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The impact of labour unions on external auditor selection and audit scope: evidence from the Korean market

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ABSTRACT

We examine whether labour unions influence external auditor selection and audit scope. As a major user group of financial information, labour unions likely demand financial information of high quality and thus high-quality audits. As a union's request for wage increases is likely strong when a firm is performing well, management facing wage negotiations with the labour union has incentives to manipulate earnings downward and may therefore prefer auditors who allow more discretion. Using union data unique to Korea during 2005–2008, we find that firms with a stronger labour union tend to choose higher-quality auditors (i.e. Big N or industry specialist auditors). We also find that unionization is negatively (positively) associated with positive (negative) abnormal audit fees and audit hours, and the effects are more pronounced when the union is stronger and more active. Given that departures from normal audit fees and audit hours in either direction arguably impair audit quality, this finding is consistent with our prediction of unions' demand for high-quality audits. Overall, our findings suggest that labour unions play an important role in determining audit quality.

KEYWORDS

Labour union; external auditor selection; audit scope; South Korea

JEL CLASSIFICATION

J53; M42; N35

I. Introduction

Agency costs occur where there is a separation between managers and owners (Jensen and Meckling 1976). One of the ways to reduce the agency costs is to hire a high-quality auditor who provides quality assurance service for financial statements prepared by management. We argue that labour unions may play a role that pressures management into selecting high-quality auditors and providing quality assurance service. In this regard, labour unions play a monitoring role by reducing agency costs, which is a positive role of unions.

However, there has been little empirical evidence to support this argument. Prior studies heavily rely on a dark side of labour unions, where unions are regarded as a rent-seeker and thereby decrease the firm's value (Ruback and Zimmerman 1984; Connolly, Hirsch, and Hirschey 1986; Hirsch 1991). The purpose of this study is to fill in the void in the literature by providing empirical evidence that unions represent a monitoring mechanism. Specifically, we test whether labour unions demand high-quality audits.

A main function of unions is to protect employee rights and demand the improvement of employee welfare. Negotiating wages with management is one of its most important tasks. Unions rely on financial information in meetings with management over negotiating wage increases. For that purpose, unions make every effort to acquire highly accurate and transparent financial information representing the reality of the business (Kleiner and Bouillon 1988; Appelbaum and Hunter 2007; Leung, Li, and Rui 2009). In addition, unions demand high-quality financial reporting in order to be able to monitor management effectively and secure their jobs against bankruptcies resulting from deteriorating financial conditions.

Contrariwise, management has incentives to hide inside information on resources available to the firm or 'true' operating income from unions (Bova 2013). This is because better informed unions will have a better position in wage negotiations. Management tends to consider unions rent-seekers instead of value creators (Ruback and Zimmerman 1984;

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Connolly, Hirsch, and Hirschey 1986; Hirsch 1991). Thus, if the firm performs well and consequently unions' demand for wage increases is expected to be high, the managers of unionized firms have incentives to manipulate earnings downward since management can use (manipulated) poor performance as an excuse for turning down wage increases as long as the downward does not impair long-term firm value (Liberty and Zimmerman 1986). Hiding information on available resources could allow managers to achieve a more desirable outcome from wage negotiations or to pursue their own benefits (Hilary 2006; Matsa 2010; Klasa, Maxwell, and Ortiz-Molina 2009; Farber et al. 2012). Managers who face wage negotiations and thus pursue downward earnings management may prefer lower-quality external auditors.

Using Korean data during 2005–2008, we first examine whether the presence of unions increases the likelihood of high-quality auditors being selected.¹ For the role of unions on quality or scope of external audits, we then test an association between unionization and abnormal audit fees and audit hours. We also predict that this effect of unions, if it exists, is more pronounced in firms with stronger unions than firms with weaker unions. Strength of each company's union is measured by its membership to the following affiliations: (1) a member of *Minju Confederation of Trade Unions (Minju)*, (2) a member of *Hanguk Federation of Trade Unions (Hanguk)* and (3) non affiliated unions, where *Minju* is considered the most aggressive and nonaffiliated unions the least. More detailed descriptions of unions in Korea are included in the following section.

We empirically document that the *Minju* (the strongest union) significantly increases the likelihood of Big 4 or industry specialist auditors being chosen, while *Nonaffiliated* (the weakest) unions reduce the likelihood of higher-quality auditors being engaged. We further find that both *Minju* and *Hanguk* reduce abnormally positive abnormal audit fees and audit hours, and increase abnormally negative abnormal

audit fees and audit hours. These suggest that both *Minju* and *Hanguk* unions increase audit quality by reducing two extremes (i.e. too high and too low) of abnormal audit fees and audit hours. On the other hand, *Nonaffiliated* unions have virtually no impact on abnormal audit fees and audit hours.

This study provides several contributions to the both extant literature on unions and external audits.² First, to our best knowledge, this is the first study to use large public data to empirically explore the association between labour unions and external audits. We provide evidence that unions, who are important users of financial statements and have been relatively ignored by the literature, affect audit-related decisions such as auditor selection and audit scope.

Second, by using the unique Korean data (i.e. individual firm-level union measure), we can investigate how the different characteristics of labour unions affect audit selection and resource allocations to/by auditors. Korean regulators required publicly traded firms to disclose whether they had a union, their unions' affiliation, the number of employees who join the union and the number of full-time union administrators. These data appear to be publicly available only in Korea during specific time period (i.e. during 1998–2008). Several U.S. studies use *estimated* unionization or labour intensity data at the industry level, since they were unable to use actual firm-level union data, which makes our study unique (e.g. Hilary 2006; Matsa 2010; Farber et al. 2013; Chen, Kacperczyk, and Ortiz-Molina 2011; Chyz et al. 2013).

Third, this study shows that labour unions, through the influence over decisions of auditor selection and scope, play a monitoring role and therefore reduce agency costs between owners and management (Jensen and Meckling 1976). The literature has shown that there have been third-party groups that require high-quality information, thereby reducing agency costs. For example, institutional shareholders, as an important user of financial

¹There is anecdotal evidence in Korea that unions were involved in auditor selection processes. On 24 December 2002, *Yonhap News* reported that the employees of Hyundai Moto Co. demanded a change of an external auditor because the auditor has been in position for a long period and provided non-audit services which may damage their independence as an external auditor. *Yonhap News* also reported that 'the union of Hyundai Motor Co. has the right to demand that the firm change its external auditor.' Korea JoongAng Daily (25 October 2006) reported that labour union at Korean Exchange has interrupted internal auditor selection process in order to select an independent and high-quality auditor (available at: <http://mengnews.joins.com/view.aspx?ald=2833197>). Prime Economy (4 July 2008) also reported that IBK union staged a strike to oppose a candidacy of new auditor (available at: <http://www.newsprime.co.kr/news/article.html?no=57437>).

²To get practitioners' opinions, we conducted a brief survey and a follow-up interview. From this extra procedure, we learned the following. First, management of firms with *Minju*, compared to its counterpart of firms with *Hanguk*, is more favourable on union's participation in the auditor selection process. Second, both labour unions used audited financial statements in their wage negotiation deals with management. In summary, the practitioners' opinions are generally consistent with our findings in this study.

information, play a monitoring role. Our study also adds to this line of studies providing evidence that labour unions make contribution to lead firms to disclose high-quality financial information.

The rest of this article is organized as follows. Section II presents the literature review and hypothesis development. Section III describes the research design and sample, and provides descriptive statistics. Section IV reports the empirical results. Finally, Section V concludes the study.

II. Literature review and hypotheses

Unions in Korea

Most unions in Korea belong to the *Hanguk* or *Minju* federations. According to a 2008 Labor White Paper,³ of 5889 unionized firms (1,559,172 members), 3429 belonged to *Hanguk* (755,234 members) and 1143 belonged to *Minju* (627,274 members). The remaining 1317 firms (176,671 members) were non-unions have been increasing in affiliated. Thus, about 89% of unionized employees belonged to one of the two major associations, and *Hanguk* had more membership firms. *Hanguk* and *Minju* have very different founding histories, ideologies and propensities. Not surprisingly, these two associations have exhibited very different strategies and approaches in dealing with wage negotiations and government labour policies (Yoon and Lee 2008).

Minju tends to take an aggressive position and is not reluctant to go on strike if its demands are not satisfied, while *Hanguk* are more moderate and compromise with management as much as it can. Nonaffiliated unions have been increasing in members and are considered least aggressive and active. A panel study of the Korea Labor Institute (2008) provides a good example of comparisons between these groups of unions. To illustrate, the average number of collective bargaining sessions differs across union confederations (7.94 times for *Minju*, 6.12 for *Hanguk* and 5.03 for *Nonaffiliated* unions). *Minju* also shows the greatest difference between wage increase demanded by a union and the rate suggested by management during collective bargaining (with *Minju* at 5.0%, *Hanguk* at 4.6% and *Nonaffiliated* at 2.7%). These statistics are consistent

with our argument that the most aggressive union is *Minju*, followed by *Hanguk* and *Nonaffiliated* unions.

Related literature and hypothesis development

Unions need information in preparing for wage negotiations, but managers tend to hide inside information for their own benefit (Hilary 2006). Having more information enables unions to function better during wage negotiations and gain more resources (Kleiner and Bouillon 1988). Providing more information to unions may eliminate managers' grounds for refusing wage increases. Results from experimental studies (e.g. Croson 1996) also suggest that managers are better off negotiating with uninformed unions. Therefore, the best option for managers facing wage negotiations is not to share information with unions.

Using Canadian data, Scott (1994) empirically finds that firms facing a higher likelihood of a strike or operating in an industry with high average salaries tend to reduce the amount of information on pension issues. Furthermore, as unions' demands for wage increases are likely intensified when the union is stronger, managers are much less likely to make information available when facing stronger unions (Klasa, Maxwell, and Ortiz-Molina 2009; Matsa 2010). If this is the case, information asymmetry increases with union strength (Hilary 2006).

