, and the cases of getting civil compensation from auditors are even rare. Therefore, following prior studies conducted in code-law settings, such as Germany (Weber, Willenborg, and Zhang 2008), Japan (Skinner and Srinivasan 2012), and Taiwan (Liao, Chi, and Chen 2013), we infer that an auditor's litigation risks in Taiwan are minimized, and should not be a major concern in affecting audit quality.

3. Research design

3.1. Proxies for audit quality

If the ASC member auditors can deliver superior audit quality due to the arguments asserted in Section 2, the possibility that earnings management in financial statements is mitigated will be higher. Following Lennox, Wu, and Zhang (2016) and DeFond, Erkens, and Zhang (2016), we use absolute and positive values of performance-adjusted current discretionary accruals as the first measure of audit quality in our study.[13] As suggested by Lennox, Wu, and Zhang (2016), the advantage of using absolute accruals is that it measures both income-increasing and income-decreasing earnings management. However, absolute discretionary accruals have two potential disadvantages. The first is that good audit quality may change the sign of signed accruals (e.g. from 0.1 to –0.1); however, such a sign change cannot be captured by absolute accruals. Second, and also is the disadvantage of negative discretionary accruals: It is difficult to conclude the meaning of changes in the magnitude of negative discretionary accruals. For example, a decrease in negative discretionary accruals (i.e. toward zero) may indicate a correction of income-decreasing earnings management; however, it may be interpreted as a compromise of auditor conservatism.

Using OLS, we run Equation (1.1) by industry-year to isolate the current discretionary component from the total current accruals (Ashbaugh, LaFond, and Mayhew 2003; DeFond and Jiambalvo 1994; Hribar and Collins 2002; Kothari, Leone, and Wasley 2005)[14]:

$$CA_{i,t} = \beta_1(1/A_{i,t-1}) + \beta_2((\Delta REV_{i,t} - \Delta AR_{i,t})/A_{i,t-1}) + \beta_3 ROA_{i,t-1} + u_{i,t} \quad (1.1)$$

We estimate *ABSCDA* by taking the absolute value of residuals in Equation (1.1), and obtain *POSCDA* by deleting residuals with negative values.

where $CA_{i,t}$ = current accruals for firm i in year t, calculated by net income before extraordinary items plus depreciation and amortization, minus net cash flows from operating activities, then deflated by total assets at the end of year t – 1; $A_{i,t-1}$ = total assets for firm i at the end of year t-1; $\Delta REV_{i,t}$ = change in net sales for firm i in year t; $\Delta AR_{i,t}$ = change in net account receivables for firm i in year t; $ROA_{i,t}$ = return on assets for firm i in year t.

Managers also have incentives to meet or beat earnings benchmarks (e.g. Bartov, Givoly, and Hayn 2002; Burgstahler and Dichev 1997). One of the benchmarks often used in empirical studies is zero earnings (e.g. Chi, Douthett, and Lisic 2012; Francis and Wang 2008; Gul, Wu, and Yang 2013). We thus define small profits (*SP*) as a dummy variable coded as 1 if a firm's income before extraordinary items in year t (scaled by the total assets at the end of year t – 1) falls between 0.00 and 0.01 (e.g. Ahmed, Neel, and Wang 2013; Chi, Douthett, and Lisic 2012; Gunny 2010), and 0 otherwise.[15]

3.2. Empirical model – three period model

We use OLS in Equations (2.1.a) and (2.1.b), and use logistic regression in Equation (2.2) to test Arguments 1, 2, and 3.

$$\begin{aligned} ABSCDA_{i,t} = {} & \beta_0 + \beta_1 BEFORE_{i,t} + \beta_2 DURING_{i,t} + \beta_3 AFTER_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEV_{i,t} \\ & + \beta_6 AGEM_{i,t} + \beta_7 OCF_{i,t} + \beta_8 INDEXPT_{i,t} + \beta_9 PRE1CA_{i,t} + \beta_{10} TENURE_{i,t} \\ & + \beta_{11} LOSS_{i,t} + \beta_{12} SDSALES_{i,t} + \beta_{13} CIMP_{i,t} + INDUSTRY + YEAR + u_{i,t} \end{aligned} \quad (2.1.a)$$

$$\begin{aligned} POSCDA_{i,t} = {} & \beta_0 + \beta_1 BEFORE_{i,t} + \beta_2 DURING_{i,t} + \beta_3 AFTER_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEV_{i,t} \\ & + \beta_6 AGEM_{i,t} + \beta_7 OCF_{i,t} + \beta_8 INDEXPT_{i,t} + \beta_9 PRE1CA_{i,t} + \beta_{10} TENURE_{i,t} \\ & + \beta_{11} LOSS_{i,t} + \beta_{12} SDSALES_{i,t} + \beta_{13} CIMP_{i,t} + INDUSTRY + YEAR + u_{i,t} \end{aligned} \quad (2.1.b)$$

$$\begin{aligned} SP_{i,t} = {} & \beta_0 + \beta_1 BEFORE_{i,t} + \beta_2 DURING_{i,t} + \beta_3 AFTER_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LEV_{i,t} + \beta_6 AGEM_{i,t} \\ & + \beta_7 OCF_{i,t} + \beta_8 INDEXPT_{i,t} + \beta_9 PRE1CA_{i,t} + \beta_{10} TENURE_{i,t} + \beta_{11} SDSALES_{i,t} + \beta_{12} CIMP_{i,t} \\ & + INDUSTRY + YEAR + u_{i,t} \end{aligned} \quad (2.2)$$

where $ABSCDA_{i,t}$ = the absolute value of performance-adjusted current discretionary accruals for firm i in year t; $POSCDA_{i,t}$ = performance-adjusted current discretionary accruals with a positive value for firm i in year t; $SP_{i,t}$ = 1 if income before extraordinary items divided by previous year-end total assets for firm i in year t falls in the interval (0.00, 0.01), and 0 otherwise; $BEFORE_{i,t}$ = 1 if a firm-year observation for firm i in year t is audited in an ASC member auditor's 'pre-appointment' year during the sample period, and 0 otherwise; $DURING_{i,t}$ = 1 if a firm-year observation for firm i in year t is audited by an incumbent ASC member auditor during the sample period, and 0 otherwise; $AFTER_{i,t}$ = 1 if a firm-year observation for firm i in year t is audited by a former ASC member auditor during the sample period, and 0 otherwise; $SIZE_{i,t}$ = the natural logarithm of total assets for firm i at the end of year t; $LEV_{i,t}$ = total liabilities divided by total assets for firm i at the end of year t; $AGEM_{i,t}$ = the listing age for firm i in year t; $OCF_{i,t}$ = net cash flows from operating activities deflated by last year-end total assets for firm i in year t; $INDEXPT_{i,t}$ = a dummy variable coded 1 if firm i is audited by an industry expert audit firm in year t, and 0 otherwise; $PRE1CA_{i,t}$ = last year's total current accruals deflated by last year-end total assets for firm i in year t; $TENURE_{i,t}$ = consecutive tenure (in years) audited by the latest audit firm since 1983[16] for firm i in year t; $LOSS_{i,t}$ = 1 if net income of firm i in year t is less than zero, and 0 otherwise; $SDSALES_{i,t}$ = standard deviation of sales deflated by last year-end total assets for firm i in year t, calculated over the current and prior four years; $CIMP_{i,t}$ = client importance for firm i in year t, which is measured as the natural logarithm of client sales divided by the sum of the natural logarithm of client sales from all listed clients audited by the same engagement audit firm; $INDUSTRY$ = industry dummy variables; $YEAR$ = year dummy variables.

