

Financial Distress and Audit Report Lags: An Empirical Study in Korea

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Abstract: This study examines the association between a firm's financial distress and audit report lags. Through this analysis, we intend to reveal whether auditors consider the clients' financial distress when performing external audits. This study employs 2,786 firm-year observations from 2011 to 2018. The sample of this study consists of companies listed on the Korea Composite Stock Price Index (KOSPI) and the Korea Securities Dealers Automated Quotation (KOSDAQ). We perform OLS regression analysis to test our hypothesis. The OLS regression analysis is conducted through the SAS and STATA programs. We find that there is a significant and positive association between financial distress and audit report lags. The audit report lags increase as the likelihood of clients' financial distress increases. The results indicate that audits take different amounts of audit effort when auditors consider financial distress as a business risk when they conduct audits. In other words, we provide evidence that auditors increase the amount of audit effort when the likelihood of clients' financial distress is high. In the absence of studies on how external auditors respond to audited firms' financial distress, this study analyzes whether external auditors change their audit efforts by assessing the audited firms' financial distress. Second, the empirical result that external auditors actually follow the guidelines related to business risk and financial distress specified in the Korean Auditing Standards supports the effectiveness of the business risk-related regulations specified in the Korean Auditing Standards

Keywords: financial distress, audit efforts, audit report lags, business risk

JEL Classification: M41, M42, M21

Introduction

This study empirically analyzes the association between financial distress and audit report lags. Through this analysis, we intend to reveal whether auditors consider the clients' business risk when performing external audits. A company's financial distress refers to a situation in which a company cannot generate sufficient revenue or income to repay its obligations, such as debt or preferred stock (Baldwin et al., 1983; Wruck, 1990). These financial difficulties are caused by high fixed costs, a large proportion of illiquid assets, or unstable earnings.

Early detection of a company's possible bankruptcy and financial distress has long been of interest to investors and academic researchers. Prior research related to financial distress was mainly conducted in the direction of introducing a statistical predictive model of financial distress and analyzing how investors perceive financial distress in the capital market. Early studies related to the statistical predictive models of financial distress suggested a univariate determinant model, a multivariate determinant model, and a logit model, respectively (Altman et al., 2017; Avramov et al., 2013; Habib et al., 2020). The statistical models they introduced were modified and used in various versions in numerous studies after that.

After the introduction of the statistical predictive model for financial distress, studies into the impact of financial distress have been conducted. Previous studies related to financial distress were mainly conducted with the objective of examining responses in the capital market. However, there are not sufficient studies to analyze how corporate financial distress affects auditor behavior. Accordingly, this study analyzes the association between financial distress and audit effort. The audit effort invested by auditors is measured by audit report lags.

Existing studies define an audit method that considers the business risk of the company being audited as a "business risk audit" among the audit procedures for obtaining audit evidence (Knechel, 2007). Generally Accepted Auditing Standards (GAAS) and International Standards on Auditing (ISA) require auditors to evaluate and consider business risks when performing external audits. Indeed, Knechel (2007) provides evidence that the Big 4 accounting firms conduct a "business risk audit" that considers business risk. Auditors evaluate clients' business risks and decide their actions accordingly, from client acceptance to risk management during the audit procedures and audit termination decisions (J.-H. Choi & Kim, 2020). These risks also include the litigation risk, corporate governance, and financial risks (Bronson et al., 2017; J. R. Cohen & Hanno, 2000; Manita et al., 2020; Valaskova et al., 2018).

According to the Statement on Auditing Standards (SAS) No. 99 and AS 2401, incentives, opportunities, and rationalization are three conditions that increase accounting

irregularities and financial reporting irregularities (Gul et al., 2018). Financial distress provides incentives for market expectations, maximizes short-term compensation, and achieves high corporate financial performance (Efendi et al., 2007). The existing literature provides evidence that managers of companies in financial distress tend to distort their financial reporting to maximize their compensation. In other words, financial distress provides incentives to distort financial reporting (Efendi et al., 2007; Hogan et al., 2008; Wruck 1990). Jaggi and Lee (2002) provide evidence that there is a positive and significant relation between income-increasing discretionary accruals and financial distress.