Management generally considers labour unions as rent-seekers (Grout 1984; Connolly, Hirsch, and Hirschey 1986; Hirsch 1992; Klasa, Maxwell, and Ortiz-Molina 2009; Matsa 2010). Unions have incentives to extract as much quasi-rent as possible through collective bargaining and strike threats (Grout 1984). Moreover, unions tend to demand wage increases when their firms are performing well than when their firms' performance is poor (Reynolds 1978; Blanchflower, Oswald, and Sanfey 1996). Management thus responds to this predicted actions by unions by manipulating earnings downward in order to minimize rent-seeking by unions (Liberty and Zimmerman 1986; Farber et al. 2013).

However, empirical results are mixed for this prediction. For example, Liberty and Zimmerman (1986) find no evidence of earnings manipulation

³The Labor White Paper is published every year by the Korean Ministry of Employment and Labor to present and evaluate labour policies. The document includes various statistics on labour markets such as employment, education, work environment and labour relations.

prior to wage negotiations. Subsequent studies (e.g. Mautz and Richardson 1992; Cullinan and Knoblett 1994) also fail to provide evidence that managers exercise discretion on earnings through accounting choices prior to wage negotiations.

In contrast, DeAngelo and DeAngelo (1991) successfully document evidence of earnings management in the year of wage negotiations. Specifically, they find that firms report unusually large amounts of losses in years when wage negotiations occur. D'Souza, Jacob, and Ramesh (2001) also find evidence consistent with the earnings management argument that management reduces labour negotiation costs through a discretionary selection of accounting choices. They document that unionized firms tend to select the immediate recognition method in the year of SFAS 106 adoption, resulting in lower earnings in that year. Similarly, Bova (2013) offers evidence supporting the management in unionized firms has incentives to provide a negative outlook. He documents that unionized firms are more likely to just miss analysts' forecasts through both expectation and earnings managements although this tendency is not restricted to wage negotiation periods.

When unions prepare for wage negotiations with management, they need high-quality financial information for successful negotiations (Appelbaum and Hunter 2007; DeAngelo and DeAngelo 1991; Leung, Li, and Rui 2009). The high-quality information that unions demand should be the one that faithfully represents the real status of the companies' business. If earnings are manipulated by management for opportunistic purposes, the union may not reap sufficient benefits.

Similarly, Faleye, Mehrotra, and Morck (2006) argue that unions prefer conservative earnings. This is because unions act like bondholders in that they claim fixed amounts from companies in the form of fixed wages and benefits. To secure these fixed claims, unions tend to demand conservative accounting. If firms with inflated earnings may pay dividends to shareholders based on the manipulated performance, it will increase the risk that unions, as fixed claimers, lose guaranteed wages and benefits.

Therefore, unions have strong incentives to deter accounting manipulation (Liberty and Zimmerman 1986). However, unions may not be able to monitor or evaluate the appropriateness of the financial information management provides because they usually lack financial expertise. Using high-quality and independent auditors would assure unions that the information offered is representative of business reality. Unions in Korea are frequently involved in the process of hiring internal and/or external auditors. This suggests that unions hold a channel to have their voice heard in the auditor selection process.

We use Big 4 and industry specialist auditors as proxies for high-quality auditors, following the literature suggesting that they offer better assurance on the quality of their financial information than do non-Big 4 and non-industry specialist auditors (DeAngelo 1981; Teoh and Wong 1993; Balsam, Krishnan, and Yang 2003; Khurana and Raman 2004; Behn, Choi, and Kang 2008). Big 4 auditors also provide higher insurance coverage to parties that suffer losses through audit failures (Dye 1993; Lennox 1999; Fortin and Pittman 2007), making them more attractive to unions.

Prior studies generally suggest that unions are a group of important stakeholders with the ability and incentive to influence firms' accounting choices and corporate financial decisions. For example, unions can have effects on various business decisions including earnings management (DeAngelo and DeAngelo 1991; Bova 2013), investments in Research & Development (Connolly, Hirsch, and Hirschey 1986), cash holdings (Klasa, Maxwell, and Ortiz-Molina 2009), leverage (Matsa 2010), accounting conservatism (Farber et al. 2012), CEO compensation (Banning and Chiles 2007), cost of equity (Chen, Kacperczyk, and Ortiz-Molina 2011) and cost of debt (Chen, Kacperczyk, and Ortiz-Molina 2012). In addition to these business issues prior studies document, we predict that unions are able to influence audit issues as well. We hypothesize that unions demand high-quality audits and request managers to hire Big 4 or industry specialists, *ceteris paribus*,⁴ because unions equipped with high-quality financial information are in a better position in wage negotiations with management.

⁴Faleye, Mehrotra, and Morck (2006) note that unions can influence firms' investment activities directly or indirectly through at least three avenues: (1) unionized employee activism, (2) introduction of cooperation agreements between unions and management and (3) shareholder activism. We believe that unions can also utilize these three avenues to influence audit issues. For an anecdotal evidence of the union activism, see footnote 1.

H1a: Firms with unions are more likely than firms without unions to have Big 4 or industry specialist auditors, *ceteris paribus*.

We now turn to the second research question of whether union type (i.e. strong versus mild) has a differential effect on audit-related issues. We believe that the union's request to hire Big 4 or specialist auditors should be more influential when unions are stronger and/or more active. Strong unions possess greater bargaining power through the threat of strike and, therefore, have greater influence on management decisions (Farber et al. 2013; Chung et al. 2016; Choi, Sohn, and Seo 2016). Managers could also be proactive in selecting high-quality auditors to satisfy the demand from strong unions if their best interest is to minimize unnecessary uneasiness and uncertainty caused by strikes and other harmful actions.

As mentioned earlier, *Minju* is considered the more aggressive and active association because of its frequent and aggressive strikes. Thus, we expect that unions affiliated with *Minju* possess more bargaining power than other unions, and thus have greater influence on management when demanding high-quality audits. Moreover, management facing strong unions may also have greater incentives to hire high-quality auditors in the hope of avoiding unnecessary disputes with unions by signalling that they are trying to provide high-quality information and have no intention of hiding anything. We therefore posit that *Minju* unions are more likely to hire Big 4 or industry specialist auditors.

H1b: Firms whose unions are affiliated with *Minju* (stronger union) are more likely to have Big 4 or industry specialist auditors.

Next, we examine whether unionization is associated with abnormal audit fees and audit hours. We conduct these tests separately according to the sign of the abnormal audit fees. As positive and negative abnormal audit fees have different implications, tests using both samples together may produce spurious results (Picconi and Reynolds 2013).

Abnormally high audit fees create auditor incentives to compromise independence, which impairs audit

quality (Choi, Kim, and Zang 2010; Asthana and Boone 2012; Dye 1991). The normal audit fee level is determined by factors suggested by prior studies, such as firm characteristics, complexity or risk. Abnormal fees are residuals that cannot be explained by those factors. Choi, Kim, and Zang (2010) suggest that positive abnormal fees imply that the auditor has bonded economically to the client. In addition, abnormally high audit hours indicate the unnecessary allocation of audit resources (Caramanis and Lennox 2008), signalling a type of audit inefficiency. An unnecessarily high audit time could help build inappropriate personal relationships between auditors and management, increasing doubts about auditor independence (Tackett, Wolf, and Claypool 2004). Moreover, extra high audit fees (and hours) could be bribes delivered by management to auditors in exchange for weak monitoring (Kinney and Libby 2002). These discussions lead us to predict that, if labour unions successfully monitor audit quality, unionized firms should have less positive abnormal audit fees and audit hours.

However, positive abnormal fees and audit hours can also be interpreted as extra effort (Eshleman and Guo 2014; Blankley, Hurtt, and MacGregor 2012; Hribar, Kravet, and Wilson 2014).⁵ Auditors likely exert extra efforts when assessing high audit risk in clients. To maintain a certain level of audit risk, auditors expand their audit scope by increasing substantive tests. According to this line of studies, positive abnormal audit fees (or hours) reflect extra efforts beyond the controlled risk factors that are included in the audit fee (or audit hour) model. These extra efforts may lead to high audit quality. Auditors also exert extra efforts when firms with high-quality governance request more thorough audits to minimize litigation risks (Carcello et al. 2002; Abbott et al. 2003). In these cases, positive abnormal audit fees and hours are considered desirable and aligned with labour unions' interests. The above arguments may lead to a prediction that unions encourage extra audit effort, suggesting a positive association between unionization and positive abnormal audit fees and hours. Due to these opposing predictions, we state two competing hypothesis as follows.

⁵Still others (e.g. Picconi and Reynolds 2013) argue that abnormally high audit fees represent a risk premium charged by auditors for firms with high audit risk. See DeFond and Zhang (2014) for a review of audit fees as a proxy of audit quality.

H2a-1a: Unionization positively affects positive abnormal audit fees and audit hours.

H2a-1b: Unionization negatively affects positive abnormal audit fees and audit hours.

Regarding negative abnormal audit fees and hours, we predict a positive association with unions. Given that certain level of audit fee and hour levels (normal level) should be secured to ensure audit quality, negative abnormal audit fees and audit hours are interpreted as an underutilization of audit services (Picconi and Reynolds 2013) or something that confers greater bargaining power onto audit clients (Asthana and Boone 2012), both of which lead to lower-quality audits. Higher-quality auditors can charge clients higher audit fees (e.g. the Big N premium), which suggests higher audit quality (Simunic 1980; Francis, Philbrick, and Schipper 1994). Audit fees lower than the norm may therefore be related to low audit quality. Unions that prefer higher-quality audits will make the effort to deter this insufficient audit services (i.e. lower-quality audits). This is consistent with prior studies reporting that high-quality governance firms demand more rigorous audits, which reduces a possibility of insufficient audits. Consequently, our hypothesis is stated as follows:

H2a-2: Unionized firms tend to have less negative abnormal audit fees and audit hours.

Consistent with the rationale for H1b, we argue that strong unions have greater influence on company decisions and that their demand for higher audit quality should be more powerful. This leads us to predict that unions' effects on abnormal audit fees and audit hours are more pronounced in stronger unions (i.e. *Minju*):

H2b. The effects of unionization on abnormal audit fees and audit hours, if they exist, are more pronounced in unions affiliated with *Minju* (stronger union).

