

The Association between Social Ties Within Boards and Human Resource Investment in Internal Control^{*}

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ABSTRACT

According to prior literature and media articles, outside directors that have social ties with inside directors do not monitor managers appropriately. This study examines the association between social ties within boards and human resource investment in internal control (IC) over financial reporting. Using Korean firm data, we found that social ties within boards are negatively associated with the IC of firms' accounting and public disclosure departments, which could negatively affect the reliability of their financial reporting and disclosures. These findings have valuable implications for interested parties such as investors and regulators

Keywords: board of directors, social ties, human resource investment, internal control, financial reporting

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INTRODUCTION

This study examines the effect of the association between within-board social ties and human resource investment in IC on financial reporting in Korean firms.¹⁾ While a board of directors is expected to implement checks and balances on management, social ties based on the regional and schools between board members have been criticized as the primary reason for board ineffectiveness in Korea. This can be attributed to the fact that, in Korea, within board social ties are mainly driven by the dominant culture of nepotism.²⁾ In particular, Korean nepotism is characterized by regional and school social ties. Korean nepotism is strongly influenced by a distorted form of Confucian culture, which has been the dominant culture in Korea for centuries. While Confucianism emphasizes loyalty, filial piety, and propriety, it is entrenched with the selfish motives of one group that sought to protect its own interests and monopolize high-ranking positions (Jeon 2004; Kim 2001; Kim et al. 2006).

Regardless of the intended objectives, Confucian culture has had a significantly negative impact on Korean society in that it comprises elements that run counter to democratic social relations, gender equality, tolerance, and public interest. Furthermore, Confucian culture has instilled authoritarianism, familyism, and nepotism in Korean society and is thus a serious obstacle to the democratization and social development of Korean society. In Korean society, socially tied private groups have created various inefficiencies and inequities, which have amplified social distrust and conflict (Lee 1994; Ryu 2000). This phenomenon has clearly prevented various groups from laying the foundation for symbiosis and participating in fair competition in accordance with the rules advocated by a pluralistic competitive society.

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- 1) In Korea, firms have an internal accounting management system to ensure the effectiveness of IC over financial reporting. The current study aims to discuss the effect of social ties within the board of directors on the effectiveness of the internal control system through human resource investment in the internal accounting management system. Therefore, this study uses the terms “internal control system” and “internal accounting management system” without distinction.
 - 2) According to Wikipedia, “nepotism is based on favoritism granted to relatives in various fields, including business, politics, entertainment, sports, religion and other activities” (Accessed on June 15, 2020, <https://en.wikipedia.org/wiki/Nepotism>).

Thus, this study proposes that the social ties among directors, based on regional and school ties, under the strong influence of the Confucian culture that lasted for centuries, negatively affects the allocation of resources to IC over financial reporting. In this study, within-board social ties refer to the home and school ties between inside and outside directors.

A firm's board of directors plays a key role in overseeing managerial decisions; it not only provides final approval for the firm's major managerial decisions, but also manages the firm's IC functions. Therefore, effective boards are more likely to secure the resources required to support monitoring functions in a firm. This study analyzes the possibility that social connections within a board of directors may affect the allocation of human resources toward IC over financial reporting. A board of directors with high social connectivity is likely to be passive toward the allocation of resources required to ensure the effectiveness of IC. Consistent with these arguments, several media articles highlighted that regional and school-related social connections are closely related to management opacity and the weakening of control functions.³⁾ Additionally, prior studies in Korea reported the negative effect of social ties based on region and schools on firm value possibly due to ineffective monitoring (Kim and Shin 2016).

In Korea, the hiring of non-independent outside directors has led to the consistent issue of the inadequate monitoring of the opportunistic behavior of management. In this regard, Kim and Lee (2015) highlighted that, in Korea, board members are typically chosen based on their social connections, such as regional and academic ties, with the managing families or incumbent management, which inevitably leads to the significant influence of management on these directors. Furthermore, Kim and Lee (2015) stated that, if outside directors have social connections with internal directors, they would be significantly less likely to oppose the board's agenda. Kim and Lee (2015) report that outside directors who opposed the board's agenda at least once in companies with assets of 2 trillion won or more were significantly less likely to be replaced if they belonged to the same region as the CEO or graduated from the same high school. Therefore, due to the characteristics of regional and school ties in Korea, severe criticism was consistently directed toward the lack of effectiveness of outside directors under the current system, which only requires

3) See appendix B for an example.

the appointment of outside directors to meet external independence requirements.

This study aims to examine the relationship between the social ties within the board of directors and human resource investment in the internal accounting management system. Human resource investment can be measured by using the natural logarithm of the number of personnel involved in IC. Additionally, the area of origin as well as the high-school, university, and grade education of the inside and outside directors of companies were collected directly from the Kis-Line database to measure social ties within the board. Social ties within the board of directors, i.e., between the inside and outside directors, were measured using dummy variables of 1 or 0 if directors had the same region of origin or attended the same school, respectively.

Using 1,738 firm-year observations for firms listed on the Korea Exchange during the period 2014–2016, we find that the board of directors' independence in appearance, measured as the ratio of inside directors to outside director, did not have a significant impact on human resources in IC systems. However, social ties, which represent the in fact independence of the board of directors, had a significant negative relationship with the number of personnel responsible for IC over financial reporting. This suggests that the effectiveness of IC systems can be weakened when the social ties within boards of directors become stronger. This can be attributed to the board of directors' lack of independence (i.e., weakened monitoring function).

