

The Association Between Accruals Quality and the Characteristics of Accounting Experts and Mix of Expertise on Audit Committees*

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1. Introduction

An important dimension of audit committee (AC) effectiveness that has gained the attention of regulators and academics is the financial expertise of AC members (General Accounting Office 1991; Public Oversight Board 1993; Kalbers and Fogarty 1993; DeZoort 1997, 1998; Blue Ribbon Committee on Improving the Effectiveness of Corporate Audit Committees 1999; DeZoort, Hermanson, Archambeault, and Reed 2002; Sarbanes-Oxley Act of 2002 [SOX] 2002; Cohen, Krishnamoorthy, and Wright 2004). Section 407 of SOX requires the Securities and Exchange Commission (SEC) to adopt rules mandating that the AC of public firms include at least one member who is a financial expert or disclose reasons for not adopting this requirement. While SOX proposes a narrow definition of financial expertise, to include individuals with experience in accounting or auditing, the SEC controversially adopted a broader definition of financial expertise that includes accounting and certain types of nonaccounting (finance and supervisory) financial expertise.^{1,2}

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1. Under the final rules adopted by the SEC, an AC member can be deemed a financial expert if the member has: (a) accounting expertise, from work experience as a certified public accountant, auditor, chief financial officer, financial comptroller, financial controller, or accounting officer; (b) finance expertise, from work experience as an investment banker, financial analyst, or any other financial management role; or (c) supervisory expertise, from supervising the preparation of financial statements (e.g., chief executive officer [CEO] or company president).
2. This wide-ranging definition of financial expertise was subsequently adopted by the NASDAQ (NASD Rule 4350(d)(2)(A)), while the New York Stock Exchange (NYSE) implicitly adopted a broad definition by delegating the task of interpreting financial expertise to the board of their registrants (NYSE Section 303A(7)(a)).

The controversy surrounding the definition of what constitutes a financial expert has given rise to an avenue of academic research on the effects of accounting and nonaccounting financial expertise in ACs on financial reporting quality (e.g., Carcello, Hollingsworth, Klein, and Neal 2006; Qin 2007; Zhang, Zhou, and Zhou 2007; Krishnan and Visvanathan 2008). The findings from these studies indicate that the presence of AC members with only accounting expertise is positively related to financial reporting quality. According to Cohen, Krishnamoorthy, and Wright 2008, the predominant theoretical focus of such prior studies rests upon the foundation of Jensen and Meckling's 1976 agency theory. Under this theoretical framework, improper financial accounting practices are assumed to obscure real performance and diminish investors' ability to make informed decisions, leading to higher agency costs (Xie, Davidson, and DaDalt 2003). The AC plays a key role in reducing agency costs by overseeing the effectiveness of management's financial reporting policies (Klein 2002; Bédard, Chtourou, and Courteau 2004; Archambeault, DeZoort, and Hermanson 2008).³ Moreover, Cohen et al. (2004) point out that various characteristics of ACs influence their effectiveness as corporate governance mechanisms. The findings of studies such as Zhang et al. 2007 and Krishnan and Visvanathan 2008 suggest that the domain-specific knowledge of AC accounting experts provides them with an effective means of monitoring management's financial reporting practices and reducing associated agency costs. Indeed, Beasley et al. (2009) show that the most common reason for being asked to serve on an AC in the post-SOX era is if a potential director possesses accounting expertise.

However, Bédard and Gendron (2010) suggest that, while having the "right experts" as AC members is an important input to AC effectiveness, more post-SOX research is needed on the efficacy of the monitoring role of such experts. They also suggest the need for researchers to take a deeper view of the agency role of AC members such as accounting experts to assess how their personal characteristics influence their contributions toward AC effectiveness. Moreover, in accordance with the proposed theoretical model of Hillman and Dalziel 2003, Bédard and Gendron (2010) and Cohen et al. (2008) highlight the need for studies to investigate how the agency role of accounting experts is influenced by the resource dependence focus of other AC members. Resource dependence theory suggests that AC members with valuable nonaccounting expertise such as business and industry knowledge can also contribute toward AC effectiveness. Accordingly, this study attempts to fill this void in the literature by using post-SOX data to examine how the monitoring effectiveness of accounting experts is affected by (a) the personal characteristics of accounting experts and (b) the presence of nonaccounting financial experts in ACs.

3. Indeed, Beasley, Carcello, Hermanson, and Neal (2009) show that AC members themselves favor an agency view of their primary role, where they are engaged to monitor management's financial reporting practices.

Unlike prior studies that merely control for the effects of other important AC attributes when assessing the impact of AC accounting experts on financial reporting quality (e.g., Zhang et al. 2007; Krishnan and Visvanathan 2008), our study allows the monitoring capability of accounting experts to vary based on their independence, share ownership, multiple directorship, and tenure characteristics. This choice of characteristics is driven by agency theory-based studies (e.g., Klein 2002; Carcello and Neal 2003; Vafeas 2003; Yang and Krishnan 2005) indicating that financial reporting quality is also affected by such characteristics of AC members. Accordingly, this study draws on these characteristics of AC accounting experts to investigate the contextual effectiveness of accounting experts on ACs. As such, our study addresses the call, by recent studies that have synthesized the AC effectiveness literature (e.g., DeZoort et al. 2002; DeFond and Francis 2005; Bédard and Gendron 2010), for empirical research on how the effectiveness of AC financial experts is affected by attributes such as independence, share ownership, multiple directorships, and tenure.

Furthermore, in contrast to most prior studies on the role of AC financial experts, our study expands its theoretical purview to incorporate both the agency and resource dependence roles of directors, as promulgated by Hillman and Dalziel 2003. Resource dependence theory posits that directors do more than reduce uncertainty by providing valuable expertise and advice in a variety of strategic areas (Hillman, Cannella, and Paetzold 2000). In the context of ACs, Cohen et al. (2008) argue that a focus on resource dependence, evinced through the business and industry expertise of non-accounting experts on ACs, can enhance the ability of ACs to assess whether the accounting methods accurately reflect the underlying economic substance of transactions, which should lead to higher financial reporting quality. Similarly, Bédard and Gendron (2010) argue that risk evaluation and knowledge of industry constitute important roles for ACs. They also suggest the need for more research on how the competencies of certain non-accounting experts can strengthen AC effectiveness.⁴ Accordingly, this study investigates whether the business and industry knowledge possessed by AC nonaccounting experts can complement the domain-specific knowledge of accounting experts to promote financial reporting quality. Given the debate over the broad definition of financial expertise adopted by the SEC and stock exchanges,⁵ our study provides a more fully specified and richer perspective on how accounting and nonaccounting expertise coalesce to promote AC effectiveness.

4. DeZoort et al. (2002) also suggest that researchers should evaluate whether AC effectiveness is best promoted when ACs are primarily composed of accounting experts or when they include members with a mix of accounting and nonaccounting expertise.

5. For example, DeFond, Han, and Hu (2005) state that, if the goal of the SEC is to improve financial reporting quality, then it should adopt a narrower definition of financial expertise that includes only accounting expertise.

Based on a sample of 770 firms with available data during a post-SOX period (2004–2006), our empirical results, consistent with prior research, indicate that AC accounting expertise is positively associated with accruals quality, a commonly used proxy for financial reporting quality. When the accounting expertise measure is partitioned based on high and low levels of independence, share ownership, multiple directorships, and tenure, accruals quality is found to be positively related to accounting experts who (a) are independent from the firm, (b) hold low levels of multiple directorships, and (c) have a lower tenure in their firms. Further tests suggest that accounting experts who possess all three of these characteristics make more significant contributions toward AC effectiveness in the post-SOX era. These findings suggest that future research seeking to employ the path of agency theory to link AC accounting expertise and financial reporting quality should strive to incorporate or further explore the multifaceted nature of AC accounting expert effectiveness.

Our results from tests of the mix of accounting and nonaccounting (finance and supervisory) expertise suggest that the most positive impact on accruals quality is achieved when firms possess a combination of both accounting- and finance-literate experts in their AC. Hence, while most prior studies document insignificant benefits materializing from the presence of finance experts in ACs, this study is among the first to show that such AC experts can significantly enhance the effectiveness of accounting experts on ACs. This finding is intuitive, because finance experts typically constitute investment bankers and financial analysts, who have considerable experience in carrying out due diligence with regard to equity offerings and mergers and acquisitions. To be successful in such roles, finance experts have to be adept at gathering their own research and scrutinizing both financial and nonfinancial information. In line with our arguments based on resource dependence, our findings suggest that, while finance experts do not possess the domain-specific skills of accounting experts, the business and industry knowledge of these experts, when coupled with accounting expertise, provides incremental benefits to ACs. Our results, on the other hand, suggest that the additional presence of supervisory experts in ACs that include accounting and finance experts is not associated with any incremental improvement in accruals quality, a finding that questions the need for supervisory experts on ACs. It appears that such experts lack an adequate understanding of accounting matters and fail to constructively apply their business acumen in complementing accounting or finance expertise in ACs. Nonetheless, our findings relating to finance expertise underscore the need for researchers to continue exploring how the monitoring and resource dependence roles of AC members interact to promote financial reporting quality.

Moreover, while our results generally remain robust to an approach that accounts for endogeneity, we also find that accounting experts prefer directorships in firms with higher accruals quality. This result is noteworthy because prior studies in this research stream assume that the appointment

of AC accounting experts is not a choice for firms. If the presence of AC accounting experts implies higher accruals quality, why do some firms not appoint AC accounting experts to enhance their accruals quality? Our findings suggest that there are constraints, such as preexisting accruals quality, associated with the appointment of accounting experts to ACs and highlight the importance of future researchers controlling for endogeneity when examining the link between AC accounting experts and financial reporting quality.

Besides its contributions to the academic literature on AC accounting expertise, our study is relevant to firms and regulators in that it identifies those characteristics of accounting experts that are the most useful in restoring post-SOX market confidence in financial reporting quality. Given that the SEC and U.S. stock exchanges continue to apply the broad definition of financial expertise, the results, particularly those from tests of the mix of accounting and nonaccounting expertise, can have policy implications for the SEC and firms seeking to improve the effectiveness of their ACs.⁶ More specifically, while some studies state that the SEC should adopt a narrower definition of financial expertise that includes only accounting expertise (e.g., DeFond, Hann, and Hu 2005), our results suggest that the inclusion of finance experts on ACs that include accounting experts adds further value to AC effectiveness. In other words, this finding supports the current regulatory stance of including finance experts in the definition of AC financial expertise. Conversely, our insignificant findings for supervisory expertise suggest revisiting the need for supervisory expertise in ACs.