III. Research design and sample selection

Research design

To investigate whether unionization is associated with auditor choice, we estimate logistic regressions in Equations (1) and (2) as baseline models.

$$\begin{aligned} BIG_{it}(ISPE_{it}) = & \alpha + \beta_1 Union_{it} + \beta_2 Size_{it} \\ & + \beta_3 Export_{it} + \beta_4 Invrec_{it} \\ & + \beta_5 Lev_{it} + \beta_6 Loss_{it} + \beta_7 ROA_{it} \\ & + \beta_8 Consol_{it} + Industry\ and\ Year\ dummies + \varepsilon_{it} \end{aligned} \quad (1)$$

$$\begin{aligned} BIG_{it}(ISPE_{it}) = & \alpha + \beta_1 Minju_{it} + \beta_2 Hanguk_{it} \\ & + \beta_3 Nonaffiliated_{it} + \beta_4 Size_{it} \\ & + \beta_5 Export_{it} + \beta_6 Invrec_{it} + \beta_7 Lev_{it} \\ & + \beta_8 Loss_{it} + \beta_9 ROA_{it} + \beta_{10} Consol_{it} \\ & + Industry\ and\ Year\ dummies + \varepsilon_{it} \end{aligned} \quad (2)$$

where

- BIG*: 1 if the firm is audited by a Big 4 auditor, and 0 otherwise;
- ISPE*: 1 if the firm is audited by an industry specialist, and 0 otherwise;
- Union*: 1 if the firm has unionized labour, and 0 otherwise;
- Minju*: 1 if the union of the firm is affiliated with *Minju*, and 0 otherwise;
- Hanguk*: 1 if the union of the firm is affiliated with *Hanguk*, and 0 otherwise;
- Nonaffiliated*: 1 if the union of the firm is not affiliated with any federation, and 0 otherwise;
- Size*: Natural logarithm of total assets;
- Export*: Ratio of export sales to total sales;
- Invrec*: Sum of inventory and accounts receivables divided by total assets;
- Lev*: Total debt divided by total equity;
- Loss*: 1 if the net income is negative, and 0 otherwise;
- ROA*: Net income divided by total assets and
- Consol*: 1 if the firm reports consolidated financial statements, and 0 otherwise.

The dependent variables in Equations (1) and (2) are *BIG* (Big 4) and *ISPE* (industry specialist). Following the prior studies, we assess *ISPE* using two measures: audit fee and number of client (Craswell and Taylor 1991; DeFond, Francis, and Wong 2010; Ferguson and Stokes 2002; Craswell, Francis, and Taylor 1995). *ISPE* measures are often criticized to be not clear whether the measurements of industry specialist capture 'auditing a few large clients' or 'auditing a large number of small client' (Gramling and Stone 2001; Balsam, Krishnan, and Yang 2003). By including both size-weighted measure (fee) and non-size-weighted measure (number of client) in *ISPE* assessment, we can mitigate this controversial issue (Ferguson and Stokes 2002). When determining industry specialists, we eliminate industries with

10 or fewer observations, consistent with Mayhew and Wilkins (2003).

In model (1), the variable of interest is *Union*. If the existence of union affects the choice of a Big 4 audit firm (*BIG*) or an industry specialist (*ISPE*), the coefficient β_1 will be significantly positive. Next, we classify the union as *Minju*, *Hanguk* or *Nonaffiliated* in model (2) and test the impact of each union type on the auditor choice. If the type of union (i.e. its aggressiveness) has a differential effect on auditor choice compared to firms without unions, we predict significantly positive coefficients of union type (β_1 , β_2 and β_3) and further expect the magnitude of the coefficients to be $\beta_1 > \beta_2 > \beta_3$.

In line with prior studies, we control for the firm-specific characteristics likely to affect auditor choice (Choi and Wong 2007; Simunic and Stein 1987; St. Pierre and Anderson 1984; Hope et al. 2007). First, we control for firm scale and complexity using the following variables: firm size (*Size*), ratio of export sales to total sales (*Export*), inventory and accounts receivables scaled by total asset (*Invrec*), and a dummy variable for reporting consolidated financial statements (*Consol*). These four variables capture the level of effort the auditor should devote to ensure a desired level of audit assurance (Simunic and Stein 1987). We therefore expect the choice of Big 4 and industry specialist auditors to be positively associated with these control variables.

Next, we control for the possible impact of financial distress on auditor's litigation risk and eventual auditor choices (Choi and Wong 2007) using debt to equity ratio (*Lev*) and loss (*Loss*). Following prior studies showing the risk avoidance strategy of large auditors (Johnstone and Bedard 2004), we expect the two variables measuring financial distress to be negatively associated with the choice of Big 4 or industry specialist auditors.

We then turn to the test of whether the union has an impact on abnormal audit fees or audit hours. First, we estimate the normal audit fee and hour using the model below:

$$\begin{aligned} AFEE_{it}(AHOUR_{it}) = & \alpha + \beta_1 Size_{it} + \beta_2 Export_{it} \\ & + \beta_3 Lev_{it} + \beta_4 Foreign_{it} + \beta_5 Consol_{it} \\ & + \beta_6 Invrec_{it} + \beta_7 ROA_{it} + \beta_8 Loss_{it} \\ & + \beta_9 Sgrowth_{it} + \beta_{10} Issue_{it} + \beta_{11} BIG_{it} \\ & + Industry\ and\ Year\ dummy + \varepsilon_{it} \end{aligned} \quad (3)$$

where

- AFEE*: Natural logarithm of audit fees;
- AHOUR*: Natural logarithm of audit hours;
- Size*: Natural logarithm of total assets;
- Export*: Ratio of export sales to total sales;
- Lev*: Total debt divided by total equity;
- Foreign*: 1 if foreign exchange profit or loss is more than 0, and 0 otherwise;
- Consol*: 1 if the firm reports consolidated financial statements, and 0 otherwise;
- Invrec*: Sum of inventory and accounts receivables divided by total assets;
- ROA*: Net income divided by total assets;
- Loss*: 1 if the net income is negative, and 0 otherwise;
- Sgrowth*: sales growth;
- Issue*: 1 if the sum of debt or equity issued for the last 3 years is more than 5% of total assets, and 0 otherwise and
- BIG*: 1 if the firm is audited by a Big 4 auditor, and 0 otherwise.

Audit fees are a function of client size, client complexity, client and auditor risk, and audit quality (e.g. Craswell and Francis 1999). We include *Size* to proxy for client size since the audit fee increases as the client gets bigger (Palmrose 1986). Firm complexity (*Export*, *Foreign*, *Consol* and *Invrec*) is likely to increase audit fees and audit hours. We then include *ROA*, *Lev* and *Loss* to proxy for firm risk, which will increase audit fees. A high growth firm (*Sgrowth* and *Issue*) has a greater demand for audit services, thereby increasing audit fees (Choi and Wong 2007; Choi, Kim, and Zang 2010). Finally, to control for the impact of auditor characteristics, we include a Big 4 dummy variable (*BIG*).

Using this Equation (3), we estimate the predicted value of *AFEE* (*AHOUR*), the normal audit fee (hour). We then calculate abnormal audit fees (*ABFEE*) by taking the difference between actual audit fees (*AFEE*) and normal audit fees. Abnormal audit hours (*ABHOUR*) are obtained in a similar way.

We next regress the abnormal audit fees and audit hours on the union variables and other control variables to investigate unions' effect on audit scope (or effort), using Equations (4) and (5):

$$\begin{aligned} ABFEE_{it}(ABHOUR_{it}) = & \alpha + \beta_1 Union_{it} + \beta_2 Size_{it} \\ & + \beta_3 Export_{it} + \beta_4 Invrec_{it} + \beta_5 Lev_{it} \\ & + \beta_6 Loss_{it} + \beta_7 ROA_{it} + \beta_8 Ini_{it} + \beta_9 Consol_{it} \\ & + \beta_{10} BIG_{it} + Industry\ and\ Year\ dummy + \varepsilon_{it} \end{aligned} \quad (4)$$

$$\begin{aligned}
ABFEE_{it}(ABHOUR_{it}) = & \alpha + \beta_1 Minju_{it} + \beta_2 Hanguk_{it} \\
& + \beta_3 Nonaffiliated_{it} + \beta_4 Size_{it} + \beta_5 Export_{it} \\
& + \beta_6 Invrec_{it} + \beta_7 Lev_{it} + \beta_8 Loss_{it} \\
& + \beta_9 ROA_{it} + \beta_{10} Ini_{it} + \beta_{11} Consol_{it} \\
& + \beta_{12} BIG_{it} + Industry \text{ and Year dummy} + \varepsilon_{it}
\end{aligned} \tag{5}$$

where

ABFEE: actual audit fees minus the normal level of audit fees;

ABHOUR: actual audit hours minus the normal level of audit hours;

Ini: 1 for the first year of audit, and 0 otherwise and See Equations (1) and (2) for the definitions of other variables.

The variables of interest are *Union* in model (4) and *Minju*, *Hanguk* and *Nonaffiliated* in model (5). As mentioned, we estimate models (4) and (5) separately according to the sign of the abnormal audit fees and hours. If unionization increases (reduces), the abnormal audit fees or audit hours, the coefficient β_1 will be significantly positive (negative) in model (4). Furthermore, we investigate the impact of union types in model (5). In models (4) and (5), we include the same control variables used in models (1) and (2), and add two more indicator variables: one for the first year of audit (*Ini*) to control for the possibility of lowballing (Simon and Francis 1988) and one for Big 4 (*BIG*) to control for the fee difference between Big 4 and non-Big 4 auditors (Craswell, Francis, and Taylor 1995). The definitions of the variables are summarized in Table 1.

Sample selection

The initial sample comprises 6594 non-financial firms listed on the Korean stock markets between 2005 and 2008. We impose 2008 as the limit because union data were no longer mandated in companies' annual reports starting 2009. Union data such as membership and federation status are hand collected from the companies' annual reports.⁶ We retain only firms having December fiscal year-ends to control for potential effects resulting from the difference in

fiscal year-ends. We also exclude firms whose financial data are not available from the KIS-Value III database, equivalent to Compustat in the U.S. Finally, we drop firms affiliated with both *Minju* and *Hanguk* because they possess characteristics of both associations. This process yields a final sample of 4568 companies, the union sample of which is 1751 (38%) and the non-union sample 2817 (62%). Of the union sample, *Minju* and *Hanguk* firms account for 457 (26%) and 1150 (66%), respectively, and the remaining 144 firms (8%) are not affiliated with *Minju* or *Hanguk*.⁷ The sample selection process is summarized in Table 2.