This study makes a important contribution to literature since it elaborately measures the in-fact independence of the board of directors in a way that reflects the characteristics of informal social ties that are attributed to Confucian culture. Social ties, which are measured in this study, reflect the cultural dynamics caused by links between board members based on their regions of origin and schools attended. Thus, it is particularly relevant to use Korean data to examine the role of nepotism in defining the independence of the board of directors since nepotism is a widespread issue in Korea (Park, Park, and Lee, 2018). Therefore, this study is meaningful in that we measured the social connections within boards of directors, based on home and school ties, reflecting the cultural characteristics of Korea. Wintoki and Xi (2019) criticized commercial law for defining the ratio of outside directors, which forced companies to supplement their outside directors using social ties to comply with regulations

regarding the number of outside directors. The results of our study indicate that the current regulations are not effective in ensuring board independence at least from the perspective of companies' investment in IC over financial reporting. These results are consistent with the importance of board independence in fact rather than merely in appearance. However, this study has a limitation in that the results do not fully address the endogeneity issue. In other words, companies with poor corporate governance may appoint outside directors that have strong social ties with internal directors and do not invest much in the internal accounting management system. Thus, it is important to pay attention to interpretation.

This remainder of this study is organized as follows: Section 2 provides an overview of relevant literature and presents a research theory based on these studies. Section 3 discusses the empirical model and sample selection procedure. Section 4 presents the empirical results of this study, while Section 5 presents the findings and implications.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Korean cultural background of social ties

Confucianism is characterized by viewing regional origin and school ties as critical social connections; consequently, the influence of nepotism is evident in Korea where Confucian culture plays a major role. Korea is deeply rooted in the relationship oriented customs derived from Confucianism, which was adopted as a state religion when the Lee Dynasty was founded in 1392. This has led to various social inefficiencies and side effects due to decisions based on informal connections such as home, school, and family ties (Shawn and Jung 2015; Park, Lee, and Kang 2016; Shawn 2017). This cultural characteristic creates the problem that, outside directors, who are supposed to keep managers in check from an independent position, usually have social relationships, such as home and school ties, with internal directors, thereby undermining the in-fact independence of the board of directors. This could negatively affect an organization's decision making and transparency.

The importance of IC in Korean companies has been increasingly

emphasized, and various efforts are underway to ensure the effectiveness of IC, e.g., upgrading the external auditors' review of the IC of listed companies to an "audit" level beginning from the 2019 fiscal year. The board of directors plays an important role in the allocation of resources to ensure the effectiveness of IC. However, if social connections exist within a firm's board of directors, they weaken the independence of the de facto board of directors, and thus, the firm may reduce its investment in internal-control resources. A low investment in internal control human resources indicates that managers may have a high discretionary decision-making structure.

Korean institutional background of internal control system

An IC system refers to the control activities performed to achieve a firm's management objectives and can be largely divided into operational, regulatory compliance and financial-reporting reliability controls. IC over financial reporting obliges firms to implement in-house accounting control and control procedures to ensure financial reporting reliability based on the three aforementioned controls. These procedures include accounting and settlement processes related to recording, maintaining, managing, and disclosing accounting information.⁴⁾ Similar to the SOX Act, which significantly strengthened the effectiveness of IC following the Enron incident in the US, Korea introduced an article in the Act on External Audit for Stock Companies (hereafter, the External Audit Act) requiring listed firms to establish IC and supporting departments since 2001.⁵⁾ From 2002 onwards, Articles 2–3 of the Act on External Audit for Stock

4) The Public Company Accounting Oversight Board (PCAOB 2004) defined internal controls for financial reporting as "processes designed for providing reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes." In Korea, the same definition applies to IC.

5) Following the Enron case in the late 1990s and early 2000s, as well as several other accounting fraud cases, the SOX Act significantly strengthened the provisions for internal control systems to prevent accounting fraud and enhance financial reporting reliability. Among these provisions, Section 302 of the SOX requires companies to review their internal control systems and disclose details regarding their vulnerabilities, while Section 404 requires auditors to review their internal control systems and express their opinions on the adequacy of these systems.

Companies, has required the disclosure of the number of personnel in charge of IC, and, from 2005 onwards, the Act has mandated that external auditors review the IC operations of firms and provide a separate IC review in addition to the audit report. In 2019, the Act changed the requirement from a review report to an audit report for firms with more than 2 trillion won of total assets (External Audit Act, Article 8-6 Revised).

Literature review and hypothesis development

In a related study, Lee, Sonu, and Choi (2011) analyzed the impact of corporate governance on the number of personnel in charge of IC over financial reporting, predicting that the larger a firm's board of directors, the greater the ownership level of its largest and foreign shareholders, and the greater the board's independence, the more effective the IC system. However, they found that the ownership of the largest and foreign shareholders and the board of directors' independence had no significant impact on the number of personnel in charge of IC. Lee, Sonu, and Choi's (2011) study results presumably failed to accurately reflect the board of directors' independence since the current independence rule only emphasizes the board's independence in appearance by simply complying with laws, when defining the independence of the board.

Krishnan et al. (2011) argued that the definition of the board of directors' independence should be reconsidered since measuring independence by simple outside director ratios may not represent the real independence of the board of directors. This means that outside directors tend to have various network ties with their firms' CEOs and inside directors, including academic connections, home ties, and other outside activities, thus weakening their practical independence. Unlike Lee, Sonu, and Choi's (2011) study, which verified the effect of external directors' independence in appearance only, it was expected that, by measuring board independence "in fact" based on social ties, the lack of independence between internal and external directors will adversely affect the effectiveness of IC over financial reporting. While Lee, Sonu, and Choi (2011) only analyzed companies listed during the period 2005–2008, the current study aims to examine the impact of board independence on human resources investment in relation to the IC over financial reporting by using a sample after the implementation of the K-IFRS (2011).

Good governance is one of the necessary conditions for operating an excellent IC system, as indicated by a number of prior studies that confirmed that superior corporate governance can improve IC systems. First, Krishnan (2005) studied companies that had replaced their auditors before the introduction of the SOX Act and found that the higher the independence and expertise of the audit committee, the less vulnerable the IC system, revealing that superior governance has a significantly positive impact on the effectiveness of IC systems. Goh (2009) found that the higher the independence of the board of directors and the larger the audit committee, the faster weakness in IC systems were corrected. Ge and McVay (2005) reported that the higher the number of competent internal accounting personnel, the greater the transparency and reliability of financial reporting, which further enables the implementation of effective IC schemes, resulting in the reduced vulnerability of IC systems. Thus, these prior studies showed that companies with good governance structures are less likely to have IC weakness and are more likely to rectify them quickly when they occur.