The remainder of this study is organized as follows. Section 2 discusses the role of accounting experts in preserving financial reporting quality. Sections 3 and 4 discuss how financial reporting quality can be affected by the characteristics of accounting experts and the mix of accounting and nonaccounting expertise, respectively. Section 5 describes the sample selection procedure and data. Section 6 explains variable measurement and section 7 discusses the research design. Section 8 reports the descriptive statistics and empirical results. Section 9 reports the results from additional tests and section 10 presents this study's conclusions.

2. The role of accounting experts in preserving financial reporting quality

Agency theory emphasizes that the board is in place to monitor management, who may otherwise increase their wealth at the expense of firm value

6. We further assess the practical implications of our research questions by interviewing six audit committee members of large public firms, as well as two audit partners from the Big 4 accounting firms. All interviewees considered that examining how the monitoring effectiveness of accounting experts is affected by their personal characteristics and the presence of nonaccounting financial experts in ACs are interesting and worthwhile research questions that will increase our understanding of conditions that enhance the monitoring role of ACs. Moreover, the respondents agreed that finance experts can add incremental value to audit committees that include accounting experts.

(Jensen and Meckling 1976; Fama and Jensen 1983). The agency view of an AC requires the committee to reduce agency costs by monitoring financial reporting quality (Archambeault et al. 2008), and prior research suggests that accounting experts are the most effective financial experts in enhancing the AC's monitoring role (Carcello et al. 2006; Qin 2007; Krishnan and Visvanathan 2008). Accounting expertise may be more important for AC members than any other expertise, because "best practices" suggest that AC members are responsible for tasks that require a high degree of accounting sophistication (DeFond et al. 2005). Financial reporting issues involve the highest level of technical detail among AC effective areas (Kalbers and Fogarty 1993; Green 1994), and desirable AC members should have knowledge of accounting concepts and the auditing process to recognize problems and ask probing questions of management and the auditor (Bull and Sharp 1989; Libby and Luft 1993; Scarpati 2003; Lipman 2004). In fact, AC members themselves believe that accounting expertise is vital for AC service (DeZoort 1997, 1998).

The contribution accounting experts can bring to the oversight of important financial reporting areas, such as monitoring accruals quality, is further highlighted by SOX, which states that financial experts should be experienced in preparing or auditing financial statements and accounting for accruals, estimates, and reserves. Similarly, Cohen, Gaynor, Krishnamoorthy, and Wright (2007) state that the preservation of accruals quality is an important AC responsibility in the post-SOX era, particularly when firms experience problems such as internal control deficiencies. Indeed, HassabEl-naby, Said, and Wolfe (2007) show a significant post-SOX increase in the focus of ACs in reviewing accounting policies and key management estimates, judgments, and valuations.

Accounting experts are well suited toward evaluating accrual policies because their assessment of quality often relates to elements of the Statement of Financial Accounting Concepts framework (relevance and reliability) and they are more equipped to identify concerns that are not publicly covered (McDaniel, Martin, and Maines 2002). They are also more likely to evaluate alternative accounting treatments under generally accepted accounting principles and discuss estimates and assumptions involved in implementing new accounting policies (Beasley et al. 2009).⁷ In line with this view, studies such as Carcello et al. 2006, Qin 2007, and Krishnan and Visvanathan 2008 consider the merits of both AC accounting and non-accounting financial expertise and find that only the former is related to lower discretionary accruals, higher earnings response coefficients, and higher accounting conservatism, respectively. Davidson, Xie, and Xu (2004) and DeFond et al. (2005) document a positive market reaction to the

7. Krishnan and Visvanathan (2008) argue that, in comparison to other experts, accounting experts face increased exposure to state lawsuits in the post-SOX era, which may provide further incentives for accounting experts to promote sound accrual policies.

appointment of new AC members with accounting expertise, but no reaction to the appointment of AC members with nonaccounting financial expertise. Overall, prior evidence suggests that essentially the monitoring role of accounting experts can most effectively promote the quality of financial reporting.

3. Characteristics of accounting experts

A common practice among prior studies that investigate how AC accounting experts influence financial reporting quality is to control for other AC characteristics that may affect the vigilance of AC members in reducing agency costs. By adopting an approach consonant with the interactionist perspective in psychology (e.g., Kenrick and Dantchik 1983), Krishnan and Visvanathan (2008) and Carcello et al. (2006) go further to consider how AC accounting experts interact with panoptic measures of corporate governance to promote financial reporting quality. This approach resonates with recent calls for researchers to investigate the contextual nature of benefits arising from AC expertise (DeZoort et al. 2002; DeFond and Francis 2005). What these studies do not evaluate, however, is how the relationship between accounting experts and financial reporting quality is influenced by the characteristics of the accounting experts themselves. DeZoort et al. (2002), in synthesizing the AC literature based on agency theory, emphasize the importance of evaluating how the effectiveness of AC financial experts is affected by their personal attributes, such as independence, share ownership, multiple directorships, and tenure. This is an important extension to consider because, besides financial expertise, these attributes are among the most widely researched AC-level attributes in prior studies and have been of regulatory interest. Hence, considering the variation in these attributes at the accounting expert level can provide a mosaic view of whether such attributes accentuate or attenuate the monitoring effectiveness of AC accounting experts. Accordingly, our study examines how the relationship between AC accounting experts and financial reporting quality is influenced by attributes such as the independence, share ownership, multiple directorships, and tenure of accounting experts.⁸

Independence: In contrast to their nonindependent counterparts, independent accounting experts on the AC are rewarded or penalized in the external market for outside directors. Hence, they may have lower economic incentives to collude with top managers and are more likely to objectively monitor management performance. Prior evidence indicates a positive

8. While we limit our study to these four attributes to keep the empirical models parsimonious, we acknowledge that there are other characteristics that can also play a role in influencing the effectiveness of ACs. For example, prior research has focused on the role of AC size and number of meetings in ensuring AC effectiveness. These variables, however, can only be measured at the AC level and not at the AC member level.

relationship between AC independence and (a) financial reporting quality (Abbott, Parker, and Park 2000; Beasley and Salterio 2001; Klein 2002; Bédard et al. 2004) and (b) other corporate events that contribute to financial reporting quality (Scarbrough, Rama, and Raghunandan 1998; Abbott and Parker 2000; Raghunandan, Read, and Rama 2001), suggesting that independent AC accounting experts are more diligent monitors of financial reporting. The fact that regulators promulgate the simultaneous presence of financial expertise and independence in ACs further supports the view that independent AC accounting experts are more effective in their monitoring responsibilities. Although the shift toward fully independent ACs in the post-SOX era might have reduced the importance of examining this issue, DeFond and Francis (2005) emphasize the importance of continuing to evaluate the relative contributions of independent and nonindependent AC members in the post-SOX era.⁹

Share ownership: The widely accepted view that higher equity ownership motivates directors to question managerial policies (Patton and Baker 1987) implies that accounting experts with high share ownership have a long-term investment horizon and hence a stronger desire to carry out their duties effectively to uphold the value of their own stock. Supportive evidence is provided by studies that document a positive relationship between directors' share ownership and financial reporting quality (Shivdasani 1993; Beasley 1996; Gerety and Lehn 1997; Chtourou, Bédard, and Courteau 2001; Ahmed and Duellman 2007). On the other hand, studies focusing on ACs show that allocating high share ownership to AC members leads to adverse/undesirable financial reporting quality-related outcomes (Wright 1996; Carcello and Neal 2003; Yang and Krishnan 2005). Under this view, it is argued that accounting experts with high share ownership have a short-term investment horizon and can opportunistically benefit in the near term from higher stock prices. They may ignore the presence of inappropriate accounting practices if they perceive that such an action can increase their own wealth in the short run. Considering prior evidence on how director and AC member share ownership affects financial reporting quality, we propose that the shareholding of directors who are accounting experts on the AC can affect financial reporting quality. However, given the contrasting nature of prior evidence, this relationship is examined without predicting a directional effect.

Multiple boards: Beasley et al. (2009) state that SOX has increased the labor market profile of AC focal points such as accounting experts. As a result, accounting experts with multiple directorships may be more vigilant monitors if they are concerned about their reputational losses. Moreover, because multiple directorships are positively associated with firm size (Ferris, Jagannathan, and Pritchard 2003; Fich and Shivdasani 2006), accounting experts with multiple directorships could be more skilled because

9. In our additional tests, we discuss how the findings of this study are affected when firms with nonindependent AC members are excluded from the analysis.

of the magnitude and complexity of the operations they oversee. Consistent with the above arguments, Yang and Krishnan (2005) and Carcello and Neal (2003) show that AC member experience on other boards is less likely to be associated with earnings management and with auditor dismissals following a going concern opinion.¹⁰

Conversely, because the level of AC activity has dramatically increased in the post-SOX era, as evidenced by the substantial growth in the number of AC meetings (Spencer Stuart 2006; Burke, Guy, and Tatum 2008), it is possible that the monitoring effectiveness of accounting experts is impaired by holding too many directorships. It appears that AC service in the post-SOX era demands considerable time and effort and may better suit accounting experts with fewer directorships. Several studies conducted at the board level show that the monitoring role of directors can be damaged by holding too many directorships (Lipton and Lorsch 1992; Beasley 1996; Core, Holt-hausen, and Larcker 1999; Shivdasani and Yermack 1999; Fich and Shivdasani 2006).¹¹ Given the contrasting evidence, we investigate the relationship between financial reporting quality and the multiple directorships of AC accounting experts, without predicting a sign for this relationship.

Tenure: If effective monitoring is an internally acquired skill, then accounting experts with greater tenure (length of service) are likely to offer more effective monitoring of financial reporting relative to those with lower tenure. This view is supported by Yang and Krishnan 2005, who document a negative relationship between the tenure of directors who serve on ACs and earnings management, suggesting a positive effect of experience with the firm on the firm's accounting processes.¹²

Conversely, other studies argue that shorter director tenure leads to less effective monitoring of managerial actions (Bhagat and Black 1999; Vafeas 2003), suggesting that lower-tenured AC accounting experts are less likely to be influenced by management.¹³ Additionally, it is possible that recently appointed accounting experts are recruited to ensure higher compliance with the regulatory requirements of SOX (Beasley et al. 2009), which can lead to better-quality financial reporting. The arguments presented suggest that the

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10. Other studies report a positive relationship between firm performance and multiple directorships held or subsequently held by the board of directors and firm officers (Ferris et al. 2003; Harris and Shimizu 2004).
 11. Consistent with this view, the National Association of Corporate Directors (1996) and the Council of Institutional Investors (1998) adopted resolutions on limiting the number of directorships held by directors of public firms.
 12. Beasley (1996) and Chtourou et al. (2001) also document a positive relationship between director tenure and financial reporting quality, albeit using all directors. Other studies that provide evidence of the accumulated knowledge and experience from longer-tenured directors being more effective include Pfeffer 1983, Kosnik 1990, and Hermalin and Weisbach 1991.
 13. The National Association of Corporate Directors (1996) recommends that the tenure of directors be limited to 10 to 15 years to introduce new directors that are more likely to contribute fresh ideas and critical thinking to the board.

tenure of accounting experts can influence financial reporting quality. However, because of the opposing nature of the arguments, this relationship is examined without a directional prediction.