IV. Empirical results

Descriptive statistics

Table 3 summarizes the basic statistics for all variables used in this study. Table 3 Panel A presents the mean and median for the full sample as well as the union sample and the non-*Union* sample. We focus on mean values in this discussion, as a discussion on median values would be virtually identical (with the exception of *Invrec*). The statistical significance of the mean differences between the *Union* and non-*Union* samples is reported in the *Union* column. *Union* firms are more likely to engage Big 4 audit firms (*BIG*) than non-*Union* firms (65.3% versus 49.4%). The auditor specialist variable (*ISPE_Client* and *ISPE_Fee*) is significantly higher in the *Union* sample. These results are consistent with the prediction that unionized firms tend to engage high-quality auditors.

Abnormal audit fees (*ABFEE*) and audit hours (*ABHOUR*) are significantly higher in the non-*Union* group. The *Union* sample has a higher mean value of firm size (*Size*), ratio of export sales to total sales (*Export*), audit complexity (*Invrev*), leverage ratio (*Lev*), return on asset (*ROA*) and consolidated financial statements (*Consol*), while it has a lower mean value for loss (*Loss*). These results suggest that unionized firms are, on average, bigger, highly leveraged, more complex and more profitable.

⁶We also collect data on the number of unionized employees and full-time union staff members, and test whether our results differ by including these variables. The untabulated results indicate that these variables are not statistically significant, while the variables of interest remain unchanged. This result suggests that in Korea, the affiliation with *Minju* or *Hanguk* better captures the union's strength or negotiation power than the unionized ratio or number of full-time union members.

⁷During the sample period, 49 firms established new unions, and 25 changed their associations; these account for about 1.6% of the total sample. These suggest that firms rarely change their associations.

Table 1. Definition of variables.

Dependent Variables	
<i>BIG</i>	= 1 if the firm is audited by a Big 4 auditor, and 0 otherwise;
<i>ISPE_Client</i>	= 1 if the auditor has the largest number of clients in the industry, 0 otherwise;
<i>ISPE_Fee</i>	= 1 if the auditor has the largest market share of annual audit revenue from clients in the industry, and 0 otherwise;
<i>ABFEE</i>	= Abnormal audit fees;
<i>ABHOUR</i>	= Abnormal audit hours;
Test Variables	
<i>Union</i>	= 1 if the firm has unionized labour, and 0 otherwise;
<i>Minju</i>	= 1 if the union of the firm belongs to the <i>Minju</i> Confederation of Korean Trade Union, and 0 otherwise;
<i>Hanguk</i>	= 1 if the union of the firm belongs to the <i>Hanguk</i> Federation of Korean Trade Union, and 0 otherwise;
<i>Nonaffiliated</i>	= 1 if the union of the firm does not belong to any federation, and 0 otherwise;
Control Variables	
<i>Size</i>	= Natural logarithm of total asset;
<i>Export</i>	= Ratio of export sales to total sales;
<i>Invrec</i>	= Sum of inventory and accounts receivables divided by total assets;
<i>Lev</i>	= Total debt divided by total equity;
<i>Loss</i>	= 1 if the net income is negative, and 0 otherwise;
<i>ROA</i>	= Net income divided by total assets;
<i>Ini</i>	= 1 for the first year of audit, and 0 otherwise; and
<i>Consol</i>	= 1 if the firm reports consolidated financial statements, and 0 otherwise.

Table 2. Sample selection procedure.

Nonfinancial firms listed in Korea Stock Exchange and KOSDAQ from 2005 to 2008	6594
Less: Firms with non-December fiscal year-end	(287)
Less: Firms without financial data in KIS-Value III	(1709)
Less: Firms affiliated with both <i>Minju</i> and <i>Hanguk</i>	(30)
Final sample	4568

Minju refers to the *Minju* Confederation of Korean Trade Union, and *Hanguk* refers to the *Hanguk* Federation of Korean Trade Union. Of the final sample, the *Union* sample is 1751 and the non-*Union* sample is 2817.

In Table 3 Panel B, we use only unionized firms to compare the mean and median of the variables among union groups (*Minju*, *Hanguk* and *Nonaffiliated*). The *Hanguk* column contains the statistical significance of differences in the mean and median between the *Minju* and *Hanguk* samples. Similarly, the *Nonaffiliated* column includes the comparisons between the *Minju* and *Nonaffiliated* samples. We find that 73.3% of the *Minju* sample is audited by a Big 4 audit firm (*BIG*), while 63.1% of the *Hanguk* and 57.6% of the *Nonaffiliated* are audited by a Big 4 auditor. *Minju* firms are also more likely to engage an industry specialist auditor (*ISPE_Client*) than *Hanguk* and *Nonaffiliated* firms. The *Minju* firms have, on average, greater abnormal

audit fees (*ABFEE*), audit hours (*ABHOUR*), firm size (*Size*), leverage (*Lev*) and complexity (*Invrev*, *Consol*) than the other groups.

Table 4 reports Pearson correlations for the variables used in our regression analyses. We find that all union variables except for *Nonaffiliated* have significant and positive correlations with higher-quality auditors (*BIG*, *ISPE*). These results provide another piece of evidence that firms with affiliated unions are more likely to hire a Big 4 or an industry specialist auditor. In addition, the abnormal audit fees and audit hours are negatively correlated with the union variables (*Union*, *Hanguk* and *Nonaffiliated*).

Regression results

Table 5 presents results of the tests where the audit firm choice is regressed on union variables and other determinants. Columns (1) and (2) report the union impact on the choice of a Big 4 auditor (*BIG*). The coefficient on *Union* in column (1) is positive but not significant. We next assess the impact of each union group by replacing *Union* with *Minju*, *Hanguk*, and *Nonaffiliated* in column (2). We find a positive coefficient of *Minju* that is statistically significant at $p < 0.05$, an insignificant coefficient of *Hanguk*, and a negative coefficient of *Nonaffiliated* that is significant at $p < 0.05$. These results suggest that firms affiliated with *Minju* are more likely to choose a Big 4 audit firm than non-*Union* firms, while those affiliated with *Hanguk* are not. Surprisingly, firms with *Nonaffiliated* unions are less likely than firms without unions to hire a Big 4 auditor. The insignificant coefficient of *Union* in model (1) is likely due to the result after cancelling out the two opposite effects of *Minju* and *Nonaffiliated*.

In columns (3)–(6), we report the impact of unions on the choice of industry specialist auditor (*ISPE*). Columns (3) and (4) show the regression results where the industry specialist classification is defined by the number of audit clients. The variable of *Union* in column (3) is significantly positive ($p < 0.05$), suggesting that unionization positively affects the choice of industry expert. In column (4), the coefficient of *Minju* is significantly positive ($p < 0.01$), that of *Hanguk* is positive but not significant and that of *Nonaffiliated* is negatively significant ($p < 0.1$).

Table 3. Descriptive statistics.

Variable	Full sample (n = 4568)		non-Union (n = 2817)		Union (n = 1751)	
	Mean	Median	Mean	Median	Mean	Median
Panel A. Full sample: Union and non-Union sample						
<i>BIG</i>	0.555	1.000	0.494	0.000	0.653***	1.000***
<i>ISPE_Client</i>	0.268	0.000	0.233	0.000	0.326***	0.000***
<i>ISPE_Fee</i>	0.228	0.000	0.199	0.000	0.273***	0.000***
<i>ABFEE</i>	0.001	0.007	0.020	0.028	-0.030***	-0.021***
<i>ABHOUR</i>	0.001	0.040	0.016	0.059	-0.023***	-0.006***
<i>Size</i>	18.609	18.297	18.113	17.966	19.408***	19.116***
<i>Export</i>	0.071	0.000	0.061	0.000	0.087***	0.000***
<i>Invrec</i>	0.300	0.288	0.297	0.282	0.305	0.295**
<i>Lev</i>	0.412	0.413	0.389	0.382	0.449***	0.465***
<i>Loss</i>	0.271	0.000	0.315	0.000	0.199***	0.000***
<i>ROA</i>	-0.002	0.032	-0.020	0.030	0.026***	0.034***
<i>Ini</i>	0.277	0.000	0.269	0.000	0.290	0.000
<i>Consol</i>	0.459	0.000	0.370	0.000	0.603***	1.000***
Panel B. Union sample by union type						
Variable	<i>Minju</i> (n = 457)		<i>Hanguk</i> (n = 1150)		<i>Nonaffiliated</i> (n = 144)	
	Mean	Median	Mean	Median	Mean	Median
<i>BIG</i>	0.733	1.000	0.631***	1.000***	0.576***	1.000***
<i>ISPE_Client</i>	0.381	0.000	0.313***	0.000***	0.250***	0.000***
<i>ISPE_Fee</i>	0.326	0.000	0.259***	0.000***	0.215**	0.000**
<i>ABFEE</i>	0.012	0.025	-0.043***	-0.041***	-0.062**	-0.045**
<i>ABHOUR</i>	0.047	0.077	-0.044***	-0.020***	-0.074**	-0.081***
<i>Size</i>	19.681	19.359	19.338***	19.075***	19.104***	18.950***
<i>Export</i>	0.085	0.000	0.083	0.000	0.117	0.000
<i>Invrec</i>	0.320	0.320	0.304**	0.288***	0.271***	0.264***
<i>Lev</i>	0.484	0.487	0.435***	0.453***	0.459	0.467
<i>Loss</i>	0.155	0.000	0.210**	0.000**	0.257***	0.000***
<i>ROA</i>	0.026	0.031	0.028	0.035	0.009*	0.032
<i>Ini</i>	0.304	0.000	0.288	0.000	0.257	0.000
<i>Consol</i>	0.641	1.000	0.605	1.000	0.465***	0.000***

This table reports the descriptive statistics for the variables used in the regression tests. Panel A reports the mean and median values of the full sample, non-Union sample and Union sample.