Companies with superior governance structures are likely to maintain a stricter IC, which requires a larger number of IC personnel. In this study, we examined the independence of the board of directors as a key characteristic of good corporate governance. The board of directors plays a key role in monitoring managerial decisions, not only providing final approval for a company's major management decisions, but also managing its IC functions by designing a compensation structure, appointing external auditors, and ensuring the effectiveness of internal monitoring functions. Therefore, it is necessary to examine whether a board of directors performs the functions required to establish and secure an appropriate support organization within the enterprise. In particular, the SOX Act stipulates that a company's CEO is responsible for the establishment and operation of an effective IC system, and that if weakness exist in the IC system, the CEO shall be responsible for the establishment and operation of the IC system as well as evaluating and reporting regarding the IC. In this regard, the effectiveness of an IC system will eventually be affected by the characteristics of the CEO in charge of building and operating it, as well as the board of directors who report on it. This is because decisions regarding IC systems begin with the CEO but must be

reported to and approved by the board of directors.⁶⁾ Thus, depending on the position of the board of directors in charge of monitoring and their thoughts about IC systems, human resource investment to ensure the effectiveness of the IC system may vary. Therefore, this study seeks to examine the impact of board independence in fact on the number of personnel responsible for the IC over financial reporting.

The board of directors' independence is represented by the independence of its outside directors. A firm's board of directors is a key functional unit that is operated by a number of board members who seek to reach a conclusion through discussion. The results of their discussion are significantly affected by the expertise, information, and opinions of individual directors (Zahra and Pierce 1989; Kosnik 1990; Hambrick, Werder, and Zajac 2008). Thus, the individuals that comprise a board of directors and their selection significantly affect the board's ability to reach a conclusion. Thus, in 2002, the SOX Act stipulated that more than half of the board of directors' members must be outside directors to ensure the independence of outside directors. However, studies since 2002 have suggested that, in Korea, outside directors, who are responsible for monitoring management, often have social connections with management, thus weakening of the board of directors' independence (Khedmati, Sualihu, and Yawson 2020). Fracassi and Tate (2012) argued that more powerful CEOs appoint directors using their social ties and these connections weaken the effectiveness of the board's monitoring, which eventually undermines the effectiveness of internal governance and corporate value. Hwang and Kim (2009) found that the CEOs of entities with more independent directors in fact were paid less, while CEOs of firms with more independent directors in appearance but less independent in fact showed less performance-CEO turnover sensitivity and lower pay-performance sensitivity. Additionally, Krishnan et al. (2011) reported that the higher the social links between the chief financial officer (CFO), the CEO, and the board of directors, the greater the likelihood of earnings management. Khedmati, Sualihu, and Yawson (2020) reported that the greater the social connections between the CEO and outside directors, the lower the labor investment efficiency and stronger the labor cost stickiness. The results of preceding studies

6) Major acquisitions are often initiated by the CEO but require board approval (Fracassi and Tate 2012).

show that the independence of outside directors in fact, considering social ties, negatively affects corporate value and labor investment efficiency. Outside directors' independence also increases earnings management and management remuneration.

The cultural characteristics of Confucianism in Korea have caused that firms have usually appointed outside directors having social relationships, such as home and school ties with internal directors, thereby undermining the board of directors' independence in fact. We suspect that these characteristics, embedded in Korean culture, often lead to empirical results wherein a firm's outside directors do not play a significant monitoring role in terms of managers' opportunistic behaviors. For example, Lee, Sonu, and Choi (2011) studied the determinants of IC over financial reporting using Korean data and found no significant link between the outside director ratio and the number of personnel in charge of the IC. These findings indicate that outside directors do not significantly affect the number of personnel responsible for IC over financial reporting, or that the outside director ratio does not measure intrinsic independence. In other words, these results raise the possibility of an outcome in which the outside director ratio, a measure of the board of directors' independence, fails to represent the true independence of outside directors.

In summary, this study measured the board of directors' independence in fact in consideration of social ties, and analyzed the possibility that social ties within the board could affect the allocation of resources required to ensure the effectiveness of IC. In other words, a board of directors with the social ties within it may be passive in the allocation of resources that significantly affect the effectiveness of IC, or may reduce investment in internal-control human resources, rather than designing an appropriate IC system to control financial reporting reliability by weakening the independence of the board of directors.

Therefore, in this study, we sought to confirm that the stronger the social connections within a board of directors, the lesser the human resources investment required to ensure the effectiveness of an IC system. Based on the above discussion, we developed the following hypothesis.

H1: The social ties between outside directors and inside directors within a board of directors are negatively related to the number of personnel in charge of internal control over financial reporting.

RESEARCH MODEL

Sample Selection

This study tested the hypothesis for non-financial December year-end companies listed on the Korea Securities Exchange market during the period 2014–2016. The sample covers from 2013 to 2016 since the Standards of the Internal Accounting Management System have been applied since 2013, and the Act on External Audit of Stock Companies, etc. was revised in 2017. We acknowledge that the results may not be generalizable as there have been some changes in the accounting/audit environment before and after the sample period and the relatively recent sample has not been used. However, we believe the research question is still interesting as the social tie has continuously been an important factor that affects outside director independence. The sample composition is shown in table 1.

Table 1. Sample selection procedure

Sample Selection Process	Number of Observations
Total KOSPI-market-listed non-financial firms with a December 31 st Financial Year End (FYE) during the period 2014–2016	2,658
(-) Firms without appropriate internal control personnel data	(598)
(-) Firms without board member characteristic data	(281)
(-) Firms without the necessary data for the control variables	(41)
Final Sample	1,738

In Korea, firms are required to define and describe the operation methods of their IC over financial reporting, designate IC personnel among executives, define the work area of the person in charge, and disclose changes in major IC procedures and the number of personnel in charge of the IC during the year.

