Internal Control Personnel’s Experience, Internal Control Weaknesses, and ESG Rating

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Abstract: Effective internal control is expected to have a positive effect on Environmental, Social, and Governance (ESG) ratings, which are an indicator of corporate sustainability, as it ensures improvements in efficiency and effectiveness in operations, reliable reports, and compliance with applicable laws and regulations. However, no matter how well an internal control system is designed, internal control quality deteriorates if internal control (IC) personnel do not understand the firm’s business or lack accounting experience. This study first explores the relationship between ESG ratings and internal control weaknesses (ICWs). We then examine two types of career experience of IC personnel—length of service and accounting experience—and their effect on ICWs. We conduct logit regression analyses using the data of 1876 non-financial listed firms in Korea. The results show that ICW firms have low ESG ratings. We also find that the accounting experience of IC personnel is more closely related to ICWs than the length of service. This implies that the accounting expertise of IC personnel may have a greater effect on internal control quality than the understanding of a firm’s business. Overall, our findings provide evidence that firms must have IC personnel with sufficient accounting expertise for sustainable management.

Keywords: ESG ratings; internal control weakness; internal control personnel; career experience

1. Introduction

Internal control is becoming one of the most important tools for firms to develop self-discipline and improve management performance [1–4]. The Committee of Sponsoring Organizations of the Treadway Commission (COSO) explains two ways that the internal control system affects corporate sustainability [5]. First, internal control enhances the effectiveness and efficiency of operations and ensures compliance with applicable laws and regulations, thereby helping firms improve their future performance [6–8]. Second, internal control increases the reliability of reports that firms produce and disclose, helping their stakeholders accurately evaluate and monitor the firm’s sustainability. However, little empirical evidence exists on the impact of internal control on corporate sustainability indicators. This study attempts to fill this gap by empirically examining the relationship between ICWs and Environmental, Social, and Governance (ESG) ratings.

In response to a series of accounting scandals in the early 2000s, the U.S. Congress enacted the Sarbanes-Oxley Act of 2002 (“SOX”), requiring firms to establish and maintain an internal control system, attest to its effectiveness, and disclose the results. Since Articles 302 and 404 of SOX were implemented, many studies have investigated the determinants and economic consequences of internal control weaknesses (ICWs). However, very few have examined how the characteristics of internal control (IC) personnel affect ICWs. This is because career data of these personnel are only disclosed in Korea. Using Korea’s unique data, we investigate the impact of the personnel’s length of service and accounting experience on ICWs. Length of service refers to the number of years that IC personnel
have worked for their company. Personnel with a longer period of service are likely to have a better understanding of the company’s business. Accounting experience refers to the period during which IC personnel have performed auditing and consulting services in departments related to the preparation and disclosure of financial statements or have worked for accounting firms. IC personnel with considerable accounting experience are more likely to have greater accounting expertise.

The effects of length of service and accounting experience on internal control quality can be examined from two perspectives. On one hand, IC personnel with many years of service have an in-depth understanding of the firm’s business even if they lack accounting experience, and thus can effectively operate and manage the internal control system. On the other hand, since internal control systems have similar basic operating principles, personnel with a great deal of accounting experience, even if their length of service is short, can effectively operate the internal control system by benchmarking it against industry standards. Therefore, this study expands the literature on the determinants of ICWs by examining which of the two types of career experience has a greater effect on ICWs.

To test these arguments, we use 2018 data from 1876 listed firms in Korea. We employ the ordered logit regression models to examine the relationship between ICWs and ESG ratings. The results show that ICW firms have low ESG ratings. This implies that effective internal control leads to a positive evaluation of corporate sustainability. Furthermore, we conduct logit analysis on the relationship between ICWs and the career experience of IC personnel. This study classifies IC personnel into three job positions—internal accounting manager (generally the internal accounting manager (CFO)), executive officer for accounting, and accounting staff—and investigates the effects of career experience of IC personnel in each job position on ICWs. The results are as follows. First, at the level of CFO, we find that the length of service and accounting experience have a significant negative relationship with ICWs, and accounting experience has a greater effect on ICWs than the length of service. Second, at the executive officer for accounting and accounting staff levels, we report that accounting experience and ICWs have a significant negative relationship, but length of service does not have a statistically significant relationship with ICWs. Our results imply that the accounting experience of IC personnel has a greater effect on ICWs than the length of service. Meanwhile, accounting experience of internal accounting managers (CFOs) and accounting staff turned out to have a significant effect on ICWs.

This study contributes to previous studies in various aspects. First, this study provides empirical evidence on whether internal control affects ESG rating, an indicator of corporate sustainability. The theoretical background predicts that effective internal control has the benefit of enhancing corporate sustainability [5], but few studies have attempted to empirically examine this factor. Second, using unique data on the career experience of IC personnel, we provide empirical evidence which shows that accounting expertise and an understanding of the firm’s business is important in improving internal control quality. While previous studies focus on how the number of IC personnel or the existence of CPA licenses among IC personnel affects internal control quality [9,10], this study expands on the literature by examining which career backgrounds of IC personnel have a greater impact on internal control quality. Third, to the best of our knowledge, ours is the first study to examine the effect on ICWs at each career level—internal accounting manager (generally CFO), executive officer for accounting, and accounting staff—after separating IC personnel by rank. Previously, only the average career of IC personnel was disclosed, so prior studies could not use the career data for individual positions [9,10]. Using the career data for individual position, we show that, among IC personnel, the accounting expertise of internal accounting managers and accounting staff is important for improving internal control quality. Fourth, our findings imply that companies must assign employees with extensive accounting experience to internal control tasks which are the basis for corporate sustainable growth. Fifth, our empirical results suggest that IC personnel’s accounting experience may be useful to investors when assessing a firm’s sustainability or the reliability of its financial disclosures.