The variables of interest, *BEFORE, DURING,* and *AFTER*, are all dummy variables used to test when the ASC member auditors (see Table 3) during our sample period can provide distinct audit quality.[17] As discussed above, if the coefficients of *BEFORE, DURING,* and *AFTER* are all significantly negative, then we have supportive evidence for Argument 1. If only the coefficients of *DURING* and *AFTER* are significantly negative, although we can rule out Argument 1, it is still difficult to disentangle the answer from Arguments 2 and 3; if only the coefficient of *DURING* is significantly negative, then we can further rule out Argument 2.

3.3. Empirical model – accumulated knowledge model

One assumption of the Three Period Model is that the knowledge arising from the experience of auditing standard setting is present in a binary form. However, such as the tenure, given the accumulative

nature of experience, the design of the Three Period Model may improperly compress a roughly continuous variable into a binary one. Thus, similar to Chi et al. (2017), which studies the effect of audit partner experience on audit quality, we further examine the association between the accumulated years as an ASC member and audit quality. In this model, all variables in Equations (2.1.a), (2.1.b), and (2.2) are retained, except for one new independent variable, *ASBEXP,* which is used to replace *BEFORE, DURING,* and *AFTER*. *ASBEXP* is the cumulative years an engagement partner has served as an incumbent ASC member when performing the audit of a firm-year observation. *ASBEXP* is calculated from year 2000. For example, if a practicing CPA serves as an ASC member during 2002–2005 and 2008–2011, then the values of *ASBEXP* in 2009, 2010, and 2011 will be 6, 7, and 8, respectively. Considering potential measurement errors and avoiding the maximum value of *ASBEXP* from being too small, we restrict the sample period of this model to 2009–2011, so that the maximum value of *ASBEXP* could be at least 10 years.[18] The model is as follows:

$$\begin{aligned} ABSCDA_{i,t} = {} & \beta_0 + \beta_1 ASBEXP_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 AGEM_{i,t} + \beta_5 OCF_{i,t} \\ & + \beta_6 INDEXPT_{i,t} + \beta_7 PRE1CA_{i,t} + \beta_8 TENURE_{i,t} + \beta_9 LOSS_{i,t} + \beta_{10} SDSALES_{i,t} \\ & + \beta_{11} CIMP_{i,t} + INDUSTRY + YEAR + u_{i,t} \end{aligned} \quad (3.1.a)$$

$$\begin{aligned} POSCDA_{i,t} = {} & \beta_0 + \beta_1 ASBEXP_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 AGEM_{i,t} + \beta_5 OCF_{i,t} + \beta_6 INDEXPT_{i,t} \\ & + \beta_7 PRE1CA_{i,t} + \beta_8 TENURE_{i,t} + \beta_9 LOSS_{i,t} + \beta_{10} SDSALES_{i,t} + \beta_{11} CIMP_{i,t} \\ & + INDUSTRY + YEAR + u_{i,t} \end{aligned} \quad (3.1.b)$$

$$\begin{aligned} SP_{i,t} = {} & \beta_0 + \beta_1 ASBEXP_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 AGEM_{i,t} + \beta_5 OCF_{i,t} + \beta_6 INDEXPT_{i,t} \\ & + \beta_7 PRE1CA_{i,t} + \beta_8 TENURE_{i,t} + \beta_9 SDSALES_{i,t} + \beta_{10} CIMP_{i,t} + INDUSTRY + YEAR + u_{i,t} \end{aligned} \quad (3.2)$$

If the coefficients of *ASBEXP* are significantly negative, this may indicate that the better audit quality delivered by the ASC member auditors can be attributed to the knowledge they have accumulated through the experience of setting auditing standards.

3.4. Control variables of the empirical models

We use the following control variables in the equations using current *ABSCDA* and *POSCDA* as the dependent variable. Prior studies document a positive association between the tenure of audit firms and audit quality (e.g. Chi and Huang 2005; Myers, Myers, and Omer 2003). Francis and Yu (2009) suggest that firms reporting losses have lower incentives to manage discretionary accruals than firms that report positive earnings. Therefore, we expect the coefficient signs for *TENURE* and *LOSS* to be negative. We include *SIZE* and *AGEM*, because larger and older firms are found to have lower discretionary accruals (Becker et al. 1998; Carcello and Li 2013; Chen, Lin, and Lin 2008; Myers, Myers, and Omer 2003). Therefore, we also expect negative coefficient signs for *SIZE* and *AGEM*. Because firms with more debt may have more income-increasing discretionary accruals to meet the debt covenant constraints (e.g. DeFond and Jiambalvo 1994; Reynolds and Francis 2001; Watts and Zimmerman 1986) or more income-decreasing discretionary accruals to renegotiate contracts (e.g. Ashbaugh, LaFond, and Mayhew 2003; Becker et al. 1998), we therefore include *LEV* and expect a positive association between *LEV* and *ABSCDA*. *SDSALES* is included in the control variables based on the finding of Hribar and Nichols (2007) that operating volatility is strongly positively correlated with unsigned discretionary accruals. With respect to cash flows, Dechow, Sloan, and Sweeney (1995) show that net cash flows from operating activities influence the magnitude of discretionary accruals. Some prior studies find negative associations between cash flows and *signed* discretionary accruals (e.g. Ashbaugh, LaFond, and Mayhew 2003; Chi et al. 2009; Francis and Yu 2009; Kim, Chung, and Firth 2003). Thus, we only expect a negative sign for *OCF* when the dependent variable is *POSCDA*, because

ABSCDA is an unsigned metric. For the same reason, although we also include the previous year's total current accruals (Ashbaugh, LaFond, and Mayhew 2003; Carcello and Li 2013), we only expect a negative sign for *PRE1CA* when the dependent variable is *POSCDA* based on the reversal nature of accruals. Auditing theory indicates that the magnitude of audit fees will influence the economic dependence of auditors on their clients. Consequently, this will compromise auditors' independence and impair audit quality. We therefore control for client importance at the audit firm level (*CIMP*). However, due to the inconclusive results in empirical studies (see Chi, Douthett, and Lisic 2012 for a detailed discussion), we make no predictions about the coefficient sign of *CIMP*. We also control for industry expertise at audit firm level (*INDEXPT*), because prior studies have demonstrated that audit firms with industry specialization will provide better audit quality due to industry-specific knowledge and reputational stake (Balsam, Krishnan, and Yang 2003; DeFond and Zhang 2014; Krishnan 2003). Finally, we control for industry dummies (*INDUSTRY*) and year dummies (*YEAR*).

