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Article

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Global Business & Finance Review (GBFR)

Provided in Cooperation with:

People & Global Business Association (P&GBA), Seoul

Suggested Citation: Song, Bomi (2021) : The joint effects of audit committee financial expertise and auditor industrial expertise on the quality of earnings

4hBomi Song, Global Business & Finance Review (GBFR), ISSN 2384-1648, People & Global Business Association (P&GBA), Seoul, Vol. 26, Iss. 3, pp. 68-87,
<https://doi.org/10.17549/gbfr.2021.26.3.68>

This Version is available at:

<https://hdl.handle.net/10419/253333>

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The Joint Effects of Audit Committee Financial Expertise and Auditor Industrial Expertise on the Quality of Earnings

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ABSTRACT

Purpose: The aims of this study are to investigate the joint effects of financial experts on audit committees (ACs) and industry expert auditors on earnings quality, and to investigate whether the joint effects differ based on subtypes of financial experts on ACs and the mixture of those subtypes.

Design/methodology/approach: This study measures AC financial expertise and auditor industrial expertise using indicator variables. To measure the quality of earnings, this study employs the approach of Kothari et al. (2005).

Findings: The study finds evidence that only the interaction between AC financial expertise and auditor industrial expertise has a positive effect on earnings quality. Specifically, earnings quality improves only when firms have accounting professors or finance experts (excluding finance professors) on ACs, and at the same time, when firms receive external audit from an industry specialist auditor. The study also finds that the positive association becomes obvious when ACs have both accounting and non-accounting experts. More importantly, the positive association is stronger when ACs have both non-accounting experts and more than one type of accounting experts. These results suggest that it is crucial that internal and external audit functions work cooperatively rather than separately, and that ACs include both non-accounting experts and several types of accounting experts.

Research limitations/implications: The effects of AC financial expertise on accounting information quality may vary depending on how ACs are actually operated. Thus, it would be worthwhile for future research to explore the effectiveness of ACs in consideration of the operation of ACs.

Originality/value: Contrary to prior research, this study examines the interplay of AC financial experts and industry specialist auditors. In addition, this study examines the interplay by using subtypes of financial experts on ACs and the combination of those subtypes. This study can be valuable to policy makers, academicians and investors by providing a more comprehensive view of the effectiveness of internal and external audits.

Keywords: Audit committee, Financial expertise, Auditor industrial expertise, Corporate governance, Earnings quality

I. Introduction

This study examines the joint effects of audit committee (AC) financial expertise and auditor industrial

expertise on the quality of accounting information, and also examines whether the joint effects are conditioned by subtypes of financial experts on ACs and the mixture of those subtypes. ACs, responsible for corporate internal audit function, monitor firms' financial reporting process. Thus, ACs play an important role in improving accounting information quality and serve as a crucial corporate governance mechanism

Received: May 16, 2021; Revised: Jun. 24, 2021; Accepted: Jul. 14, 2021

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needed for corporate sustainability (Bunget et al. 2020). After the Enron scandal, the role of ACs is further enhanced by Section 407 of the Sarbanes-Oxley Act (SOX) of 2002, which requires listed firms in USA to have at least one financial expert on ACs. The financial experts on ACs include AC members with accounting experience, those with finance experience, and those with supervisory experience, according to the final rule of Securities Exchange Commission (SEC) (SEC 2003).

ACs also monitor the activities of external auditors responsible for corporate external audit function and thus may affect an audit opinion. In addition, one of the most important roles of ACs is to exchange opinions with external auditors (Kwak 2010). Therefore, in order to properly explore the effectiveness of internal and external audits which are one of the most important determinants for effective corporate governance, it is necessary to analyze the joint effects of ACs and external auditors on firms' accounting information quality. However, prior research treats separately internal and external audit functions, and therefore, little is known about these joint effects. Accordingly, this study aims to explore the importance of the interplay of ACs and external auditors in determining a firm's earnings quality.

AC financial expertise is a key element in ensuring the effectiveness of ACs, but prior literature reports the mixed evidence about the effects of AC financial expertise on ACs' effectiveness. Some studies provide evidence that only AC accounting expertise is associated positively with the quality of financial reporting (Krishnan and Visvanathan 2008; Dhaliwal et al. 2010; Song et al. 2019). Davidson et al. (2004) and DeFond et al. (2005) show the consistent results. On the contrary, other studies find that non-accounting expertise such as finance and supervisory expertise has a positive effect on the effectiveness of ACs (Xie et al. 2003; Zhang et al. 2007; Hoitash and Hoitash 2009; Mustafa and Youssef 2010). In addition, there is research showing that AC financial expertise is not associated with financial reporting quality (Cheon et al. 2013; Choi et al. 2020). Similarly, prior research generally suggests that the influence

of industry specialist auditors is not clear. For example, several studies show that industry specialist auditors provide high-quality audit services (Balsam et al. 2003; Gul et al. 2009; Reichelt and Wang 2010; Chi and Chin 2011), but Minutti-Meza (2013) documents that there is no effect of industry expert auditors.

Moreover, each subtype of financial experts such as a certified accountant, an accounting professor and a finance professor has different knowledge and experience, and hence may have different influences on ACs' effectiveness. However, there is little evidence on which subtypes of AC financial experts provide benefits to ACs. Thus, this paper investigates the joint effects of AC financial experts and industry specialist auditors on the quality of earnings, and also investigates whether the joint effects differ based on the subtypes of AC financial experts.

According to a resource dependence theory, directors extract human capital resources of other directors to improve firm performance (Pfeffer 1972). Prior studies report the consistent results that the mixture of AC financial expertise impacts the effectiveness of ACs (Dhaliwal et al. 2010; Cohen et al. 2014; Kurnadi et al. 2016). For instance, Dhaliwal et al. (2010) find that ACs have the most positive effects on accounting information quality when there are accounting and finance experts on ACs. Therefore, this study also examines whether the joint effects of financial experts on ACs and industry specialist auditors on earnings quality are conditioned by the combination of subtypes of AC financial experts.

This paper uses 1,728 firm-year observations listed on the Korea Stock Exchange (KSE) from 2000 to 2015 to address the research questions. In Korea, as in the case of the requirements of the SOX, ACs are required to have at least one member with financial experience. The empirical results reveal that AC financial expertise and auditor industrial expertise do not improve earnings quality separately, but that the interaction between AC financial expertise and auditor industrial expertise has a positive impact on earnings quality. Specifically, the positive association is shown when financial experts on ACs are accounting professors, or finance experts excluding finance

professors. The results suggest that it is important for both internal and external audits to function effectively together for corporate governance, and that the joint effects of AC financial expertise and auditor industrial expertise on earnings quality depend on each subtype of AC financial experts.

In addition, this study finds that the positive association between the interplay and earnings quality becomes evident when there are both accounting and non-accounting experts on ACs. These empirical results are consistent with a resource dependence theory, and indicate that accounting expertise itself, which has been identified by some prior studies as the most important aspect of AC financial expertise, does not play a sufficient oversight role if there are no other AC members with different expertise. More importantly, this paper shows that when ACs include both non-accounting experts and more than one type of accounting experts, the interaction between AC financial expertise and auditor industrial expertise has the most positive impact on earnings quality. This finding suggests that it is crucial for firms to have ACs with both non-accounting experts and several types of accounting experts in order to improve the effectiveness of ACs.

This paper contributes to policy makers, practitioners and the extant literature in several ways. First, the results of this study have positive implications for policy makers by showing under what conditions ACs function effectively. Differently from prior research, this paper analyzes the joint effects of financial experts on ACs and industry specialist auditors, and moreover, it uses subtypes of financial experts on ACs and the mixture of those subtypes as proxies for AC financial expertise. As the AC is a key corporate governance mechanism, policy makers need to establish policies so that the AC can perform its functions well by referring to the findings of this study.

Second, this study adds to the literature on corporate governance. Prior research assumes that both financial experts on ACs responsible for corporate internal audit function and industry specialist auditors responsible for corporate external audit function affect the quality of financial reporting, respectively. However, this

paper considers these internal and external audits together and shows that only the interplay of financial experts on ACs and industry specialist auditors enhances earnings quality and is thus likely to encourage firms' sustainability. In addition, this study classifies AC financial expertise (accounting, finance and supervisory) into subtypes and analyzes whether the effects of the interplay of financial experts on ACs and industry expert auditors depend on the subtypes and the combination of those subtypes. Thus, this study fills the gaps in the AC and audit literature by demonstrating an important role of AC financial expert-industry specialist auditor interaction in enhancing earnings quality and provides valuable insight into internal and external audits.

Finally, the findings of this paper should be of interest to academicians, regulators, practitioners, investors and other stakeholders. These findings show that AC financial expertise itself does not play a sufficient monitoring role when the company receive external audit from non-industry specialist auditors, and vice versa, and show that some types of AC financial experts and the mixture of subtypes of AC financial experts play an effective role in monitoring corporate behavior together with industry specialist auditors. Therefore, the empirical results of this study provide insight into the behavior of AC financial experts and industry expert auditors, and offer a more comprehensive view of internal and external audits.

The remainder of this study is structured as follows. Section II provides the literature review and develops the hypotheses. Section III describes the research design and reports the sample selection. Section IV presents the empirical results, and Section V presents the conclusion of the article.