Under the regulations, companies must disclose the total number of workers in six departments (audit committee; board of directors; accounting division; finance division; information, technology and system; and others) in their IC operations reports.⁷⁾ Thus, data regarding the number of personnel directly responsible for the IC were collected manually and analyzed. Observations were excluded from the sample if information on board members to measure TIE variables was not available. After excluding those without financial information used as a control variable, a total of 1,738 firm-years were selected as the final sample.

Research Model

This study aimed to verify the impact of social connections between outside and in-house directors on the number of personnel in charge of the IC. To measure the level of investment in personnel responsible for the IC, the number of personnel involved in the operation of the IC were collected manually from the “Operation Report of the IC” attached to individual firms’ annual reports. The IC variable was measured by taking a natural log on the number of internal accounting management personnel.

To measure social ties, data regarding the area of origin as well as the high-school, university, and graduate education of the companies’ inside and outside directors were all manually collected and measured. In order to measure TIE, information on in-house and outside directors was obtained from the current status of registered directors in the annual report, and then information on the region of each board member and school (high school, university, graduate school) was collected from the personal information in the KIS-Line database. Based on the personal information collected manually, TIE was measured by whether there were people from the

7) Unlike the SOX in the US, the Act on External Audit for Stock Companies in Korea requires the disclosure of details of personnel information in charge on internal management accounting systems by functional departments. Such information regarding the characteristics of the personnel in charge of the IC is the only information in the world that is only disclosed in Korea, which enables the measurement of the level of human resources investment in the IC in this study. The purpose of this disclosure is to induce the person in charge of the work to perform IC to ensure accountability and transparency in accounting with responsibility and interest.

same region or school between in-house and outside directors in the board of directors. The same area was defined based on one special administrative district (i.e., Seoul metropolitan city), six metropolitan administrative districts (metropolitan cities), and nine administrative districts (province).

Analyzing these connections within the board of directors helps to understand the impact of these ties on the human resource investment required to ensure the effectiveness of IC systems. The network ties among board members that studied in the US were estimated mainly in terms of current employment, prior employment, education (MBA), and other social activities (e.g., golf club membership) (Fracassi and Tate 2012). However, many Asian countries, including Korea, Japan, and China, are characterized by the value they place on social relationships based on academic and home ties over other relationships because they are heavily influenced by nepotism under the Confucian culture.⁸⁾

The explanatory variable used in the Model (1) of this study was social ties (TIE) and the dependent variable of interest was the IC workforce (IC). The regression coefficient of TIE was expected to show a significant negative (-) coefficient since the presence of social ties within a board of directors was expected to result in a relatively smaller number of the IC personnel than those that without social ties.

$$IC = \beta_0 + \beta_1 TIE + \beta_2 BOD + \beta_3 OUT + \beta_4 SIZE + \beta_5 EMPLOYEE + \beta_6 LEV + \beta_7 CFO + \beta_8 STD_CFO + \beta_9 GROWTH + \beta_{10} LOSS + \beta_{11} CHAEBOL + \beta_{12} OWN + \beta_{13} FOR + Year\ Dummies + Industry\ Dummies \quad (1)$$

Definitions for the variables in (1) are presented in appendix A.

This study includes *BOD*, *OUT*, *SIZE*, *EMPLOYEE*, *LEV*, *CFO*, *STD_CFO*, *GROWTH*, *LOSS*, *CHAEBOL*, *OWN*, *FOR*, *Year Dummies*, and *Industrial Dummies* as control variables in accordance with Choi et al. (2013) and Lee, Sonu, and Choi (2011).

8) Nepotism refers to the tendency wherein informal relationships strongly influence every aspect of the social lives of individuals, i.e., an individual's informal social relationships in which family, home, and school ties are main factors in the relationship. As a result of centuries of Confucianism culture in Korea, informal social ties have become one of the dominant factors that affect the selection of management and/or board members.

First, companies with good governance structures are expected to hire more internal accounting system personnel, so we include the size of board (BOD) and outside board ratio (OUT) as a measure of governance and assumed that they would have more IC personnel. Lee, Sonu, and Choi (2011) reported an insignificant association of OUT with the human resources of the IC. Hence, we sought to confirm whether the current study would obtain consistent results. We included SIZE and EMPLOYEE, which represent the size of an entity, in the model because larger entities are more likely to invest in proper policies and procedures related to the IC, and were expected to be positive.

The lower the profitability, the lesser a company's ability to invest in more manpower for IC. In other words, the more financial stress a company experiences, the greater its inability to effectively operate its IC system. Therefore, we included LEV and LOSS, which represent a company's performance, as control variables and predicted that their sign would be negative (-). Similarly, we included the variables CFO, which represents profitability, and STD_CFO, which represents stability; these variables were expected to have positive (+) and negative (-) signs, respectively. Additionally, the higher the growth potential, the greater the unwillingness of companies to invest in an effective IC system. Hence, we included the sales growth variable, GROWTH, in the model, which was expected to be negative (-).

Firms belonging to Chaebols have more interested parties and are subject to greater monitoring than others. Thus, we added the variable CHAEBOL, which was expected to be positive. Additionally, we included variables representing the largest share (OWN) and foreign shareholder's share (FOR). These variables were included as control variables to represent the monitoring role of shareholders. Finally, we included year and industry fixed effects in the model. The definitions of other variables are presented in appendix A.