In equations using earnings benchmarks (i.e. *SP*) as dependent variables, the control variables are the same as those mentioned above, except *LOSS*.[19]

4. Sample selection

The sample is based on firms listed on Taiwan's two largest stock exchanges, the Taiwan Stock Exchange (TWSE) and Gre Tai Securities Market (GTSM, which has been called the Taipei Exchange since 2015), from 2000 to 2011. We collect financial data and auditor-related data from the *Taiwan Economic Journal* (*TEJ*) database. We choose 2000 as our inception year because at this time there was an extensive change in the financial and audit reporting environment in Taiwan, which may have presented a good opportunity for well-prepared CPAs (especially for those 'in the loop' rule-makers) to distinguish their service from others.[20] To obtain the complete list of the ASC member auditors, we manually collect every Taiwan SASs issued or revised during our sample period.[21] We note that when calculating current discretionary accruals, we require a minimum of 15 firms (Zang 2012) in an industry-year; we also delete all firms in the 'others' industry (*TEJ* industry code: 99) because of the component firms' heterogeneity. Second, to achieve comparability of the sample between different equations, we use the same sample for the earnings benchmark equations. Third, we delete client firms not audited by Big 4 for two reasons: (1) We find the average of our variables of interest, *BEFORE*, *DURING*, and *AFTER*, are all below 0.1% in firms audited by Non-Big 4, and this leads to a serious concern regarding the power of our tests; and (2) restricting our sample to Big 4 clients may also control for some unobserved variables which are fundamentally different between Big 4 and Non-Big 4 client firms. Fourth, recall that the sample period of the Accumulated Knowledge Model is 2009–2011. Finally, to avoid the influence of outliers, we trim observations if the value of any variable (except dummy variables) is in the top or bottom 0.5% of its distribution (Chen and Dixon 1972) from Equations (2.1.a) to (3.2).[22] Table 1 summarizes the detailed sample selection procedure and results.

Table 2 shows the industry distribution based on the final sample of Equations (2.1.a) and (2.2).[23] To calculate current discretionary accruals, we classify industries according to the two-digit *TEJ* industry codes in principle. However, since electronics industry firms (*TEJ* industry code: 23) account for over half of our sample (e.g. 4703/7536 = 62.4%), and these have a great variety of operations, we further classify electronics industry firms based on three-digit *TEJ* industry codes.[24] There are 389 firm-year observations audited by ten Big 4 ASC member auditors during the sample period. Among these, 93 firm-years are in the ASC member auditor's 'pre-appointment' year, 231 firm-years are audited by the incumbent ASC member auditors, and 65 firm-years are audited by the former ASC member auditors. Generally, the distribution of the ASC member auditors' clients is widely spread across all industries except two (*TEJ* industry code: 20 and 23U) during the sample period.

Table 3 presents the number and gender of the ASC member auditors, as well as the audit firms they serve. For completeness, we also list ASC member auditors belonging to Non-Big 4 audit firms. Note that for reasons described above, we only focus on client firms audited by Big 4 in the subsequent empirical tests. During 2000–2011, 13 (10) practicing CPAs serve as (Big 4 audit firm) members of the

Table 1. Sample selection procedure.

Sample selection criteria	Firm-year observations
Panel A: sample for the Three Period Model	
Listed firms domiciled in Taiwan during 2000–2011(Excluding utilities and financial service industries)	12,275
Less: Firms without necessary financial data to calculate *ABSCDA*	885
Less: Firms within 'others industry' or industry-year not at least 15 observations	883
Less: Firms without necessary data or audited by non-Big 4	2470
Less: Outliers	501
Final sample for Equation (2.1.a) and (2.2)	7536
Less: Performance-adjusted current discretionary accruals with negative value	4082
Final sample for Equation (2.1.b)	3454
Panel B: sample for the Accumulated Knowledge Model	
Listed firms domiciled in Taiwan during 2000–2011(Excluding utilities and financial service industries)	12,275
Less: Firms during 2000–2008	8442
Less: Firms without necessary financial data to calculate *ABSCDA*	190
Less: Firms within 'others industry' or industry-year not at least 15 observations	200
Less: Firms without necessary data or audited by non-Big 4	724
Less: Outliers	150
Final sample for Equation (3.1.a) and (3.2)	2569
Less: Performance-adjusted current discretionary accruals with negative value	1342
Final sample for Equation (3.1.b)	1227

Notes: Firm-year observations are obtained from the *Taiwan Economic Journal* (*TEJ*) database.
Variable Definition: *ABSCDA* = the absolute value of performance-adjusted current discretionary accruals.

Table 2. Sample (Firm-Years) distribution based on *TEJ* industry classification.

	TEJ		Firm-Years			
Industry name	Code	FIRM-YEAR	*BEFORE(1)*	*DURING(2)*	*AFTER(3)*	*TOTAL(1+2+3)*
Foods	12	183	0	16	2	18
Plastics	13	241	3	13	1	17
Textiles	14	517	6	18	7	31
Electric Machinery	15	464	5	7	1	13
Cement	17	485	0	4	1	5
Iron and Steel	20	292	0	0	0	0
Motherboard Scheme	23B	685	2	16	7	25
Optoelectronics/IO	23C	843	11	22	11	44
Electron Component	23D	1039	29	30	14	73
Network Modem	23E	197	9	8	2	19
IC Produce	23G	767	7	18	10	35
Electronics Industry	23H	226	0	1	1	2
Communication	23 K	155	1	0	0	1
Electronic Channel	23T	429	17	31	1	49
Consumption Electron	23U	97	0	0	0	0
Software Service	23X	265	1	16	2	19
Building & Cons.	25	361	2	18	0	20
Shipping and Trans.	26	220	0	9	0	9
Trading & Consumer	29	70	0	4	5	9
Total		7536	93	231	65	389

Notes: Table 2 presents the industry distribution based on the final sample of Equations (2.1.a) and (2.2).
Sample Period: 2000–2011.

ASC. There are at least two CPAs in each Big 4 audit firm, and three CPAs come from non-Big 4 audit firms.[25] This is consistent with the ASC constitution policy described in Section 2. However, there is only one female CPA. This ratio is substantially lower than the average ratio of female practicing CPAs in Taiwan.[26] Given that researchers find that female auditors can deliver better quality audits than male auditors (Ittonen, Vähämaa, and Vähämaa 2013) do, the variations in audit quality provided by the ASC member auditors should not be attributed to a higher ratio of female practicing CPAs.

Table 3. Profile of the ASC member auditors during 2000–2011.

Firms	Total	Male	Female
DT	3	3	0
EY	2	1	1
KP	3	3	0
PWC	2	2	0
Other	3	3	0
Total	13	12	1

Notes: DT = Deloitte & Touche; EY = Ernst & Young; KP = KPMG; and PWC = PricewaterhouseCoopers.
Table 3 presents the number and gender of the ASC member auditors, as well as the audit firms they served at during the period examined in this study. We classify the ASC member auditors of Arthur Anderson into DT because of the merge happened in 2003 (see note 25). We caution that this is not the same as the firm-year observations they audit during our sample period. We also note that we only focus on client firms audited by Big 4 in the subsequent empirical tests.