4. Mix of accounting and nonaccounting expertise

Another important board function, which has attracted less empirical attention, is the provision of valuable resources, referred to as the board's resource dependence function. Resource dependence theory views directors not as vigilant monitors but as boundary spanners who seek to improve firm performance by extracting, among other things, human capital resources from the environment (Pfeffer 1972). Hillman and Dalziel (2003) posit that the integration of the agency and resource dependence perspectives can not only more accurately reflect the real world but also help overcome theoretical weaknesses in choosing one perspective over another. Their arguments suggest that examining one perspective without the other can lead to premature conclusions. In line with this view, Cohen et al. (2008) argue that an AC with a resource dependence focus evinced through the business and industry expertise of nonaccounting experts can significantly improve its effectiveness.¹⁴ They suggest that the knowledge possessed by nonaccounting experts assists the AC to assess their firm's exposure to business, industry, and regulatory risks, affording an evaluation of whether the accounting methods properly reflect the economic substance of transactions, which in turn should lead to higher financial reporting quality. Hence, the second extension this study offers is to incorporate a resource dependence view of ACs and evaluate whether the skills possessed by nonaccounting experts complement those of accounting experts in ACs to ensure financial reporting quality.

McDaniel et al. (2002) find that, in comparison to accounting experts, nonaccounting financial experts (e.g., finance and supervisory) are more likely to raise concerns about high-salience items that are nonrecurring in nature and those that receive press attention, which may provide incremental value to AC effectiveness. Goh (2009) shows that AC members with supervisory expertise derived from supervising employees with financial reporting responsibilities are more effective than AC accounting experts in remediating internal control deficiencies. However, under resource dependence theory, the contribution of nonaccounting experts appears to be most operative for finance experts who serve as AC members. Finance experts typically have a strong background in estimating earnings forecasts, providing stock recommendations, and carrying out due diligence in connection with equity offerings and mergers and acquisitions. Finance experts not only depend on financial statements but also gather information from a

14. Hillman et al. (2000) similarly state that firms can benefit from resources provided in the form of directors with considerable expertise in internal decision making (e.g., supervisory experts) and directors with knowledge of their firm's industry and capital markets (e.g., finance experts).

wide range of other sources, including direct contact with the executives of firms they evaluate (Rogers and Grant 1997; Barker 1998). They must master the industrial, political, legal, regulatory, and ethical environments of the firms they transact with and learn how to evaluate management strategy and the consequences of different strategies. Accordingly, it is expected that the resource dependence role of nonaccounting experts will assist the AC, and specifically AC accounting experts, to better comprehend whether the accounting methods properly reflect the economic substance of transactions, which should lead to higher financial reporting quality.¹⁵ Ultimately, however, whether or not accounting and nonaccounting (finance and supervisory) AC financial expertise complement each other to promote financial reporting quality is an empirical issue that we address in this study.

5. Sample selection and data

This study employs all available data from COMPUSTAT and Board Analyst databases during the sample period of 2004 to 2006 to construct the dependent and independent variables. The initial sample includes 1,741 firms with coverage on the Board Analyst database, which discloses information on company directors, such as director independence, number of directorships held, share ownership, director tenure, committee memberships, and work experience. We then delete: (a) firms without coverage on the COMPUSTAT Quarterly Files (14 firms), (b) firms without at least eight quarters of data for deriving accruals quality and data for the independent variables (827 firms), (c) banks and financial institutions (57 firms), and (d) firms in regulated industries (73 firms), resulting in a final sample of 770 firms.

6. Measurement of variables

Dependent variable: Accruals quality

Consistent with numerous recent studies (e.g., Francis, LaFond, Olsson, and Schipper 2005; Srinidhi and Gul 2007; Bharath, Sunder, and Sunder 2008) we employ accruals quality as a proxy for financial reporting quality. This proxy is also consistent with SOX suggesting the need for AC members to be skilled in monitoring a firm's accruals practices. Our measure of accruals quality, *AQUALITY*, is based on the model of Dechow and Dichev 2002, which assumes that current accruals are estimates of future cash flow realizations and that accruals quality is an inverse function of the precision of these estimates. Accruals quality can be impaired by both intentional and unintentional errors. The presence of a competent monitoring

15. Evidence from organizational literature shows that creativity and motivation are greater in teams whose members have complementary knowledge and abilities (Jackson 1996; Krishnan, Miller, and Judge 1997; Hinds, Carley, Krackhardt, and Wholey 2000; Levine and Moreland 2004). These studies (e.g., Cohen 1994; Aronson and Patnoe 1997) suggest that individuals who need to cooperate in small group settings (e.g., ACs) see value in each other's respective domains of expertise.

agent (e.g., accounting expert), however, will deter management from making intentional errors and motivate them to exercise greater care in reducing unintentional errors, resulting in higher accruals quality.

Following Dechow and Dichev 2002, our measure of accruals quality, *AQ-UALITY*, is based on the standard deviation of residuals from firm-specific regressions of changes in working capital accruals on lagged, current, and future cash flows from operations. We employ two modifications to the model. First, following McNichols 2002, change in sales (employed in the Jones 1991 model) is included as an additional independent variable.¹⁶ Second, following Lovell 1963 and Rajgopal, Venkatachalam, and Kotha 2003, potential seasonality effects are controlled for by introducing quarterly dichotomous variables. The model is as follows:

$$\Delta WC_{i,t} = \phi_{0,i} + \phi_{1,i}CFO_{i,t-1} + \phi_{2,i}CFO_{i,t} + \phi_{3,i}CFO_{i,t+1} + \phi_{4,i}\Delta SALES_{i,t} + \sum_{n=1}^3 \phi_{5n,i}QTR_{i,n} + \varepsilon_{i,t} \quad (1)$$

where

- $\Delta WC_{i,t}$ = change in working capital accruals of firm *i* in quarter *t*, measured using data from the statement of cash flows scaled by average assets (COMPUSTAT item 44);¹⁷
- $CFO_{i,t}$ = cash flow from operations of firm *i* in quarter *t* (COMPUSTAT item 108) scaled by average assets;
- $\Delta SALES_{i,t}$ = change in sales of firm *i* in quarter *t* (COMPUSTAT item 2) scaled by average assets; and
- QTR = quarterly indicators representing fiscal quarters.

Under this measure of accruals quality, a larger standard deviation of the residuals ($\varepsilon_{i,t}$) implies lower accruals quality.

Independent variables

Test variables

Panel A of Table 1 defines our test variables. Following prior studies (e.g., DeFond et al. 2005; Krishnan and Visvanathan 2008), accounting experts are classified as AC members with work experience as certified public accountants, chief financial officers, vice presidents of finance, financial

16. We considered but chose not to include property, plant, and equipment (PPE) as an additional independent variable, because PPE is normally related to long-term accruals while our dependent variable (working capital accruals) is a measure of short-term accruals.

17. More specifically, change in working capital accruals is measured as the increase in accounts receivable (COMPUSTAT item 103) plus the increase in inventory (COMPUSTAT item 104) plus the decrease in accounts payable and accrued liabilities (COMPUSTAT item 105) plus decreases in taxes accrued (COMPUSTAT item 106) plus the increase (decrease) in other assets (liabilities) (COMPUSTAT item 107). Quarterly data on all of these items reflect a year-to-date figure and consequently had to be adjusted to reflect quarterly changes.

TABLE 1
Variable definitions

Variable name	Variable measurement
Panel A: Test variables	
<i>ACCTG</i>	1 if the AC of firm <i>i</i> includes at least one accounting expert in each year during the sample period, and 0 otherwise (Board Analyst).
<i>FINANCE</i>	1 if the AC of firm <i>i</i> includes at least one finance expert in each year during the sample period, and 0 otherwise (Board Analyst).
<i>SUPER</i>	1 if the AC of firm <i>i</i> includes at least one supervisory expert in each year during the sample period, and 0 otherwise (Board Analyst).
<i>ACCTG_HIGH_IND</i>	1 if the AC of firm <i>i</i> includes at least one independent accounting expert in each year during the sample period, and 0 otherwise (Board Analyst).
<i>ACCTG_LOW_IND</i>	1 if the AC of firm <i>i</i> includes at least one non-independent accounting expert in each year during the sample period, and 0 otherwise (Board Analyst).
<i>ACCTG_HIGH_SHOWN</i>	1 if the AC of firm <i>i</i> includes at least one accounting expert with high share ownership in each year during the sample period, and 0 otherwise (Board Analyst).
<i>ACCTG_LOW_SHOWN</i>	1 if the AC of firm <i>i</i> includes at least one accounting expert with low share ownership in each year during the sample period, and 0 otherwise (Board Analyst).
<i>ACCTG_HIGH_MTPLBD</i>	1 if the AC of firm <i>i</i> includes at least one accounting expert with high multiple directorships in each year during the sample period, and 0 otherwise (Board Analyst).
<i>ACCTG_LOW_MTPLBD</i>	1 if the AC of firm <i>i</i> includes at least one accounting expert with low multiple directorships in each year during the sample period, and 0 otherwise (Board Analyst).
<i>ACCTG_HIGH_TENURE</i>	1 if the AC of firm <i>i</i> includes at least one accounting expert with high tenure in each year during the sample period, and 0 otherwise (Board Analyst).
<i>ACCTG_LOW_TENURE</i>	1 if the AC of firm <i>i</i> includes at least one accounting expert with low tenure in each year during the sample period, and 0 otherwise (Board Analyst).
<i>ACCTG_ONLY</i>	1 if the AC of firm <i>i</i> includes at least one accounting expert but no finance or supervisory experts in each year during the sample period, and 0 otherwise.

(The table is continued on the next page.)