*, ** and *** in the Union column indicate statistical significance of differences in the mean and median between the Union and non-Union samples at the 10%, 5% and 1% levels, respectively, using *t*-test (mean) and Wilcoxon *z*-test (median).

Panel B reports the mean and median values of *Minju*, *Hanguk* and *Nonaffiliated* unions.

*, **, *** in the *Hanguk* column indicate the statistical comparisons between the *Minju* and *Hanguk* samples.

*, **, *** in the *Nonaffiliated* column indicate the statistical comparisons between the *Minju* and *Nonaffiliated* samples. See Table 1 for the definitions of the variables.

We apply another definition of industry specialist, based on audit fees, in columns (5) and (6). The results are similar to those reported in columns (3) and (4) with an exception of *Union* being insignificant. Overall, we find strong evidence that firms affiliated with *Minju* are more likely to hire a Big 4 or an industry specialist auditor. Unexpectedly, firms with *Nonaffiliated* unions (*Nonaffiliated*), relative to non-*Union* firms, are less likely to engage a Big 4 or an industry specialist auditor. Regarding the control variables, the results indicate that the probability of hiring a high-quality auditor is generally high in firms that are large in size, less complex measured by export sales and less risky in terms of leverage.

Table 6 shows results of testing the effects of unions on abnormal audit fees and audit hours. In Panel A, we conduct separate tests according to the sign of the abnormal audit fees and hours. The impact of

unionization on abnormal audit fees is reported in columns (1)–(4). When actual audit fees are higher than normal audit fees (i.e. *ABFEE* > 0), *Union* decreases the abnormal audit fee ($p < 0.01$) in column (1), and this negative effect of *Union* is driven by both *Minju* ($p < 0.01$) and *Hanguk* ($p < 0.01$), as shown in column (2). *Nonaffiliated* firms have no significant impact on the abnormal audit fees. Collectively, these results suggest that both *Minju* and *Hanguk* effectively reduce the possibility of a loss of auditor independence, while nonaffiliated unions do not.

When the actual audit fees are lower than normal (i.e. *ABFEE* < 0), *Union* increases abnormal audit fees in column (3), and this positive effect of *Union* also comes from both *Minju* and *Hanguk*, as shown in column (4). This result suggests that both *Minju* and *Hanguk* effectively prevent insufficient audits, while *Nonaffiliated* does not. We also find that, in both positive and negative

Table 4. Pearson correlation.

	N = 4568															
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
<i>BIG</i> (1)	0.422	-0.006	-0.004	0.156	0.119	0.089	0.008	0.363	0.020	-0.053	0.024	-0.128	0.142	0.030	0.164	
	<.0001	0.681	0.811	<.0001	<.0001	<.0001	0.599	<.0001	0.174	0.000	0.109	<.0001	<.0001	0.043	<.0001	
<i>ISPE</i> (2)	1.000	0.047	0.085	0.102	0.085	0.059	-0.007	0.192	-0.023	-0.055	0.014	-0.043	0.040	-0.027	0.086	
		0.001	<.0001	<.0001	<.0001	<.0001	0.617	<.0001	0.125	0.000	0.343	0.004	0.007	0.068	<.0001	
<i>ABFEE</i> (3)		1.000	0.474	-0.069	0.010	-0.071	-0.032	-0.012	-0.012	0.006	0.034	-0.001	-0.029	-0.082	0.003	
			<.0001	<.0001	0.499	<.0001	0.031	0.417	0.419	0.696	0.021	0.924	0.049	<.0001	0.817	
<i>ABHOUR</i> (4)			1.000	-0.040	0.032	-0.055	-0.028	-0.010	-0.007	0.000	0.018	-0.002	-0.030	-0.047	0.002	
				0.007	0.031	0.000	0.054	0.482	0.650	0.986	0.231	0.909	0.039	0.002	0.877	
<i>Union</i> (5)				1.000	0.423	0.736	0.229	0.448	0.063	0.024	0.146	-0.126	0.135	0.022	0.228	
					<.0001	<.0001	<.0001	<.0001	<.0001	0.109	<.0001	<.0001	<.0001	0.140	<.0001	
<i>Minju</i> (6)					1.000	-0.193	-0.060	0.254	0.024	0.040	0.119	-0.086	0.057	0.020	0.122	
						<.0001	<.0001	<.0001	0.104	0.007	<.0001	<.0001	0.000	0.174	<.0001	
<i>Hanguk</i> (7)						1.000	-0.105	0.300	0.037	0.012	0.064	-0.080	0.106	0.014	0.170	
							<.0001	<.0001	0.012	0.437	<.0001	<.0001	<.0001	0.350	<.0001	
<i>Nonaffiliated</i> (8)							1.000	0.063	0.042	-0.032	0.042	-0.006	0.012	-0.008	0.002	
								<.0001	0.005	0.032	0.005	0.708	0.400	0.582	0.883	
<i>Size</i> (9)								1.000	0.176	-0.144	0.203	-0.254	0.266	0.006	0.482	
									<.0001	<.0001	<.0001	<.0001	<.0001	0.688	<.0001	
<i>Export</i> (10)									1.000	-0.009	0.028	-0.012	0.039	-0.013	0.152	
										0.537	0.055	0.418	0.009	0.391	<.0001	
<i>Invrec</i> (11)										1.000	0.240	-0.086	0.039	0.013	-0.186	
											<.0001	<.0001	0.008	0.389	<.0001	
<i>Lev</i> (12)											1.000	0.187	-0.262	0.034	0.110	
												<.0001	<.0001	0.022	<.0001	
<i>Loss</i> (13)												1.000	-0.638	0.015	-0.048	
													<.0001	0.317	0.001	
<i>ROA</i> (14)													1.000	-0.024	0.066	
														0.104	<.0001	
<i>Ini</i> (15)														1.000	0.017	
															0.245	
<i>Consol</i> (16)																1.000

This table reports the Pearson correlations among the variables used in regression tests. See Table 1 for the definition of all variables. *ISPE* is reported based on *ISPE_Client*, where industry specialists are defined as the audit firm that has the largest number of clients in the industry.

cases, the coefficient of *Minju* is significantly larger than that of *Hanguk*, which suggests that the *Minju*, the stronger union, reduces abnormal audit fees more than does *Hanguk*.

We also report the impact of unionization on abnormal audit hours in columns (5)–(8) in Panel A. When actual audit hours are higher than normal or necessary (i.e. *AHOUR* > 0), *Union* can effectively reduce the abnormal hours ($p < 0.01$), as seen in column (5). This reduction happens in all union groups, as shown in column (6). When *AHOUR* < 0, *Union* increases the abnormal audit hour, as indicated by the positive coefficient of *Union* ($p < 0.01$) in column (7). This effect is driven by both *Minju* ($p < 0.01$) and *Hanguk* ($p < 0.05$) but not from *Nonaffiliated*, as shown in column (8). To the extent that abnormally lower audit hours likely lead to lower audit quality, *Minju* and *Hanguk* effectively deter the audit quality impairment. Overall, we find that both *Minju* and *Hanguk* effectively monitor audit quality, if we accept the argument of Asthana and Boone (2012) that, when audit fees (audit hours) depart from the normal levels, audit quality declines. By contrast, *Nonaffiliated* unions generally lack the power to monitor audit quality.

In Panel B, as a sensitivity test, we also examine whether unionized firms reduce the absolute values of abnormal audit fees and audit hours. Asthana and Boone (2012) contend that above-normal audit fees represent quasi-rents and below-normal audit fees represent strong client bargaining power, both of which cause auditors to succumb to client requests for earnings management, implying that large absolute values of audit fees (audit hours) represent lower audit quality. Our results in Panel B reveal that unionization reduces the absolute abnormal audit fees and hours, thereby improving audit quality. This effect is found in both *Minju* and *Hanguk*.

Tests using propensity-score matching (PSM) model

The analyses in previous sections reveal the effect of unionization and differentiated impacts of each union federation on audit quality measures. However, the differences in firm characteristics across union and non-*Union* groups may drive the documented results. To illustrate, as shown in Table 3, workers are more likely to unionize in larger and more profitable firms. These larger and more profitable firms in turn tend to

Table 5. The impact of union on auditor choice.
$$BIG_{it} (ISPE_{it}) = \alpha + \beta_1 Union_{it} + \beta_2 Size_{it} + \beta_3 Export_{it} + \beta_4 Invrec_{it} + \beta_5 Lev_{it} + \beta_6 Loss_{it} + \beta_7 ROA_{it} + \beta_8 Consol_{it} + Industry/Year\ dummy + \varepsilon_{it}$$

$$ISPE_{it} (ISPE_{it}) = \alpha + \beta_1 Minju_{it} + \beta_2 Hanguk_{it} + \beta_3 Nonaffiliated_{it} + \beta_4 Size_{it} + \beta_5 Export_{it} + \beta_6 Invrec_{it} + \beta_7 Lev_{it} + \beta_8 Loss_{it} + \beta_9 ROA_{it} + \beta_{10} Consol_{it} + Industry/Year\ dummy + \varepsilon_{it}$$