5. Empirical results

5.1. Descriptive statistics

Table 4 shows summary statistics for all variables in Equations (2.1.a) and (2.2) ($N = 7536$). *BEFORE*, *DURING*, and *AFTER* range from 0.9 to 3.1 percent, which correspond to 93, 231, and 65 observations, respectively. Untabulated results indicate that the average tenure of the ten Big 4 ASC member auditors is 5.9 years, which almost occupies half of our sample period (2000–2011). In addition, one died in 2003, and two served their first year since 2011. This can explain why the order of magnitude regarding our variables of interest is *DURING* > *BEFORE* > *AFTER*. The value of *SP* indicates that about 6.9 percent of the observations potentially manipulate earnings to become small profits. Finally, the value for *LOSS* indicates about 22.3 percent of our sample firm-years experience a loss.

The untabulated Pearson correlation coefficient matrix[27] shows that, taking Equation (2.1.a) ($N = 7536$) as an example, *LEV* (+), *SDSALES* (+), *SIZE* (−), *AGEM* (−), and *TENURE* (−) are all highly significantly correlated with *ABSCDA* in the expected direction. This means a firm with higher leverage, higher variability of sales, smaller size, younger listing age, and shorter audit firm tenure may have larger unsigned current discretionary accruals. Regarding the variables of interest, we find that *DURING* is significantly negatively correlated with *ABSCDA*, *BEFORE* is almost marginally *positively* correlated with *ABSCDA*, and *AFTER* is negative but not significantly correlated with *ABSCDA*. In Equation (2.2), we also find a significantly negative association between *SP* and *DURING*, and there are no significant associations between *BEFORE* or *AFTER* with *SP*. These preliminary results seem to support Argument 3, i.e. concerns about the impairments of increased reputational capital. However, we note that the above findings do not control for the effect of other variables. In the following subsection, we will demonstrate the results of the multivariate analysis.

5.2. Regression results

5.2.1. Three period model

Panel A of Table 5 presents the results of the Three Period Model (i.e. Equations (2.1.a), (2.1.b), and (2.2)). To control for serial correlation, we employ robust standard errors and report the adjusted results clustered by firm for all equations in this study. Regarding Equation (2.1.a), we find all signs of control variables are consistent with those in the correlation analysis, although the coefficients of *LEV* and *TENURE* reduce to be insignificant. The only exception is *AGEM*. The insignificant and slightly positive value of the coefficient of *AGEM* ($\beta_4 = 0.0000$) indicates that, after controlling for other factors a firm with a greater listing age is not associated with lower unsigned current discretionary accruals. However, we note that the insignificant or contrary signs of *AGEM* and *LOSS* have turned out to be consistent with our expectation in Equation (2.1.b) (dependent variable: *POSCDA)*. Regarding the variables of interest, we find that the coefficient of *DURING* ($\beta_2 = -0.0065$, $p < 0.05$) in Equation (2.1.a) is negatively significant at 5 percent level. Economically, this indicates that compared with firms not

Table 4. Descriptive statistics.

Variables	*N*	Mean	Std. Dev.	Q1	Median	Q3
BEFORE	7536	0.0123	0.1104	0.0000	0.0000	0.0000
DURING	7536	0.0307	0.1724	0.0000	0.0000	0.0000
AFTER	7536	0.0086	0.0925	0.0000	0.0000	0.0000
ABSCDA	7536	0.0622	0.0636	0.0197	0.0438	0.0822
SIZE	7536	15.2823	1.3065	14.3312	15.1010	15.9838
LEV	7536	0.4238	0.1665	0.2988	0.4281	0.5461
AGEM	7536	9.3121	6.3807	5.0000	8.0000	11.0000
OCF	7536	0.0773	0.1061	0.0170	0.0727	0.1373
TENURE	7536	11.2325	5.5926	7.0000	11.0000	15.0000
INDEXPT	7536	0.3071	0.4613	0.0000	0.0000	1.0000
PRE1CA	7536	0.0039	0.0895	−0.0357	0.0078	0.0486
LOSS	7536	0.2233	0.4165	0.0000	0.0000	0.0000
SDSALES	7536	0.2110	0.1959	0.0890	0.1525	0.2607
CIMP	7536	0.3597	0.1592	0.2200	0.3300	0.4400
SP	7536	0.0694	0.2542	0.0000	0.0000	0.0000

Note: This table presents descriptive statistics based on the variables of Equations (2.1.a) and (2.2).
Sample Period: 2000–2011.
Variable Definition: *BEFORE* = a dummy variable coded 1 if a firm-year observation is audited in an ASC member auditor's 'pre-appointment' year during the sample period, and 0 otherwise; *DURING* = a dummy variable coded 1 if a firm-year observation is audited by an incumbent ASC member auditor during the sample period, and 0 otherwise; *AFTER* = a dummy variable coded 1 if a firm-year observation is audited by a former ASC member auditor during the sample period, and 0 otherwise; *ABSCDA* = the absolute value of performance-adjusted current discretionary accruals; *SIZE* = the natural logarithm of total assets; *LEV* = total liabilities divided by total assets; *AGEM* = the listing age for a firm; *OCF* = net cash flows from operating activities deflated by previous year-end total assets; *TENURE* = consecutive tenure (in years) audited by the latest audit firm since 1983; *INDEXPT* = a dummy variable coded 1 if a firm is audited by an industry expert audit firm, and 0 otherwise; *PRE1CA* = the previous year's total current accruals deflated by previous year-end total assets; *LOSS* = a dummy variable coded 1 if net income of a firm is less than zero, and 0 otherwise; *SDSALES* = standard deviation of sales deflated by previous year-end total assets, calculated over the current and prior four years; *SP* = a dummy variable coded 1 if a firm's income before extraordinary items divided by previous year-end total assets falls in the interval (0.00, 0.01), and 0 otherwise; *CIMP* = the natural logarithm of client sales divided by the sum of the natural logarithm of client sales from all listed clients audited by the same engagement audit firm.

audited by the ASC member auditors, firms audited by an incumbent ASC member auditor have about a 0.65% lower *ABSCDA* on average. Given that the average *ABSCDA* is 6.22% of total assets (Table 4), this difference accounts for 10.45% of the average *ABSCDA*. The difference is also material because a material threshold of 0.5–2% of total assets is widely used in audit practice (Eilifsen and Messier 2015).