TABLE 1 (Continued)

Variable name	Variable measurement
<i>FINANCE_ONLY</i>	1 if the AC of firm <i>i</i> include at least one finance expert but no accounting or supervisory experts in each year during the sample period, and 0 otherwise.
<i>SUPER_ONLY</i>	1 if the AC of firm <i>i</i> include at least one supervisory expert but no accounting or finance experts in each year during the sample period, and 0 otherwise.
<i>ACCTG_AND_FINANCE</i>	1 if the AC of firm <i>i</i> include at least one accounting and at least one finance expert but no supervisory experts in each year during the sample period, and 0 otherwise.
<i>ACCTG_AND_SUPER</i>	1 if the AC of firm <i>i</i> include at least accounting and at least one supervisory expert but no finance experts in each year during the sample period, and 0 otherwise.
<i>ALL_EXPERTISE</i>	1 if the AC of firm <i>i</i> includes at least one accounting expert, at least one finance expert, and at least one supervisory expert in each year during the sample period, and 0 otherwise.
Panel B: Control variables	
<i>AC_SIZE</i>	Average number of AC members in firm <i>i</i> over the three years included in the sample period.
<i>AC_IND</i>	Average proportion of independent AC members in firm <i>i</i> over the sample period.
<i>AC_MEET</i>	Average number of AC meetings held by firm <i>i</i> over the sample period.
<i>AC_SHOWN</i>	Average proportion of total outstanding shares held by the AC members of firm <i>i</i> over the sample period.
<i>AC_MTPLBD</i>	Average number of boards in which the AC meetings of firm <i>i</i> serve in over the sample period.
<i>AC_TENURE</i>	Average number of years the AC members have served as directors of firm <i>i</i> over the sample period.
<i>BD_IND</i>	Proportion of independent non-AC members in firm <i>i</i> over the sample period.
<i>BD_SHOWN</i>	Average proportion of total outstanding shares held by the non-AC members of firm <i>i</i> over the sample period.
<i>DUALITY</i>	1 if the CEO and board chairman positions in firm <i>i</i> are held by the same individual during the sample period, and 0 otherwise.

(The table is continued on the next page.)

TABLE 1 (Continued)

Variable name	Variable measurement
<i>BIG4</i>	1 if a brand-name (i.e., Big 4) auditor serves as the external auditor for firm <i>i</i> during the sample period, and 0 otherwise.
<i>ASSETS</i>	Log of the average total assets of firm <i>i</i> during the sample period.
$\sigma(CFO)$	Standard deviation of seasonally adjusted cash flow from the operations of firm <i>i</i> during the sample period.
<i>NEGEARN</i>	Proportion of fiscal quarters during the sample period where firm <i>i</i> reports negative earnings.
$\sigma(SALES)$	Standard deviation of the seasonally adjusted sales revenue of firm <i>i</i> during the sample period.
<i>OPCYCLE</i>	Log of the average operating cycle of firm <i>i</i> during the sample period.
<i>INTINT</i>	Average ratio of the reported R&D and advertising expense to total sales revenue of firm <i>i</i> during the sample period.
<i>INTDUM</i>	1 if <i>INTINT</i> = 0, and 0 otherwise.
<i>CAPINT</i>	Average ratio of the net book value of property, plant, and equipment to total assets of firm <i>i</i> during the sample period.

controllers, or any other major accounting position. Finance experts, the first type of nonaccounting financial experts, are defined as AC members with work experience as investment bankers, financial analysts, or any other financial management role. Finally, AC members with work experience as CEOs or company presidents are classified as supervisory experts, the second type of nonaccounting financial experts. On the basis of this classification scheme, three dichotomous independent variables are constructed. The first variable, *ACCTG*, is coded 1 if the AC includes at least one accounting expert in each year during the sample period, and 0 otherwise. Similarly, *FINANCE (SUPER)* is coded 1 if the AC includes at least one finance (supervisory) expert in each year during the sample period, and 0 otherwise.

For our tests relating to the characteristics of accounting experts, *ACCTG* is replaced by dichotomous variables representing accounting experts with high and low levels of each characteristic (i.e., independence, share ownership, multiple directorships, and tenure). For example, to distinguish between the effects of independent and nonindependent accounting experts, *ACCTG* is replaced by two dichotomous variables that are coded 1 if the AC includes at least one accounting expert who is independent (*ACCTG_HIGH_IND* = 1) and nonindependent (*ACCTG_LOW_IND* = 1)

from the firm, respectively.¹⁸ For the tests concerning the remaining characteristics (i.e., share ownership, multiple directorships, and tenure of accounting experts), the accounting experts are assigned into the high or low groups based on the median value of each characteristic across all directors in the sample.

For the tests that focus on how accruals quality is affected by the mix of accounting, finance, and supervisory experts on the AC, seven dichotomous variables are employed that capture the mix of financial expertise in ACs (*ACCTG_ONLY*, *FINANCE_ONLY*, *SUPER_ONLY*, *ACCTG_AND_FINANCE*, *ACCTG_AND_SUPER*, *FINANCE_AND_SUPER*, and *ALL_EXPERTISE*). The first three variables capture instances where the AC includes at least (a) one accounting expert but no finance or supervisory expert, (b) one finance expert but no accounting or supervisory expert, and (c) one supervisory expert but no accounting or finance expert. The next three variables capture the three permutations from having two of the three types of experts in the AC (accounting and finance expertise, accounting and supervisory expertise, and finance and supervisory expertise). The last variable captures instances where the AC includes all three types of experts.

Control variables

Panel B of Table 1 defines the control variables employed in this study. Francis, LaFond, Olsson, and Schipper (2004) and Dechow and Dichev (2002) identify several innate factors that affect accruals quality. They document that accruals quality is: (a) negatively related to the standard deviation of cash flow from operations ($\sigma(CFO)$), the frequency of reporting negative earnings (*NEGEARN*), the standard deviation of sales revenue ($\sigma(SALES)$), operating cycle (*OPCYCLE*), and the ratio of total intangibles to total sales (*INTINT*) and (b) positively related to the log of total assets (*ASSETS*), the absence of reported intangibles (*INTDUM*), and the ratio of property, plant and equipment to total assets (*CAPINT*). Accordingly, we control for these variables.¹⁹

Given that our focus is on how financial reporting is influenced by the characteristics of AC accounting experts, we also control for attributes at the AC level that capture the proportion of independent AC members (*AC_IND*), the proportion of total shares held by the AC members (*AC_SHOWN*), the mean number of boards the AC members serve on (*AC_MTPLBDS*), and the mean tenure of AC members (*AC_TENURE*).

18. Board Analyst classifies directors as independent, nonindependent, or gray directors. We classify gray directors (directors with financial or other ties to management) as nonindependent accounting experts/directors, because they may have financial incentives to support management.

19. To control for seasonality in sales and cash flow from operations prior to computing the variables' standard deviations, we subtract from these variables their mean values calculated over corresponding quarters during a five-year period prior to the sample period (1998 through 2002). Levi (2005) and Wild and Seber (2000) also employ this approach of controlling for seasonality.

In addition, we control for the number of AC members (*AC_SIZE*) and the number of AC meetings (*AC_MEET*) because these attributes can also affect AC effectiveness (Beasley, Carcello, Hermanson, and Lapides 2000; DeZoort et al. 2002; Anderson, Mansi, and Reeb 2004).

Next, we control for important characteristics of directors who do not serve on ACs. Prior research suggests that board members are more effective in their monitoring roles when they are independent (e.g., Rosenstein and Wyatt 1990; Beasley 1996; Dechow, Sloan, and Sweeney 1996; Core et al. 1999) and have more ownership interest in their firm (e.g., Shivdasani 1993; Beasley 1996; Gerety and Lehn 1997). Because the independence and share ownership of the board are expected to be positively correlated with the independence and share ownership of AC members, following Krishnan 2005 and Lee, Mande, and Ortman 2004, we control for the proportion of non-AC members who are independent (*BD_IND*) and the proportion of total outstanding shares held by the non-AC members (*BD_SHOWN*). Furthermore, we control for CEO–board chairman duality (*DUALITY*), because prior studies suggest that the effectiveness of the board is enhanced when the board chairman is not the firm CEO (Dechow et al. 1996; Gul and Leung 2004; Farber 2005), and whether or not the firm’s external auditor is a brand name auditor (*BIG4*), because prior research indicates that clients of brand name auditors are more likely to possess higher financial reporting quality (Teoh and Wong 1993; Becker, DeFond, Jiambalvo, and Subramanyam 1998; Francis and Krishnan 1999; Geiger and Rama 2006).²⁰ Finally, the impact of industry characteristics is controlled for by introducing industry dummies (*INDUSTRY*).²¹

7. Research design

To relate our study to prior research, we commence our analysis by employing a cross-sectional regression model to formally test the association between accounting, finance, and supervisory AC expertise and accruals quality in the post-SOX era:

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20. In addition, this study acknowledges that internal auditors can also play a role in preserving financial reporting quality by monitoring organizational risks and assessing internal controls (Institute of Internal Auditors Research Foundation 2003; Public Company Accounting Oversight Board 2004). We do not control for internal auditing because of the significant time and cost constraints involved in identifying the presence of an internal auditing function for our large sample. Prior studies typically detect the presence of an internal audit function through the assistance of the Institute of Internal Auditors (Raghunandan et al. 2001; Carcello, Hermanson, and Raghunandan 2005).
21. Our findings are unaffected by the inclusion of other audit-related control variables, such as auditor industry specialization and auditor tenure, and other board characteristics, such as board meetings, board size, the tenure of non-AC members, and multiple directorships of non-AC members. Furthermore, Hribar and Nichols (2006) provide evidence on the correlation between unsigned measures of accruals quality (e.g., this study’s accruals quality measure) and other firm characteristics such as market value of equity, sales growth, leverage, and book-to-market ratios. Our conclusions remain robust when these firm characteristics are included as control variables.

$$\begin{aligned}
 AQUALITY = f\{ & ACCTG, FINANCE, SUPER, AC_SIZE, AC_IND, AC_MEET, \\
 & AC_SHOWN, AC_MLTPBD, AC_TENURE, BD_IND, \\
 & BD_SHOWN, DUALITY, BIG4, ASSETS, \sigma(CFO), \\
 & NEGEARN, \sigma(SALES), OPCYCLE, INTINT, \\
 & INTDUM, CAPINT, INDUSTRY\}
 \end{aligned} \quad (2).$$

Note that larger values of the accruals quality measure (*AQUALITY*) imply lower accruals quality. Accordingly, a significant negative coefficient for any of the financial expertise variables (i.e., *ACCTG*, *FINANCE*, and *SUPER*) would suggest higher financial reporting quality for firms with the type of AC financial expertise represented by the variable.

The regression analysis employed to formally test how the four characteristics of AC accounting experts are related to accruals quality is summarized as follows:

$$\begin{aligned}
 AQUALITY = f\{ & ACCTG_HIGH_X, ACCTG_LOW_X, FINANCE, SUPER, \\
 & AC_SIZE, AC_IND, AC_MEET, AC_SHOWN, AC_MLTPBD, \\
 & AC_TENURE, BD_IND, BD_SHOWN, DUALITY, BIG4, \\
 & ASSETS, \sigma(CFO), NEGEARN, \sigma(SALES), OPCYCLE, \\
 & INTINT, INTDUM, CAPINT, INDUSTRY\}
 \end{aligned} \quad (3),$$

where

$ACCTG_HIGH_X_i = 1$ if the AC of firm i includes at least one member with accounting expertise in each year during the sample period who has a high level of characteristic X , and 0 otherwise,

$ACCTG_LOW_X_i = 1$ if the AC of firm i includes at least one member with accounting expertise in each year during the sample period who has a low level of characteristic X , and 0 otherwise, and

$X =$ one of the four director characteristics, independence ($X = IND$), share ownership ($X = SHOWN$), multiple directorships ($X = MTPLBD$), and tenure ($X = TENURE$).