II. Literature Review and Hypothesis Development

A. Literature review

The SOX initially proposed a definition of AC

financial experts to include only accounting experts familiar with firms' financial reporting process through special expertise in accounting fields such as accounting processing and external audit. Certified public accountants (CPAs), chief financial officers (CFOs) and controllers are examples. However, as there was criticism that this definition is too restrictive, the final rule of SEC defines AC financial experts to also include finance experts, individuals with finance experience such as analysts and bankers, and supervisory experts, individuals with experience of supervising financial statement preparation and corporate operations such as chief executive officers (CEOs) (SEC 2003).

Earlier research on AC financial expertise does not distinguish these types of financial experts or uses only accounting experts based on a strict definition of financial expertise, and reports that AC members with financial expertise have positive influence on external auditing and financial reporting (Carcello et al. 2002; Abbott et al. 2003; Carcello and Neal 2003; Abbott et al. 2004; Bédard et al. 2004; Krishnan 2005; Keune and Johnstone 2012). Afterwards, research on AC financial experts distinguishes the three types of financial expertise and shows the mixed evidence with respect to the effectiveness of these types of financial experts. Specifically, some studies find evidence that only AC members with accounting experience enhance financial reporting quality (Krishnan and Visvanathan 2008; Dhaliwal et al. 2010; Song et al. 2019). Similarly, DeFond et al. (2005) investigate the stock market reaction to the appointment of AC financial experts and document that the market values AC members with accounting experience but not those with supervisory experience. Davidson et al. (2004) and Iyer et al. (2013) show the consistent results. Naiker and Sharma (2009) also find that when firms with at least one AC supervisory expert, they are more likely to report deficiencies in internal control. These findings suggest that AC members having specialized accounting knowledge and experience fulfil their duties to oversee financial reporting processes.

In contrast, other studies show that non-accounting experts on ACs such as finance and supervisory experts bring benefits to ACs. For instance, Xie et

al. (2003) document that the presence of AC members with experience in finance or supervision decreases the magnitude of earnings management. Zhang et al. (2007) also find that firms with accounting or non-accounting financial experts on ACs are less likely to report internal control weaknesses. In a similar vein, Hoitash and Hoitash (2009) provide evidence that audit fees increase with the presence of AC members with finance experience and those with supervisory experience, and Goh (2009) also reports the similar findings. Mustafa and Youssef (2010) find that the likelihood of misuse of assets decreases when firms have non-accounting experts on ACs. These results indicate that AC members with non-accounting expertise are faithful to their oversight duties by preventing the misappropriation of corporate assets as well as monitoring financial reporting processes. Overall, the prior literature finds mixed evidence about the effects of the three types of financial experts on ACs' effectiveness.

However, some recent studies provide evidence that AC financial expertise does not enhance the quality of financial reporting (Cheon et al. 2013; Choi et al. 2020). These results support the criticism that ACs operate formally and thus are not able to perform an effective monitoring function (Song et al. 2017). In addition, the AC system (including AC financial expertise) adopted from the model of the Anglo-Saxon countries (e.g., US, UK) may not fit non-Anglo-Saxon environments. In fact, Chen et al. (2015) document that adopting the Anglo-Saxon AC scheme is not related to the quality of earnings in Japan. Overall, the literature shows mixed evidence in regard of the influence of financial expertise on ACs' effectiveness.

Prior literature also reports the mixed evidence on the effects of industry specialist auditors on audit quality. To be specific, some studies document that the audit quality of industry expert auditors is higher than that of non-expert auditors (Balsam et al. 2003; Krishnan 2003; Gul et al. 2009; Reichelt and Wang 2010; Chi and Chin 2011; Zerni 2012). On the contrary, other studies find evidence that industry expert auditors have no effect on audit quality (Kwon

and Ki 2011; Minutti-Meza 2013). These findings indicate that it is not clear whether industry expert auditors provide better quality services based on their expertise.

Meanwhile, directors extract human capital resources of other directors to increase firm performance, according to a resource dependence theory (Pfeffer 1972). More recent research shows the findings that the mixture of AC financial expertise influences the effectiveness of ACs. Specifically, Dhaliwal et al. (2010) provide evidence that AC members with experience in accounting are positively related to the quality of accounting information, but ACs with both accounting and finance expertise have the most positive influence on the quality of accounting information. Likewise, Kusnadi et al. (2016) find that the combination of accounting and non-accounting (finance or supervisory) financial expertise enhances the quality of financial reporting. Song et al. (2017) also report the similar empirical results. In addition, Cohen et al. (2014) document that the quality of financial reporting increases with the presence of AC members with both accounting and industry expertise or in certain cases, those with both supervisory and industry expertise. These studies support the resource dependence theory and lend further credence to the importance of diversity of AC financial expertise.

B. Hypothesis development

The purpose of an AC is to improve the quality of financial reporting by effectively monitoring and supervising the financial reporting activities of management and external auditors. In addition, ACs help enhance firms' sustainability reporting (Al-Shaer and Zaman 2018). Therefore, as an audit organization established within a firm, an AC is responsible for enhancing corporate transparency and the reliability of accounting information. However, in order to improve the quality of financial statements, it is crucial for firms not only to have an AC with superior quality but also to receive an external audit from an auditor with high audit quality. This is because the roles

of AC members and external auditors complement each other to enhance accounting information quality. For instance, according to the External Audit Act, if an external auditor finds any misconduct in the duties of a director during the audit, the auditor shall notify an AC of this fact, and the AC shall report the misconduct discovered by the auditor to the firm's representative and request that it be corrected. That is why ACs appoint external auditors with high audit quality to maintain audit quality and the reliability of financial statements (Abbott and Parker 2000; Abbott et al. 2003; Song et al. 2017) or pay high audit fees to external auditors so that they can devote enough time to audit works (Collier and Gregory 1996; Abbott et al. 2003; Choi et al. 2015). The findings of prior literature that AC financial expertise and auditor industrial expertise do not individually improve the quality of financial reporting support this argument (Kwon and Ki 2011; Cheon et al. 2013; Minutti-Meza 2013; Choi et al. 2020). However, most of the prior research on ACs' effectiveness and on external auditors implicitly assume that ACs and external auditors affect financial reporting quality independently of each other, and conduct empirical analysis (Becker et al. 1998; Klein 2002; Peasnell et al. 2005; Piot and Janin 2007; Chi et al. 2011).

ACs are also responsible for overseeing hiring and performance of external auditors, which creates incentives for external auditors to demonstrate their value (Beasley et al. 2009). Moreover, one of the most crucial roles of ACs is to interact with and exchange opinions with external auditors (Kwak 2010). Accordingly, external auditors can be recognized for their value through communication with ACs and receive incentives such as a recurring external audit. According to accountability theory, an individual tailors accounts of his or her decisions to secure the approval of an audience (Tetlock 2002). Thus, external auditors may tailor their communications to satisfy preferences of ACs for external auditors' insights on resolved crucial accounting issues (Fiolleau et al. 2019). Meanwhile, according to auditor comfort theory, external auditors and ACs are characterized as comfort-providers (Pentland 1993)

and comfort-seekers (Gendron et al. 2004), respectively. External auditors get comfortable with firms' financial reports through issue resolution with management (Commerford et al. 2016) and ACs get comfortable with the financial reports through insights external auditors communicate to ACs (Beasley et al. 2009). As such, AC members can understand the firm's accounting risks through the external auditor's experience in auditing related businesses, audit plans, and audit performance. In addition, through communication with ACs, external auditors can obtain audit-related information (such as policies and operations affecting accounting information) from ACs, which have an advantage over corporate information. Consistent with these expectations, Read and Raghunandan (2001) conduct a survey on the chief internal auditors of 123 large, listed firms in the US, and report that the quality of financial reporting is improved when independent ACs with expertise effectively communicate with external auditors. Kim and Kim (2020) also find that the frequency of mutual communication between ACs (or internal auditors) and external auditors is associated positively with audit quality. Cohen et al. (2002) and Kim and Hong (2021) document similar results. Thus, in order to properly investigate the effectiveness of ACs and external auditors, it is necessary to analyze the influence of the interplay of ACs and external auditors on financial reporting. Alves (2013) also performs the analysis with a small sample, but finds that the magnitude of earnings management rather increases in cases where a firm establishes an AC but does not receive external audit from a large auditor, or where a firm receives audit from a large external auditor but does not have an AC. On the other hand, Alves (2013) reports that the magnitude of earnings management decreases when a firm has an AC and receives audit from a large external auditor at the same time. As such, the quality of financial statements is expected to be improved only when a firm has an AC with superior quality and receives an external audit from an auditor with high audit quality.

However, although expertise is a key element in ensuring the effectiveness of internal and external

audits, prior studies find the mixed evidence about the effects of AC financial expertise on ACs' effectiveness and the effects of auditor industrial expertise on audit quality (e.g. Krishnan and Visvanathan 2008; Zerni 2012; Cheon et al. 2013; Minutti-Meza 2013). In addition, there is little empirical evidence on the joint effects of AC financial expertise and auditor industrial expertise on accounting information quality. Accordingly, this study examines the effects of the interaction between financial experts of ACs and industry specialist auditors on the quality of earnings. Moreover, each subtype of AC financial experts such as a certified accountant, an accounting professor and a finance professor possesses different knowledge, skill and experience, and therefore may have different impacts on ACs' effectiveness. Using a small sample, Choi et al. (2004) and Choi et al. (2008) show that only ACs with the employees of financial institutions or professors decrease the magnitude of earnings management and that ACs with at least one professor decrease the likelihood of a fraudulent financial statement, respectively. These suggest that finance experts gather information from various sources including financial statements (Dhaliwal et al. 2010) and this experience contributes to improving earnings quality. In addition, professors often combine professionalism and independence in corporate decision-making (Choi et al. 2008) and have a reputation (White et al. 2014). Thus, it seems that ACs respect them rather than members with other experiences. However, little is known about which subtypes of financial expertise bring benefits to ACs.