This study uses the WW index (Whited & Wu, 2006) and SA index (Hadlock & Pierce, 2010) among predictive models for the possibility of financial distress to measure the likelihood of a company's financial distress. This study examines the association between the likelihood of financial distress and the audit effort invested by auditors. The audit effort invested by the auditor is measured by audit report lags. The purpose of this study is to empirically investigate whether auditors value highly the risk and invest more effort and audit time than they do in firms that do not experience financial distress when conducting audits of firms in financial distress. Theoretically, firms experiencing financial distress are expected to increase the uncertainty about future cash flows and report difficulties in raising capital. From the auditor's point of view, we try to prove this relationship by focusing on whether such a situation is actually reflected and considered when auditing. As a result of empirical analysis, the audit report lags increase as the likelihood of clients' financial distress increase. These results can be interpreted as the result of increasing the audit effort that auditors put in to cope with the high business risk of clients.

This study makes the following contributions. This study contributes as there are only a few studies on how auditors respond to the financial distress of an audited company. First, previous studies related to financial distress have mainly focused on introducing a statistical predictive model of financial distress or analyzing how the capital market perceives financial distress. However, there is a lack of research on how auditors respond to the financial distress of audited companies.

According to the Korean Auditing Standards, external auditors should understand business risk and financial distress to identify and evaluate audit risk. However, there are no studies in Korea that provide empirical results to support whether external auditors actually consider the financial distress of the audited company when conducting external audits (J. Choi & Kim, 2020). Therefore, this study analyzes whether auditors vary the audit effort they put in by evaluating clients' likelihood of financial distress. Second, the empirical results of this study provide evidence that auditors take different amounts of audit effort into considering the clients' financial distress when performing external audits. These results contribute to security market regulators and institutions. Also, to the

best of our knowledge, no prior study analyzes the association between financial distress and audit report lags. Our paper contributes by providing evidence that financial distress affects audit report lags, which is important for auditors for their decision making. Also, our findings have implications for auditors, regulators, and standard setters by providing empirical results that external auditors actually follow the guidelines related to business risk and financial distress specified in the Korean Auditing Standards. Therefore, the result supports the effectiveness of the business risk-related regulations specified in the Korean Auditing Standards.

Literature Review

Financial Distress

Existing studies related to financial distress were mainly conducted with research introducing statistical predictive models of financial distress and analyzing how the capital market perceives financial distress. After a study that provides evidence that financial distress and stock returns have a significant negative relationship (Dichev, 1998), several studies analyzing the relationship between financial distress and stock returns have been conducted.

Habib et al. (2020) review the literature on the determinants and consequences of financial distress. Habib et al. (2020) categorize the indicators of financial distress into firm-level fundamental determinants, macroeconomic determinants, and firm-level corporate governance determinants. Campbell et al. (2008) measure financial distress using a logit model, and Avramov et al. (2009) use the credit rating as a proxy for financial distress. Both studies present evidence similar to that in the previous studies, indicating that there is a significant and negative association between financial distress and stock returns (Da and Gao 2010; Garlappi et al., 2008). Altman et al. (2017) assess the classification performance of the Z-Score model developed by Altman in predicting financial distress. Altman et al. (2017) provide evidence that the general Z-Score model works well for most countries.

Griffin and Lemmon (2002) examine the relationship between financial distress, book-to-market equity, and stock returns, and provide evidence that there is a significant and negative association between financial distress and stock returns. On the other hand, unlike many existing studies that report anomalies in financial distress, Vassalou and Xing (2004) present evidence that stock returns have a positive relationship with the risk of financial distress. Lamont et al. (2001) analyze whether financial distress is a risk factor explaining stock returns. As a result of the analysis, firms with high financial distress record low returns on average. Whited and Wu (2006) constructed an index of firms' financial constraints using a generalized method of moments (GMM) estimation

of an investment Euler equation. Whited and Wu (2006) provide evidence of a significant negative association between financial distress and stock returns, contrary to the results of Lamont et al. (2001).

After the introduction of the statistical predictive model of financial distress, studies analyzing the effect of financial distress have been conducted. However, there are not enough studies to analyze how corporate financial distress affects auditor behavior. Gul et al. (2018) test the association between managerial ability and audit fees, using financial distress as a moderator variable. Gul et al. (2018) provide evidence that there is a significant and positive association between managerial ability and audit fees in financially distressed firms. However, consistent with previous studies there is a significant and negative association between managerial ability and audit fees in non-distressed firms (Krishnan and Wang 2015; Jung and Lee 2017). They argue that financially distressed firms are more motivated to meet market expectations and maximize short-term compensation through earnings management or accounting irregularities, and managers with high managerial ability also have a better ability to hide internal control weaknesses. Choi and Kim (2020) examine the association between financial distress and audit fees using Korean firms as a sample. As a result of the analysis, they prove that financial distress significantly increases audit fees.