We estimate four versions of (3), with each version concentrating on a different characteristic (X) of AC accounting experts. For example, in the first version, the coefficients of the two accounting expert variables indicate the separate effects of an independent and nonindependent AC accounting expert on accruals quality. Similarly, the remaining versions of (3) examine the separate effects of accounting experts with high and low levels of share ownership, multiple directorships, and tenure.²²

22. We rely on the Board Analyst data to identify independent and nonindependent accounting experts and allocate accounting experts into the other high or low groups based on the median level of share ownership, multiple directorships, and tenure across all directors in the sample.

Finally, the following regression model is employed to examine how accruals quality is affected by the mix of accounting and nonaccounting financial expertise in ACs:

$$\begin{aligned}
 AQUALITY = f\{ & ACCTG_ONLY, FINANCE_ONLY, SUPER_ONLY, \\
 & ACCTG_AND_FINANCE, ACCTG_AND_SUPER, \\
 & SUPER_AND_FINANCE, ALL_EXPERTISE, AC_SIZE, \\
 & AC_IND, AC_MEET, AC_SHOWN, AC_MLTPBD, \quad (4). \\
 & AC_TENURE, BD_IND, BC_SHOWN, DUALITY, BIG4, \\
 & ASSETS, \sigma(CFO), xNEGEARN, \sigma(SALES), OPCYCLE, \\
 & INTINT, INTDUM, CAPINT, INDUSTRY\}
 \end{aligned}$$

The coefficients of the test variables indicate how accruals quality is affected by the different mix of accounting, finance, and supervisory expertise in ACs.

8. Empirical results

Descriptive statistics

Table 2 reports summary statistics on the control variables for the 770 sample firms.

The statistics indicate that the mean size of ACs is 3.716, the average proportion of independent members in ACs is 0.928, and the average number of AC meetings is 9.015. The AC members collectively hold less than 1 percent of share ownership, hold an average of 2.7 directorships, and serve an average of 7.953 years with their firms. The mean proportion of independent non-AC members is 0.496 and the average cumulative proportion of shares held by these directors is 0.014. The CEO holds the position of board chairman in approximately 50.5 percent of the sample firms.

Next, we examine the *AQUALITY* for firms with and without different types of accounting experts on their AC. Note that larger values of *AQUALITY* imply lower accruals quality. For the sake of brevity, these summary statistics are not tabulated. However, the notable results from this analysis indicate that *AQUALITY* is lower for (a) firms with AC accounting experts who have low share ownership (*ACCTG_LOW_SHOWN* = 1) relative to the remaining firms (*ACCTG_LOW_SHOWN* = 0) and (b) firms with AC accounting experts who have fewer directorships (*ACCTG_LOW_MTPLBD* = 1) relative to the remaining firms (*ACCTG_LOW_MTPLBD* = 0). These statistics suggest that the marginal contribution of AC accounting experts to accruals quality is more pronounced when they have low share ownership and fewer directorships. Table 3 reports the descriptive statistics on accruals quality for firms with different mixes of financial expertise types in their AC and for firms without any AC financial expertise.

The descriptive statistics indicate that the lowest median values of *AQUALITY* are observed for firms with an AC that possesses accounting

TABLE 2

Descriptive statistics for the period 2004–2006. The sample consists of 770 firms

Variable	Mean	Q1	Median	Q3	Std. dev.
<i>AC_SIZE</i>	3.716	3.000	3.667	4.000	0.826
<i>AC_IND</i>	0.928	0.888	1.000	1.000	0.127
<i>AC_MEET</i>	9.015	7.000	8.667	10.667	3.106
<i>AC_SHOWN</i>	0.002	0.000	0.000	0.001	0.008
<i>AC_MTPLBD</i>	2.700	1.972	2.639	3.333	1.016
<i>AC_TENURE</i>	7.953	5.133	7.111	10.000	4.029
<i>BD_IND</i>	0.496	0.344	0.518	0.683	0.229
<i>BD_SHOWN</i>	0.014	0.000	0.002	0.009	0.037
<i>DUALITY</i>	0.505	0.000	1.000	1.000	0.500
<i>BIG4</i>	0.942	1.000	1.000	1.000	0.235
<i>ASSETS</i>	7.422	6.461	7.308	8.278	1.437
$\sigma(CFO)$	0.028	0.014	0.022	0.033	0.021
<i>NEGEARN</i>	0.153	0.000	0.000	0.167	0.252
$\sigma(SALES)$	0.052	0.021	0.039	0.065	0.046
<i>OPCYCLE</i>	4.687	4.396	4.727	5.042	0.616
<i>INTINT</i>	0.063	0.001	0.023	0.086	0.096
<i>INTDUM</i>	0.330	0.000	0.000	1.000	0.421
<i>CAPINT</i>	0.256	0.111	0.203	0.351	0.194

Note:

See Table 1 for variable definitions.

and supervisory expertise (median 0.0055); accounting, finance, and supervisory expertise (median = 0.0056); accounting and finance expertise (median = 0.0059); and supervisory and finance expertise (median = 0.0060). The statistics suggest the presence of complementary effects between accounting and nonaccounting expertise in promoting accruals quality. However, tests of differences (not tabulated) in the median and mean *AQUALITY* values reveal no significant differences among the accruals quality of firms with different mixes of financial expertise, with two exceptions: The mean *AQUALITY* of firms with accounting expertise only is lower than the mean *AQUALITY* of (a) firms with finance expertise only (p -value = 0.072) and (b) firms with no expertise (p -value = 0.010).

The correlation matrices are not reported, given the large number of variables employed across all regression models. However, the unreported correlation statistics indicate that the correlation coefficients are not large enough to prohibit the use of a multivariate regression analysis.²³ The

23. The highest correlation is between *BD_IND* and *AC_IND* (0.541) and the remaining correlations are all below 0.50. The results for the test variables remain robust when either *BD_IND* or *AC_IND* is excluded from the analysis.

TABLE 3
 Descriptive statistics on the accruals quality of firms with different mixes of accounting, finance, and supervisory expertise in their AC. The sample consists of 770 firms

	<i>ACCTG_</i> <i>ONLY</i> <i>= 1</i>	<i>FINANCE_</i> <i>ONLY</i> <i>= 1</i>	<i>SUPER_</i> <i>ONLY</i> <i>= 1</i>	<i>ACCTG_</i> <i>AND_</i> <i>FINANCE</i> <i>= 1</i>	<i>ACCTG_</i> <i>AND_</i> <i>SUPER</i> <i>= 1</i>	<i>SUPER_</i> <i>AND_</i> <i>FINANCE</i> <i>= 1</i>	<i>ALL_</i> <i>EXPERTISE</i> <i>= 1</i>	<i>NO</i> <i>EXPERTISE</i>
No. of observations	26	14	220	39	200	105	128	38
Mean <i>AQUALITY</i>	0.0070	0.0130	0.0081	0.0078	0.0084	0.0089	0.0079	0.0096
Median <i>AQUALITY</i>	0.0066	0.0091	0.0064	0.0059	0.0055	0.0060	0.0056	0.0086

Note:
 See Table 1 for variable definitions.

highest variance inflation factor is 4.072, which is well below the threshold of 10, beyond which multicollinearity can be a problem (Kennedy 1992).

Regression results

The results from the estimation of (2), where *AQUALITY* is regressed on the *AC* expertise and control variables in the post-SOX period, are reported in Table 4. For the sake of brevity, the coefficients for industry dummy variables are not reported.

The results indicate that *AQUALITY* is (a) negatively and significantly related to *ACCTG* (p -value = 0.0010) and (b) unrelated to *FINANCE*

TABLE 4
Cross-sectional regression test of accruals quality on expertise and control variables.
The sample consists of 770 firms

Variable	Expected sign	Parameter estimate	p -value
<i>INTERCEPT</i>	?	0.0087	0.0620 *
<i>ACCTG</i>	-	-0.0016	0.0010 ***
<i>FINANCE</i>	-	-0.0003	0.2722
<i>SUPER</i>	-	0.0002	0.3590
<i>AC_SIZE</i>	?	0.0004	0.2289
<i>AC_IND</i>	-	-0.0058	0.0020 ***
<i>AC_MEET</i>	?	-0.0000	0.9401
<i>AC_SHOWN</i>	?	0.0154	0.6156
<i>AC_MTPLBD</i>	?	0.0001	0.7646
<i>AC_TENURE</i>	?	-0.0002	0.0050 ***
<i>BD_IND</i>	-	0.0018	0.1499
<i>BD_SHOWN</i>	-	0.0027	0.3548
<i>DUALITY</i>	+	-0.0003	0.2423
<i>BIG4</i>	-	-0.0001	0.4778
<i>ASSETS</i>	-	-0.0006	0.0012 ***
$\sigma(CFO)$	+	0.0834	0.0000 ***
<i>NEGEARN</i>	+	0.0048	0.0000 ***
$\sigma(SALES)$	+	0.0252	0.0001 ***
<i>OPCYCLE</i>	+	0.0009	0.0278 **
<i>INTINT</i>	+	0.0062	0.0235 **
<i>INTDUM</i>	-	-0.0012	0.0474 **
<i>CAPINT</i>	-	-0.0004	0.3881
Adjusted R^2		0.2144	

Notes:

See Table 1 for variable definitions.

p -values are one-tailed for variables with an expected sign, and two-tailed otherwise.

***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

(p -value = 0.2722) and *SUPER* (p -value = 0.3590). Given that lower *AQUALITY* signals higher accruals quality, this finding suggests that AC accounting expertise promotes accruals quality in the post-SOX era. The results are consistent with prior studies (e.g., Carcello et al. 2006; Krishnan and Visvanathan 2008) that provide support for AC accounting experts being superior monitors of financial reporting.

The results also indicate that the AC governance variables *AC_IND* and *AC_TENURE* are both positively related to accruals quality at the 1 percent level. The latter result suggests that effective monitoring is potentially an acquired skill for AC members. It appears that the stock of firm-specific (and perhaps industry) knowledge gained by longer-tenured AC members enhances their ability to monitor the financial reporting process. The results also indicate that *ASSETS* and *INTDUM* are positively related to accruals quality (p -value = 0.0012 and 0.0474, respectively) and that accruals quality is negatively and significantly (p -value < 0.05) associated with $\sigma(CFO)$, *NEGEARN*, $\sigma(SALES)$, *OPCYCLE*, and *INTINT*. These results are consistent with those reported by Dechow and Dichev 2002 and Francis et al. 2004.