Based on the arguments, this study establishes the hypotheses in the alternative form as follows.

Hypothesis 1a: Only when AC members are financial experts, and at the same time, when external auditors are industry experts, earnings quality is improved.

Hypothesis 1b: Only when AC members are certain subtypes of financial experts, and at the same time, when external auditors are industry experts, earnings quality is improved.

Next, this study examines whether the joint effects

of AC financial expertise and auditor industrial expertise depend on the mixture of the subtypes of AC financial experts. Although accounting expertise is relatively more important among AC financial expertise (Davidson et al. 2004; DeFond et al. 2005; Krishnan and Visvanathan 2008; Naiker and Sharma 2009; Dhaliwal et al. 2010; Iyer et al. 2013; Song et al. 2019), AC members with accounting experience may need not only accounting expertise, but also influence within a firm in order for their argument to be accepted by the firm (Song et al. 2019). AC members with finance or supervisory expertise can contribute to the improvement of the status and influence of the AC within a firm by helping those with accounting expertise (Song et al. 2017). Consistent with the argument, prior research provides evidence that the positive effect of ACs is greater when they include not only members with accounting expertise but also those with other financial expertise. These results support the resource dependence theory (Pfeffer 1972) and suggest that the effectiveness of ACs is enhanced when ACs consist of members with various skill sets and experience (Dhaliwal et al. 2010; Cohen et al. 2014; Kusnadi et al. 2016; Song et al. 2017). Thus, it is expected that the joint effects of financial experts on ACs and industry expert auditors will become obvious when ACs include both accounting and other financial experts. Accordingly, this study provides the second hypothesis as follows.

Hypothesis 2: Only when ACs have both accounting and non-accounting experts, and at the same time, when external auditors are industry experts, earnings quality is improved.

III. Research Design and Sample

A. Regression model

The regression models employed in this study are the following Equations (1) to (3). First, in order to investigate the joint effects of financial experts on ACs and industry specialist auditors (H1a), this study

uses Equation (1). Second, in order to explore whether these joint effects depend on subtypes of AC financial experts (H1b), this study uses Equation (2). Third, in order to examine whether these joint effects are conditioned by the mix of subtypes of AC financial experts (H2), this study uses Equation (3).

$$|DA| = \beta_0 + \beta_1 ACCEXP + \beta_2 ACCEXP \times AUDEXPERT + \beta_3 NONCCEXP + \beta_4 NONCCEXP \times AUDEXPERT + \beta_5 AUDEXPERT + \beta_6 ACIND + \beta_7 \ln ACTIVITY + \beta_8 \ln ACTENURE + \beta_9 SIZE + \beta_{10} STDSALES + \beta_{11} STDCFO + \beta_{12} ZSCORE + \beta_{13} LEV + \beta_{14} LOSS + \beta_{15} TACC_{t-1} + \beta_{16} FOREIGN + \text{Industry and year dummies} + \varepsilon, \quad (1)$$

$$|DA| = \beta_0 + \beta_1 ACCCERT + \beta_2 ACCCERT \times AUDEXPERT + \beta_3 ACCPROF + \beta_4 ACCPROF \times AUDEXPERT + \beta_5 ACCOTHERS + \beta_6 ACCOTHERS \times AUDEXPERT + \beta_7 FINPROF + \beta_8 FINPROF \times AUDEXPERT + \beta_9 FINOTHERS + \beta_{10} FINOTHERS \times AUDEXPERT + \beta_{11} SUPEXP + \beta_{12} SUPEXP \times AUDEXPERT + \beta_{13} AUDEXPERT + \beta_{14} ACIND + \beta_{15} \ln ACTIVITY + \beta_{16} \ln ACTENURE + \beta_{17} SIZE + \beta_{18} STDSALES + \beta_{19} STDCFO + \beta_{20} ZSCORE + \beta_{21} LEV + \beta_{22} LOSS + \beta_{23} TACC_{t-1} + \beta_{24} FOREIGN + \text{Industry and year dummies} + \varepsilon, \quad (2)$$

$$|DA| = \beta_0 + \beta_1 ACCEXPONLY + \beta_2 ACCEXPONLY \times AUDEXPERT + \beta_3 ACCANDANOTHER + \beta_4 ACCANDANOTHER \times AUDEXPERT + \beta_5 ACCFINSUPEXP + \beta_6 ACCFINSUPEXP \times AUDEXPERT + \beta_7 AUDEXPERT + \beta_8 ACIND + \beta_9 \ln ACTIVITY + \beta_{10} \ln ACTENURE + \beta_{11} SIZE + \beta_{12} STDSALES + \beta_{13} STDCFO + \beta_{14} ZSCORE + \beta_{15} LEV + \beta_{16} LOSS + \beta_{17} TACC_{t-1} + \beta_{18} FOREIGN + \text{Industry and year dummies} + \varepsilon, \quad (3)$$

where the dependent variable, a proxy for earnings quality, is the absolute value of performance-matched discretionary accruals ($|DA|$) (Kothari et al. 2005). The main variables of interest of this study are the interaction terms between AC expertise variables and $AUDEXPERT$. AC expertise variables are proxies for financial experts on ACs: first, in Equation (1), this study uses $ACCEXP$ and $NONACCEXP$, which are indicator variables for AC accounting and non-accounting

experts respectively; second, in Equation (2), this study uses *ACCCERT*, *ACCPROF*, *ACCOTHERS*, *FINPROF*, *FINOTHERS* and *SUPEXP*, which are indicator variables for certified accountants, accounting professors, other accounting experts, finance professors, other finance experts and supervisory experts respectively; and third, in Equation (3), this study uses *ACCEXPONLY*, *ACCANDANOTHER* and *ACCFINSUPEXP*, which are indicator variables for whether ACs include only accounting experts, for whether ACs include either finance or supervisory experts in addition to accounting experts, and for whether ACs include all three types of financial experts. In addition, to test H2, this study also uses variables for the combination of those subtypes (e.g. *ACC_ACCOTHERS*, *ACC_ACCOTHERS_FIN*). Appendix A defines these variables. *AUDEXP*, a proxy for industry expert auditors, is an indicator variable equal to one if a firm receives external audit from an auditor with the largest market share based on sales during an industry-year, and zero otherwise. If the interactions between financial experts on ACs and industry expert auditors enhance earnings quality, the coefficients of interactions would be negative.

As in prior research (Becker et al. 1998; Hribar and Nichols 2007; Choi et al. 2013), this paper controls for the impacts of other AC and firm characteristics on earnings quality. Specifically, this paper includes AC independence (*ACIND*), natural log of the number of AC meetings held during the fiscal year (*lnACTIVITY*), and natural log of the average number of years an AC member has served as a firm's director (*lnACTENURE*). Firm size (*SIZE*), financial risk (*ZSCORE*), financial position (*LEV*), and profitability (*LOSS*) are also controlled. In addition, this study includes the past three-year standard deviation of sales and of cash flows from operation (*STDSALES*, *STDCFO*) to minimize the measurement error of discretionary accruals. Lagged total accruals (*TACC_{t-1}*) and the percentage of foreign ownership (*FOREIGN*) are included to control for the reversal of accruals and ownership structure, respectively. Finally, this study includes industry and year fixed effects to control for variations in different industries and years.

B. Sample

This study uses a sample of firms listed on the KSE from 2000 to 2015. In Korea, according to the commercial act, listed firms with total assets over KRW 2 trillion (approximately US\$ 1.7 billion) are required to establish an AC from 2000 onward. In addition, similar to the requirement of the SOX, ACs are required to have at least one member with financial expertise. AC data is hand collected from firms' annual reports from the data retrieval system provided by the Financial Supervisory Service (FSS). Financial data is extracted from the TS2000 database provided by Korea Listed Companies Association. This study includes non-financial firms with December fiscal year-end, ACs and non-missing variables. In order to mitigate the potential effects of outliers, continuous variables are winsorized at the top and bottom 1%. This sample selection procedure yields a final sample of 1,728 firm-year observations from 2000 to 2015.

IV. Empirical Results

A. Descriptive Statistics

Table 1 reports the descriptive statistics of the variables used in this paper. The mean values of *ACCEXP* and *NONACCEXP* suggest that 44.7% and 58.1% of firms have an AC with at least one accounting and non-accounting (finance or supervisory) financial experts, respectively. With respect to subtypes of financial experts on ACs, 16.4%, 11.6% and 19.6% of firms have an AC with at least one certified accountant (*ACCCERT*), accounting professor (*ACCPROF*) and accounting expert (excluding *ACCCERT* and *ACCPROF*) such as a CFO and a controller (*ACCOTHERS*), respectively. 7.9%, 14.3%, and 45.1% of firms have an AC with at least one finance professor (*FINPROF*), finance expert (excluding *FINPROF*) such as an analyst and a banker (*FINOTHERS*) and supervisory expert such as a CEO (*SUPEXP*), respectively. The mean values of *ACCEXPONLY*, *ACCANDANOTHER* and

ACCFINSUPEXP indicate that 26.9%, 16.2% and 1.6% of firms have only accounting experts, either finance or supervisory experts in addition to accounting experts, and all of three types of financial experts on ACs, respectively. Meanwhile, 35.8% of firms receive external

audit from industry specialist auditors (*AUDEXPERT*). The mean values of interaction terms range from 0.7% to 21.4%.