Variable	Industry specialist					
	BIG		ISPE_Client		ISPE_Fee	
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-13.831*** (-14.29)	-13.833*** (-14.23)	-23.241 (-0.02)	-23.184 (-0.02)	-23.900 (-0.02)	-23.854 (-0.02)
Union	0.060 (0.71)		0.184** (2.03)		0.139 (1.48)	
Minju		0.341** (2.52)		0.440*** (3.39)		0.384*** (2.84)
Hanguk		0.035 (0.36)		0.154 (1.51)		0.112 (1.06)
Nonaffiliated		-0.518** (-2.41)		-0.432* (-1.76)		-0.443* (-1.74)
Size	0.786*** (17.87)	0.787*** (17.79)	0.347*** (9.46)	0.345*** (9.37)	0.366*** (9.75)	0.365*** (9.68)
Export	-0.496*** (-2.74)	-0.473*** (-2.59)	-0.515*** (-2.61)	-0.502** (-2.53)	-0.603*** (-2.95)	-0.593*** (-2.89)
Invrec	0.534** (2.18)	0.500** (2.04)	0.028 (0.10)	-0.004 (-0.01)	-0.001 (-0.00)	-0.025 (-0.09)
Lev	-0.560*** (-2.79)	-0.532*** (-2.64)	-0.379* (-1.72)	-0.364* (-1.65)	-0.448** (-1.96)	-0.435* (-1.90)
Loss	0.051 (0.51)	0.057 (0.57)	0.046 (0.41)	0.051 (0.46)	0.117 (1.02)	0.123 (1.06)
ROA	0.385 (1.33)	0.399 (1.38)	-0.126 (-0.40)	-0.103 (-0.32)	-0.078 (-0.23)	-0.055 (-0.16)
Consol	-0.123 (-1.57)	-0.140* (-1.79)	-0.016 (-0.18)	-0.039 (-0.45)	0.028 (0.31)	0.007 (0.07)
Industry, Year dummy	Included	Included	Included			
N	4568	4568	4568	4568	4568	4568
Pseudo R ²	0.158	0.160	0.110	0.112	0.0801	0.0823

This table reports the results of estimating the auditor choice as a function of unions and other determinants. Column (1) reports the impact of unionization on the choice of Big 4 auditors, and Columns (3) and (5) report the impact of unionization on the choice of industry specialist auditors. Columns (2), (4) and (6) report the different impacts of each Federation of Trade Union (*Minju*, *Hanguk* and *Nonaffiliated*) on auditor choices of Big 4 or industry specialist auditors. See Table 1 for the definition of all variables.

*, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively (two-tailed). The numbers in parentheses are the Z-statistics.

hire high-quality auditors. Therefore, other factors (i.e. size, profitability) may affect both choice variables of unionization and high-quality auditors. To address this endogeneity issue, we retest our hypotheses by employing a PSM model.

First, we calculate the unionization propensity score (predicted values) from a logistic regression that estimates the probability of being a unionized firm using determinants such as firm size (the natural log of total assets and number of employees), profitability (*ROA*), solvency and liquidity measures (leverage, cash flow from operation, current ratio) and growth opportunity (market to book ratio). Then we match each *Union* sample ($N = 1751$) to a non-*Union* sample based on the closest propensity score using caliper distance of 3%, without replacement (Lawrence, Minutti-Meza, and Zhang 2011; Minutti-Meza 2013). To check the appropriateness of the matching process, we compare the basic statistics of *Union* and non-*Union* matched sample

using Paired *t*-test. The results indicate that there is no significant difference between two groups in all control variables used in main model as well as in the variables used in propensity score estimation.

Table 7 Panel A displays the impact of unionization on auditor choice. We generally find results similar to those documented in previous sections. More specifically, firms with *Minju* increase the likelihood of choosing Big 4 or industry specialists, while those with *Nonaffiliated* decrease the likelihood or have no effect. Table 7 Panel B reports the effects of unions on positive and negative abnormal audit fees and audit hours. The results are qualitatively the same as the main results. Most importantly, we continue to find that unions affiliated with *Minju*, the strongest unions, effectively reduce (increase) the positive (negative) abnormal portion of audit fees/hours, even in PSM regressions. These results reinforce the findings of the previous sections.

Table 6. Impact of unionization on abnormal audit fees and abnormal audit hours.

$$ABFEE_{it} (ABHOUR_{it}) = \alpha + \beta_1 Union_{it} + \beta_2 Size_{it} + \beta_3 Export_{it} + \beta_4 Invrec_{it} + \beta_5 Lev_{it} + \beta_6 Loss_{it} + \beta_7 ROA_{it} + \beta_8 Ini_{it} + \beta_9 Consol_{it} + \beta_{10} BIG_{it} + Industry \& Year \text{ dummy} + \varepsilon_{it}$$

$$ABFEE_{it} (ABHOUR_{it}) = \alpha + \beta_1 Minju_{it} + \beta_2 Hanguk_{it} + \beta_3 Nonaffiliate_{it} + \beta_4 Size_{it} + \beta_5 Export_{it} + \beta_6 Invrec_{it} + \beta_7 Lev_{it} + \beta_8 Loss_{it} + \beta_9 ROA_{it} + \beta_{10} Ini_{it} + \beta_{11} Consol_{it} + \beta_{12} BIG_{it} + \beta_{13} ISPE_{it} + Industry \& Year \text{ dummy} + \varepsilon_{it}$$

Variable	Abnormal audit fee(ABFEE)				Abnormal audit hour(ABHOUR)			
	ABFEE > 0		ABFEE < 0		ABHOUR > 0		ABHOUR < 0	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Analyses using signed abnormal audit fees and audit hours								
Intercept	-0.307*** (-2.97)	-0.315*** (-3.05)	0.477*** (3.55)	0.477*** (3.55)	-0.296** (-2.40)	-0.301** (-2.43)	0.101 (0.42)	0.095 (0.39)
Union	-0.047*** (-4.25)		0.025** (2.13)		-0.041*** (-3.03)		0.065*** (3.12)	
Minju		-0.068*** (-4.14)		0.042** (2.33)		-0.049** (-2.44)		0.103*** (3.22)
Hanguk		-0.041*** (-3.31)		0.022* (1.65)		-0.033** (-2.16)		0.053** (2.27)
Nonaffiliated		-0.027 (-0.95)		0.006 (0.21)		-0.077** (-2.09)		0.047 (1.02)
Size	0.031*** (7.24)	0.031*** (7.32)	-0.038*** (-6.37)	-0.038*** (-6.34)	0.025*** (4.70)	0.025*** (4.72)	-0.021** (-2.07)	-0.020** (-2.00)
Export	0.047** (2.00)	0.046* (1.96)	-0.038 (-1.59)	-0.038 (-1.59)	0.034 (1.17)	0.036 (1.23)	0.025 (0.59)	0.026 (0.61)
Invrec	-0.059* (-1.83)	-0.058* (-1.78)	0.056 (1.61)	0.054 (1.55)	-0.070* (-1.77)	-0.070* (-1.78)	0.187*** (3.03)	0.183*** (2.97)
Lev	0.039 (-1.55)	-0.042* (-1.67)	0.036 (1.24)	0.035 (1.20)	0.028 (0.89)	0.030 (0.94)	-0.055 (-1.11)	-0.056 (-1.12)
Loss	-0.029** (-2.28)	-0.029** (-2.27)	0.007 (0.50)	0.008 (0.55)	-0.011 (-0.70)	-0.011 (-0.70)	0.012 (0.48)	0.013 (0.52)
ROA	-0.104*** (-3.21)	-0.106*** (-3.26)	0.085** (1.97)	0.086** (1.99)	-0.073* (-1.82)	-0.072* (-1.80)	0.069 (0.90)	0.070 (0.91)
Ini	-0.006 (-0.59)	-0.006 (-0.58)	-0.024** (-2.30)	-0.024** (-2.32)	-0.014 (-1.20)	-0.014 (-1.21)	-0.016 (-0.85)	-0.016 (-0.85)
Consol	-0.009 (-0.85)	-0.008 (-0.81)	0.005 (0.49)	0.004 (0.38)	-0.015 (-1.15)	-0.015 (-1.19)	0.020 (1.03)	0.018 (0.92)
BIG	-0.031*** (-2.77)	-0.030*** (-2.68)	0.043*** (3.65)	0.042*** (3.58)	0.013 (0.97)	0.013 (0.94)	0.021 (1.02)	0.019 (0.95)
Industry, Year dummy	Included		Included		Included		Included	
N	2312	2312	2256	2256	2447	2447	2121	2121
Adjusted R ²	0.055	0.068	0.068	0.079	0.079	0.068	0.068	0.037
Panel B: Analyses using absolute values of abnormal audit fees and audit hours								
Variable	Abnormal audit fee		Abnormal audit hour					
	(1)	(2)	(3)	(4)				
Intercept	-0.398*** (-4.92)	-0.404*** (-4.99)	-0.254** (-2.08)	-0.260** (-2.13)				
Union	-0.035*** (-4.38)		-0.048*** (-4.00)					
Minju		-0.053*** (-4.38)		-0.074*** (-4.04)				
Hanguk		-0.032*** (-3.59)		-0.038*** (-2.81)				
Nonaffiliated		-0.007 (-0.37)		-0.049* (-1.66)				
Size	0.035*** (10.13)	0.035*** (10.19)	0.025*** (4.87)	0.025*** (4.90)				
Export	0.042** (2.52)	0.041** (2.46)	0.005 (0.19)	0.006 (0.22)				
Invrec	-0.044* (-1.87)	-0.042* (-1.78)	-0.116*** (-3.27)	-0.114*** (-3.20)				
Lev	-0.045** (-2.39)	-0.047** (-2.46)	0.032 (1.12)	0.032 (1.12)				
Loss	-0.020** (-2.06)	-0.020** (-2.09)	-0.006 (-0.45)	-0.007 (-0.47)				
ROA	-0.100*** (-3.83)	-0.101*** (-3.89)	-0.068* (-1.74)	-0.069* (-1.76)				
Ini	0.011 (1.51)	0.011 (1.53)	0.003 (0.28)	0.003 (0.28)				
Consol	-0.004 (-0.58)	-0.003 (-0.45)	-0.016 (-1.41)	-0.016 (-1.38)				
BIG	-0.031*** (-4.52)	-0.031*** (-4.40)	0.012 (1.16)	0.013 (1.21)				

(Continued)

Table 6. (Continued).

Industry, Year dummy	Included		Included	
N	4568	4568	4568	4568
Adjusted R ²	0.059	0.059	0.036	0.037

Panel A reports the results of estimating abnormal audit fees and audit hours as a function of unions and other determinants. Columns (1) and (3) report the impact of unionization on abnormal audit fees when the abnormal audit fee is positive and negative, respectively. Columns (5) and (7) report the unionization impact on abnormal audit hours when the abnormal audit hour is positive and negative, respectively. Columns (2) and (4) report the differential impacts of each Federation of Trade Union (*Minju/Hanguk*) on abnormal audit fees when the abnormal audit fee is positive and negative, respectively. Columns (6) and (8) report the impact of union types on abnormal audit hours when the abnormal audit fee is positive and negative, respectively. See Table 1 for the definitions of all variables.