Table 5 presents the results from the estimation of (3), where *AQUALITY* is regressed on the high and low levels of attributes of AC accounting experts and the controls.

The results indicate that accruals quality is positively related to the presence of independent accounting experts (p -value = 0.0045). This result is intuitive and consistent with our prior that independent AC members are better monitors of the financial reporting process (e.g., McMullen and Raghunandan 1996; Beasley et al. 2000; Klein 2002; Bédard et al. 2004). The results for the governance and other control variables are similar to those reported in Table 4.

The fourth, fifth, and sixth columns of Table 5 present the results after considering the effects of accounting experts who have high or low levels of stock ownership, multiple directorships, and tenure, respectively. The results from the fourth column of Table 5 report that the presence of accounting experts with both high and low levels of stock ownership is positively related to accruals quality (p -value = 0.0077 and 0.0019, respectively). This result suggests that AC accounting experts are positively related to accruals quality regardless of whether they have high or low share ownership. In other words, share ownership does not appear to either enhance or impair the monitoring skills of accounting experts. This inference is validated by documenting that a test of the difference between the coefficients of the variables capturing accounting experts with high and low stock ownership is statistically insignificant (p -value = 0.7248, not tabulated). One possible reason for this insignificant difference is that most AC members in our sample have low levels of share ownership, so there is little variation in the share ownership of accounting experts in the two groups. We further investigate the impact of AC member compensation on our results by

TABLE 5

Cross-sectional regression test of accruals quality on the characteristics of accounting expertise, finance expertise, supervisory expertise, and control variables. The sample consists of 770 firms

	Expected sign	Accounting expert attribute (<i>X</i>)			
		<i>X</i> = <i>IND</i>	<i>X</i> = <i>SHOWN</i>	<i>X</i> = <i>MTPLBD</i>	<i>X</i> = <i>TENURE</i>
<i>INTERCEPT</i>	?	0.0088 <i>0.0634</i> *	0.0092 <i>0.0480</i> **	0.0092 <i>0.0485</i> **	0.0088 <i>0.0592</i> *
<i>ACCTG_HIGH_X</i>	-/?	-0.0015 <i>0.0045</i> ***	-0.0019 <i>0.0077</i> ***	-0.0009 <i>0.1065</i>	-0.0007 <i>0.2690</i>
<i>ACCTG_LOW_X</i>	?	-0.0016 <i>0.2937</i>	-0.0017 <i>0.0019</i> ***	-0.0023 <i>0.0010</i> ***	-0.0019 <i>0.0007</i> ***
<i>FINANCE</i>	-	-0.0003 <i>0.2728</i>	-0.0003 <i>0.2484</i>	-0.0003 <i>0.2591</i>	-0.0003 <i>0.2682</i>
<i>SUPER</i>	-	0.0003 <i>0.3505</i>	0.0002 <i>0.3735</i>	0.0003 <i>0.3476</i>	0.0002 <i>0.3697</i>
<i>AC_SIZE</i>	?	0.0004 <i>0.2283</i>	0.0004 <i>0.1830</i>	0.0004 <i>0.2528</i>	0.0004 <i>0.1813</i>
<i>AC_IND</i>	-	-0.0059 <i>0.0028</i> ***	-0.0057 <i>0.0021</i> ***	-0.0057 <i>0.0023</i> ***	-0.0059 <i>0.0017</i> ***
<i>AC_MEET</i>	?	0.0000 <i>0.9388</i>	0.0000 <i>0.9848</i>	-0.0000 <i>0.9342</i>	0.0000 <i>0.9817</i>
<i>AC_SHOWN</i>	?	0.0156 <i>0.6132</i> *	0.0148 <i>0.6289</i> *	0.0152 <i>0.6196</i> *	0.0161 <i>0.6008</i> *
<i>AC_MTPLBD</i>	?	0.0001 <i>0.7702</i>	0.0001 <i>0.8039</i>	0.0002 <i>0.8928</i>	0.0001 <i>0.7270</i>
<i>AC_TENURE</i>	?	-0.0002 <i>0.0052</i> ***	-0.0002 <i>0.0039</i> ***	-0.0002 <i>0.0072</i> ***	-0.0002 <i>0.0019</i> ***
<i>BD_IND</i>	-	0.0018 <i>0.1580</i>	0.0019 <i>0.1288</i>	0.0018 <i>0.2152</i>	0.0016 <i>0.1276</i>
<i>BD_SHOWN</i>	-	0.0026 <i>0.3609</i>	0.0025 <i>0.3646</i>	0.0018 <i>0.4039</i>	0.0033 <i>0.3238</i>
<i>DUALITY</i>	+	-0.0003 <i>0.2431</i>	-0.0003 <i>0.2642</i>	-0.0003 <i>0.2618</i>	-0.0004 <i>0.2084</i>
<i>BIG4</i>	-	-0.0001 <i>0.4636</i>	-0.0001 <i>0.4614</i>	-0.0001 <i>0.4734</i>	-0.0001 <i>0.4493</i>
<i>ASSETS</i>	-	-0.0007 <i>0.0014</i> ***	-0.0007 <i>0.0008</i> ***	-0.0007 <i>0.0013</i> ***	-0.0007 <i>0.0011</i> ***
$\sigma(CFO)$	+	0.0837 <i>0.0000</i> ***	0.0830 <i>0.0000</i> ***	0.0839 <i>0.0000</i> ***	0.0846 <i>0.0000</i> ***

(The table is continued on the next page.)

TABLE 5 (Continued)

	Expected sign	Accounting expert attribute (X)			
		$X =$ IND	$X =$ SHOWN	$X =$ MTPLBD	$X =$ TENURE
<i>NEGEARN</i>	+	0.0048 <i>0.0000</i> ***	0.0048 <i>0.0000</i> ***	0.0047 <i>0.0000</i> ***	0.0047 <i>0.0000</i> ***
$\sigma(\text{SALES})$	+	0.0251 <i>0.0001</i> ***	0.0253 <i>0.0001</i> ***	0.0246 <i>0.0001</i> ***	0.0248 <i>0.0001</i> ***
<i>OPCYCLE</i>	+	0.0010 <i>0.0276</i> **	0.0009 <i>0.0375</i> **	0.0009 <i>0.0326</i> **	0.0010 <i>0.0248</i> **
<i>INTINT</i>	+	0.0061 <i>0.0250</i> ***	0.0062 <i>0.0229</i> ***	0.0060 <i>0.0270</i> ***	0.0060 <i>0.0260</i> ***
<i>INTDUM</i>	-	-0.0011 <i>0.0487</i> **	-0.0012 <i>0.0449</i> **	-0.0011 <i>0.0595</i> *	-0.0010 <i>0.0663</i> *
<i>CAPINT</i>	-	-0.0005 <i>0.3842</i>	-0.0005 <i>0.3678</i>	-0.0005 <i>0.3703</i>	-0.0005 <i>0.3689</i>
Adjusted R^2		0.2124 ***	0.2178 ***	0.2160 ***	0.2157 ***

Notes:

See Table 1 for variable definitions.

The first row in each cell reports the coefficient estimate and the second row reports the p -value (in italics), where p -values are one-tailed for variables with an expected sign, and two-tailed otherwise.

***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

undertaking a similar analysis based on the stock options of AC accounting experts later in the study. The results from the fifth column indicate that the ability of AC accounting experts to positively influence accruals quality is driven by accounting experts who hold fewer directorships in other firms (p -value = 0.0010). This result suggests that accounting experts who serve on fewer boards make more effective AC members. Further, the results from the last column indicate that the positive relationship between accruals quality and AC accounting expertise is most pronounced for accounting experts who have a lower tenure with their firms (p -value = 0.0007). This result is interesting in that it is in the opposite direction to that obtained for the variable that considers the average tenure of all AC members, suggesting that, while longer tenure for AC members appears to lead to more effective monitoring, this result does not apply to accounting experts, who appear to have a pronounced effect on accruals quality when they have a shorter tenure.

We also replicate our estimation of (3) after redefining the two accounting expert variables so that they capture whether the AC includes at least one ideal and one non-ideal accounting expert, respectively. Based on the

results from Table 5, an ideal accounting expert is defined as an accounting expert who is independent, holds fewer directorships, and has a lower tenure. The relationship between accruals quality and ideal accounting

TABLE 6

Cross-sectional regression test of accruals quality on ideal and non-ideal accounting expertise, finance expertise, supervisory expertise, and control variables. The sample consists of 770 firms

Variable	Expected sign	Parameter estimate	<i>p</i> -value
<i>INTERCEPT</i>	?	0.0092	0.0488**
<i>IDEAL_ACCTG</i>	?	-0.0032	0.0002***
<i>NON_IDEAL_ACCTG</i>	?	-0.0012	0.0243**
<i>FINANCE</i>	-	-0.0003	0.2705
<i>SUPER</i>	-	0.0003	0.3550
<i>AC_SIZE</i>	?	0.0004	0.1974
<i>AC_IND</i>	-	-0.0058	0.0018***
<i>AC_MEET</i>	?	-0.0000	0.9383
<i>AC_SHOWN</i>	?	0.0152	0.6200
<i>AC_MTPLBD</i>	?	0.0000	0.8893
<i>AC_TENURE</i>	?	-0.0002	0.0025***
<i>BD_IND</i>	-	0.0017	0.1807
<i>BD_SHOWN</i>	-	0.0026	0.3601
<i>DUALITY</i>	+	-0.0003	0.2336
<i>BIG4</i>	-	-0.0001	0.4633
<i>ASSETS</i>	-	-0.0007	0.0013***
$\sigma(CFO)$	+	0.0838	0.0000***
<i>NEGEARN</i>	+	0.0048	0.0000***
$\sigma(SALES)$	+	0.0253	0.0001***
<i>OPCYCLE</i>	+	0.0009	0.0298**
<i>INTINT</i>	+	0.0060	0.0261**
<i>INTDUM</i>	-	-0.0010	0.0666*
<i>CAPINT</i>	-	-0.0006	0.3605
Adjusted R^2		0.2191	

Notes:

IDEAL_ACCTG = 1 if the AC of firm *i* includes at least one ideal accounting expert (an accounting expert who is independent, holds fewer directorships, and has a lower tenure) in each year during the sample period, and 0 otherwise, and *NON_IDEAL_ACCTG* = 1 if the AC of firm *i* includes at least one non-ideal accounting expert (an accounting expert who is not an ideal accounting expert) in each year during the sample period, and 0 otherwise.

See Table 1 for remaining variable definitions.

p-values are one-tailed for variables with an expected sign, and two-tailed otherwise.

***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

experts is expected to be more pronounced than that between accruals quality and non-ideal accounting experts.