Table 2 presents the Pearson correlations between the variables for the full sample. AC accounting expertise

Table 1. Descriptive statistics

Variable	Mean	Std. Dev.	Q1	Median	Q3
<i>DA</i>	0.076	0.069	0.025	0.055	0.108
<i>ACCEXP</i>	0.447	0.497	0.000	0.000	1.000
<i>NONACCEXP</i>	0.581	0.494	0.000	1.000	1.000
<i>ACCCERT</i>	0.164	0.370	0.000	0.000	0.000
<i>ACCPROF</i>	0.116	0.321	0.000	0.000	0.000
<i>ACCOTHERS</i>	0.196	0.397	0.000	0.000	0.000
<i>FINPROF</i>	0.079	0.270	0.000	0.000	0.000
<i>FINOTHERS</i>	0.143	0.350	0.000	0.000	0.000
<i>SUPEXP</i>	0.451	0.498	0.000	0.000	1.000
<i>ACCEXPONLY</i>	0.269	0.444	0.000	0.000	1.000
<i>ACCANDANOTHER</i>	0.162	0.369	0.000	0.000	0.000
<i>ACCFINSUPEXP</i>	0.016	0.124	0.000	0.000	0.000
<i>ACCEXP</i> × <i>AUDEXPERT</i>	0.171	0.376	0.000	0.000	0.000
<i>NONACCEXP</i> × <i>AUDEXPERT</i>	0.214	0.410	0.000	0.000	0.000
<i>ACCCERT</i> × <i>AUDEXPERT</i>	0.049	0.215	0.000	0.000	0.000
<i>ACCPROF</i> × <i>AUDEXPERT</i>	0.054	0.226	0.000	0.000	0.000
<i>ACCOTHERS</i> × <i>AUDEXPERT</i>	0.079	0.269	0.000	0.000	0.000
<i>FINPROF</i> × <i>AUDEXPERT</i>	0.040	0.196	0.000	0.000	0.000
<i>FINOTHERS</i> × <i>AUDEXPERT</i>	0.046	0.209	0.000	0.000	0.000
<i>SUPEXP</i> × <i>AUDEXPERT</i>	0.164	0.370	0.000	0.000	0.000
<i>ACCEXPONLY</i> × <i>AUDEXPERT</i>	0.097	0.296	0.000	0.000	0.000
<i>ACCANDANOTHER</i> × <i>AUDEXPERT</i>	0.067	0.250	0.000	0.000	0.000
<i>ACCFINSUPEXP</i> × <i>AUDEXPERT</i>	0.007	0.083	0.000	0.000	0.000
<i>AUDEXPERT</i>	0.358	0.479	0.000	0.000	1.000
<i>ACIND</i>	0.833	0.373	1.000	1.000	1.000
<i>lnACACTIVITY</i>	1.422	0.693	1.099	1.386	1.792
<i>lnACTENURE</i>	0.961	0.571	0.560	0.981	1.386
<i>SIZE</i>	21.191	1.594	19.762	21.413	22.360
<i>STDSALES</i>	0.150	0.159	0.056	0.102	0.185
<i>STDCFO</i>	0.051	0.042	0.024	0.040	0.066
<i>ZSCORE</i>	3.136	3.350	1.423	2.303	3.613
<i>LEV</i>	0.500	0.224	0.333	0.519	0.646
<i>LOSS</i>	0.174	0.379	0.000	0.000	0.000
<i>TACC_{t-1}</i>	-0.025	0.080	-0.063	-0.024	0.014
<i>FOREIGN</i>	0.172	0.163	0.035	0.124	0.265

The variables are used in the regression model and defined in Appendix A.

(*ACCEXP*) (non-accounting expertise (*NONACCEXP*)) has a negative (positive) correlation with the absolute value of performance-matched discretionary accruals ($|DA|$). However, this correlation is not statistically significant. The correlation between auditor industrial expertise (*AUDEXPERT*) and $|DA|$ and the correlation between *ACCEXP* (or *NONACCEXP*) \times *AUDEXPERT* and $|DA|$ are also statistically insignificant. Firm size (*SIZE*), the standard deviation of sales (*STDSALES*) and of cash flows from operation (*STDCFO*), and leverage (*LEV*) are positively related to $|DA|$. AC independence (*ACIND*) and lagged total accruals (*TACC_{t-1}*) have a negative correlation with $|DA|$. However, this is the result of univariate analysis without controlling other variables that may affect $|DA|$. Accordingly, this study performs multivariate regression analysis considering other variables that may affect $|DA|$. Meanwhile, this study finds that the variance inflation factor scores of the regression analysis of this study are less than 10. Therefore, the possibility that multicollinearity biases the results of this study is judged to be low.

B. Regression Results

Table 3 shows the empirical results of estimating Equation (1). For the analysis, this study uses standard errors clustered at firm and year levels (Petersen 2008; Gow et al. 2010). In Column (1), in which this study decomposes AC financial experts into *ACCEXP* and *NONACCEXP*, the coefficients on *ACCEXP* \times *AUDEXPERT* and on *NONACCEXP* \times *AUDEXPERT* are negative and significant. These indicate that the interplay of non-accounting experts on ACs and industry expert auditors as well as the interplay of accounting experts on ACs and industry expert auditors have a positive effect on earnings quality. In Column (2), in which this study classifies AC financial experts into subtypes, the coefficients on *ACCPROF* \times *AUDEXPERT* and on *FINOTHERS* \times *AUDEXPERT* are significantly negative. These suggest that earnings quality enhances when firms have accounting professors or finance experts (excluding finance professors), and at the same time, when firms receive external audit from an industry specialist auditor.

Overall, the findings of Table 3 show that it is

Table 2. Correlation analysis

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)
(1) $ DA $	1.00																
(2) <i>ACCEXP</i>	-0.01	1.00															
(3) <i>NONACCEXP</i>	0.03	-0.33	1.00														
(4) <i>ACCEXP</i> \times <i>AUDEXPERT</i>	0.01	0.50	-0.14	1.00													
(5) <i>NONACCEXP</i> \times <i>AUDEXPERT</i>	0.03	-0.10	0.44	0.24	1.00												
(6) <i>AUDEXPERT</i>	0.03	0.05	0.02	0.61	0.70	1.00											
(7) <i>ACIND</i>	-0.07	0.15	-0.01	0.13	0.05	0.12	1.00										
(8) <i>lnACTIVITY</i>	-0.02	-0.02	0.00	-0.02	0.03	0.00	0.01	1.00									
(9) <i>lnACTENURE</i>	-0.06	0.01	-0.02	-0.05	-0.06	-0.08	0.05	-0.01	1.00								
(10) <i>SIZE</i>	0.06	0.03	0.03	0.20	0.23	0.31	0.39	0.08	0.04	1.00							
(11) <i>STDSALES</i>	0.08	0.00	0.03	0.04	0.03	0.05	-0.03	0.01	-0.15	-0.04	1.00						
(12) <i>STDCFO</i>	0.16	-0.04	0.04	0.00	0.01	-0.02	-0.10	0.05	-0.12	0.00	0.31	1.00					
(13) <i>ZSCORE</i>	-0.03	0.18	-0.07	0.06	-0.01	0.01	-0.03	-0.04	0.00	-0.10	0.04	-0.05	1.00				
(14) <i>LEV</i>	0.15	-0.15	0.11	-0.01	0.07	0.05	0.06	0.01	-0.06	0.21	0.13	0.18	-0.57	1.00			
(15) <i>LOSS</i>	0.03	-0.10	0.05	-0.03	0.03	0.00	-0.01	-0.01	0.00	-0.01	-0.01	0.03	-0.28	0.20	1.00		
(16) <i>TACC_{t-1}</i>	-0.08	0.02	-0.06	-0.06	-0.11	-0.09	-0.03	-0.01	0.01	-0.10	0.08	0.00	0.12	-0.11	-0.03	1.00	
(17) <i>FOREIGN</i>	0.05	0.16	-0.02	0.20	0.18	0.24	0.17	0.05	0.08	0.53	-0.11	-0.03	0.18	-0.10	-0.17	-0.10	1.00

This table shows Pearson correlations among the variables used in the regression model, the variables that are defined in Appendix A. The bold numbers indicate significance at $p \leq 0.01$.

crucial for both internal and external audits to function effectively in order to increase their effectiveness, and that the joint effects of financial experts on ACs and auditor industrial experts differ based on

qualifications of AC financial experts, as predicted by H1a and H1b.