*, ** and *** indicate significance at the 10%, 5%, and 1% levels, respectively (two-tailed). The numbers in parentheses are the *t*-statistics.

In Panel B, we use absolute values of abnormal audit fees and hours as dependent variables for the tests. See Table 1 for the definitions of all variables.

*, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively (two-tailed). The numbers in parentheses are the *t*-statistics.

Tests including corporate governance

As another sensitivity test, we also explore whether corporate governance moderates the association between unions and audit quality. We use firm-level corporate governance scores (CGS) as a proxy for corporate governance. CGS is announced on an annual basis by Korea Corporate Governance Service (KCGS), a non-profit organization. We conduct tests with 2030 samples where CGS are available. In our main regressions, we add *highcgs* variable which indicates 1 if CGS is above median value, and 0 otherwise.

The untabulated analyses indicate that interaction terms of main independent variables (*Union*, *Minju*, *Hanguk* and *Nonaffiliated*) and *highcgs* are in general insignificant, which suggests that corporate governance does not have additional impact on the relation between union and high-quality auditors. We also find only weak evidence that the high level of governance positively affects the association between *Minju* and abnormal audit fee, but not in the case of abnormal audit hours. One limitation using CGS as a proxy for governance is that CGS is only available in firms that have above-average governance score, which causes our study to suffer from a selection bias.

We further test using other proxies suggested by prior studies including institutional investors, management ownership and ratio of independent board of directors. However, we fail to find any conclusive results for these tests. Collectively, we do not find any strong moderate effect of corporate governance in the relation between unions and auditor choice/audit quality.

Tests to address econometric issues

The same firm appears multiple times in our research window since the unit of analysis in our tests is a firm-

year rather than a unique firm, which implies that there may exist issues of heteroscedasticity and autocorrelation. To address these issues, we rerun all tests using Newey–West standard errors (Newey and West 1987). Untabulated results reveal that our inferences remain unchanged.

V. Conclusion

This article investigates the association between unions and external audits, particularly the choice of Big 4 or industry specialist auditors. We also test the association between unions and abnormal audit fees and audit hours. To gain ascendancy in wage negotiations with management, unions try to obtain quality information, while management is reluctant to share inside information. We posit that strong unions will more successfully push management to select high-quality auditors and to demand high-quality audit services.

Using Korean unique data, we find that unions affiliated with *Minju* (the strongest unions) positively affect the choice of Big 4/industry specialist auditor, while unions without any affiliation (the weakest) negatively affect this choice. Unions associated with *Hanguk* (modest unions) have no impact on the choice of Big 4 auditor/industry specialist.

Moreover, *Minju* reduces (increases) positive (negative) abnormal audit fees and hours. These results hold even after we control for firm characteristics using a PSM. *Hanguk* also generally reduces abnormal audit fees and hours, although the influence is not as strong as *Minju*. The overall results suggest that the strongest unions increase audit quality, while the most management-friendly unions, the nonaffiliated ones, do not. *Hanguk* in some sense increases audit quality, but less than *Minju*.

Table 7. Test results using propensity score matching.