The rest of this paper has the following structure. Section 2 examines the internal control disclosure system in Korea, reviews previous studies, and sets the hypotheses. Section 3 explains the research
design, while Section 4 provides empirical results. Section 5, the conclusions section, summarizes this study and presents its limitations and offers suggestions for future research.

2. Literature Review and Hypothesis Development

2.1. Institutional Background

Since the U.S. Congress passed the Sarbanes-Oxley Act of 2002 (SOX), Korea’s Financial Supervisory Service (an agency performing the same role as the Securities and Exchange Commission (SEC) in the U.S.) announced a set of measures to reform the accounting system in Korea in 2002. As these measures are similar to those included in SOX, they are referred to as K-SOX.

According to the Act on External Audit of Stock Companies (the External Audit Act), each company is required to have an internal accounting control system for preparing and disclosing reliable accounting information. A company representative is responsible for controlling and operating the internal accounting control system and designates one of its full-time directors to be in charge of the system as an internal accounting manager. The company representative reports on the operational status of the internal accounting control system to the general meeting of shareholders, the board of directors, and the statutory auditor each business year. In conducting an audit, an auditor must review (or must audit if he/she is the auditor of a stock-listed corporation) the details of the report on the operational status of the internal accounting control system, and is required to state his/her overall review opinion on the findings (or the audit opinion for a stock-listed corporation) in the audit report. The difference between the External Audit Act and Article 404 of SOX is that, in Korea, the auditor is under the obligation to review or audit the details of the firm’s report on the operational status of the internal accounting control system.

Korea has made it obligatory to disclose the names and career experience (length of service and accounting experience) of IC personnel in annual reports (10-K) as of 1 January 2018. Previously, only the average months of service among all IC personnel and the percentage of those with a CPA license were to be briefly disclosed. However, the revised regulations make it mandatory to individually disclose the personal data of IC personnel as well as their length of service at the relevant company in order to promote accountability. IC personnel’s career experience must be segregated in terms of length of service and accounting experience. Length of service refers to the entire period in which one has worked at the relevant company as an employee. Accounting experience refers to the period in which one has performed audit or consultation services in a department preparing and disclosing financial statements or at an accounting firm before working at the relevant company.

2.2. Literature Review

Internal control refers to various control activities carried out to achieve a firm’s managerial objectives [5]. The internal control system has become important, especially since the U.S. enacted SOX after the Enron scandal and adopted strong regulations regarding establishment and maintenance of internal control systems. Since the implementation of SOX, various studies have been conducted on internal control systems in academia. These studies can be classified into two types. The first examines the characteristics of ICW firms. The second studies the effects of ICWs on stakeholders. These studies examine the market response to ICWs and the impact of ICWs on the cost of capital.

The first to study the characteristics of ICW firms are Ge and McVay [11]. They propose that firms with complex businesses, poor profitability, and small size are likely to report ICWs. Doyle et al. [12] find that smaller, younger firms with poor financial solvency are likely to report ICWs. Ashbaugh-Skaife et al. [13] find that companies with complex operating systems, recently altered organizational structures, large accounting risks, or recently resigned auditors are likely to have ICWs. They also find that companies with a history of being sanctioned by the SEC, companies audited by large accounting firms, as well as those with large institutional shareholders are likely to report ICWs due to considerable internal and external surveillance. Albring et al. [14] argue that the unexpected
audit fees for the previous year help predict ICWs. Chen and Keung [15] document that excess directors’ and officers’ legal liability insurance increases the probability of ICW disclosure. Cheng et al. [16] investigate the spillover effect of ICW disclosures. They find that a firm is less likely to disclose ICWs if one of its audit committee members has also been on the board of an ICW firm within the previous three years. This implies that the director’s prior experience with adverse disclosure outside the firm influences the disclosure of ICWs.

Meanwhile, there are many studies that connect and examine governance and ICW reports. If the audit committee is comprised of independent outside directors and includes a financial expert, the firm is less likely to report ICWs [17–19]. Firms with higher independence, greater expertise, and more activity on the board of directors or audit committee are less likely to have ICWs [20,21]. Firms with CFOs that lack expertise are more likely to report ICWs and are also likely to replace the CFO after reporting the weakness [22,23]. Lisic et al. [24] document that firms with expertise on the audit committee are more likely to report ICWs, but if there is a strong CFO, this relationship is weakened. Although it is rare, there is also a study that uses personal characteristics of IC personnel available only in Korea [9,10]. Choi et al. [9] provide empirical evidence that firms with a higher ratio of IC personnel to their total employees are less likely to disclose ICWs.

Next, there is literature that examines the effects of internal control on stakeholders. Most studies that investigate the stock market’s response to the disclosure of ICWs document a significant negative stock price reaction [25–27]. Hammersley et al. [25] find a significant negative stock price response at the time of disclosure of ICW. They also report that the negative stock price response becomes stronger when the ICW is serious, difficult to detect through external audits, and ambiguous. ICWs also increase the probability of a future stock crash and make it easy for managers to withhold bad news [26,27].

The research on the effect of internal control on the cost of capital can be divided into the study of the cost of equity and the cost of debt. This research provides empirical evidence that investors or creditors consider ICW firms to have high risks and thus demand higher rates of return, which is why the disclosure of ICWs increases the cost of capital [28–30]. In addition, the disclosure of ICW has a negative effect on the number of financial analysts following a stock [31], and increases the probability that the internal control manager will be dismissed [32].