For control variables, earnings quality is associated negatively with the standard deviation of cash flows

Table 3. Audit committee (AC) financial expertise, auditor industrial expertise and earnings quality

	Dependent variable = $ DA $	
	(1)	(2)
Constant	0.054 (1.26)	0.064 (1.30)
<i>ACCEXP</i>	0.005 (1.43)	
<i>NONACCEXP</i>	0.004 (1.06)	
<i>ACCERT</i>		0.001 (0.28)
<i>ACCPROF</i>		0.010 (1.22)
<i>ACCOTHERS</i>		0.003 (0.72)
<i>FINPROF</i>		-0.007 (-1.28)
<i>FINOTHERS</i>		0.010** (2.34)
<i>SUPEXP</i>		0.001 (0.39)
<i>ACCEXP</i> × <i>AUDEXPERT</i>	-0.008*** (-4.18)	
<i>NONACCEXP</i> × <i>AUDEXPERT</i>	-0.013** (-1.99)	
<i>ACCERT</i> × <i>AUDEXPERT</i>		-0.006 (-0.67)
<i>ACCPROF</i> × <i>AUDEXPERT</i>		-0.023** (-2.19)
<i>ACCOTHERS</i> × <i>AUDEXPERT</i>		0.002 (0.31)
<i>FINPROF</i> × <i>AUDEXPERT</i>		0.013 (1.42)
<i>FINOTHERS</i> × <i>AUDEXPERT</i>		-0.023** (-1.99)
<i>SUPEXP</i> × <i>AUDEXPERT</i>		-0.006 (-0.95)
<i>AUDEXPERT</i>	0.008 (1.33)	0.005 (0.70)
<i>ACIND</i>	-0.008 (-1.25)	-0.007 (-1.12)
<i>lnACACTIVITY</i>	-0.002 (-0.99)	-0.002 (-0.95)
<i>lnACTENURE</i>	-0.000 (-0.15)	-0.001 (-0.41)
<i>SIZE</i>	0.001 (0.54)	0.001 (0.37)
<i>STDSALES</i>	0.014 (1.17)	0.016 (1.30)
<i>STDCF0</i>	0.125*** (3.21)	0.125*** (3.20)
<i>ZSCORE</i>	0.002** (2.29)	0.002** (2.14)
<i>LEV</i>	0.026** (2.26)	0.026** (2.18)
<i>LOSS</i>	0.006 (0.93)	0.006 (1.02)
<i>TACC_{t-1}</i>	-0.042 (-1.56)	-0.039 (-1.49)
<i>FOREIGN</i>	0.009 (0.60)	0.013 (0.93)
Industry/Year fixed effects	Yes	Yes
Clustering	Firm, Year	Firm, Year
Observations	1,728	1,728
Adjusted R ²	0.111	0.111

T-statistics in parentheses are based on standard errors clustered by firm and year. The marks *, ** and *** denote significance at 0.10, 0.05 and 0.01 levels, respectively, in two-tailed tests. The variables are defined in Appendix A.

from operation (*STDCFO*) representing operating volatility. In addition, variables representing financial risk (*ZSCORE*) and leverage (*LEV*) are negatively related to earnings quality. These results are consistent with the results of prior research (Song et al. 2019).

Table 4 presents the results with indicator variables representing the mixture of financial experts on ACs and their interactions with the variable of industry specialist auditors. The negative and significant coefficient on *ACCANDANOTHER* × *AUDEXPERT* indicates that the positive association between earnings quality and the interplay of AC financial expertise and auditor industrial expertise becomes evident when there are both accounting and non-accounting experts on ACs, as predicted by H2.

Table 5 shows the results with indicator variables representing the mixture of subtypes of AC financial experts and their interactions with the variable of industry expert auditors. Panels A and B report the results for industry expert auditor and non-industry expert auditor samples, respectively. In Columns (1), (2) and (3), *ACC* indicate *ACCCERT*, *ACCPROF* and *ACCOTHERS*, respectively. In Column (1) of Panel A, the coefficients on *ACCOTHERS_FIN*, *ACC_ACCOTHERS_FIN* and *ACC_FIN_SUP* are significantly negative. In Column (2) of Panel A, the coefficients on *ACC_FIN*, *ACC_SUP*, *ACC_ACCOTHERS_FIN* and *ACC_ACCOTHERS_UP* are negative and significant. Similarly, Column (3) of Panel A reports the negative and significant coefficient on *ACC_FIN*, *ACCOTHERS_*

Table 4. AC financial expertise mixture, auditor industrial expertise and earnings quality

	Dependent variable = $ DA $
Constant	0.060 (1.45)
<i>ACCEXPONLY</i>	0.003 (0.81)
<i>ACCANDANOTHER</i>	0.007 (1.48)
<i>ACCFINSUPEXP</i>	-0.009 (-0.84)
<i>ACCEXPONLY</i> × <i>AUDEXPERT</i>	0.003 (0.47)
<i>ACCANDANOTHER</i> × <i>AUDEXPERT</i>	-0.016*** (-3.66)
<i>ACCFINSUPEXP</i> × <i>AUDEXPERT</i>	0.030 (1.52)
<i>AUDEXPERT</i>	-0.002 (-0.31)
<i>ACIND</i>	-0.007 (-1.15)
<i>lnACACTIVITY</i>	-0.002 (-1.19)
<i>lnACTENURE</i>	-0.000 (-0.14)
<i>SIZE</i>	0.001 (0.40)
<i>STDSALES</i>	0.014 (1.22)
<i>STDCFO</i>	0.127*** (3.20)
<i>ZSCORE</i>	0.002** (2.37)
<i>LEV</i>	0.026** (2.31)
<i>LOSS</i>	0.006 (0.92)
<i>TACC_{t-1}</i>	-0.042 (-1.57)
<i>FOREIGN</i>	0.009 (0.63)
Industry/Year fixed effects	Yes
Clustering	Firm, Year
Observations	1,728
Adjusted R ²	0.111

T-statistics in parentheses are based on standard errors clustered by firm and year. The marks *, ** and *** denote significance at 0.10, 0.05 and 0.01 levels, respectively, in two-tailed tests. The variables are defined in Appendix A.

Table 5. AC financial expertise mixture and earnings quality: Categorized by auditor industrial expertise

Panel A: Firms hiring an industry specialist auditor (<i>AUDEXPERT</i> = 1)			
	Dependent variable = <i> DA </i>		
	(1) <i>ACC</i> = <i>ACCERT</i>	(2) <i>ACC</i> = <i>ACCPROF</i>	(3) <i>ACC</i> = <i>ACCOTHERS</i>
Constant	0.226*** (2.80)	0.014 (0.24)	0.012 (0.18)
<i>ACC_ONLY</i>	-0.010 (-1.19)	-0.004 (-0.25)	0.004 (0.38)
<i>ACCOTHERS_ONLY</i>	0.002 (0.150)	-0.001 (-0.12)	-0.007 (-0.99)
<i>FIN_ONLY</i>	-0.009* (-1.79)	-0.009 (-1.57)	-0.008 (-1.56)
<i>SUP_ONLY</i>	-0.002 (-0.22)	-0.002 (-0.26)	-0.002 (-0.26)
<i>ACC_ACCOTHERS</i>	-	-0.004 (-0.18)	-0.003 (-0.14)
<i>ACC_FIN</i>	0.019 (1.01)	-0.051*** (-3.06)	-0.043*** (-3.05)
<i>ACC_SUP</i>	-0.027 (-1.38)	-0.025** (-2.50)	-0.002 (-0.11)
<i>ACCOTHERS_FIN</i>	-0.051*** (-4.59)	0.016 (0.89)	0.009 (0.56)
<i>ACCOTHERS_SUP</i>	-0.015 (-1.33)	-0.012 (-1.05)	-0.027** (-2.30)
<i>FIN_SUP</i>	-0.002 (-0.09)	-0.002 (-0.14)	-0.001 (-0.08)
<i>ACC_ACCOTHERS_FIN</i>	-0.059*** (-3.17)	-0.059*** (-2.62)	-
<i>ACC_ACCOTHERS_SUP</i>	-	-0.085*** (-7.45)	-0.087*** (-8.82)
<i>ACC_FIN_SUP</i>	-0.045** (-1.98)	-0.010 (-0.00)	0.051* (1.84)
<i>ACCOTHERS_FIN_SUP</i>	0.020 (1.01)	0.033 (1.24)	-0.015 (-0.00)
<i>ALL</i>	-	-	-
<i>ACIND</i>	-0.005 (-0.40)	-0.003 (-0.25)	-0.004 (-0.28)
<i>lnACTIVITY</i>	-0.010** (-2.40)	-0.010** (-2.37)	-0.009** (-2.04)
<i>lnACTENURE</i>	-0.002 (-0.35)	-0.002 (-0.46)	-0.002 (-0.50)
<i>SIZE</i>	-0.003 (-0.80)	-0.002 (-0.75)	-0.002 (-0.81)
<i>STDSALES</i>	0.024 (1.02)	0.032 (1.42)	0.036* (1.68)
<i>STDCFO</i>	0.169* (1.89)	0.183** (1.98)	0.198** (2.28)
<i>ZSCORE</i>	0.001 (1.04)	0.001 (0.86)	0.001 (1.10)
<i>LEV</i>	0.033* (1.71)	0.031* (1.65)	0.032 (1.61)
<i>LOSS</i>	0.006 (1.21)	0.007 (1.39)	0.008 (1.37)
<i>TACC_{t-1}</i>	-0.070 (-1.62)	-0.074 (-1.63)	-0.078* (-1.68)
<i>FOREIGN</i>	0.026 (0.96)	0.034 (1.31)	0.034 (1.23)
Industry/Year fixed effects	Yes	Yes	Yes
Clustering	Firm, Year	Firm, Year	Firm, Year
Observations	618	618	618
Adjusted R ²	0.137	0.138	0.143