With respect to Equation (2.1.b), although only marginally significant (perhaps due to the reduced sample size), the coefficient for *DURING* ($\beta_2 = -0.0070$, $p < 0.1$) is even larger in magnitude than that of Equation (2.1.a). This may be interpreted as that the type of earnings management curbed by incumbent ASC member auditors is primarily income-increasing discretionary accruals.[28] In Equation (2.2), the coefficient for *DURING* ($\beta_2 = -0.7997$, $p < 0.05$) is negatively significant at 5 percent level. Economically, this indicates that compared with firms not audited by the ASC member auditors, firms audited by an incumbent ASC member auditor have about a 5.2 percent lower probability of having small profits on average.[29]

As delineated in Argument 1, if inherent expertise is the underlying reason for an engagement partner to be appointed as a member of the ASC, then the coefficient of *BEFORE* should be simultaneously significantly negative with *DURING* and *AFTER*. However, Panel A of Table 5 reports that regardless of Equations (2.1.a), (2.1.b), or (2.2), the coefficients of *BEFORE* are all positive and insignificantly different from 0. Therefore, we do not get supportive evidence for Argument 1. We have two possible explanations for this result. First, while the engagement partners who are appointed as ASC members may have excellent inherent expertise, this does not necessarily lead to high quality audits. As DeAngelo (1981) suggests, audit quality is based on the joint probability that an auditor both discovers a misstatement (i.e. auditor competence) and adjusts or reports it (i.e. auditor independence). Second, the ASC member auditors do not have superior audit expertise, but instead are just the representatives of audit firms.

Table 5. Regression results for the association of ASC member auditors and audit quality.

	Equation (2.1.a)	Equation (2.1.b)	Equation (2.2)
	DV = ABSCDA	*DV = POSCDA*	*DV = SP*
	Coeff.	Coeff.	Coeff.
	(*t*-stat)	(*t*-stat)	(*t*-stat)
Panel A : Three Period Model			
INTERCEPT	0.1256*** (10.83)	0.0636*** (4.42)	0.2960 (0.33)
BEFORE	0.0080 (1.22)	0.0050 (0.62)	0.2468 (0.62)
DURING	−0.0065** (−2.01)	−0.0070* (−1.75)	−0.7997** (−2.17)
AFTER	−0.0033 (−0.51)	−0.0051 (−0.66)	0.1648 (0.31)
SIZE	−0.0064*** (−7.62)	0.0021** (2.10)	−0.0756 (−1.29)
LEV	0.0085 (1.36)	−0.0495*** (−6.78)	0.6990* (1.81)
AGEM	0.0000 (0.03)	−0.0009*** (−4.92)	0.0216** (2.21)
OCF	−0.0244* (−1.74)	−0.4005*** (−22.57)	−2.7546*** (−5.67)
INDEXPT	0.0003 (0.18)	0.0020 (0.94)	−0.1905 (−1.47)
PRE1CA	0.0325*** (2.91)	0.0201 (1.50)	−0.5486 (−1.08)
TENURE	−0.0002 (−1.03)	−0.0003 (−1.60)	0.0021 (0.20)
LOSS	0.0108*** (4.77)	−0.0396*** (−15.09)	–
SDSALES	0.0632*** (11.16)	0.0514*** (6.39)	−1.1448* (−2.54)
CIMP	0.0015 (0.21)	−0.0103 (−1.39)	−1.2327** (−2.44)
INDUSTRY	Controlled	Controlled	Controlled
YEAR	Controlled	Controlled	Controlled
N	7536	3454	7536
F-value	17.08		
***	21.92		
***	–		
Wald Test	–	–	4.71***
Adj. R^2	13.98%	41.52%	–
Pseudo R^2	–	–	6.22%
Panel B: Accumulated Knowledge Model Panel			
	Equation (3.1.a)	Equation (3.1.b)	Equation (3.2)
INTERCEPT	0.1449** (8.48)	0.0442* (1.91)	−0.5515 (−0.38)
ASBEXP	−0.0004 (−0.40)	−0.0003 (−0.17)	−0.1230 (−1.17)
SIZE	−0.0050*** (−4.40)	0.0044*** (2.91)	−0.1220 (−1.36)
LEV	−0.0045 (−0.45)	−0.0431*** (−4.23)	0.6504 (0.94)
AGEM	−0.0005** (−2.07)	−0.0012*** (−4.06)	−0.0149 (−0.78)
OCF	−0.0818*** (−3.61)	−0.4340*** (−15.55)	−3.1888*** (−3.99)
INDEXPT	−0.0007 (−0.24)	0.0039 (1.20)	−0.3325* (−1.68)
PRE1CA	0.0344* (1.66)	−0.0032 (−0.14)	0.5375 (0.61)
TENURE	−0.0001 (−0.71)	−0.0001 (−0.41)	0.0190 (1.11)
LOSS	0.0018 (0.47)	−0.0444*** (−10.21)	–
SDSALES	0.0691*** (7.02)	0.0580*** (4.56)	−0.2514 (−0.42)
CIMP	−0.0094 (−1.01)	−0.0070 (−0.73)	−1.4583* (−1.71)
INDUSTRY	Controlled	Controlled	Controlled
YEAR	Controlled	Controlled	Controlled
N	2569	1227	2569
F-value	12.18***	13.64***	–
Wald Test	–	–	2.15***
Adj. R^2	16.73%	46.61%	–
Pseudo R^2	–	–	4.83%

Notes: Table 5 presents the empirical results of the Three Period Model (Panel A) and the Accumulated Knowledge Model (Panel B). Panel A reports the results of Equations (2.1.a), (2.1.b) and (2.2); Panel B reports the results of Equations (3.1.a), (3.1.b) and (3.2).
To control for serial correlation, we employ robust standard errors and report the adjusted results clustered by firms for all equations in this table.
Variable Definitions:
All definitions are the same as Table 4, except: *INDUSTRY* = industry dummies; *YEAR* = year dummies.
*, **, *** Indicate significance at 0.10, 0.05, and 0.01 levels, respectively (two-sided).

According to Argument 2, if the knowledge arising from the experience of auditing standard setting does increase audit expertise, then the coefficients of *DURING* and *AFTER* should be simultaneously significantly negative. However, If Argument 3 is correct, then better audit quality may appear only

during (at most *after* for a few periods of time) the time when an engagement partner serves as an ASC member. The results indicate that the coefficients of *AFTER* are insignificantly different from 0 in all equations (negative for Equation (2.1.a) and (2.1.b), positive for Equation (2.2)). Collectively, the results of the Three Period Model seem to support Argument 3. However, because of the accumulative nature of experience, we further check the results of the Accumulated Knowledge Model.

5.2.2. Accumulated knowledge model

Panel B of Table 5 reports whether the knowledge accumulated through the experience of setting auditing standards is associated with better audit quality. In Equations (3.1.a) and (3.1.b), the coefficients for *ASBEXP* are both statistically insignificant, as is the coefficient in Equation (3.2). Therefore, Argument 2 is not supported by our empirical results. We interpret the results as follows. First, a number of studies show that experience and the knowledge gained from specific engagements are more relevant to explain audit performance (e.g. Ashton 1991; Bedard and Biggs 1991; Chi et al. 2017). The knowledge accumulated from the experience of setting auditing standards might be closer to general rather than industry- or task-specific audit knowledge. Therefore, whether the knowledge created by such experience can improve audit quality is questionable. Second, the part-time nature of the ASC membership may mean that these auditors devote only a limited amount of time to their standard setting activities, and thus it could be expected that the knowledge gained through such experience is also limited. Finally, the empirical results for the control variables in Equations (3.1.b), (3.1.b), and (3.2) are generally consistent with those of the Three Period Model.