Internal control also affects corporate financing decisions, investment decisions, mergers and acquisitions (M&A) decisions, and conservatism in financial reporting [33–36]. Gao et al. [33] report that internal control influences corporate financing decisions. ICW firms are more likely to seek external financing and use equity financing rather than debt before the disclosure of ICWs. However, after the disclosure of ICWs, ICW firms show similar financing preferences to non-ICW firms. Sun [34] examines the impact of ICWs on firm investment. He documents that ICW firms invest significantly less than non-ICW firms. Caplan et al. [35] investigate whether ICWs are associated with poor M&A decisions. They find that the goodwill recognized from the acquisition in a year with ICWs is more likely to be impaired in subsequent years than the goodwill recognized from the acquisition in years without ICWs. Mitra et al. [36] examine the relationship between accounting conservatism and ICWs and show that ICW firms exhibit greater accounting conservatism than non-ICW firms.

### 2.3. Hypotheses Development

#### 2.3.1. ICWs and ESG Ratings

COSO [5] defines internal control as “a process, effected by an entity’s board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives relating to operations, reporting, and compliance.” COSO released its Internal Control-Integrated Framework (the Framework) in 1992 to respond to senior executives’ demand for effective ways to better control their business and to ensure that the company achieves its objectives. The framework provides for three categories of objectives: operations, reporting, and compliance [5]. For operational objectives, internal control ensures that the company uses resources effectively and
efficiently for business. Reporting objectives pertain to internal and external financial and non-financial reporting. Internal control helps maintain a reliable, timely, and transparent reporting system for financial and non-financial information. Lastly, for compliance objectives, internal control ensures that the company complies with applicable laws, regulations, and internal policies and procedures. The Framework suggests that effective internal control has the benefit of helping executives measure business performance, make management decisions, evaluate business processes, and manage risk, thereby achieving the company’s organizational objectives efficiently and avoiding risk [5]. In addition, effective internal control allows for quick detection of problems caused by personal carelessness, negligence, misjudgment, or unclear instructions, as well as intentional violations of internal policies and procedures (such as embezzlement, breach of trust, etc.) on the part of employees and facilitates the company’s ability to take timely countermeasures [5]. As such, internal control has value that goes beyond just accurate accounting information because it increases the reliability of not only financial reporting but also non-financial reporting and improves the efficiency and effectiveness of operations. Previous studies suggest empirical evidence that effective internal control not only lowers the possibility of financial reporting fraud [37] but also increases the reliability of non-financial information [1,2]. In addition, effective internal control has a positive effect on the future performance and innovation performance of a firm [6,7]. These benefits that effective internal control brings to the company ultimately contribute to the company’s sustainability. This is why many countries including the U.S. require firms to evaluate their own internal control systems and disclose their weaknesses.

There are many examples of weakening corporate sustainability due to a lack of internal control. For example, Volkswagen was removed from the Dow Jones Sustainability Indices (DJSI) after admitting that it had installed “defeat devices” to cheat emissions tests. Volkswagen’s “Dieselgate” is an example of a decline in corporate sustainability due to the lack of internal control over compliance with environmental laws. While the theoretical background and anecdotal evidence suggest that weak internal controls could undermine the sustainability of a firm, few studies have examined this. Our first hypothesis involves examining whether internal control quality affects the evaluation of corporate sustainability. In this study, we measure the absence of ICWs as reflecting a high quality level of internal control. The ESG rating is used as a proxy for the company’s sustainability. We predict that an ICW firm will have a lower ESG rating.

**Hypothesis 1.** There is no significant relationship between ICWs and ESG ratings.

2.3.2. IC Personnel’s Career Experience and ICWs

Internal control systems are vital to the sustainability of a firm. However, no matter how well designed the internal control system is, it is impossible to avoid execution errors that occur in the process of operating the system. Human resources are the key factor in the internal control system, and the qualifications and experience of the people operating the system may have a critical impact on internal control quality.

The career experience of IC personnel can be classified into two types: length of service, which represents how long they have worked for the firm, and accounting experience, which represents how long they have been involved in accounting. IC personnel that have worked for a long time have a good understanding of the firm’s transactions or business, and thus can identify and prevent transactions that may seem abnormal or fraudulent. In many cases, fraud arises in a complicated transaction or business structure, which makes it difficult to identify with only a general knowledge of accounting. Identifying unusual or fraudulent transactions requires an in-depth understanding of the firm’s business. Dyck et al. [37] analyzes 216 cases of accounting frauds that occurred in U.S. conglomerates from 1996 to 2004. They find that employees inside the company are better at detecting accounting frauds than external auditors or supervisory authorities. This implies that understanding the firm’s business may be more useful in detecting fraud than general accounting knowledge.
On the other hand, IC personnel’s accounting experience is likely to have a greater effect on internal control quality than length of service. Ge and McVay [11] report that the most common reasons for ICW are account-specific issues caused by employees with insufficient technical expertise. Their findings imply that, although the purpose of a firm’s internal control system is not entirely for financial reporting, the accounting expertise of IC personnel contributes significantly to the firm’s internal control quality. Similarly, many studies provide empirical evidence that when the board of directors or audit committee includes an accounting expert, the firm is less likely to disclose ICWs [17–24].

Our second hypothesis is to examine whether the two types of career experience of IC personnel—length of service and accounting experience—have a significant effect on internal control quality. Our third hypothesis is to examine whether length of service or accounting experience has a greater effect on internal control quality.

Hypothesis 2. There is no significant relationship between IC personnel’s length of service and disclosure of ICWs.

Hypothesis 3. There is no significant relationship between IC personnel’s accounting experience and disclosure of ICWs.

Hypothesis 4. There is no significant difference in the effect of IC personnel’s length of service and accounting experience on disclosure of ICWs.