Panel B: Firms hiring a non-industry specialist auditor (<i>AUDEXPERT</i> = 0)			
	Dependent variable = <i> DA </i>		
	(1) <i>ACC</i> = <i>ACCERT</i>	(2) <i>ACC</i> = <i>ACCPROF</i>	(3) <i>ACC</i> = <i>ACCOTHERS</i>
Constant	0.043 (1.01)	0.032 (0.82)	0.032 (0.69)
<i>ACC_ONLY</i>	0.002 (0.21)	0.012 (1.22)	0.007 (0.78)
<i>ACCOTHERS_ONLY</i>	0.008 (1.08)	0.004 (0.52)	0.005 (0.67)
<i>FIN_ONLY</i>	-0.000 (-0.03)	-0.000 (-0.01)	-0.000 (-0.00)
<i>SUP_ONLY</i>	0.001 (0.07)	0.000 (0.05)	0.000 (0.07)

Table 5. Continued

Panel B: Firms hiring a non-industry specialist auditor ($AUDEXPERT = 0$)			
	Dependent variable = $ DA $		
	(1) $ACC = ACCERT$	(2) $ACC = ACCPROF$	(3) $ACC = ACCOTHERS$
<i>ACC_ACCOTHERS</i>	-0.008 (-0.62)	-0.005 (-0.84)	-0.001 (-0.10)
<i>ACC_FIN</i>	0.002 (0.17)	0.044 (0.94)	0.033 (1.34)
<i>ACC_SUP</i>	0.008 (0.83)	-0.000 (-0.01)	0.008 (1.06)
<i>ACCOTHERS_FIN</i>	0.038* (1.73)	0.012 (1.07)	0.016 (0.98)
<i>ACCOTHERS_SUP</i>	0.005 (0.57)	0.008 (1.40)	0.006 (0.69)
<i>FIN_SUP</i>	0.005 (0.52)	0.005 (0.49)	0.005 (0.51)
<i>ACC_ACCOTHERS_FIN</i>	-	-	-
<i>ACC_ACCOTHERS_SUP</i>	-	0.006 (0.49)	0.006 (0.59)
<i>ACC_FIN_SUP</i>	0.054*** (3.50)	0.001 (0.17)	-0.015 (-1.45)
<i>ACCOTHERS_FIN_SUP</i>	-0.012 (-1.23)	-0.009 (-0.72)	0.012 (0.94)
<i>ALL</i>	-	-	-
<i>ACIND</i>	-0.008 (-1.34)	-0.008 (-1.59)	-0.009 (-1.53)
<i>lnACTIVITY</i>	0.002 (1.01)	0.002 (1.15)	0.002 (1.09)
<i>lnACTENURE</i>	-0.000 (-0.04)	-0.000 (-0.10)	-0.000 (-0.07)
<i>SIZE</i>	0.002 (1.10)	0.003 (1.45)	0.003 (1.25)
<i>STDSALES</i>	0.019 (1.05)	0.019 (1.05)	0.018 (1.00)
<i>STDCFO</i>	0.075* (1.83)	0.068 (1.54)	0.073 (1.57)
<i>ZSCORE</i>	0.002** (2.33)	0.002** (2.26)	0.002** (2.09)
<i>LEV</i>	0.028* (1.94)	0.028* (1.94)	0.030** (2.14)
<i>LOSS</i>	0.007 (0.85)	0.007 (0.90)	0.007 (0.86)
<i>TACC_{t-1}</i>	-0.034 (-1.12)	-0.038 (-1.25)	-0.035 (-1.09)
<i>FOREIGN</i>	-0.013 (-1.04)	-0.015 (-1.09)	-0.016 (-1.34)
Industry/Year fixed effects	Yes	Yes	Yes
Clustering	Firm, Year	Firm, Year	Firm, Year
Observations	1,110	1,110	1,110
Adjusted R ²	0.113	0.111	0.110

T-statistics in parentheses are based on standard errors clustered by firm and year. The marks *, ** and *** denote significance at 0.10, 0.05 and 0.01 levels, respectively, in two-tailed tests. The variables are defined in Appendix A.

SUP and *ACC_ACCOTHERS_SUP*. Similar to the results of Table 4, these findings suggest that accounting expertise itself, which has been identified by some prior studies as the most crucial aspect of AC financial expertise (Davidson et al. 2004; DeFond et al. 2005; Krishnan and Visvanathan 2008; Naiker and Sharma 2009; Dhaliwal et al. 2010; Iyer et al. 2013; Song et al. 2019), does not play a sufficient monitoring role when there are no other AC members with different expertise.

In addition, Panel A reports the interaction between financial experts on ACs and industry specialist auditors has the most positive influence on earnings quality when ACs include both non-accounting experts and more than one type of accounting experts. For example, in Column (2), the difference between the coefficient on *ACC_SUP* (-0.025) and that on *ACC_ACCOTHERS_SUP* (-0.085) is statistically significant (p-value: 0.000). In Column (3), the difference between the coefficient on *ACCOTHERS_SUP* (-0.027) and that

on *ACC_ACCOTHERS_SUP* (-0.087) is statistically significant (p-value: 0.000). These results indicate that it is important for firms to have ACs with both non-accounting experts and several types of accounting experts in order to enhance the effectiveness of ACs, consistent with a resource dependence theory.

On the contrary, Panel B presents insignificant coefficients or positive and significant coefficients on the interaction terms, suggesting that earnings quality improves when ACs have both accounting and non-accounting expertise, and concurrently, when external auditors are industry experts.

Overall, the findings of Tables 4 and 5 show that the effectiveness of internal and external audits differs depending on whether industry expert auditors and ACs with financial experts perform audit function at the same time, and that the effect of the interplay of financial experts on ACs and industry expert auditors is conditioned by the combination of qualifications of AC financial experts.

C. Robustness Tests

1. Firm-fixed effect regression

This paper performs analysis clustered at firm and year levels because standard errors may be correlated across firms and across time. Moreover, in order to control the possibility that uncontrolled firm characteristics would bias the findings of this study, this paper performs analysis using subsamples according to whether firms receive external audit from industry specialist auditors or not. In addition to this analysis, this paper evaluates a firm-fixed effect regression model to address potential endogeneity concerns (Doo and Yoon 2020). The untabulated results are consistent with the findings in Tables 3 to 5, indicating that it is unlikely that the findings of this study are significantly affected by uncontrolled firm characteristics.

2. Alternative measures of AC financial expertise and auditor industrial expertise

This study uses alternative measures of financial

experts on ACs and industry expert auditors. First, instead of the dummy variables for the presence of financial experts on ACs, this paper uses continuous variables, measured as the ratio of financial experts on ACs to the size of ACs. Also, as the alternative specification of auditor industry specialization, this study uses an indicator variable equal to one if a firm receives audit from an external auditor with a market share of 30% or more based on sales during an industry-year, and zero otherwise. This study finds consistent results with the main findings of this study (untabulated).

3. Alternative measures of earnings quality

This study uses alternative measures of the quality of earnings as follows: first, this paper performs empirical analysis using a subsample with positive *DA* and a subsample with negative *DA*. This study also uses the absolute value of discretionary accruals as in Modified Jones (Dechow et al. 1995). The untabulated results are qualitatively similar to the findings documented in Tables 3 to 5.

V. Conclusion

This study investigates the joint effects of AC financial expertise and auditor industrial expertise on the quality of earnings, and performs the analysis using subtypes of AC financial expertise and the combination of those subtypes. The empirical findings show that only the interplay of ACs with financial expertise and industry specialist auditors leads to improved earnings quality. Specifically, only in cases where AC members are accounting professors or finance experts excluding finance professors, the interplay has positive impact on earnings quality. In addition, this paper finds that the positive relationship between the interplay and earnings quality becomes obvious when ACs include both accounting and non-accounting experts. More importantly, the interplay

has the most positive impact on earnings quality when ACs have non-accounting expertise as well as more than one type of accounting expertise. These results indicate that the effectiveness of ACs and external auditors enhance when firms' internal and external audit functions work cooperatively, and concurrently, when ACs are composed of members with accounting expertise and those with non-accounting expertise. The results also suggest that the effectiveness of ACs and external auditors is even greater when firms receive external audit from an industry expert auditor and have an AC with non-accounting experts and various types of accounting experts. This paper contributes to the literature by providing a more comprehensive view of the effectiveness of internal and external audits. The findings of this study also have policy implications by showing evidence for the need to establish policies that encourage firms to form an AC that properly performs its oversight role. Future research may extend the results of this study and add to the literature by using various classifications of AC expertise including non-financial expertise.