The results from this analysis, reported in Table 6, suggest that, while accruals quality is positively related to both ideal accounting experts (p -value = 0.0002) and non-ideal accounting experts (p -value = 0.0243), the effect of the variable capturing ideal accounting experts is significantly larger (p -value = 0.0114, not tabulated), confirming that the ability of accounting experts to contribute to AC effectiveness is most pronounced when they are independent from the firm and management, hold fewer directorships, and have lower tenure.²⁴ Table 7 presents the results from (4), which evaluates how accruals quality is related to various mixes of AC financial expertise.

Our findings suggest that accruals quality is positively related to the presence of (a) accounting and finance expertise (p -value = 0.0187) and (b) all three (accounting, finance, and supervisory) expertises in the AC (p -value = 0.0734). The results suggest that, while finance expertise is not directly related to AC effectiveness, the mix of accounting and finance expertise is optimal for ensuring accruals quality. These findings are consistent with prior research suggesting that nonaccounting financial experts are also able to bring valuable resource dependence contributions to AC effectiveness (Cohen et al. 2008). Test of differences between the two significant coefficients show that the coefficients are not statistically different (p -value = 0.2781, not tabulated), suggesting that the additional presence of supervisory experts in ACs that already include accounting and finance experts is not associated with an incremental improvement in accruals quality. This result is consistent with the notion that supervisory experts lack an adequate understanding of accounting matters (e.g., Livingston 2003; Plitch and Ceron 2003) and fail to constructively apply their business acumen in complementing accounting or finance expertise in ACs. Nonetheless, our findings for finance experts provide supportive evidence of how the resource dependence roles of such experts can provide incremental business and industry knowledge to ACs with accounting experts and promote financial reporting quality.

9. Additional tests

Alternative measures of test variables

To test the robustness of the results from Table 5 to alternative measures of financial expertise, we replicate our analyses after measuring financial expertise as the number and proportion of AC members who are accounting experts with high/low independence, share ownership, multiple

24. It is important to note that firms can still benefit from appointing non-ideal accounting experts. More specifically, it is better for firms to appoint non-ideal accounting experts than to appoint no accounting experts at all.

TABLE 7

Cross-sectional regression test of accruals quality on mix of expertise and control variables. The sample consists of 770 firms

Variable	Expected sign	Parameter estimate	<i>p</i> -value
<i>INTERCEPT</i>	?	0.0091	0.0538*
<i>ACCTG_ONLY</i>	–	–0.0022	0.1003
<i>FINANCE_ONLY</i>	–	0.0015	0.2314
<i>SUPER_ONLY</i>	–	–0.0003	0.4082
<i>ACCTG_AND_FINANCE</i>	?	–0.0032	0.0187**
<i>ACCTG_AND_SUPER</i>	?	–0.0016	0.1973
<i>SUPER_AND_FINANCE</i>	?	–0.0005	0.3365
<i>ALL_EXPERTISE</i>	?	–0.0019	0.0734*
<i>AC_SIZE</i>	?	0.0004	0.2280
<i>AC_IND</i>	–	–0.0057	0.0021***
<i>AC_MEET</i>	?	0.0000	0.9690
<i>AC_SHOWN</i>	?	0.0154	0.3086
<i>AC_MTPLBD</i>	?	0.0001	0.7299
<i>AC_TENURE</i>	?	–0.0002	0.0037***
<i>BD_IND</i>	–	0.0018	0.1610
<i>BD_SHOWN</i>	–	0.0030	0.3404
<i>DUALITY</i>	+	–0.0004	0.2064
<i>BIG4</i>	–	0.0001	0.4811
<i>ASSETS</i>	–	–0.0007	0.0013***
$\sigma(CFO)$	+	0.0829	0.0000***
<i>NEGEARN</i>	+	0.0048	0.0000***
$\sigma(SALES)$	+	0.0244	0.0001***
<i>OPCYCLE</i>	+	0.0009	0.0306**
<i>INTINT</i>	+	0.0061	0.0251**
<i>INTDUM</i>	–	–0.0011	0.0489**
<i>CAPINT</i>	–	–0.0004	0.4111
Adjusted R^2		0.2130*****	

Notes:

See Table 1 for variable definitions.

p-values are one-tailed for variables with an expected sign, and two-tailed otherwise.

***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

directorships, and tenure. The results from these analyses, reported in panels A and B of Table 8, are consistent with those reported in our main analysis.²⁵

25. A test of difference between the coefficients of the variables capturing accounting experts with high and low stock ownership is statistically insignificant (*p*-value = 0.7819, not tabulated).

TABLE 8

Cross-sectional regression test using alternative measures of test variables. The sample consists of 770 firms

	Expected sign	AC member attribute (<i>X</i>)			
		<i>X</i> = <i>IND</i>	<i>X</i> = <i>SHOWN</i>	<i>X</i> = <i>MTPLBD</i>	<i>X</i> = <i>TENURE</i>
Panel A: Based on the number of accounting experts with high/low characteristics					
<i>ACCTG_HIGH_X</i>	-/?	-0.0011 <i>0.0042</i> ***	-0.0011 <i>0.0538</i> *	-0.0007 <i>0.1105</i>	-0.0006 <i>0.2959</i>
<i>ACCTG_LOW_X</i>	?	-0.0020 <i>0.1379</i>	-0.0013 <i>0.0035</i> ***	-0.0019 <i>0.0009</i> ***	-0.0017 <i>0.0005</i> ***
<i>FINANCE</i>	-	-0.0005 <i>0.1908</i>	-0.0005 <i>0.1825</i>	-0.0005 <i>0.1577</i>	-0.0005 <i>0.1599</i>
<i>SUPER</i>	-	0.0009 <i>0.0010</i> ***	0.0009 <i>0.0010</i> ***	0.0008 <i>0.0014</i> ***	0.0008 <i>0.0013</i> ***
Panel B: Based on the proportion of ACs made up of accounting experts with high/low characteristics					
<i>ACCTG_HIGH_X</i>	-/?	-0.0047 <i>0.0010</i> ***	-0.0043 <i>0.0410</i> **	-0.0023 <i>0.1495</i>	-0.0025 <i>0.2017</i>
<i>ACCTG_LOW_X</i>	?	-0.0068 <i>0.1610</i>	-0.0056 <i>0.0006</i> ***	-0.0079 <i>0.0001</i> ***	-0.0068 <i>0.0001</i> ***
<i>FINANCE</i>	-	-0.0018 <i>0.2232</i>	-0.0018 <i>0.2153</i>	-0.0019 <i>0.1910</i>	-0.0019 <i>0.1969</i>
<i>SUPER</i>	-	0.0032 <i>0.0008</i> ***	0.0032 <i>0.0008</i> ***	0.0030 <i>0.0012</i> ***	0.0030 <i>0.0012</i> ***
Panel C: Based on quartiles of characteristics					
<i>ACCTG_Q1_X</i>	?		-0.0016 <i>0.0588</i> *	-0.0016 <i>0.0342</i> **	-0.0018 <i>0.0035</i> ***
<i>ACCTG_Q2_X</i>	?		-0.0010 <i>0.0084</i> *	0.0010 <i>0.7147</i>	-0.0011 <i>0.0736</i> *
<i>ACCTG_Q3_X</i>	?		-0.0013 <i>0.0538</i> *	-0.0009 <i>0.4265</i>	-0.0005 <i>0.5254</i>
<i>ACCTG_Q4_X</i>	?		-0.0021 <i>0.0070</i> *	0.0003 <i>0.9713</i>	-0.0008 <i>0.3480</i>
<i>FINANCE</i>	-		-0.0004 <i>0.2317</i>	-0.0004 <i>0.2119</i>	-0.0003 <i>0.2538</i>
<i>SUPER</i>	-		0.0002 <i>0.3746</i>	0.0003 <i>0.3296</i>	0.0002 <i>0.3727</i>
Panel D: Based on ordering of financial expertise					
<i>ACCTG_HIGH_X</i>	?	-0.0014 <i>0.0090</i> ***	-0.0019 <i>0.0110</i> **	-0.0007 <i>0.1475</i>	-0.0006 <i>0.3429</i>

(The table is continued on the next page.)

TABLE 8 (Continued)

	Expected sign	AC member attribute (<i>X</i>)			
		<i>X</i> = <i>IND</i>	<i>X</i> = <i>SHOWN</i>	<i>X</i> = <i>MTPLBD</i>	<i>X</i> = <i>TENURE</i>
<i>ACCTG_LOW_X</i>	?	-0.0016 <i>0.3077</i>	-0.0016 <i>0.0036</i> ***	-0.0022 <i>0.0013</i> ***	-0.0018 <i>0.0012</i> ***
<i>FINANCE</i>	-	-0.0003 <i>0.3108</i>	-0.0004 <i>0.2580</i>	-0.0003 <i>0.2807</i>	-0.0003 <i>0.2947</i>
<i>SUPER</i>	-	0.0010 <i>0.0473</i> **	0.0009 <i>0.0689</i> *	0.0010 <i>0.0039</i> ***	0.0010 <i>0.0048</i> ***

Notes:

See Table 1 for variable definitions.

The first row in each cell reports the coefficient estimate and the second row reports the *p*-value (in italics), where *p*-values are one-tailed for variables with an expected sign, and two-tailed otherwise.

***, **, and * denote significance at the 0.01, 0.05, and 0.10 levels, respectively.

Interestingly, these tests also indicate that the alternative measures of supervisory expertise are negatively related to accruals quality at the 1 percent level. This finding further heightens concerns about the contribution of supervisory experts to AC effectiveness. The analysis in Table 6 is also replicated using the number of ideal (and non-ideal) accounting experts and the proportion of AC members who are ideal and non-ideal accounting experts. The results from these analyses (not tabulated) show that accruals quality is positively related to (a) the numbers of both ideal and non-ideal accounting experts (*p*-values = 0.0014 and 0.0399, respectively) and (b) both the proportions of AC members who are ideal and non-ideal accounting experts (*p*-values = 0.0001 and 0.0010, respectively).²⁶

To further test the sensitivity of our results in Table 5 relating to share ownership, multiple directorships, and tenure, we replicate our analysis after assigning accounting experts into four groups (quartiles) instead of two, using the median and upper and lower quartile values of these characteristics. The results, reported in panel C of Table 8, show that accruals quality is positively associated with accounting experts who are in the lowest quartile of multiple directorships and tenure. The finding for the lowest quartile of tenure together with the almost monotonic impact of tenure across the four quartiles suggests the presence of an optimal tenure. We find that accounting experts in the lowest tenure quartile have a tenure of three years or less, which suggests that accounting experts have to be fairly recent

26. Under both sets of tests, the coefficients of the variables representing the number and proportion of ideal accounting experts is significantly larger (*p*-value = 0.0725 and 0.0312, respectively, not tabulated).

appointees to be most effective in monitoring financial reporting. It is also possible that such accounting experts are specifically recruited to ensure higher compliance with the regulatory requirements of SOX. The impact of post-SOX-appointed accounting experts is explored more formally later. In line with our main results, share ownership of accounting experts does not seem to affect their ability to monitor accruals quality. As a further refinement of our analysis in Table 6, we replicate our tests after defining an ideal expert as an independent accounting expert in the lowest quartile of multiple directorships and tenure. The results from this analysis (not tabulated) show that accruals quality is positively related to the presence of the refined measures of ideal accounting experts (p -value = 0.0118) and non-ideal accounting experts (p -value = 0.0057).²⁷

Finally, the robustness of the results is also evaluated after adopting the following ordering of the financial expertise of the AC members: accounting > finance > supervisory. Under this ordering scheme, AC members with multiple types of expertise are restricted to the expertise that is highest in the ordering scheme. For example, an AC member who is a certified public accountant and also a company president will only qualify as an accounting expert.²⁸ The results from the replication of tests from Table 5, reported in panel D of Table 8, show that the accounting expertise variables remain unaffected, largely because the new ordering scheme does not result in accounting experts being reclassified as nonaccounting experts. Similarly, the new ordering scheme does not affect our findings for ideal and non-ideal accounting experts from Table 6 (not tabulated), nor does it alter our findings on mixes of expertise from Table 7 (not tabulated).