3. Research Design

3.1. Model Specification

3.1.1. ICWs and ESG Ratings

To test the effect of ICWs on the ESG rating for the next year, we estimate the ordered logit regression model Equation (1).

\[
ESG_{it+1} = \alpha_0 + \alpha_1 ICW_{it} + \gamma_1 LMV_{it} + \gamma_2 ROA_{it} + \gamma_3 LEV_{it} + \gamma_4 BIG_{it} + \text{Industry fixed effect} + \epsilon_{it}
\]

(1)

ESG = 6 if the firm’s ESG rating is S, 5 for A+, 4 for A, 3 for B+, 2 for B, and 1 for C or less.
ICW = 1 if the firm reports ICWs and 0 if not.
LMV = Natural log of market value of equity (in thousands of won)
ROA = Return on assets (=net income/total assets)
LEV = Debt ratio (=total liabilities/total assets)
BIG = 1 if a firm is audited by Big 4 and 0 otherwise
\(\epsilon\) = Error term

In Equation (1), ESG, the dependent variable, is the ESG rating for the next year. We collect ESG rating information from the database of the Korea Corporate Governance Service (KCGS). ESG ratings in the KCGS are reflected as six grade levels: S, A+, A, B+, B, C, or less. We rank ESG ratings on a scale from 6 (the highest ESG rating, S) to 1 (the lowest ESG rating, C or less). A ranking of 6 indicates that there exists only a minimal possibility of damaging shareholder value due to ESG risks. We use an ordered logit regression model with lagged explanatory variables because the firm-specific variables can be reflected in the ESG rating with a time lag. The variable of interest is ICW, a dummy variable that takes the value of 1 if the firm reports ICWs and 0 if not. If the company’s sustainability indicators deteriorate when the firm discloses ICWs, \(\alpha_1\) is expected to have a significant negative value. We include firm size, ROA, debt ratio, and auditor size as control variables. These variables are identified as determinants of ESG ratings in previous studies [38–40]. Firms with large market value,
high profitability, and Big 4 auditors are expected to have high ESG ratings, while firms with a high debt ratio are expected to have low ESG ratings. Lastly, we include the industry dummy to control the difference in ESG ratings among industries.

3.1.2. IC Personnel’s Career Experience and ICWs

To test the effect of IC personnel’s career experience on ICWs, we estimate the logit regression model Equation (2).

\[
ICW_t = \alpha_0 + \alpha_1 BEXP_{it} + \alpha_2 AEXP_{it} + \gamma_1 SIZE_{it} + \gamma_2 ROA_{it} + \gamma_3 CFO_{it} + \gamma_4 LEV_{it} \\
+ \gamma_5 AGE_{it} + \gamma_6 BIG_{it} + \gamma_7 GROW_{it} + \gamma_8 LIQ_{it} \\
+ \text{Industry fixed effect} + \epsilon_{it}
\] (2)

ICW = 1 if the firm reports ICW, 0 if not
BEXP1 = Natural log of the internal accounting manager’s length of service
BEXP2 = Natural log of the executive officer for accounting’s length of service
BEXP3 = Natural log of the accounting staff’s length of service
AEXP1 = Natural log of the internal accounting manager’s accounting experience
AEXP2 = Natural log of the executive officer for accounting’s accounting experience
AEXP3 = Natural log of the accounting staff’s accounting experience
SIZE = Natural log of total assets (in thousands of won)
ROA = Return on assets (=net income/total assets)
CFO = Cash flow from operating activities/total assets
LEV = Debt ratio (=total liabilities/total assets)
AGE = Ln(firm age +1);
BIG = 1 if a firm is audited by Big 4, and 0 otherwise
GROW = Sales growth;
LIQ = Current assets/current liabilities
\epsilon = Error term

In Equation (2), ICW, the dependent variable, is a dummy variable that takes the value of 1 if the firm reports ICW and 0 if not. The variables of interest are BEXP, the variable of IC personnel’s length of service, and AEXP, the variable of IC personnel’s accounting experience. If ICWs are decreased by the IC personnel’s length of service and accounting experience, \( \alpha_1 \) and \( \alpha_2 \) are expected to have significant negative values. Furthermore, if the IC personnel’s length of service has a greater effect on ICWs than accounting experience, \( \alpha_1 > \alpha_2 \); if opposite, \( \alpha_2 > \alpha_1 \). IC personnel are classified by job position into internal accounting manager (generally CFO), executive officer for accounting, and accounting staff. BEXP1 and AEXP1 are internal accounting manager’s career experience variables, BEXP2 and AEXP2 are executive officer for accounting’s career experience variables, and BEXP3 and AEXP3 are accounting staff’s career experience variables.

Other control variables include firm-specific variables that may affect ICWs according to previous studies [12,13]. Doyle et al. [12] suggests that firm size and age are in an inverse relation with ICWs, and thus we include the natural log of total assets (SIZE) and firm age (AGE). We include the firm’s return on assets (ROA), operating cash flow (CFO), liquidity ratio (LIQ), and leverage ratio (LEV), because firms in financial difficulties are likely to have ICWs. Moreover, we include sales growth (GROW), since growing firms are likely to have difficulty in maintaining proper internal controls that keep pace with their growth. BIG is also included because big accounting firms are likely to detect and report ICWs. BIG is a dummy variable that has the value of 1 if the firm’s auditor is a BIG 4 accounting firm, and 0 if not. Finally, we include the industry dummy to control the difference in internal control quality among industries.
3.2. Sample Selection

We personally collected data on IC personnel's career experience and ICW from the annual report on Form 10-K of Korean listed firms in 2008. We started the sample period from 2018, because it is the first year in which the data on IC personnel’s length of service became available. Beginning in 2019, Korea implemented the new External Audit Act and has since undergone large-scale audit reform measures including the introduction of a periodic auditor designation system and the standard audit hours. To control the impact of these audit reforms on our empirical results, we limited the sample period to 2018, before the enforcement of the new External Audit Act. Financial data were collected from TS2000 (equivalent to Compustat in the U.S.). Financial companies are excluded from the samples since the format and account titles of financial statements are different from other industries and are thus difficult to compare. We required sample firms for the fiscal year ending 31 December. The size of the final samples is 1876 firm-year observations. Table 1 shows the distribution of samples by industry. The industries with the biggest number of samples are manufacture of electronic components, computer, visual, sounding and communication equipment.