EMPIRICAL ANALYSES

Descriptive Statistics

Table 2 presents the descriptive statistics of the variables used in the empirical models. To minimize distortion of the results

due to extreme values of the variables, the upper and lower 1% values of all continuous variables, except the dummy variables, were winsorized. The dependent variable of this study was human resource investment in internal management accounting systems. *IC_TOTAL1*, the natural logarithm taken by adding 1 to the total number of personnel in the accounting, finance, information technology, disclosure, and other IC departments responsible for financial reporting, showed an average of 2.465. The average number of personnel in the accounting, finance, information technology, disclosure, and other departments in charge of a firm's IC over financial reporting (*IC_TOTAL1*) was 11.76. *IC_TOTAL2*, the natural logarithm taken by adding 1 to the total number of personnel in accounting, finance, information technology, and disclosure departments responsible for IC in financial reporting, had an average value of 2.313. The average number of personnel in the accounting, finance, information technology, disclosure, and other departments involved in a firm's IC over financial reporting (*IC_TOTAL2*) was 10.10. The reason for measuring *IC_TOTAL2* excluding the number of internal accounting personnel in other departments is that the majority of internal accounting personnel in other departments are composed of audit committee and board of directors, which may not be highly related to investment in internal accounting management personnel. Additionally, the variables *IC_ACC*, *IC_FIN*, *IC_IT*, *IC_DISCLOSE*, and *IC_OTHER* were measured as the natural log values of the number of internal accounting management personnel of accounting, finance, information technology, disclosure, and other IC departments, respectively. On average, the accounting department has the largest number of internal accounting management personnel.

TIE was estimated, considering the existence of a social connections between the internal and external directors of a board, to measure the directors' practical independence. On average, 56.6% of board members had social connections. Specifically, 14.0%, 47.8%, and 18.1% in the board of directors of the sample were from the same high school, university, and graduate school, respectively, while 25.7% were from the same region. *OUT*, the ratio of outside directors to measure independence in fact, had an average value of 42.9%.

Table 2. Descriptive statistics (N = 1,738)

Variable ^a	Mean	Std. Dev.	Min	Median	Max
<i>IC_TOTAL1</i>	2.465	0.776	1.099	2.398	5.226
<i>IC_TOTAL2</i>	2.313	0.745	0.693	2.197	4.663
<i>IC_ACC</i>	1.720	0.745	0.000	1.609	4.127
<i>IC_FIN</i>	1.009	0.778	0.000	1.099	3.332
<i>IC_IT</i>	1.021	0.726	0.000	0.693	3.497
<i>IC_DISCLOSE</i>	0.101	0.324	0.000	0.000	1.609
<i>IC_OTHER</i>	0.716	0.904	0.000	0.693	3.970
<i>TIE</i>	0.566	0.496	0.000	1.000	1.000
<i>TIE_HIGH</i>	0.140	0.347	0.000	0.000	1.000
<i>TIE_UNIV</i>	0.478	0.499	0.000	0.000	1.000
<i>TIE_GRAD</i>	0.181	0.385	0.000	0.000	1.000
<i>TIE_HOME</i>	0.257	0.437	0.000	0.000	1.000
<i>BOD</i>	1.927	0.277	1.386	1.946	2.639
<i>OUT</i>	0.429	0.119	0.200	0.400	0.750
<i>SIZE</i>	19.953	1.483	17.198	19.720	24.254
<i>EMPLOYEE</i>	3.324	0.688	2.197	3.219	5.561
<i>LEV</i>	0.414	0.217	0.019	0.408	0.963
<i>CFO</i>	0.046	0.069	-0.176	0.044	0.232
<i>STD_CFO</i>	0.048	0.032	0.004	0.042	0.171
<i>GROWTH</i>	0.036	0.301	-0.625	0.005	1.955
<i>LOSS</i>	0.236	0.425	0.000	0.000	1.000
<i>CHAEVOL</i>	0.255	0.436	0.000	0.000	1.000
<i>OWN</i>	0.438	0.164	0.083	0.435	0.829
<i>FOR</i>	0.095	0.121	0.000	0.043	0.551

^a*TIE_HIGH*, *TIE_UNIV*, *TIE_GRAD*, and *TIE_HOME* are indicator variables that represent the presence of high-school ties, university ties, graduate-school ties, and regional ties, respectively, between internal and external directors. Other variable definitions are presented in appendix A.

Table 3 shows the Pearson correlations among the variables used in the empirical models. The correlation between the variable representing investment in the *IC* personnel and *TIE* was shown to have a significant positive value. This means that investment in internal accounting personnel increased when social connections existed between inside and outside directors. However, there is a limitation to this interpretation because the correlation results did not consider the effects of the control variables. The correlations between other control variables were not high, except for *SIZE*, *EMPLOYEE*, and *CHAEBOL*.

Regression Analyses

Table 4 presents the results regarding the hypothesis of this study. All regression analyses in this study report the results of a firm-year clustering (two-way clustering) to coordinate heteroscedasticity and autocorrelation (Petersen 2009). Column (1) of table 4 shows the results for *IC_TOTAL1* as a dependent variable and Column (2) shows the results for *IC_TOTAL2* as a dependent variable.

Columns (1) and (2) showed that *TIE* had a significant negative value, meaning that the existence of social connections between inside and outside directors within the board decreases a firm's investment in the *IC* personnel. These results support the hypothesis of this study. Consistent with results in prior studies (Choi et al., 2013; Lee, Sonu, and Choi 2011), *OUT*, which represents the proportion of independent outside directors, was insignificant. The empirical results show that the larger the firm size and the higher the number of employees, the more likely that companies belong to chaebols and the higher the investment in the *IC* personnel. Moreover, the higher the debt ratio or controlling shareholders' equity ratio, the lower the investment in the *IC* personnel.⁹⁾

Table 5 presents the test results for the hypothesis of this study based on the number of internal accounting personnel by department. In table 5, Columns (1)-(5) show the results of the regression analysis of *IC_ACC* (*IC* personnel of the accounting department), *IC_FIN* (*IC* personnel of the financial department),

9) The highest variance information factor (VIF) of regressions is 3.47 indicating multicollinearity problems are not severe.