References

- Abbott, L. J., & Parker, S. (2000). Auditor selection and audit committee characteristics. *AUDITING: A Journal of Practice & Theory*, 19(2), 47-66.
- Abbott, L. J., Parker, S., Peters, G. F., & Raghunandan, K. (2003). The association between audit committee characteristics and audit fees. *AUDITING: A Journal of Practice & Theory*, 22(2), 17-32.
- Abbott, L. J., Parker, S., & Peters, G. F. (2004). Audit committee characteristics and restatements. *AUDITING: A Journal of Practice & Theory*, 23(1), 69-87.
- Al-Shaer, H., & Zaman, M. (2018). Credibility of sustainability reports: The contribution of audit committees. *Business Strategy and the Environment*, 27(7), 973-986.
- Altman, E. I. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *The Journal of Finance*, 23(4), 589-609.
- Alves, S. (2013). The impact of audit committee existence and external audit on earnings management. *Journal of Financial Reporting and Accounting*, 11(2), 143-165.
- Balsam, S., Krishnan, J., & Yang, J. S. (2003). Auditor industry specialization and earnings quality. *AUDITING: A Journal of Practice & Theory*, 22(2), 71-97.
- Beasley, M. S., Carcello, J. V., Hermanson, D. R., & Neal, T. L. (2009). The audit committee oversight process. *Contemporary Accounting Research*, 26(1), 65-122.
- Becker, C. L., DeFond, M. L., Jambalvo, J., & Subramanyam, K. R. (1998). The effect of audit quality on earnings management. *Contemporary Accounting Research*, 15(1), 1-24.
- Bédard, J., Chtourou, S. M., & Courteau, L. (2004). The effect of audit committee expertise, independence, and activity on aggressive earnings management. *AUDITING: A Journal of Practice & Theory*, 23(2), 13-35.
- Bunget, O. C., Mateş, D., Dumitrescu, A. C., Bogdan, O., & Burcă, V. (2020). The link between board Structure, audit, and performance for corporate sustainability. *Sustainability*, 12(20), 8408.
- Carcello, J. V., Hermanson, D. R., Neal, T. L., & Riley Jr, R. A. (2002). Board characteristics and audit fees. *Contemporary Accounting Research*, 19(3), 365-384.
- Carcello, J. V., & Neal, T. L. (2003). Audit committee characteristics and auditor dismissals following 'New' going-concern reports. *The Accounting Review*, 78(1), 95-117.
- Chen, J., Duh, R. R., Hsu, A.W. H., & Pan, C. M. (2015). Can Anglo-Saxon audit committee scheme improve earnings quality in non-Anglo-Saxon environments? *Journal of Contemporary Accounting and Economics*, 11(1), 61-74.
- Cheon, Y. S., Cheung, J., & Ha, S. (2013). The effectiveness of financial experts in the audit committee and corporate governance. *Korean Accounting Review*, 38(4), 31-60. [printed in Korean]
- Chi, H. Y., & Chin, C. L. (2011). Firm versus partner measures of auditor industry expertise and effects on auditor quality. *Auditing: A Journal of Practice & Theory*, 30(2), 201-229.
- Chi, W., Liscic, L. L., & Pevzner, M. (2011). Is enhanced audit quality associated with greater real earnings management? *Accounting Horizons*, 25(2), 315-335.
- Choi, B. G., Song, B., & Choi, J. H. (2015). Audit committee characteristics and low-balling of audit fees. *Study on Accounting, Taxation & Auditing*, 57(2), 31-66.
- Choi, J. H., Jeon, K. A., & Park, J. I. (2004). The role of audit committees in decreasing earnings management: Korean evidence. *International Journal of Accounting, Auditing and Performance Evaluation*, 1(1), 37-60.
- Choi, J. H., Kim, J. B., Wang, Z., & Zang, Y. (2013). *Dynamic auditor competition and audit quality in local markets*. Working paper. Seoul National University.
- Choi, K., Park, J. I., & Cho, H. W. (2008). An empirical analysis on the relation between the board of director and audit committee's characteristics and financial statement fraud. *Study on Accounting & Auditing*, 58, 351-389. [printed in Korean]

- Choi, S., Han, J., Jung, T., & Song, B. (2020). Audit committee members with CEO experience and the value of cash holdings. *Managerial Auditing Journal*, 35(7), 897-926.
- Cohen, J., Krishnamoorthy, G., & Wright, A. M. (2002). Corporate governance and the audit process. *Contemporary Accounting Research*, 19(4), 573-594.
- Cohen, J. R., Hoitash, U., Krishnamoorthy, G., & Wright, A. M. (2014). The effect of audit committee industry expertise on monitoring the financial reporting process. *The Accounting Review*, 89(1), 243-273.
- Collier, P., & Gregory, A. (1996). Audit committee effectiveness and the audit fee. *European Accounting Review*, 5(2), 177-198.
- Commerford, B. P., Hermanson, D. R., Houston, R. W., & Peters, M. F. (2016). Real earnings management: A threat to auditor comfort? *AUDITING: A Journal of Practice & Theory*, 35(4): 39-56.
- Davidson, W. N., Xie, B., & Xu, W. (2004). Market reaction to voluntary announcements of audit committee appointments: The effect of financial expertise. *Journal of Accounting and Public Policy*, 23(4), 279-293.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *The Accounting Review*, 70(2), 193-225.
- DeFond, M. L., Hann, R. N., & Hu, X. (2005). Does the market value financial expertise on audit committees of boards of directors? *Journal of Accounting Research*, 43(2), 153-193.
- Dhaliwal, D., Naiker, V., & Navissi, F. (2010). The association between accruals quality and the characteristics of accounting experts and mix of expertise on audit committees. *Contemporary Accounting Research*, 27(3), 787-827.
- Doo, S., & Yoon, S. S. (2020). Voluntary audit committees and financial reporting: Korean evidence. *Asia-Pacific Journal of Financial Studies*, 49(5), 689-719.
- Fiolleau, K., Hoang, K., & Pomeroy, B. (2019). Auditors' communications with audit committees: The influence of the audit committee's oversight approach. *AUDITING: A Journal of Practice & Theory*, 38(2), 125-150.
- Gendron, Y., Bédard, J., & Gosselin, M. (2004). Getting inside the black box: A field study of practices in "effective" audit committees. *AUDITING: A Journal of Practice & Theory*, 23(1), 153-171.
- Goh, B. W. (2009). Audit committees, boards of directors, and remediation of material weaknesses in internal control. *Contemporary Accounting Research*, 26(2), 549-579.
- Gow, I. D., Ormazabal, G., & Taylor, D. J. (2010). Correcting for cross-sectional and time-series dependence in accounting research. *The Accounting Review*, 85(2), 483-512.
- Gul, F. A., Fung, S. Y. K., & Jaggi, B. (2009). Earnings quality: Some evidence on the role of auditor tenure and auditors industry expertise. *Journal of Accounting and Economics*, 47(3), 265-287.
- Hoitash, R., & Hoitash, U. (2009). The role of audit committees in managing relationships with external auditors after SOX. *Managerial Auditing Journal*, 24(4), 368-397.
- Hribar, P., & Nichols, D. C. (2007). The use of unsigned earnings quality measures in tests of earnings management. *Journal of Accounting Research*, 45(5), 1017-1053.
- Iyer, V. M., Bamber, E. M., & Griffin, J. (2013). Characteristics of audit committee financial experts: An empirical study. *Managerial Auditing Journal*, 28(1), 65-78.
- Keune, M. B., & Johnstone, K. M. (2012). Materiality judgments and the resolution of detected misstatements: The role of managers, auditors, and audit committees. *The Accounting Review*, 87(5), 1641-1677.
- Kim, J., & Kim, K. S. (2020). Relationship between frequency of external auditors' communication with those charged with governance and audit quality. *Journal of Taxation and Accounting*, 21(3), 29-48. [printed in Korean]
- Kim, Y., & Hong, J. (2021). The effect of communication between external auditors and those charged with governance on earnings response coefficient. *Korean Journal of Management Accounting Research*, 21(1), 1-23. [printed in Korean]
- Klein, A. (2002). Audit committee, board of director characteristics, and earnings management. *Journal of Accounting and Economics*, 33(3), 375-400.
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163-197.
- Krishnan, G. V. (2003). Does Big 6 auditor industry expertise constrain earnings management? *Accounting Horizons*, 17(Supplement), 1-16.
- Krishnan, G. V., & Visvanathan, G. (2008). Does the SOX definition of an accounting expert matter? The association between audit committee directors' accounting expertise and accounting conservatism. *Contemporary Accounting Research*, 25(3), 827-857.
- Krishnan, J. (2005). Audit committee quality and internal control: An empirical analysis. *The Accounting Review*, 80(2), 649-675.
- Kusnadi, Y., Leong, K. S., Suwardy, T., & Wang, J. (2016). Audit committees and financial reporting quality in Singapore. *Journal of Business Ethics*, 139, 197-214.
- Kwak, S. K. (2010). A critical review on the literature about the audit committee. *Journal of Taxation and Accounting*, 11(4), 175-217. [printed in Korean]
- Kwon, S. Y., & Ki, E. S. (2011). The effect of audit quality on the bias and accuracy of management forecasts: Audit competence vs. audit effort. *Korean Accounting Review*, 36(1), 71-124. [printed in Korean]
- Minutti-Meza, M. (2013). Does auditor industry specialization improve audit quality? *Journal of Accounting Research*, 51(4): 779-817.
- Mustafa, S. T., & Ben Youssef, N. (2010). Audit committee financial expertise and misappropriation of assets. *Managerial Auditing Journal*, 25(3), 208-225.
- Naiker, V., & Sharma, D. S. (2009). Former audit partners on the audit committee and internal control deficiencies.