Table 1. Sample composition by industry.

| Industry                                                                 | Frequency | Percent |
|--------------------------------------------------------------------------|-----------|---------|
| Manufacture of food products                                            | 64        | 3.41    |
| Manufacture of beverages                                                 | 10        | 0.53    |
| Manufacture of textiles, except apparel                                  | 12        | 0.64    |
| Manufacture of wearing apparel, clothing accessories and fur articles    | 26        | 1.39    |
| Manufacture of pulp, paper, and paper products                           | 25        | 1.33    |
| Manufacture of chemicals and chemical products; except pharmaceuticals   | 132       | 7.04    |
| and medicinal chemicals                                                  |           |         |
| Manufacture of pharmaceuticals, medicinal chemical and botanical products | 133       | 7.09    |
| Manufacture of rubber and plastics products                              | 50        | 2.67    |
| Manufacture of other non-metallic mineral products                       | 36        | 1.92    |
| Manufacture of basic metals                                              | 75        | 4       |
| Manufacture of fabricated metal products, except machinery and furniture | 43        | 2.29    |
| Manufacture of electronic components, computer, visual, sounding and     | 258       | 13.75   |
| communication equipment                                                  |           |         |
| Manufacture of medical, precision and optical instruments, and watches   | 69        | 3.68    |
| and clocks                                                               | 60        | 3.2     |
| Manufacture of electrical equipment                                      | 164       | 8.74    |
| Manufacture of other machinery and equipment                             | 93        | 4.96    |
| Manufacture of motor vehicles, trailers, and semitrailers                | 22        | 1.17    |
| Manufacture of other transport equipment                                 | 11        | 0.59    |
| Other manufacturing                                                      | 11        | 0.59    |
| Electricity, gas, steam, and air conditioning supply                      | 41        | 2.19    |
| General construction                                                     | 14        | 0.75    |
| Specialized construction activities                                       | 116       | 6.18    |
| Wholesale trade on own account or on a fee or contract basis              | 112       | 5.97    |
| Retail trade, except motor vehicles and motorcycles                       | 35        | 1.87    |
| Land transport and transport via pipelines                                | 11        | 0.59    |
| Publishing activities                                                    | 116       | 6.18    |
| Motion picture, video and television program production, sound recording | 28        | 1.49    |
| and music publishing activities                                           | 12        | 0.64    |
| Broadcasting activities                                                  | 12        | 0.64    |
| Postal activities and telecommunications                                  | 33        | 1.76    |
| Computer programming, consultancy, and related activities                | 32        | 1.71    |
| Information service activities                                           | 26        | 1.39    |
| Research and development                                                 | 68        | 3.62    |
| Professional services                                                    | 16        | 0.85    |
| Architectural, engineering, and other scientific technical services      | 15        | 0.8     |
| Business support services                                                | 11        | 0.59    |
| Education                                                                | 1876      | 100     |
4. Empirical Results

4.1. Descriptive Statistics

Table 2 shows the descriptive statistics of samples used in this study. The average of ESG is 1.84, which means that the average ESG rating for sample firms is B. The mean of ICW is 0.05, which indicates that ICW firms make up 5% of all samples. The means of BEXP1, BEXP2, and BEXP3 are 2.04, 1.79, and 1.93, respectively. When converted to raw values, the average length of service of internal accounting managers, executive officers for accounting, and accounting staff are 7.69 years, 5.99 years, and 6.89 years, respectively. The means of AEXP1, AEXP2, and AEXP3 are 2.37, 2.19, and 2.38, respectively. Since accounting experience includes the career experience in accounting before joining the current firm, it is longer than the length of service. The mean of SIZE is 18.97, and when converted to a raw value, the average total assets of sample firms is KRW 173.2 billion. The mean of ROA is −0.01, which means that sample firms report a net loss equal to 1% of their total assets. Among the sample firms, 45% are audited by the Big 4 accounting firms. The average leverage ratio (LEV) of sample firms is 36%, and the average liquidity ratio is 346%. The annual average sales growth (GROW) of sample firms is 7%, and average firm age (raw value of AGE) is 8.8 years.

Table 2. Descriptive statistics.

| Variables | Mean | Standard Deviation | Minimum | Median | Maximum |
|-----------|------|--------------------|---------|--------|---------|
| ESG       | 1.84 | 0.90               | 1.00    | 2.00   | 5.00    |
| ICW       | 0.05 | 0.22               | 0.00    | 0.00   | 1.00    |
| BEXP1     | 2.04 | 1.19               | −1.61   | 2.30   | 3.76    |
| BEXP2     | 1.79 | 1.14               | −1.61   | 1.58   | 3.69    |
| BEXP3     | 1.93 | 1.00               | −1.12   | 2.17   | 3.44    |
| AEXP1     | 2.37 | 1.02               | −0.12   | 2.77   | 3.80    |
| AEXP2     | 2.19 | 1.04               | 0.00    | 2.56   | 3.72    |
| AEXP3     | 2.38 | 0.75               | 0.22    | 2.64   | 3.74    |
| SIZE      | 18.97| 1.31               | 16.37   | 18.77  | 23.51   |
| ROA       | −0.01| 0.13               | −0.63   | 0.02   | 0.23    |
| CFO       | 0.03 | 0.09               | −0.50   | 0.03   | 0.26    |
| LEV       | 0.36 | 0.20               | 0.03    | 0.36   | 0.88    |
| AGE       | 3.18 | 0.69               | 1.01    | 3.18   | 4.32    |
| BIG       | 0.45 | 0.50               | 0.00    | 1.00   | 1.00    |
| GROW      | 0.07 | 0.39               | −0.74   | 0.02   | 2.38    |
| LIQ       | 3.46 | 5.33               | 0.21    | 1.70   | 37.43   |

Refer to Equations (1) and (2) for the definition of variables.