Table 3. SPearson correlations (N = 1,738)

Variable ^a	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1)	0.934 (<.0001)	0.852 (<.0001)	0.582 (<.0001)	0.634 (<.0001)	0.119 (<.0001)	0.529 (<.0001)	0.140 (<.0001)	0.176 (<.0001)	0.157 (<.0001)	0.633 (<.0001)	0.762 (<.0001)	0.126 (<.0001)	0.112 (<.0001)	-0.135 (<.0001)	-0.015 (0.520)	-0.033 (0.172)	0.473 (<.0001)	-0.118 (<.0001)	0.368 (<.0001)
(2)		0.911 (<.0001)	0.630 (<.0001)	0.679 (<.0001)	0.147 (<.0001)	0.262 (<.0001)	0.145 (<.0001)	0.179 (<.0001)	0.153 (<.0001)	0.644 (<.0001)	0.672 (<.0001)	0.152 (<.0001)	0.115 (<.0001)	-0.117 (<.0001)	-0.010 (0.676)	-0.023 (0.345)	0.471 (<.0001)	-0.133 (<.0001)	0.378 (<.0001)
(3)			0.426 (<.0001)	0.463 (<.0001)	0.127 (<.0001)	0.212 (<.0001)	0.135 (<.0001)	0.174 (<.0001)	0.167 (<.0001)	0.602 (<.0001)	0.605 (<.0001)	0.104 (<.0001)	0.126 (<.0001)	-0.116 (<.0001)	-0.035 (0.148)	-0.029 (0.221)	0.458 (<.0001)	-0.135 (<.0001)	0.379 (<.0001)
(4)				0.483 (<.0001)	-0.087 (0.000)	0.120 (<.0001)	0.097 (<.0001)	0.114 (<.0001)	0.112 (<.0001)	0.407 (<.0001)	0.424 (<.0001)	0.193 (<.0001)	0.021 (0.380)	-0.066 (0.005)	0.020 (0.404)	0.018 (0.459)	0.279 (<.0001)	-0.087 (0.000)	0.165 (<.0001)
(5)					-0.039 (0.104)	0.171 (<.0001)	0.075 (0.0018)	0.115 (<.0001)	0.069 (0.004)	0.396 (<.0001)	0.477 (<.0001)	0.153 (<.0001)	0.065 (0.006)	-0.051 (0.034)	0.000 (0.993)	-0.015 (0.537)	0.260 (<.0001)	-0.071 (0.003)	0.206 (<.0001)
(6)						0.007 (0.773)	-0.036 (0.1342)	0.024 (0.311)	-0.002 (0.923)	0.062 (0.009)	0.094 (<.0001)	-0.037 (0.123)	0.009 (0.700)	0.024 (0.313)	-0.022 (0.357)	0.016 (0.503)	0.030 (0.205)	0.026 (0.286)	0.085 (0.000)
(7)							0.057 (0.0167)	0.077 (0.001)	0.074 (0.001)	0.218 (<.0001)	0.470 (<.0001)	-0.013 (0.591)	0.035 (0.145)	-0.094 (<.0001)	-0.022 (0.368)	0.004 (0.865)	0.201 (<.0001)	-0.027 (0.252)	0.147 (<.0001)
(8)								0.279 (<.0001)	0.088 (0.0002)	0.251 (<.0001)	0.217 (<.0001)	-0.024 (0.327)	0.063 (0.008)	-0.083 (0.000)	0.016 (0.492)	-0.054 (0.023)	0.146 (<.0001)	-0.076 (0.001)	0.179 (<.0001)
(9)									0.284 (<.0001)	0.286 (<.0001)	0.327 (<.0001)	0.049 (0.039)	0.034 (0.154)	-0.066 (0.005)	0.027 (0.253)	-0.018 (0.465)	0.122 (<.0001)	-0.097 (<.0001)	0.212 (<.0001)
(10)										0.247 (<.0001)	0.194 (<.0001)	0.108 (<.0001)	0.016 (0.496)	-0.006 (0.807)	-0.046 (0.056)	0.019 (0.437)	0.218 (<.0001)	-0.017 (0.468)	0.116 (<.0001)

Table 3. (continued)

(11)											0.736 (<0.0001)	0.171 (<0.0001)	0.187 (<0.0001)	-0.238 (<0.0001)	-0.035 (0.144)	-0.087 (0.000)	0.622 (<0.0001)	-0.020 (0.395)	0.506 (<0.0001)
(12)												0.168 (<0.0001)	0.154 (<0.0001)	-0.170 (<0.0001)	-0.008 (0.746)	-0.059 (0.014)	0.477 (<0.0001)	-0.118 (<0.0001)	0.420 (<0.0001)
(13)													-0.133 (<0.0001)	0.148 (<0.0001)	-0.060 (0.012)	0.342 (<0.0001)	0.120 (<0.0001)	-0.146 (<0.0001)	-0.163 (<0.0001)
(14)														-0.097 (<0.0001)	0.047 (0.052)	-0.378 (<0.0001)	0.054 (0.023)	0.111 (<0.0001)	0.288 (<0.0001)
(15)															-0.004 (0.856)	0.143 (<0.0001)	-0.128 (<0.0001)	-0.096 (<0.0001)	-0.184 (<0.0001)
(16)																-0.143 (<0.0001)	-0.002 (0.949)	0.002 (0.925)	-0.004 (0.879)
(17)																	-0.033 (0.164)	-0.197 (<0.0001)	-0.188 (<0.0001)
(18)																		-0.008 (0.726)	0.278 (<0.0001)
(19)																			-0.185 (<0.0001)

^aVariable definitions are presented in appendix A. The following variables are used in this table: (1) IC_TOTAL1, (2) IC_TOTAL2, (3) IC_ACC, (4) IC_FIN, (5) IC_IT, (6) IC_DISCLOSE, (7) IC_OTHER, (8) TIE, (9) BOD, (10) OUT, (11) SIZE, (12) EMPLOYEE, (13) LEV, (14) CFO, (15) STD_CFO, (16) GROWTH, (17) LOSS, (18) CHAEBOL, (19) OWN, and (20) FOR. The p-values are given in parentheses.