5.2.3. Discussion about the differences in the coefficients between BEFORE, DURING, and AFTER[30]

In this subsection, we complement the above findings by further discussing the differences in the coefficients for our variables of interest (i.e. *BEFORE*, *DURING*, and *AFTER*). As described above, if concerns about reputation risks lead to better audit quality provided by the ASC member auditors, then the magnitude of the coefficients should be: *BEFORE* > *AFTER* > *DURING*. The difference between the coefficients of *BEFORE* and *DURING* should be most foreseeable because the reputational effects are strongest when a client firm is audited by an incumbent ASC member auditor. In contrast, the difference between the coefficients of other combinations, i.e. *BEFORE* versus *AFTER* and *DURING* versus *AFTER*, may be less likely to be significant. The results in Panel A of Table 5 confirm our inferences. The coefficients of all equations show a consistent pattern that *BEFORE* > *AFTER* > *DURING*. Furthermore, we also test (untabulated) the statistical difference between the coefficients of *BEFORE*, *DURING*, and *AFTER* in all equations of the Three Period Model. Consistent with our inferences, two of three equations (Equations (2.1.a) and (2.2)) show a significant difference between the coefficients of *BEFORE* and *DURING*. In the remaining six combinations, only one scenario (i.e. *DURING* vs. *AFTER* in Equation (2.2)) demonstrates a statistically significant difference.

In summary, the evidence presented from Equations (2.1.a) to (3.2) is consistent with Argument 3, i.e. concerns about the impairments of increased reputational capital may better explain why the ASC member auditors are associated with better audit quality.

6. Sensitivity and robustness tests

In this section, we conduct the following eight tests to examine the sensitivity or robustness of the results in this study. First, as indicated in note 8, it might be possible that the higher audit quality found in this study is actually due to concerns about reputational capital accompanied by the important positions held by these ASC member auditors in their respective firms. To address this concern, we contacted the human resource department and several senior audit partners of each Big 4 audit firm to obtain the complete yearly list of important positions. We define important positions as level one positions (with a title such as chairman, CEO, president, etc.) and level two positions (with a title such as vice chairman, vice CEO, vice president, chief risk officer, chief information officer, chief

knowledge officer, chief strategy officer, assurance service leader, etc.) in the Taipei office of each Big 4 audit firm. Due to data collection limitations, we only acquired the yearly important positions held by each of the ten ASC member auditors in this study and a list of yearly level one positions (two or three partners in each firm-year) in each Big 4 audit firm. Therefore, some of our matched pairs may be upwards-matching (i.e. a match of a level two position in the treatment group with a level one position in the control group). According to the data, six out of the ten ASC member auditors in our study held important positions during the sample period. We then use one-to-one matching with same year, same industry, and the closest assets of the firm. We additionally require that the matched firm-years must be audited by different audit firms. Recall that we have 231 firm-years audited by incumbent ASC member auditors in Table 2 (*DURING* = 1). Among those, 110 firm-years are deleted because they are not audited by partners also holding important positions, 23 firm-years are further dropped since we cannot find a qualified match. Finally, the matched sample size is 196 (i.e. [231-110-23] × 2) when comparing *ABSCDA* and *SP*. As for *POSCDA*, because of an additional requirement that the signs of current discretionary accruals in the matched pairs must both be positive, the matched sample size for *POSCDA* is further reduced to 50.[31] This matching process effectively decreases the difference of the mean assets between treatment and control groups to a lesser or even insignificant result (depending on the matching criteria). We use both univariate and regression analyses to test whether engagement partners who hold both incumbent ASC membership and important positions are positively associated with (marginally) better audit quality than those who only hold important positions. The results of univariate analysis indicate that the values of *ABSCDA*, *POSCDA*, and *SP* in the treatment group are all significantly lower than those of the control group. Even when using regression analyses to control for other determinants that affect our proxies for audit quality, we find that the coefficients of *DURING* in the equations of the dependent variables of *ABSCDA* and *SP* are still significantly negative.[32] The coefficient of *DURING* in the equation of the dependent variable of *POSCDA*, albeit being insignificant (coefficient value = −0.0155, $p = 0.24$), is also negative, probably due to the smaller sample size. In addition, we also run the regression model used in Panel A of Table 5 after removing those firm-years that are audited by engagement partners who hold both incumbent ASC membership and important positions. We use this analysis to test whether engagement partners who do not hold incumbent important positions are positively associated with better audit quality. The advantage of this method is that it has relatively large sample size ($N = 7415$ for Equation (2.1.a) and Equation (2.2); $N = 3405$ for Equation (2.1.b)). As a result, the coefficients of *BEFORE,* DURING, and *AFTER* are qualitatively consistent with those in the main analysis, except for the insignificant coefficient of *DURING* in Equation (2.1.a). Taken together, these results lend support that the better audit quality associated with incumbent ASC member auditors should not be due to the concurrent important positions they held in their respective audit firms. Second, to achieve comparability of the sample between different equations, we delete firm-years within 'others industry' or industry-year without at least 15 observations for the calculation of discretionary accruals. However, this process also deletes some observations that can be used in the earnings benchmark model (i.e. Equations (2.2) and (3.2)). Thus, we relax this requirement and re-run the earnings benchmark model. As a result, this makes the sample size of Equation (2.2) and Equation (3.2) increase by 15.46% (1,165 firm-years) and 10.51% (270 firm-years), respectively. The empirical results are consistent with those of the main analysis. Third, similar to Allen and Ramanna (2013), we drop each ASC member auditor at a time and re-estimate all regression models in this study. This leads to 60 (six equations time ten ASC member auditors) additional tests. The results are still consistent with those of the main analysis. The only two insignificant exceptions are one ASC member auditor in Equation (2.1.a) and another in Equation (2.1.b). However, the coefficient signs of *DURING* are unchanged. Therefore, our findings are not driven by any individual ASC member auditor. Fourth, we use alternative models to calculate discretionary accruals. We use the following cross-sectional variant of the Jones Model (Jones 1991; Klein 2002) and the performance-adjusted modified Jones Model (Chen, Lin, and Lin 2008; Kothari, Leone, and Wasley 2005) to estimate discretionary accruals. Consistent with Equation (1.1), we run Equations (1.2) and (1.3) by industry-year.

Cross-sectional variant of the Jones Model

$$TA_{i,t} = \beta_1(1/A_{i,t-1}) + \beta_2(\Delta REV_{i,t}/A_{i,t-1}) + \beta_3(PPE_{i,t}/A_{i,t-1}) + u_{i,t} \quad (1.2)$$

Performance-adjusted modified Jones Model

$$TA_{i,t} = \beta_1(1/A_{i,t-1}) + \beta_2((\Delta REV_{i,t} - \Delta AR_{i,t})/A_{i,t-1}) + \beta_3(PPE_{i,t}/A_{i,t-1}) + \beta_4 ROA_{i,t-1} + u_{i,t} \quad (1.3)$$

where $TA_{i,t}$ = total accruals for firm i in year t, calculated by net income before extraordinary items minus net cash flows from operating activities, then deflated by total assets at the end of year $t-1$; $PPE_{i,t}$ = gross amount of property, plant, and equipment for firm i at the end of year t.