Table 3 presents the results of the univariate analysis that compares ICW firms with non-ICW firms. The results suggest that the IC personnel of ICW firms have short lengths of service and less accounting experience than those of non-ICW firms. In addition, ICW firms are smaller in size, less profitable, have lower operating cash flows, have higher debt ratios, have younger firm ages, and are more likely to appoint Big 4 accounting firms than non-ICW firms.

Table 4 presents the Pearson correlation matrix among key variables used in the regression analysis. ESG has a negative correlation with ICW but is not statistically significant. ESG is negatively associated with BEXP and AEXP, which indicates that the companies with more experienced IC personnel have high ESG ratings. ICW has a significant negative correlation with BEXP and AEXP at a 1% level. This indicates that if IC personnel serve longer and have more accounting experience, ICW is less likely to be disclosed, which is consistent with our hypothesis. Moreover, ICW has a significant negative correlation with SIZE, ROA, CFO, AGE, and LIQ, whereas it has a significant positive correlation with LEV and BIG. This result indicates that firms with ICW are small in size, low in profitability, low in
operating cash flow, young in age, and have low liquidity and high debt ratios. Moreover, it implies that Big 4 auditors detect ICW better since they perform high-quality audits.

Table 3. Univariate test: ICW firms vs. non-ICW firms.

| Variables | ICW Firms (N = 98) | Non-ICW Firms (N = 1778) | Mean Difference (T-Test) |
|-----------|-------------------|--------------------------|-------------------------|
| BEXP1     | 1.220             | 2.081                    | −0.860 **               |
| BEXP2     | 1.138             | 1.827                    | −0.689 **               |
| BEXP3     | 1.200             | 1.968                    | −0.768 **               |
| AEXP1     | 1.396             | 2.427                    | −1.031 **               |
| AEXP2     | 1.369             | 2.231                    | −0.861 **               |
| AEXP3     | 1.467             | 2.429                    | −0.962 **               |
| SIZE      | 18.009            | 19.020                   | −1.011 **               |
| ROA       | −0.087            | −0.002                   | −0.085 **               |
| CFO       | −0.001            | 0.029                    | −0.030 **               |
| LEV       | 0.498             | 0.357                    | 0.141 **                |
| AGE       | 2.750             | 3.208                    | −0.458 **               |
| BIG       | 0.602             | 0.441                    | 0.161 **                |
| GROW      | 0.125             | 0.067                    | 0.058                   |
| LIQ       | 2.750             | 3.494                    | −0.744                  |

*** indicates $p < 0.01$.

Table 4. Pearson correlation matrix.

|         | ESG | ICW | BEXP1 | BEXP2 | BEXP3 | AEXP1 | AEXP2 | AEXP3 | SIZE | ROA | CFO | LEV | AGE | BIG | GROW | LIQ |
|---------|-----|-----|-------|-------|-------|-------|-------|-------|------|-----|-----|-----|-----|-----|------|-----|
| ICW     | −0.05 | (0.19) |       |       |       |       |       |       |      |     |     |     |     |     |      |     |
| BEXP1   | 0.04  | −0.16 |       |       |       |       |       |       |      |     |     |     |     |     |      |     |
|         | (0.27) | (0.00) |       |       |       |       |       |       |      |     |     |     |     |     |      |     |
| BEXP2   | 0.07  | −0.13 | 0.70  |       |       |       |       |       |      |     |     |     |     |     |      |     |
|         | (0.06) | (0.00) | (0.00) |       |       |       |       |       |      |     |     |     |     |     |      |     |
| BEXP3   | 0.16  | −0.17 | 0.45  | 0.41  |       |       |       |       |      |     |     |     |     |     |      |     |
|         | (0.00) | (0.00) | (0.00) | (0.00) |       |       |       |       |      |     |     |     |     |     |      |     |
| AEXP1   | −0.04 | −0.23 | 0.32  | 0.26  | 0.19  |       |       |       |      |     |     |     |     |     |      |     |
|         | (0.25) | (0.00) | (0.00) | (0.00) | (0.00) |       |       |       |      |     |     |     |     |     |      |     |
| AEXP2   | 0.06  | −0.18 | 0.22  | 0.49  | 0.20  | 0.56  |       |       |      |     |     |     |     |     |      |     |
|         | (0.08) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |       |       |      |     |     |     |     |     |      |     |
| AEXP3   | 0.09  | −0.28 | 0.24  | 0.22  | 0.47  | 0.38  | 0.34  |       |      |     |     |     |     |     |      |     |
|         | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |       |      |     |     |     |     |     |      |     |
| SIZE    | 0.61  | −0.17 | 0.16  | 0.21  | 0.33  | 0.11  | 0.16  | 0.18  |       |     |     |     |     |     |      |     |
|         | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |       |     |     |     |     |     |      |     |
| ROA     | 0.12  | −0.15 | 0.10  | 0.11  | 0.12  | 0.06  | 0.06  | 0.12  | 0.27  |     |     |     |     |     |      |     |
|         | (0.00) | (0.00) | (0.00) | (0.00) | (0.01) | (0.01) | (0.00) | (0.00) | (0.00) |     |     |     |     |     |      |     |
| CFO     | 0.16  | −0.07 | 0.08  | 0.11  | 0.11  | 0.05  | 0.04  | 0.07  | 0.22  | 0.57 |     |     |     |     |      |     |
|         | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) |     |     |     |     |      |     |
| LEV     | 0.11  | 0.16  | −0.03 | −0.01 | −0.01 | −0.03 | 0.01  | −0.06 | 0.11  | −0.27 | −0.16 |     |     |     |      |     |
|         | (0.00) | (0.22) | (0.66) | (0.60) | (0.23) | (0.56) | (0.01) | (0.00) | (0.00) | (0.00) | (0.00) |     |     |     |      |     |
| AGE     | −0.08 | −0.15 | 0.23  | 0.24  | 0.30  | 0.11  | 0.14  | 0.12  | 0.26  | 0.07  | 0.03  | 0.04 |     |     |      |     |
|         | (0.03) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.15) | (0.07) |     |     |      |     |
| BIG     | 0.35  | 0.07  | 0.04  | 0.02  | 0.11  | −0.05 | −0.01 | 0.04  | 0.39  | 0.10  | 0.14  | 0.03  | 0.00 |     |      |     |
|         | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.04) | (0.00) | (0.00) | (0.00) | (0.00) | (0.00) | (0.24) | (0.89) |     |      |     |
| GROW    | 0.03  | 0.03  | −0.01 | −0.00 | −0.10 | 0.01  | 0.01  | −0.01 | 0.02  | 0.17  | 0.08  | −0.03 | −0.17 | 0.07 |     |      |     |
|         | (0.43) | (0.15) | (0.58) | (0.90) | (0.00) | (0.65) | (0.65) | (0.74) | (0.29) | (0.00) | (0.17) | (0.00) | (0.00) | (0.00) |     |     |
| LIQ     | −0.07 | −0.03 | −0.02 | −0.03 | −0.08 | −0.01 | −0.03 | 0.00  | −0.15 | 0.03  | −0.03 | −0.52 | −0.12 | −0.02 | 0.07 |     |     |
|         | (0.04) | (0.18) | (0.38) | (0.26) | (0.00) | (0.77) | (0.18) | (0.84) | (0.00) | (0.14) | (0.21) | (0.00) | (0.00) | (0.43) | (0.00) |     |     |