Controlling for endogeneity

Our analysis thus far assumes that a firm's choice of a type of accounting expert is exogenously given. However, it is possible that accounting experts do not randomly join firms but, rather, self-select firms based on certain firm characteristics. Most importantly, it is possible that accounting experts with detailed knowledge about the firm's accounting systems systematically opt out of serving with firms with low earnings quality to avoid damaging their reputations, being sued, or undertaking an additional workload (Beasley et al. 2009). This suggests that accruals quality and the presence of accounting experts can be endogenously determined, which would bias the regression analysis (Maddala 1983). To address the endogeneity issue,

27. However, in this instance the two coefficients are not statistically different from each other.

28. This is because if an AC member is a certified public accountant and also a former president of a company, it is possible that he/she will rely primarily on his/her accounting expertise in evaluating issues. Alternatively, another AC member who is only a company president will rely solely on his/her supervisory expertise. This raises the question of whether the first AC member's supervisory expertise is as relevant as the second AC member's supervisory expertise.

modified versions of (3) are estimated that consider accounting experts with high and low levels of independence, share ownership, multiple directorships, and tenure, in a system of simultaneous equations with eight different self-selection probit regressions that model these accounting experts on accruals quality and variables representing other firm characteristics. Following Agrawal and Chadha 2005 and Coles, Daniel, and Naveen 2008, we identify firm size, operating performance, sales growth, financial leverage, capital intensity, research and development, intangible assets, free cash flows, market-to-book ratio, stock volatility, firm age, CEO age, CEO tenure, CEO ownership, CEO–board chairman duality, and board size as other firm characteristics that can drive the presence of accounting experts on the AC. The simultaneous regression analysis is performed by first regressing each endogenous variable on all exogenous variables (instruments). In the second stage, modified versions of (3) and the self-selection equations are separately estimated, with the right-hand-side endogenous variable replaced by its fitted value from the first-stage regression.

In summary, with the exception of the results relating to nonindependent accounting experts and high-tenured accounting experts, self-selection equation results from the second stage (not tabulated) for the remaining types of accounting experts all indicate negative and significant (p -value < 0.01) coefficients on the fitted value of accruals quality, suggesting that the association between these types of accounting experts and accruals quality is endogenous. Consistent with Beasley et al. 2009, these results suggest that accounting experts prefer directorships in firms with high accruals quality. However, the results for the modified versions of (3) indicate negative and significant (p -value < 0.01) parameter estimates for the fitted value of accounting experts who are independent, have low (and also high) share ownership, have fewer multiple directorships, and are lower tenured. Hence, the findings for Table 5 generally remain robust after correcting for the endogeneity between accruals quality and presence of AC ideal accounting experts. Results from similar tests relating to Table 6 (not tabulated) suggest that, while both ideal and non-ideal accounting experts self-select themselves into firms with high accruals quality, both types of experts continue to positively influence accruals quality after correcting for this self-selection (p -value < 0.01). In relation to the comparable tests for Table 7, the results suggest that ACs with accounting experts only self-select firms with high accruals quality, while ACs accruals quality is positively and significantly (p -value < 0.01) related to the presence of (a) only accounting expertise, (b) accounting and finance expertise, and (c) all three (accounting, finance, and supervisory) types of expertise in the AC.

Impact of post-SOX–appointed accounting experts

Given the unique time period of our study, an alternative interpretation of our findings relating to the tenure characteristic is that the results are being driven by post-SOX–appointed accounting experts, who have the requisite

skills for assisting firms to better comply with the new financial reporting requirements. This view is supported by the results in panel C of Table 8, which show that accruals quality is positively related to accounting experts in the lowest tenure quartile, which would largely subsume post-SOX–appointed accounting experts. However, to provide more insight, two further tests are undertaken. First, the tenure-related tests in Table 5 are replicated after splitting the variable representing lower-tenured accounting experts (i.e., *ACCTG_LOW_TENURE* = 1) into two variables capturing the presence of at least one post-SOX–appointed accounting expert (*ACCTG_POST_SOX*) and at least one lower-tenured accounting expert who was appointed in the pre-SOX period (*ACCTG_MED_TENURE*).²⁹ The results from this analysis (not tabulated) show a positive relationship between accruals quality and *ACCTG_POST_SOX* (p -value = 0.0009) and a weaker positive relationship between accruals quality and *ACCTG_MED_TENURE* (p -value = 0.0952). However, a test of difference between the coefficients on *ACCTG_POST_SOX* and *ACCTG_MED_TENURE* is statistically insignificant (p -value = 0.5609), making it difficult to conclude that the result for the tenure characteristic is alternatively explained by more adept accounting experts being appointed in the post-SOX period.

Second, we extend our analysis in Table 6 by investigating whether independent post-SOX–appointed accounting experts with fewer multiple directorships are more adept than other accounting experts at ensuring high accruals quality. The results from this analysis (not tabulated) indicate that, while the presence of both types of accounting experts is positively related to accruals quality, the effect of independent post-SOX–appointed accounting experts with fewer multiple directorships is statistically larger (p -value = 0.0783, not tabulated) than that of other accounting experts. In contrast to the previous test's findings, in this instance, there is some weak support for the view that the results for the tenure characteristic can be alternatively attributed to post-SOX–appointed accounting experts.

Other tests

We conduct several other additional tests. First, given the finding that share ownership does not influence the monitoring role of accounting experts, we consider the role of an alternative type of director compensation, namely, stock option compensation. Prior studies show that the use of stock option compensation for directors has significantly increased in recent times (Perry 2001; Opperman and Hornsby 2005). However, research on the benefits of director stock option plans has produced conflicting results. On the one hand, Fich and Shivdasani (2005) show that firms with stock option plans for directors have higher growth and profitability. On the other hand, other studies show that the adoption of director stock option plans are associated

29. We continue to employ the variable representing higher-tenured accounting experts (*ACCTG_HIGH_TENURE*) as an independent variable for this test.

with negative stock market reactions, more internal control problems, and more revenue misstatements (Gerety, Hoi, and Robin 2001; Du and Jiang 2007; Cullinan, Du, and Wright 2008). We assess the impact of stock option compensation for accounting experts by replicating our tests in Table 5 after redefining the two test variables to capture the presence of accounting experts who receive or do not receive stock option compensation.³⁰ Consistent with our main results relating to share ownership, the results from this analysis (not tabulated) indicate that accounting experts are positively related to accruals quality, regardless of whether or not they receive stock option compensation (p -value = 0.0727 and 0.0125, respectively), with the difference between the effects of the two types of accounting experts being statistically insignificant (p -value = 0.5760).

We also replicate our tests using a sample of fully independent ACs, considering that all firms are expected to have fully independent ACs in the post-SOX era. However, adopting this restricted sample does not change the findings for the remaining characteristics considered in Table 5. To evaluate sensitivity of results in Table 6, we define ideal independent accounting experts as those with fewer directorships and lower tenure and find that accruals quality is positively related to both ideal and non-ideal independent accounting expertise (p -values = 0.0000 and 0.0457, respectively), with the coefficient of ideal accounting expertise being statistically larger (p -value = 0.0069, not tabulated). Finally, with regard to Table 7, we find that accruals quality is positively related to the combination of accounting and finance expertise in ACs only (p -value = 0.0446).

In the final additional test, we extend our analysis in Table 5 by evaluating whether the characteristics of finance and supervisory experts also affect their ability to influence accruals quality. The only result of note from this analysis (not tabulated) is that supervisory experts with lower tenure are negatively associated with accrual quality (p -value = 0.0173).

10. Conclusion

This study assumes a deeper view of the agency role of AC accounting experts by assessing how the personal characteristics of such experts affect their monitoring of accruals quality. We find that AC accounting experts who are independent, hold fewer directorships, and have a lower tenure in their firms have a profound positive impact on accruals quality. The corresponding results for nonaccounting financial expertise are insignificant. The results suggest that AC members should not only possess accounting expertise but also be independent, relatively free from commitments to other firms, and be recent appointees. The study also considers how the agency role of accounting experts is influenced by the resource dependence focus of

30. This partitioning scheme results in two relatively equal group sizes for this test. We find that 207 firms have at least one accounting expert with stock option compensation while 213 firms have at least one accounting expert without such compensation.

nonaccounting (finance and supervisory) experts in ACs and finds evidence to suggest that the business and industry knowledge possessed by finance experts can complement the domain-specific knowledge of accounting experts to promote accruals quality. We also find that supervisory experts are unable to constructively apply their business acumen in complementing AC accounting or finance experts to enhance accruals quality.

Our findings highlight the importance of controlling for the characteristics of accounting experts in future research. Equally significant, our study emphasizes the importance of considering how the monitoring role of AC accounting experts is influenced by the resource dependence roles of non-accounting experts and supports the regulatory stance of including finance experts in the definition of AC financial expertise. Conversely, our insignificant findings for supervisory expertise support any future legislative efforts to exclude supervisory expertise from the definition of financial expertise.

Similar to prior research on AC financial expertise, one caveat to our findings is that we test associations; we do not provide evidence of causation. Furthermore, we rely on the historical employment data of directors disclosed by firms to identify the type of expertise possessed by AC members. Hence, our results may be affected by the extent of historical employment coverage of directors provided by firms. Finally, the accruals quality of firms may have been affected by various other requirements of SOX during the sample period. However, controlling for the total population of possible effects of SOX on accruals quality is not feasible. Nonetheless, we control for a wide range of control variables in accordance with the extant literature and for endogeneity.

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