Table 4. Social ties and internal control personnel

$$IC = \beta_0 + \beta_1 TIE + \beta_2 BOD + \beta_3 OUT + \beta_4 SIZE + \beta_5 EMPLOYEE + \beta_6 LEV + \beta_7 CFO + \beta_8 STD_CFO + \beta_9 GROWTH + \beta_{10} LOSS + \beta_{11} CHAEBOL + \beta_{12} OWN + \beta_{13} FOR + Year\ Dummies + Industry\ Dummies$$

Variable	Dependent Variable: IC			
	(1) IC_TOTAL1		(2) IC_TOTAL2	
	Coeff.	t-value	Coeff.	t-value
Intercept	-0.864	-3.15 ***	-1.887	-6.07 ***
<i>TIE</i>	-0.048	-1.99 **	-0.042	-1.66 *
<i>BOD</i>	-0.205	-4.09 ***	-0.123	-2.35 **
<i>OUT</i>	0.081	0.79	-0.007	-0.07
<i>SIZE</i>	0.068	4.67 ***	0.150	8.91 ***
<i>EMPLOYEE</i>	0.733	24.35 ***	0.453	12.14 ***
<i>LEV</i>	-0.159	-2.40 **	-0.013	-0.18
<i>CFO</i>	-0.208	-1.05	-0.109	-0.54
<i>STD_CFO</i>	-0.207	-0.49	0.164	0.38
<i>GROWTH</i>	-0.012	-0.33	0.013	0.31
<i>LOSS</i>	0.007	0.22	0.009	0.27
<i>CHAEBOL</i>	0.180	5.01 ***	0.170	4.41 ***
<i>OWN</i>	-0.162	-2.11 **	-0.269	-3.22 ***
<i>FOR</i>	0.092	0.63	0.197	1.37
Year Dummies	Yes		Yes	
Industry Dummies	Yes		Yes	
Firm Clustering	Yes		Yes	
Year Clustering	Yes		Yes	
F-Value	84.57***		70.71***	
Adj.-R ²	62.74%		54.30%	
N	1,738		1,738	

Note: ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are presented in appendix A.

IC_IT (IC personnel of the information technology), *IC_DISCLOSE* (IC personnel of the disclosure department), and *IC_OTHER* (IC personnel of other departments), respectively.

The empirical results show that only Columns (1) and (4) showed a significant negative (-) value for *TIE*. These results suggest that social ties between inside and outside directors could negatively affect the effectiveness of the IC for financial reporting and disclosure quality since the allocation of sufficient personnel for the IC is essential for implementing strict IC. This is because the IC systems of the accounting and disclosure departments are directly related to transparency in accounting and disclosure.

Table 6 presents the empirical results for the hypothesis based on social tie type. In table 6, Columns (1), (2), (3), and (4) show the impact of the existence of high-school, university, graduate-school, and regional ties, respectively, on IC personnel (*IC_TOTAL1*). The results show that investment in internal-control personnel is significantly reduced only if high-school and university ties exist. This means that school ties, especially high school and university ties, are further hindering the decision-making function related to the board's investment in internal accounting management personnel rather than local ties. Although not reported in Table 6, using *IC_TOTAL2* also shows the same results qualitatively.

CONCLUSION

In this study, we analyzed how informal social connections based on home and school ties, which are dominant characteristics of Korean society due to its historical and cultural background, are associated with firms' investment in human resources for IC purposes. The analysis of companies listed on the Korea Exchange during the period 2014–2016 showed that the apparent independence of the board of directors, measured by the ratio of outside directors to inside directors, did not have a significant impact on the IC system. However, board independence, measured considering the social ties among directors, has a significant positive relationship with the number of employees responsible for IC. In other words, we found that social ties within boards of directors, which indicate a lack of board independence, weakens the monitoring function, thus

Table 5. Social ties and internal control personnel by department

$$IC = \beta_0 + \beta_1 TIE + \beta_2 BOD + \beta_3 OUT + \beta_4 SIZE + \beta_5 EMPLOYEE + \beta_6 LEV + \beta_7 CFO + \beta_8 STD_CFO + \beta_9 GROWTH + \beta_{10} LOSS + \beta_{11} CHAEBOL + \beta_{12} OWN + \beta_{13} FOR + \text{Year Dummies} + \text{Industry Dummies}$$

Variable	Dependent Variable: IC							
	(1) IC_ACC		(2) IC_FIN		(3) IC_IT		(4) IC_DISCLOSE	
	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value	Coeff.	t-value
Intercept	-2.387	-6.87 ***	-2.170	-5.57 ***	-1.608	-4.45 ***	-0.121	-0.59
TIE	-0.043	-1.70 *	-0.005	-0.16	-0.044	-1.42	-0.039	-2.28 **
BOD	-0.082	-1.46	-0.108	-1.55	-0.069	-1.12	0.013	0.44
OUT	0.123	1.02	0.121	0.79	-0.186	-1.33	-0.065	-0.90
SIZE	0.144	8.00 ***	0.117	5.48 ***	0.057	2.90 ***	-0.001	-0.09
EMPLOYEE	0.358	9.72 ***	0.315	7.23 ***	0.433	9.41 ***	0.050	2.41 **
LEV	-0.118	-1.56	0.201	2.13 **	0.123	1.44	-0.055	-1.28
CFO	0.180	0.85	-0.649	-2.34 **	-0.279	-1.20	-0.034	-0.27
STD_CFO	0.187	0.41	-0.491	-0.93	0.348	0.75	0.664	2.45 **
GROWTH	-0.048	-1.07	0.110	2.00 **	0.051	0.87	-0.015	-0.72
LOSS	0.021	0.60	-0.025	-0.57	-0.051	-1.26	0.041	1.91 *
CHAEBOL	0.201	4.73 ***	0.029	0.56	0.041	0.88	0.006	0.22
OWN	-0.332	-3.70 ***	-0.251	-2.29 **	-0.062	-0.62	0.128	2.36 **
FOR	0.338	2.28 **	-0.337	-1.74 *	-0.014	-0.07	0.230	2.17 **
Year Dummies	Yes		Yes		Yes		Yes	
Industry Dummies	Yes		Yes		Yes		Yes	
Firm Clustering	Yes		Yes		Yes		Yes	
Year Clustering	Yes		Yes		Yes		Yes	
F-Value	48.68***		16.74***		16.24***		5.46***	
Adj.-R ²	46.75%		24.83%		27.25%		4.26%	
N	1,738		1,738		1,738		1,738	

Note: ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are presented in appendix A.

ineffectively allocating human resources to IC. These results were consistent when using an alternative measure that excluded the number of the IC personnel in the audit committee and the board of directors. Additionally, we found that social ties have a significantly negative impact on human resource investment in the accounting and disclosure departments.