Variable	BIG		ISPE_Client		ISPE_Fee																																																																																																																																																																																													
	(1)	(2)	(3)	(4)	(5)	(6)																																																																																																																																																																																												
Panel A. Auditor choice of Big 4 or industry specialist auditors																																																																																																																																																																																																		
Intercept	-16.593*** (-11.44)	-16.771*** (-11.43)	-24.360 (-0.03)	-24.264 (-0.03)	-24.119 (-0.03)	-24.070 (-0.03)																																																																																																																																																																																												
Union	0.054 (0.51)		0.196 (1.63)		0.263** (2.09)																																																																																																																																																																																													
Minju		0.451*** (2.68)		0.419** (2.47)		0.458** (2.57)																																																																																																																																																																																												
Hanguk		0.044 (0.36)		0.187 (1.34)		0.241* (1.65)																																																																																																																																																																																												
Nonaffiliated		-0.956*** (-3.51)		-0.614* (-1.77)		-0.305 (-0.88)																																																																																																																																																																																												
Size	0.936*** (13.08)	0.947*** (13.04)	0.446*** (7.55)	0.442*** (7.46)	0.444*** (7.29)	0.442*** (7.24)																																																																																																																																																																																												
Export	-0.451* (-1.79)	-0.357 (-1.39)	-0.066 (-0.24)	-0.022 (-0.08)	-0.109 (-0.38)	-0.078 (-0.27)																																																																																																																																																																																												
Invrec	0.331 (0.90)	0.254 (0.68)	0.755* (1.80)	0.670 (1.59)	0.429 (0.96)	0.367 (0.82)																																																																																																																																																																																												
Lev	-0.404 (-1.34)	-0.333 (-1.10)	-0.694** (-2.05)	-0.661* (-1.94)	-0.766** (-2.15)	-0.739** (-2.07)																																																																																																																																																																																												
Loss	-0.012 (-0.08)	-0.003 (-0.02)	0.050 (0.28)	0.058 (0.33)	0.195 (1.03)	0.204 (1.08)																																																																																																																																																																																												
ROA	-0.400 (-0.68)	-0.386 (-0.66)	-0.661 (-0.97)	-0.653 (-0.95)	-0.099 (-0.13)	-0.087 (-0.11)																																																																																																																																																																																												
Consol	-0.038 (-0.34)	-0.080 (-0.71)	-0.040 (-0.32)	-0.071 (-0.56)	0.021 (0.16)	-0.003 (-0.02)																																																																																																																																																																																												
Industry, Year dummy	Included		Included		Included																																																																																																																																																																																													
N	2152	2152	2152	2152	2152	2152																																																																																																																																																																																												
Pseudo R ²	0.155	0.163	0.123	0.126	0.0961	0.0983																																																																																																																																																																																												
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="3">Variable</th> <th colspan="4">Abnormal audit fee(ABFEE)</th> <th colspan="4">Abnormal audit hour(ABHOUR)</th> </tr> <tr> <th colspan="2">ABFEE > 0</th> <th colspan="2">ABFEE < 0</th> <th colspan="2">ABHOUR > 0</th> <th colspan="2">ABHOUR < 0</th> </tr> <tr> <th>(1)</th> <th>(2)</th> <th>(3)</th> <th>(4)</th> <th>(5)</th> <th>(6)</th> <th>(7)</th> <th>(8)</th> </tr> </thead> <tbody> <tr> <td colspan="9">Panel B. Signed abnormal audit fees and audit hours</td> </tr> <tr> <td>Intercept</td> <td>-0.369*** (-2.68)</td> <td>-0.370*** (-2.69)</td> <td>0.353* (1.93)</td> <td>0.367** (2.01)</td> <td>-0.393** (-2.20)</td> <td>-0.378** (-2.12)</td> <td>-0.101 (-0.31)</td> <td>-0.104 (-0.32)</td> </tr> <tr> <td>Union</td> <td>-0.066*** (-4.85)</td> <td></td> <td>0.030** (2.04)</td> <td></td> <td>-0.055*** (-3.14)</td> <td></td> <td>0.087*** (3.37)</td> <td></td> </tr> <tr> <td>Minju</td> <td></td> <td>-0.083*** (-4.13)</td> <td></td> <td>0.038* (1.72)</td> <td></td> <td>-0.047* (-1.82)</td> <td></td> <td>0.095** (2.46)</td> </tr> <tr> <td>Hanguk</td> <td></td> <td>-0.060*** (-3.84)</td> <td></td> <td>0.036** (2.13)</td> <td></td> <td>-0.049** (-2.45)</td> <td></td> <td>0.084*** (2.85)</td> </tr> <tr> <td>Nonaffiliated</td> <td></td> <td>-0.051 (-1.44)</td> <td></td> <td>-0.019 (-0.59)</td> <td></td> <td>-0.123** (-2.49)</td> <td></td> <td>0.080 (1.47)</td> </tr> <tr> <td>Size</td> <td>0.035*** (5.43)</td> <td>0.035*** (5.44)</td> <td>-0.032*** (-3.62)</td> <td>-0.033*** (-3.68)</td> <td>0.028*** (3.26)</td> <td>0.027*** (3.17)</td> <td>-0.009 (-0.59)</td> <td>-0.008 (-0.56)</td> </tr> <tr> <td>Export</td> <td>0.061** (2.11)</td> <td>0.059** (2.01)</td> <td>-0.109*** (-3.11)</td> <td>-0.104*** (-2.95)</td> <td>0.028 (0.69)</td> <td>0.034 (0.83)</td> <td>0.053 (0.88)</td> <td>0.053 (0.88)</td> </tr> <tr> <td>Invrec</td> <td>-0.094** (-1.98)</td> <td>-0.094** (-1.99)</td> <td>0.065 (1.27)</td> <td>0.061 (1.19)</td> <td>-0.051 (-0.84)</td> <td>-0.059 (-0.97)</td> <td>0.203** (2.29)</td> <td>0.201** (2.25)</td> </tr> <tr> <td>Lev</td> <td>-0.063* (-1.68)</td> <td>-0.067* (-1.79)</td> <td>0.068 (1.60)</td> <td>0.069 (1.63)</td> <td>0.056 (1.16)</td> <td>0.062 (1.29)</td> <td>-0.084 (-1.14)</td> <td>-0.084 (-1.15)</td> </tr> <tr> <td>Loss</td> <td>-0.037* (-1.89)</td> <td>-0.037* (-1.90)</td> <td>-0.016 (-0.79)</td> <td>-0.016 (-0.75)</td> <td>0.003 (0.13)</td> <td>0.003 (0.11)</td> <td>-0.031 (-0.84)</td> <td>-0.031 (-0.83)</td> </tr> <tr> <td>ROA</td> <td>-0.207*** (-2.69)</td> <td>-0.210*** (-2.74)</td> <td>0.054 (0.70)</td> <td>0.056 (0.71)</td> <td>-0.051 (-0.54)</td> <td>-0.049 (-0.53)</td> <td>-0.126 (-0.83)</td> <td>-0.126 (-0.83)</td> </tr> <tr> <td>Ini</td> <td>-0.024* (-1.70)</td> <td>-0.024* (-1.69)</td> <td>-0.039*** (-2.63)</td> <td>-0.040*** (-2.69)</td> <td>-0.020 (-1.12)</td> <td>-0.021 (-1.17)</td> <td>-0.004 (-0.15)</td> <td>-0.004 (-0.16)</td> </tr> <tr> <td>Consol</td> <td>0.004 (0.32)</td> <td>0.005 (0.34)</td> <td>0.007 (0.49)</td> <td>0.006 (0.40)</td> <td>0.007 (0.39)</td> <td>0.006 (0.31)</td> <td>0.013 (0.51)</td> <td>0.013 (0.48)</td> </tr> <tr> <td>BIG</td> <td>-0.006 (-0.41)</td> <td>-0.005 (-0.36)</td> <td>0.036** (2.45)</td> <td>0.033** (2.25)</td> <td>0.000 (0.02)</td> <td>-0.001 (-0.04)</td> <td>0.008 (0.30)</td> <td>0.007 (0.27)</td> </tr> <tr> <td>Industry, Year dummy</td> <td colspan="2">Included</td> <td colspan="2">Included</td> <td colspan="2">Included</td> <td colspan="2">Included</td> </tr> <tr> <td>N</td> <td>1038</td> <td>1038</td> <td>1114</td> <td>1114</td> <td>1101</td> <td>1101</td> <td>1051</td> <td>1051</td> </tr> <tr> <td>Adjusted R²</td> <td>0.157</td> <td>0.156</td> <td>0.086</td> <td>0.087</td> <td>0.064</td> <td>0.115</td> <td>0.051</td> <td>0.051</td> </tr> </tbody> </table>								Variable	Abnormal audit fee(ABFEE)				Abnormal audit hour(ABHOUR)				ABFEE > 0		ABFEE < 0		ABHOUR > 0		ABHOUR < 0		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Panel B. Signed abnormal audit fees and audit hours									Intercept	-0.369*** (-2.68)	-0.370*** (-2.69)	0.353* (1.93)	0.367** (2.01)	-0.393** (-2.20)	-0.378** (-2.12)	-0.101 (-0.31)	-0.104 (-0.32)	Union	-0.066*** (-4.85)		0.030** (2.04)		-0.055*** (-3.14)		0.087*** (3.37)		Minju		-0.083*** (-4.13)		0.038* (1.72)		-0.047* (-1.82)		0.095** (2.46)	Hanguk		-0.060*** (-3.84)		0.036** (2.13)		-0.049** (-2.45)		0.084*** (2.85)	Nonaffiliated		-0.051 (-1.44)		-0.019 (-0.59)		-0.123** (-2.49)		0.080 (1.47)	Size	0.035*** (5.43)	0.035*** (5.44)	-0.032*** (-3.62)	-0.033*** (-3.68)	0.028*** (3.26)	0.027*** (3.17)	-0.009 (-0.59)	-0.008 (-0.56)	Export	0.061** (2.11)	0.059** (2.01)	-0.109*** (-3.11)	-0.104*** (-2.95)	0.028 (0.69)	0.034 (0.83)	0.053 (0.88)	0.053 (0.88)	Invrec	-0.094** (-1.98)	-0.094** (-1.99)	0.065 (1.27)	0.061 (1.19)	-0.051 (-0.84)	-0.059 (-0.97)	0.203** (2.29)	0.201** (2.25)	Lev	-0.063* (-1.68)	-0.067* (-1.79)	0.068 (1.60)	0.069 (1.63)	0.056 (1.16)	0.062 (1.29)	-0.084 (-1.14)	-0.084 (-1.15)	Loss	-0.037* (-1.89)	-0.037* (-1.90)	-0.016 (-0.79)	-0.016 (-0.75)	0.003 (0.13)	0.003 (0.11)	-0.031 (-0.84)	-0.031 (-0.83)	ROA	-0.207*** (-2.69)	-0.210*** (-2.74)	0.054 (0.70)	0.056 (0.71)	-0.051 (-0.54)	-0.049 (-0.53)	-0.126 (-0.83)	-0.126 (-0.83)	Ini	-0.024* (-1.70)	-0.024* (-1.69)	-0.039*** (-2.63)	-0.040*** (-2.69)	-0.020 (-1.12)	-0.021 (-1.17)	-0.004 (-0.15)	-0.004 (-0.16)	Consol	0.004 (0.32)	0.005 (0.34)	0.007 (0.49)	0.006 (0.40)	0.007 (0.39)	0.006 (0.31)	0.013 (0.51)	0.013 (0.48)	BIG	-0.006 (-0.41)	-0.005 (-0.36)	0.036** (2.45)	0.033** (2.25)	0.000 (0.02)	-0.001 (-0.04)	0.008 (0.30)	0.007 (0.27)	Industry, Year dummy	Included		Included		Included		Included		N	1038	1038	1114	1114	1101	1101	1051	1051	Adjusted R ²	0.157	0.156	0.086	0.087	0.064	0.115	0.051	0.051
Variable	Abnormal audit fee(ABFEE)				Abnormal audit hour(ABHOUR)																																																																																																																																																																																													
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Intercept	-0.369*** (-2.68)	-0.370*** (-2.69)	0.353* (1.93)	0.367** (2.01)	-0.393** (-2.20)	-0.378** (-2.12)	-0.101 (-0.31)	-0.104 (-0.32)																																																																																																																																																																																										
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Nonaffiliated		-0.051 (-1.44)		-0.019 (-0.59)		-0.123** (-2.49)		0.080 (1.47)																																																																																																																																																																																										
Size	0.035*** (5.43)	0.035*** (5.44)	-0.032*** (-3.62)	-0.033*** (-3.68)	0.028*** (3.26)	0.027*** (3.17)	-0.009 (-0.59)	-0.008 (-0.56)																																																																																																																																																																																										
Export	0.061** (2.11)	0.059** (2.01)	-0.109*** (-3.11)	-0.104*** (-2.95)	0.028 (0.69)	0.034 (0.83)	0.053 (0.88)	0.053 (0.88)																																																																																																																																																																																										
Invrec	-0.094** (-1.98)	-0.094** (-1.99)	0.065 (1.27)	0.061 (1.19)	-0.051 (-0.84)	-0.059 (-0.97)	0.203** (2.29)	0.201** (2.25)																																																																																																																																																																																										
Lev	-0.063* (-1.68)	-0.067* (-1.79)	0.068 (1.60)	0.069 (1.63)	0.056 (1.16)	0.062 (1.29)	-0.084 (-1.14)	-0.084 (-1.15)																																																																																																																																																																																										
Loss	-0.037* (-1.89)	-0.037* (-1.90)	-0.016 (-0.79)	-0.016 (-0.75)	0.003 (0.13)	0.003 (0.11)	-0.031 (-0.84)	-0.031 (-0.83)																																																																																																																																																																																										
ROA	-0.207*** (-2.69)	-0.210*** (-2.74)	0.054 (0.70)	0.056 (0.71)	-0.051 (-0.54)	-0.049 (-0.53)	-0.126 (-0.83)	-0.126 (-0.83)																																																																																																																																																																																										
Ini	-0.024* (-1.70)	-0.024* (-1.69)	-0.039*** (-2.63)	-0.040*** (-2.69)	-0.020 (-1.12)	-0.021 (-1.17)	-0.004 (-0.15)	-0.004 (-0.16)																																																																																																																																																																																										
Consol	0.004 (0.32)	0.005 (0.34)	0.007 (0.49)	0.006 (0.40)	0.007 (0.39)	0.006 (0.31)	0.013 (0.51)	0.013 (0.48)																																																																																																																																																																																										
BIG	-0.006 (-0.41)	-0.005 (-0.36)	0.036** (2.45)	0.033** (2.25)	0.000 (0.02)	-0.001 (-0.04)	0.008 (0.30)	0.007 (0.27)																																																																																																																																																																																										
Industry, Year dummy	Included		Included		Included		Included																																																																																																																																																																																											
N	1038	1038	1114	1114	1101	1101	1051	1051																																																																																																																																																																																										
Adjusted R ²	0.157	0.156	0.086	0.087	0.064	0.115	0.051	0.051																																																																																																																																																																																										

Panel A reports the impact of unions on auditor choice using the matched sample by the propensity score. See Table 1 for the definitions of all variables. *, ** and *** indicate significance at the 10%, 5% and 1% levels, respectively (two-tailed). The numbers in parentheses are the Z -statistics.

Panel B reports the propensity score matching results of unions' effect on abnormal audit fees and hours. See Table 1 for the definitions of all variables. *, ** and *** indicate significance at the 10%, 5%, and 1% level, respectively (two-tailed). The numbers in parentheses are the t -statistics.

This study extends the literature by examining how the union, an important information user group, affects external audit quality and, ultimately, financial reporting quality. These results that strong unions play a monitoring role help investors evaluate the quality of a firm's financial reporting. Our results suggest that a firm's financial information is more likely to be of high quality if the firm has strong unions. In addition, our results that unions add values to firms by enhancing monitoring may change regulators' prior belief about unions, which in turn influences their policy towards unions.

As common in archival studies, this study also has some limitations, which also offer future research opportunities. First, we acknowledge that other factors, such as the number of strikes and their duration or unions' demanded wage levels, could serve as better proxies than the membership of specific federation used in this study for union strength. However, data unavailability prevented us from performing such tests. Second, unknown firm characteristics may affect both unionization and audit quality. Despite our efforts to minimize this possibility, we are unable to rule out all possibilities. Given that we are unable to provide direct evidence that unions *actually* participate in audit-related decisions, results documented in our study are of limited value. Finally, this study examines unions' impact on auditor choice, audit fee and audit hours, all of which are audit inputs (DeFond, Erkens, and Zhang 2014). Future studies could investigate the impact of unions on audit quality using *output measures* of audits (e.g. quality of financial reporting or restatement).

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