Other variable definitions are the same as those in Equation (1.1). Consequently, the results of these proxies for discretionary accruals are still qualitatively unchanged from those of the main analysis. Fifth, to examine whether the results of the Accumulated Knowledge Model are driven by the discretionary choice of the sample period, we change the sample period from 2009–2011 to 2007–2011 and 2008–2011. The results are unchanged from those of the main analysis, thus enhancing our confidence that knowledge gained through the experience of setting auditing standards may not help provide better audit quality (at least in our setting). Sixth, we employ two-way clustering (i.e. clustering by firm and year) which allows for both time-series and cross-sectional dependence in error terms. The results are unchanged, and some coefficients are even more statistically significant. However, Cameron, Gelbach, and Miller (2008) have shown that when the clustered numbers are too small, the cluster-robust method may over-reject a true null hypothesis. In this study, the sample periods only cover 3 or 12 years. Therefore, we use one-way clustering (i.e. clustering by firm) in our main analysis. Seventh, as Francis (2011) suggested, a firm with certain characteristics that lead to high quality earnings may tend to choose a high quality auditor. Similarly, it is possible that after being appointed to the ASC, the ASC member auditors become more conservative and only sign audit reports for clients with high financial reporting quality. Therefore, to avoid the potential threat of endogeneity caused by omitted variables (or so-called 'self-selection'), we apply the following methods to address this concern: (1) We employ the two-stage Heckman (1979) treatment effect model prevalent in accounting research (Lennox, Francis, and Wang 2012) in the Three Period Model (i.e. Equations (2.1.a), (2.1.b) and (2.2)). In the first stage, we build a probit regression model that regresses a treatment variable (i.e. *BEFORE*, *DURING*, and *AFTER*) on all other independent variables, then we get the Inverse Mills Ratio (*IMR*). In the second stage, we include *IMR* as an additional control in Equations (2.1.a), (2.1.b) and (2.2), respectively, to test if there exists endogeneity problems due to omitted variables. To sum up, this leads to 3 (equations) × 3 (treatment variables) tests. We find that although the coefficients of *IMR* are significant in two of night tests, suggesting a potential omitted variable issue in some of our models; however, the magnitude and level of significance are generally similar and consistent with those of the main analysis. (2) We try to examine the extent to which a first-year ASC member auditor changes his/her client firms during our sample period. As a result, we only find minor changes in our sample. Taken together, the endogeneity caused by omitted variables may not be a serious issue in the Three Period Model. Lastly, to avoid the potential threat of endogeneity caused by functional form misspecification, Shipman, Swanquist, and Whited (2017, 222) suggested that:

> A practical way to assess the potential effects of FFM [functional form misspecification] on estimates of the ATE [average treatment effects] is to perform MR [multiple regression] on an expanded model including additional functional forms of control variables (e.g. squared or cubed) … to capture nonlinear relationships.

We thus follow their suggestion in all equations of the Three Period Model and the Accumulated Knowledge Model. We do not include squared or cubed forms in independent binary variables, because functional form misspecification is not a serious concern when controlling for binary variables. The empirical results of the expanded model are consistent with our main inferences, except the significance level of *DURING* in expanded Equation (2.1.b) reduces to be one-tailed.[33]

7. Conclusions

This study investigates whether engagement partners who participate in national auditing standard setting can better constrain earnings management, and also explores the possible cause that explains the results. This is a new partner-level characteristic to highlight differential audit quality compared with those identified in prior studies. The findings show that firms audited by incumbent ASC member auditors are associated with lower discretionary accruals and a lower probability of reporting small profits. Therefore, concerns about the impairments of increased reputational capital may be the most likely cause for our findings. Our evidence indicates that a positive event which increases an auditor's reputational capital can therefore provide enhanced audit quality, echoing the call from DeFond and Zhang (2014). In addition, given that accounting and auditing studies have begun to investigate the characteristics of the standard setter (regulator) and their effects on equilibrium outcomes, this study may provide additional insights.

The results from this study have at least two implications and also provide opportunities for future research. First, the better audit quality associated with the incumbent ASC member auditors indicates that our proxy to identify high quality auditors may also be used to investigate other settings, such as the PCAOB of the USA and the Audit & Assurance Council of the U.K., where all members are full-time, let alone in countries where the members of their auditing standard setter are part-time, such as China and the ASB of the USA Second, although we infer that better audit quality may be driven primarily by ASC member auditors' reputation concerns in Taiwan's setting, we do not intend to generalize our results to other jurisdictions, especially countries with higher auditor litigation risks. For regulators, researchers who are concerned about the external validity of our results, further studies can be conducted in the future.

Notes

1. In this study, we use the term 'Big 4' uniformly to represent the largest international Big 'N' audit firms in each period. For example, during 1998–2002, Big 4 comprises Arthur Andersen, Deloitte & Touche, Ernst & Young, KPMG, and PricewaterhouseCoopers.
2. Of course, although we present these three arguments based on the best of our knowledge, we cannot rule out other possible causes that may lead to our results.
3. In note 9, we discuss the composition of other national auditing standard setters.
4. For example, negative abnormal returns of client firms, client firms switch their audit firms, and the audit firm loses market share.
5. On May 9, 2016, the SEC (Securities and Exchange Commission) approved the Proposed Rules filed by PCAOB (SEC 2016). It requires that 'for each audit report it issues for an issuer, a registered public accounting firm must file with the Board a report on Form AP that includes the following:
   - The name of the engagement partner and Partner ID;
   - For other accounting firms participating in the audit for which the responsibility for the audit is not divided'.

   The new rules are effective for audit reports issued on or after January 31 (June 30), 2017 for the engagement partner (other accounting firms).
6. Regulations Governing Approval of Certified Public Accountants to Audit and Attest to the Financial Reports of Public Companies, Article 6. In fact, the Taiwan SASs also include audit-related services, such as examinations, reviews, agreed-upon procedures, and compilations.
7. The main differences between the members and consultants are that the consultants are set primarily for consultation and do not have the right to vote on the passage of auditing standards. Considering the core function in promulgating auditing standards, we focus on the association between the ASC member auditors and the audit quality provided by them.
8. According to article 9 of the Constitution of the ARDF, committee members and consultants are nominated by the chairperson of the committee and approved by the board of standing directors. Terms of committee members and consultants are same as that of the committee chairperson. Before the end of each term (3/31 every three years), the ASC committee chair will invite the heads (the actual title depends on each firm's organizational structure) of the Big 4 audit firms to be ASC members. Generally, the heads of the Big 4 audit firms either accept the offer, or recommend their senior auditing partners as members of the ASC. According to our investigation, 60% (i.e. six engagement partners) of the ASC member auditors also held important positions in their respective audit firms, such as CEO, chief risk officer, chief information officer, and assurance service leader, in our sample

period. This raises the possibility that the higher audit quality found in this study is actually due to concerns about reputational capital accompanied by the important positions held by these ASC member auditors. In Section 6, we use additional research designs to deal with this concern.