The results of this study offer the practical insight that, for a long period of time, the outside director system, which began as an institutional effort to ensure the effectiveness of IC, was ineffective possibly due to the failure in considering Korea's historical and cultural background. Moreover, we conducted an in-depth analysis of the dynamics that exist among the human resources of different functions and confirmed that investment decisions regarding the human resources required for IC are linked to the characteristics of the members of the board of directors.

To prevent the moral hazard of management, properly monitor opportunistic behavior, and enhance corporate value by maximizing professionalism and synergy, it is essential to establish effective corporate governance, which requires an in-depth understanding of the attributes of the human resources that operate IC systems. This study suggests that designing a management oversight system without understanding the dynamics of the qualitative and quantitative attributes of IC human resources can only result in increased social costs. However, while this study examined the impact of social ties within boards of directors on the composition of personnel exclusively responsible for IC, it did not analyze the effectiveness of the IC personnel themselves. Additionally, this study only considered school and area of origin when identifying social connections among directors.

This study covers a three-year sample period from 2014 to 2017 in consideration of the implementation of the Standards for Internal Accounting Management System in 2013 and the revision of the Act on External Audit of Stock Companies, etc. in 2017. This study is limited in that the results may not be generalizable for the same period in a different institutional environment. Future research can further examine the effect of social ties on management's opportunistic behaviors, such as performance-compensation sensitivity, the purchase of treasury stocks, or the issuance of convertible bonds, which may directly increase the management's personal wealth.

Table 6. (continued)

Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm Clustering	Yes	Yes	Yes	Yes	Yes	Yes
Year Clustering	Yes	Yes	Yes	Yes	Yes	Yes
F-Value	85.10***	84.43***	85.08***	84.83***	76.25***	
Adj.-R ²	62.72%	62.71%	62.66%	62.65%	62.80%	
N	1,738	1,738	1,738	1,738	1,738	

Note: ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively. TIE_HIGH, TIE_UNIV, TIE_GRAD, and TIE_HOME are indicator variables that represent the presence of high-school ties, university ties, graduate-school ties, and regional ties, respectively, between internal and external directors. Other variable definitions are presented in appendix A..

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APPENDIX A

Variable Definitions

<i>IC_TOTAL1</i>	Natural logarithm (1 + number of personnel in charge of the internal management accounting system)
<i>IC_TOTAL2</i>	Natural logarithm (1 + number of personnel in charge of the internal management accounting system in the accounting, finance, information technology, and disclosure departments)
<i>IC_ACC</i>	Natural logarithm (1+ number of personnel in charge of internal management accounting system in the accounting department)
<i>IC_FIN</i>	Natural logarithm (1+ number of personnel in charge of internal management accounting system in the finance department)
<i>IC_IT</i>	Natural logarithm (1+ number of personnel in charge of the internal management accounting system in the information technology department);
<i>IC_DISCLOSE</i>	Natural logarithm (1+ number of personnel in charge of the internal management accounting system in the disclosure department);
<i>IC_OTHER</i>	Natural logarithm (1+ number of personnel in charge of the internal management accounting system in other departments)
<i>TIE</i>	Indicator variable representing the presence of social ties between internal and outside directors
<i>BOD</i>	Natural logarithm (1 + number of members in the board of directors)
<i>OUT</i>	Proportion of outside directors
<i>SIZE</i>	Natural logarithm (1 + total assets)
<i>EMPLOYEE</i>	Natural logarithm (1 + number of total employees)
<i>LEV</i>	Total liabilities/total assets
<i>CFO</i>	Cash flows from operating activities/prior year total assets
<i>STD_CFO</i>	Standard deviation of (cash flows from operating activities/prior year total assets) over the period from t-5 years to t year
<i>GROWTH</i>	Growth rate of sales revenue
<i>LOSS</i>	Indicator variable representing losses

<i>CHAEVOL</i>	Indicator variable representing Chaebol affiliates
<i>OWN</i>	Primary shareholder ownership
<i>FOR</i>	Foreign shareholder ownership

APPENDIX B

Article Related to the Social ties between Inside and Outside Directors within the Board

SustinVest, a private voting-rights advisor in Korea, criticized Hanjin Group for the lack of independent outside directors to keep management in check. If the independence of outside directors to be appointed in Hanjin Group is not objectively secured, it would be difficult to enhance the mid- to long-term value of its companies just by improving their governance structure, as proposed by Hanjin Group. In a report titled “The Path that Hanjin Group should take,” SustinVest highlighted that the outside directors of the major listed affiliates in the Hanjin Group are currently very vulnerable in terms of independence. This is because most of its outside directors are alumni of Kyungbok High School, which Group Chairman Cho Yang-ho had attended, or academic connections related to the University of Southern California (USC), wherein family members, such as Group Chairman Cho Yang-ho, had studied, or the law firm center, Square, which is also related to the group chairman. SustinVest argued that “an open channel should be established where ordinary shareholders and various stakeholders can freely recommend candidates for outside directors without restrictions, not a declarative phrase to appoint independent outside directors.” They also advised that, “There is a need to secure procedural justification for appointing the final outside director candidate through reasonable and transparent procedures in this formed pool of outside directors.” [Korea Economic Daily, 2019.03.04.

APPENDIX C**Table 1 Sample selection procedure**

Sample Selection Process	Number of Observations
Total KOSPI-market-listed non-financial firms with a December 31 st Financial Year End (FYE) during the period 2014–2016	2,658
(-) Firms without appropriate internal control personnel data	(598)
(-) Firms without board member characteristic data	(281)
(-) Firms without the necessary data for the control variables	(41)
Final Sample	1,738