*p*-values are presented in parentheses.
4.2. Logit Regression Results

Table 5 presents the ordered logit regression results that test Hypothesis 1. The regression coefficient of ICW is significantly negative, which indicates that ICW firms have lower ESG ratings. This result supports Hypothesis 1, indicating that ICW firms are undervalued for their sustainability because of their low effectiveness and efficiency of operations as well as the low reliability of their financial and non-financial information. For other control variables, the regression coefficients of LMV, LEV, and BIG are positively significant. These results imply that companies that are large in size, have high leverage, and have Big 4 auditors have higher ESG ratings.

Table 5. Results of ordered logit regressions of ESG ratings.

| Variables | Model 1 |
|-----------|---------|
| Intercept | 20.00 *** (11.45) |
| ICW       | -1.81 (-2.12) |
| LMV       | 0.73 *** (11.19) |
| ROA       | 0.72 (0.71) |
| LEV       | 1.59 *** (3.62) |
| BIG       | 0.86 *** (4.89) |
| Industry Fixed Effect | Yes |
| X²        | 324.99 *** |
| Pseudo R² | 0.18 |
| N         | 743 |

*** indicates p < 0.01.

Table 6 shows the logit regression results that test Hypotheses 2 and 3. Model 1 is the result of analyzing the effects of the internal accounting manager’s career experience on ICWs. The regression coefficient of BEXP1 is -0.33 and the regression coefficient of AEXP1 is -0.79, representing statistically significant negative values. This result shows that longer service and extensive accounting experience of internal accounting managers decreases ICWs. The regression coefficient of AEXP1 is greater than that of BEXP1, which implies that the internal accounting manager’s accounting experience is more important in decreasing ICWs than length of service. Model 2 is the result of analyzing the effects of the executive officer for accounting’s career experience on ICWs. The regression coefficient of AEXP2 is -0.67, which is statistically significant at a 1% level, but the regression coefficient of BEXP2 is not statistically significant. This result shows that greater accounting experience of the executive officer for accounting decreases ICWs, but his/her length of service does not have a significant effect on ICWs. Model 3 is the result of analyzing the effects of the accounting staff’s career experience on ICWs. The regression coefficient of AEXP3 is -1.27, which has a significant negative value at a 1% level, but the regression coefficient of BEXP3 is not statistically significant. This result indicates that greater accounting experience of the accounting staff decreases ICWs, but their length of service does not have a significant effect on ICWs. Overall, the results in Table 5 show that IC personnel’s accounting experience has a greater effect on ICWs than length of service, but the effect of IC personnel’s career experience on ICWs varies depending on the job position of the IC personnel.
Table 6. Results of logit regressions of ICWs.

| Variables | Model 1 | Model 2 | Model 3 |
|-----------|---------|---------|---------|
| Intercept | 15.18 *** | 14.13 *** | 14.93 *** |
|           | (5.85)   | (5.62)  | (5.68)  |
| BEXP1     | −0.33 ** |          |          |
|           | (−2.87)  |          |          |
| AEXP1     | −0.79 ***|          |          |
|           | (−6.30)  |          |          |
| BEXP2     |          | −0.24   |          |
|           |          | (−1.69) |          |
| AEXP2     | −0.67 ***|          |          |
|           |          | (−4.71) |          |
| BEXP3     |          | −0.19   |          |
|           |          | (−1.20) |          |
| AEXP3     |          | −1.27 ***|          |
|           |          | (−7.73) |          |
| SIZE      | −0.93 ***| −0.90 ***| −0.85 ***|
|           | (−6.47)  | (−6.47) | (−5.86) |
| ROA       | −0.48    | −0.66   | −0.37   |
|           | (−0.55)  | (−0.76) | (−0.39) |
| CFO       | 1.55     | 1.64    | 1.51    |
| LLEV      | (1.13)   | (1.25)  | (1.09)  |
| LEV       | 4.40 *** | 4.46 *** | 4.18 ***|
|           | (5.74)   | (5.89)  | (5.27)  |
| AGE       | −0.44 *  | −0.47 **| −0.58 **|
|           | (−2.45)  | (−2.59) | (−3.09) |
| BIG       | 1.24 *** | 1.25 ***| 1.32 ***|
|           | (4.69)   | (4.85)  | (4.95)  |
| GROW      | 0.37     | 0.40    | 0.33    |
| LINV      | (1.32)   | (1.42)  | (1.13)  |
| LIQ       | 0.01     | 0.02    | 0.01    |
|           | (0.46)   | (0.53)  | (0.46)  |
| Industry Fixed Effect | Yes | Yes | Yes |
| X²        | 249.77 *** | 223.97 *** | 268.27 *** |
| Pseudo R² | 0.33 | 0.30 | 0.36 |
| N         | 1876 | 1876 | 1876 |