- The Accounting Review*, 84(2), 559-587.
- Peasnell, K. V., Pope, P. F., & Young, S. (2005). Board monitoring and earnings management: Do outside directors influence abnormal accruals? *Journal of Business Finance & Accounting*, 32(7-8), 1311-1346.
- Pentland, B. T. (1993). Getting comfortable with the numbers: Auditing and the micro-production of macro-order. *Accounting, Organizations and Society*, 18(7-8), 605-620.
- Petersen, M. A. (2009). Estimating standard errors in finance panel data sets: Comparing approaches. *The Review of Financial Studies*, 22(1), 435-480.
- Pfeffer, J. (1972). Size and composition of corporate boards of directors: The organization and its environment. *Administrative Science Quarterly*, 17(2), 218-228.
- Piot, C., & Janin, R. (2007). External auditors, audit committees and earnings management in France. *European Accounting Review*, 16(2), 429-454.
- Read, W., & Raghunandan, K. (2001). The state of audit committees. *Journal of Accountancy*, 191(May), 57-60.
- Reichelt, K., & Wang, D. (2010). National and office-specific measures of auditor industry expertise and effects on audit quality. *Journal of Accounting Research*, 48(3), 647-686.
- SEC (2003). *Final rule: Disclosure required by Sections 406 and 407 of the Sarbanes-Oxley Act of 2002*. Washington, DC: Securities and Exchange Commission.
- Song, B., Ahn, H., & Choi, J. H. (2017). The effect of the composition of audit committee financial expertise on industry specialist auditor choice and audit. *Korean Accounting Review*, 42(5), 209-243. [printed in Korean]
- Song, B., Ahn, H., Choi, G. D., & Ryu, H. S. (2019). Earnings management, prospector strategy and expertise of an audit committee. *Korea International Accounting Review*, 88, 201-229. [printed in Korean]
- Tetlock, P. E. (2002). Social functionalist frameworks for judgment and choice: Intuitive politicians, theologians, and prosecutors. *Psychological Review*, 109(3), 451-471.
- White, J. T., Woidtke, T., Black, H. A., & Schweitzer, R. L. (2014). Appointments of academic directors. *Journal of Corporate Finance*, 28, 135-151.
- Xie, B., Davidson, W. N., & DaDalt, P. J. (2003). Earnings management and corporate governance: The role of the board and the audit committee. *Journal of Corporate Finance*, 9(3), 295-316.
- Zerni, M. (2012). Audit partner specialization and audit fees: Some evidence from Sweden. *Contemporary Accounting Research*, 29(1), 312-340.
- Zhang, Y., Zhou, J., & Zhou, N. (2007). Audit committee quality, auditor independence, and internal control weaknesses. *Journal of Accounting and Public Policy*, 26(3), 300-327.

Appendix A. Variable definitions

Variable	Definition
$ DA $	Absolute value of performance-matched discretionary accruals (Kothari et al. 2005)
<i>ACCEXP</i>	Indicator variable equal to 1 if an AC has at least one accounting expert, and 0 otherwise
<i>NONACCEXP</i>	Indicator variable equal to 1 if an AC has at least one finance or supervisory expert, and 0 otherwise
<i>ACCERT</i>	Indicator variable equal to 1 if an AC has at least one certified accountant, and 0 otherwise
<i>ACCPROF</i>	Indicator variable equal to 1 if an AC has at least one accounting professor, and 0 otherwise
<i>ACCOTHERS</i>	Indicator variable equal to 1 if an AC has at least one accounting expert, neither certified accountants nor accounting professors, and 0 otherwise
<i>FINPROF</i>	Indicator variable equal to 1 if an AC has at least one finance professor, and 0 otherwise
<i>FINOTHERS</i>	Indicator variable equal to 1 if an AC has at least one finance expert excluding finance professors, and 0 otherwise
<i>SUPEXP</i>	Indicator variable equal to 1 if an AC has at least one supervisory expert, and 0 otherwise
<i>ACCEXPONLY</i>	Indicator variable equal to 1 if an AC has at least one accounting expert but no finance or supervisory experts, and 0 otherwise
<i>ACCANDANOTHER</i>	Indicator variable equal to 1 if an AC has at least one accounting expert and at least one finance or supervisory expert, and 0 otherwise
<i>ACCFINSUPEXP</i>	Indicator variable equal to 1 if an AC has at least one accounting expert, at least one finance expert and at least one supervisory expert, and 0 otherwise
<i>ACC_ONLY</i>	(1) in case <i>ACC</i> refers to <i>ACCERT</i> (<i>ACCERT_ONLY</i>): Indicator variable equal to 1 if an AC has at least one accounting expert corresponding to <i>ACCERT</i> (hereafter a corresponding accounting expert) but no other financial experts, and 0 otherwise (2) in case <i>ACC</i> refers to <i>ACCPROF</i> (<i>ACCPROF_ONLY</i>): Indicator variable equal to 1 if an AC has at least one accounting expert corresponding to <i>ACCPROF</i> (hereafter a corresponding accounting expert) but no other financial experts, and 0 otherwise (3) in case <i>ACC</i> refers to <i>ACCOTHERS</i> (<i>ACCOTHERS_ONLY</i>): Indicator variable equal to 1 if an AC has at least one accounting expert corresponding to <i>ACCOTHERS</i> (hereafter a corresponding accounting expert) but no other financial experts, and 0 otherwise
<i>ACCOTHERS_ONLY</i>	(1) Indicator variable equal to 1 if an AC has at least one accounting expert not corresponding to <i>ACCERT</i> (i.e. <i>ACCPROF</i> and <i>ACCOTHERS</i> ; hereafter a non-corresponding accounting expert) but no other financial experts, and 0 otherwise (2) Indicator variable equal to 1 if an AC has at least one accounting expert not corresponding to <i>ACCPROF</i> (i.e. <i>ACCERT</i> and <i>ACCOTHERS</i> ; hereafter a non-corresponding accounting expert) but no other financial experts, and 0 otherwise (3) Indicator variable equal to 1 if an AC has at least one accounting expert not corresponding to <i>ACCOTHERS</i> (i.e. <i>ACCERT</i> and <i>ACCPROF</i> ; hereafter a non-corresponding accounting expert) but no other financial experts, and 0 otherwise
<i>FIN_ONLY</i>	Indicator variable equal to 1 if an AC has at least one finance expert but no other financial experts, and 0 otherwise
<i>SUP_ONLY</i>	Indicator variable equal to 1 if an AC has at least one supervisory expert but no other financial experts, and 0 otherwise
<i>ACC_ACCOTHERS</i>	Indicator variable equal to 1 if an AC has both corresponding and non-corresponding accounting experts but no other financial experts, and 0 otherwise
<i>ACC_FIN</i>	Indicator variable equal to 1 if an AC has both corresponding accounting and finance experts but no other financial experts, and 0 otherwise
<i>ACC_SUP</i>	Indicator variable equal to 1 if an AC has both corresponding accounting and supervisory experts but no other financial experts, and 0 otherwise
<i>ACCOTHERS_FIN</i>	Indicator variable equal to 1 if an AC has both non-corresponding accounting and finance experts but no other financial experts, and 0 otherwise
<i>ACCOTHERS_SUP</i>	Indicator variable equal to 1 if an AC has both non-corresponding accounting and supervisory experts but no other financial experts, and 0 otherwise

Appendix A. Continued

Variable	Definition
<i>FIN_SUP</i>	Indicator variable equal to 1 if an AC has both finance and supervisory experts but no other financial experts, and 0 otherwise
<i>ACC_ACCOTHERS_FIN</i>	Indicator variable equal to 1 if an AC has corresponding accounting, non-corresponding accounting and finance experts, but no supervisory experts, and 0 otherwise
<i>ACC_ACCOTHERS_SUP</i>	Indicator variable equal to 1 if an AC has corresponding accounting, non-corresponding accounting and supervisory experts, but no finance experts, and 0 otherwise
<i>ACC_FIN_SUP</i>	Indicator variable equal to 1 if an AC has corresponding accounting, finance and supervisory experts, but no non-corresponding accounting experts, and 0 otherwise
<i>ACCOTHERS_FIN_SUP</i>	Indicator variable equal to 1 if an AC has non-corresponding accounting, finance and supervisory experts, but no corresponding accounting experts, and 0 otherwise
<i>ALL</i>	Indicator variable equal to 1 if an AC has all four types of financial experts (corresponding accounting, non-corresponding accounting, finance and supervisory), and 0 otherwise
<i>AUDEXPERT</i>	Indicator variable equal to 1 if a firm receives audit from an external auditor with the largest market share based on sales during an industry-year, and 0 otherwise
<i>ACIND</i>	Indicator variable equal to 1 if all of AC members are independent directors, and 0 otherwise
<i>lnACACTIVITY</i>	Natural log of the number of AC meetings held during the fiscal year
<i>lnACTENURE</i>	Natural log of the average number of years an AC member has served as a firm's director
<i>SIZE</i>	Natural log of total assets
<i>STDSALES</i>	Past three-year standard deviation of sales divided by lagged total assets
<i>STDCFO</i>	Past three-year standard deviation of cash flows from operation divided by lagged total assets
<i>ZSCORE</i>	Financial risk measure (Altman 1968)
<i>LEV</i>	Total liabilities divided by lagged total assets
<i>LOSS</i>	Indicator variable equal to 1 if a firm reports net loss during the fiscal year, and 0 otherwise
<i>TACC_{t-1}</i>	Total accruals (= net income - cash flows from operation) divided by total assets at the beginning of the year
<i>FOREIGN</i>	Percentage of stocks held by foreign shareholders