9. Some countries, such as the USA and China, also allow practicing CPAs to become members of their auditing standard setting bodies. In the USA, the independent Auditing Standards Board (ASB) of the AICPA promulgates standards for auditing, attestation, and quality control service for non issuers. Among the 19 members, five are from local, regional and other non-Big 4 national firms; five are nominated by the National Association of State Boards of Accountancy (NASBA); four are from the Big 4 firms; and five are users and public members. (http://www.aicpa.org/Research/Standards/AuditAttest/ASB/Pages/ASBbiography.aspx). In China, the Auditing Standards Committee is one of the 12 special committees under the Council of the Chinese Institute of Certified Public Accountants (CICPA). The main composition of its 31 members is similar to that in Taiwan (http://www.cicpa.org.cn/leaders/zmzywyh/201012/W020101214376848488603.doc).
10. In general, these studies have shown that the size of audit firms are positively related to audit quality, longer audit firm tenure does not compromise audit quality, and client firms' comparability of earnings is higher when they are audited by the same Big 4 audit firm. Based on the argument that larger offices have greater in-house expertise so that they can provide better audit quality, Francis and Yu (2009) find that instead of industry expertise, the size of the Big 4 practice office is the fundamental driver of audit quality.
11. Using partner-level data from Taiwan, Aobdia, Lin, and Petacchi (2015) find that high quality audit partners can provide informational value to the capital market participants beyond audit firms. Firms audited by high quality audit partners therefore enjoy higher earnings response coefficients, less IPO underpricing, and better debt contract terms.
12. Of course, we admit that firm (or office) level inputs, such as audit firms' internal control, review, decision, and general governance mechanisms are of substantial importance.
13. We acknowledge that the validity of our results hinges on the accuracy of our proxies to measure discretionary accruals. In Section 6, we use various accruals models to confirm the robustness of our results.
14. Managers can manipulate unmanaged earnings by using accrual items (Dechow, Ge, and Schrand 2010); particularly, they have the most discretion over current accruals (e.g. Ashbaugh, LaFond, and Mayhew 2003; Becker et al. 1998; Chi et al. 2009). In addition, prior literature indicates that accruals are correlated with firm performance (Dechow, Sloan, and Sweeney 1995; Kothari, Leone, and Wasley 2005), therefore we control for firm performance (ROA) in Equation (1.1).
15. We also use net income as the numerator to define small profits. The results are unchanged from those of the main analysis.
16. This is the first year that the *TEJ* database begins to calculate consecutive tenure (in years) audited by the latest audit firm.
17. We define our variables of interest, for example, *DURING*, as 1 if any one of a firm's engagement partners is the incumbent ASC member auditor. We use this criterion for two reasons. First, some of our arguments, such as reputation risks, should not make obvious differences between lead and concurring CPAs. Second, we do not need to assume the first CPA of an audit report as the lead CPA and the second CPA as the concurring CPA (e.g. Chi and Chin 2011).
18. Potential measurement errors arise because we calculate the value of *ASBEXP* since 2000. In fact, some engagement partners may also be ASC members before 2000. However, as detailed in Section 4 and note 20, year 2000 is a turning point for the financial and audit reporting environment in Taiwan, and thus may provide a good opportunity for well-prepared CPAs to distinguish their service from others. Limiting the sample period of the Accumulated Knowledge Model to 2009–2011 may partially mitigate concerns about measurement errors. We also conduct a sensitivity test in Section 6.
19. We do not control for *ROA* and *LOSS* in Equation (2.2) and (3.2) because a firm with negative *ROA* or that reports a loss can never report small profits at the same time, so *ROA* is mechanically positively correlated with small profits, while *LOSS* is mechanically negatively correlated with small profits.
20. With regard to auditing standards, Taiwan SASs No. 33 was issued in 1999. Unqualified audit opinions with explanatory paragraph(s) are separated from the qualified opinion; hence, the type of audit opinion is expanded to five. Since then, Taiwan SASs are issued or revised per Taiwan SASs No. 33. Moreover, in response to globalization and the need to increase the comparability of financial reporting between domestic and foreign companies, the Taiwan Financial Accounting Standards Committee (TFASC) decided to issue its twSFAS based on IFRS (i.e. to converge with IFRS). Accounting standards with new topics are based on contemporaneous IFRS (with some degree of carve-outs) since 2000 (Wu et al. 2017).
21. During 2000–2011, the ASC issued or revised 20 Taiwan SASs, in almost every year except 2002. The main advantage of our collection method is that we can even identify irregular turnovers (e.g. unexpected resignations).
22. To avoid the concern that our results are driven by the removal of outliers, we also try to rerun all equations (i.e. Equations (2.1.a) to (3.2)) without trimming outliers. The results are unchanged from those of the main analysis.
23. For brevity, we also only provide the results of Equations (2.1.a) and (2.2) in Table 4. The results of other equations are available upon request.

24. Similarly, the TWSE increased its industry classifications from 20 to 29 since 2007, with the difference being that it further split the electronics industry into eight new classifications.
25. Due to the collapse of Arthur Anderson in 2002, its member firm in Taiwan merged with the member firm of Deloitte Touche Tohmatsu in Taiwan in 2003.
26. According to the 'Accounting Firm Service Survey' issued annually by the Financial Supervisory Commission (FSC) of Taiwan, the percentage of female practicing CPAs during 2006–2011 is between 31and 34 percent. See website: http://www.fsc.gov.tw/ch/home.jsp?id=136&parentpath=0,4.
27. The results of all equations in this study are available upon request.
28. Untabulated results do not find any significant relationship between firms audited by the incumbent ASC member auditors and negative discretionary accruals in all equations of this study. This result is also consistent with the argument of Lennox, Wu, and Zhang (2016) that the implication of a change in negative discretionary accruals is not clear from the perspective of audit quality.
29. Similar to Carcello and Li (2013), we calculate economic implications by multiplying the *DURING* coefficient by (probability of a small profit) × (1 – probability of a small profit). Given the mean probability of a small profit (Table 4) is 0.0694, so the economic implication is (−0.7997) × (0.0694)*(1 – 0.0694) = −0.052.
30. We thank the referee's advice that reminds us to further analyze the differences in coefficients of the variables of interest (i.e. BEFORE, DURING, and AFTER)
31. As another matching criterion, we allow for matching firm-years audited by different and same audit firms. This lead to a larger sample size for *ABSCDA* and *SP* ($N = 206$) and *POSCDA* ($N = 54$). The empirical results are unchanged. However, we decide not to match firm-years audited by the same audit firms, because the number of matched pairs is too small to make reliable inferences.
32. However, a caution regarding the small size problem should be made when using a logistic regression model (Long 1997). Therefore, the results of univariate analysis may be more representative when comparing *SP*.
33. We do not use PSM (propensity score matching) to deal with functional form misspecification in this study given that our variables of interest, *BEFORE*, *DURING*, and *AFTER*, are relatively rarely coded 1 (see Table 2). When proceeding with the conventional PSM research designs, we find that the sample size is further reduced substantially. According to Shipman, Swanquist, and Whited (2017, 220): 'The smaller the sample size, the less likely it is that the subsample generalizes to the population.' However, we still acknowledge that there may be some unknown functional forms not captured by our expanded model.

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