* *, **, *** indicate $p < 0.1$, $p < 0.05$, and $p < 0.01$, respectively.

The results of other control variables are as follows. The regression coefficients of SIZE and AGE represent significant negative values, whereas those of LEV and BIG represent significant positive values. This result indicates that bigger and older firms are less likely to have ICWs, whereas firms with high leverage ratios are more likely to have ICWs. Moreover, if the firm’s auditor is a Big 4 accounting firm, deficiencies in internal control will more likely be detected. Pseudo R2, which represents the explanatory power of the models, are 0.30–0.36.

Table 7 shows the logit regression results including all career experience variables of internal accounting managers, executive officers for accounting, and accounting staff in a single model. The regression coefficients of AEXP1 and AEXP3 are −0.46 and −0.99, respectively, representing statistically significant negative values, while the regression coefficient of AEXP2 is not statistically significant. Furthermore, all BEXP variables are not statistically significant. This result implies that the accounting expertise of internal accounting managers and accounting staff is particularly important in improving the internal control quality. The results of other control variables are similar to the results shown in Table 6.
5. Conclusions

This study investigates whether ICWs affect ESG ratings and then analyzes the characteristics of IC personnel’s career experience that affect ICWs. Using unique data on IC personnel, we are able to identify the types of IC personnel’s career experience that appear to decrease ICWs. A failure of internal control can impact the company’s profitability, success, and even survival [6,7]. The low effectiveness of internal controls leads to inefficient use of resources, low reliability of financial and non-financial information, and non-compliance, which adversely affect corporate sustainability [5]. Although interest in internal control has increased significantly in recent years, few studies have examined the effect of internal control on corporate sustainability. This study investigates whether ICW firms receive low evaluations in corporate sustainability using ESG ratings. In addition, this study examines IC personnel’s career experience as a determinant of ICWs. Specifically, we investigate which of the two components, IC personnel’s understanding of the business or general accounting experience, has a greater effect on ICWs. Korea is the only country that has made it mandatory to disclose IC personnel’s length of service and accounting experience.

A firm’s internal control system is not a sustainability report in and of itself, but previous studies suggest that internal control contributes to the disclosure of corporate sustainability information and

| Variables | Model |
|-----------|-------|
| Intercept | 14.81 ***<br>(5.51) |
| BEXP1     | −0.29<br>(−1.54) |
| AEXP1     | −0.46 **<br>(−2.69) |
| BEXP2     | −0.00<br>(−0.02) |
| AEXP2     | −0.05<br>(−0.24) |
| BEXP3     | −0.05<br>(−0.26) |
| AEXP3     | −0.99 ***<br>(−5.32) |
| SIZE      | −0.82 ***<br>(−5.52) |
| ROA       | −0.29<br>(−0.31) |
| CFO       | 1.20<br>(0.84) |
| LEV       | 4.32 ***<br>(5.37) |
| AGE       | −0.49 *<br>(−2.53) |
| BIG       | 1.27 ***<br>(4.60) |
| GROW      | 0.37<br>(1.22) |
| LIQ       | 0.02<br>(0.50) |
| Industry Fixed Effect | Yes |
| N         | 289.60 *** |
| X²        | 0.38 |
| Pseudo. R²| 1876 |

*, **, *** indicate p < 0.1, p < 0.05, and p < 0.01, respectively.
provide empirical evidence that high-quality internal control improves corporate green information disclosure [1,2]. Examining the determinants of internal control quality provides indicators for the stakeholders to assess the accuracy and reliability of the firms’ sustainability information disclosures. The literature demonstrates that internal control as a basic component of CSR plays an important role in strengthening the competitiveness and legitimacy of a company [3,4].

Using the unique data of listed firms in Korea, we find that ICWs are inversely related to ESG rating, an indicator of corporate sustainability. Additionally, IC personnel’s accounting experience is more closely related to the disclosure of ICWs than length of service. This result indicates that IC personnel’s accounting expertise may have a greater effect on internal control quality than an understanding of the firm’s business. Our findings imply that effective internal control helps raise a company’s ESG rating, and firms should assign personnel with extensive accounting experience in the field of internal control to improve internal control quality. This study provides valuable insight about the role and determinants of internal control quality as the basis for a company’s sustainable growth, but it also has the following limitations. First, even though the internal control regulations of Korea are similar to the U.S., other unknown institutional differences may make it difficult to generalize our results to all countries. Second, since the disclosure of IC personnel’s career experience began in 2018, this study uses only one year of data—2018. Third, there may be an endogenous issue related to the characteristics of companies that select IC personnel with a lot of accounting experience. However, despite these limitations, we believe that our research will shed light on the determinants of internal control quality. We look forward to future studies that will provide more direct evidence concerning the effect of IC personnel’s career experience on the reliability of sustainability management reports.

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