Existing studies related to financial distress mainly analyze responses in the capital market. However, insufficient studies have examined the auditor's response to corporate financial distress. Many previous studies conducted empirical analyses on how companies respond to financial distress in the capital market. On the other hand, few studies provide empirical results on whether external auditors vary the amount of audit effort they put in according to the financial distress of the audited company. In particular, there is no study in Korea analyzing the relationship between financial risk and the audit effort of external auditors. It is necessary to provide empirical results that show whether external auditors actually comply with the regulations related to financial distress and business risk specified in the Korean Auditing Standards. Accordingly, this study analyzes the association between financial distress and audit report lags.

Audit Report Lags

On the one hand, audit report lags are the time lag from the closing date of the financial statements until the audit is completed and the auditor signs the audit report. Previous studies related to audit report lags analyze audit report lags from two different perspectives. Bamber et al. (1993) analyze the factors affecting audit report lags from the perspective of the audit effort that the auditor inputs according to the audit risk. On the other hand, Ashton et al. (1987) analyze the factors affecting audit report lags from the

viewpoint of the timeliness of financial reporting.

Previous studies analyzing audit report lags from the point of view of audit effort argue that if auditors judge clients' audit risk to be high, the more amount of audit effort put in until the audit report is prepared and submitted to lower the target audit risk. For that reason, they argue that audit report lags increase (Bae & Sohn, 2013; Chang et al., 2016; Ettredge et al., 2006; Hwang et al., 2008; Tanyi et al., 2010). Also, Blankley et al. (2014) test the association between future financial statement restatements and audit report lags, and provide evidence that compared to non-restating firms, firms that eventually restate their financial statements have longer abnormal audit report lags.

On the other hand, previous studies analyzing audit report lags from the viewpoint of the timeliness of financial reporting argue that the greater the size of a company and the earlier the auditor change period during the business year, the greater the degree of timeliness required for financial information by external stakeholders. For that reason, they argue that audit report lags decrease (Bamber et al., 1993; Schwartz and Soo 1996). Audit report lags are a very important factor in terms of the timeliness of accounting information (Afify, 2009). Sultana et al. (2015) present evidence that the audit reporting lags decrease as more financial experts, more experienced members, and greater independent members are included among audit committee members.

Previous studies from the perspective of the audit effort invested by auditors mainly research the determinants of audit report lags. Previous studies related to audit report lag classified the determinants of audit report lags into the characteristics of the audited company and the characteristics of the auditor, and examine how the factors of each characteristic are related to the audit report lags (Ashton et al., 1987; Bamber et al., 1993; Chang et al., 2016). Abernathy et al. (2017) investigate the determinants of audit report lags, including firm-level corporate governance mechanisms (i.e. board characteristics, CEO duality).

Most of the studies examining audit report lags in terms of the characteristics of the audited firm provide evidence that audit report lags decrease if the characteristics of the audited firm are excellent. Blankley et al. (2014) analyze the relationship between the restatement of financial statements and audit report lags. As a result of the analysis, they provide evidence that firms with restated financial statements have longer abnormal audit report lags than firms that do not restate financial statements. Bae and Sohn (2013) provide evidence that there is a positive relationship between the number of voting multipliers and audit report lags. Bae and Sohn (2013) argue that the greater the agency problem, the more likely the controlling shareholders will make opportunistic decisions due to the ownership-control disparity, and accordingly the auditors perform more stringent audit procedures. For that reason, they argue that agency problems negatively

affect the timeliness of the financial statements. Chang et al. (2016) analyze the effect of the designation of the Dishonest Disclosure Act on the audit report lags. As a result of the analysis, they provide evidence that there is a statistically significant positive relationship between the designation of an unfaithful corporate disclosure and the audit report lags. Chang et al. (2016) interpreted this result as the reason that auditors evaluate the audit risk as high. In other words, audit report lags increase because auditors spend more time collecting additional audit evidence to lower the audit risk. An and Shin (2012) analyze the relationship between corporate ethical management and audit report lags by measuring corporate ethical management as an economic justice index. An and Shin (2012) provide evidence that there is a significant and negative association between the economic justice index, a measure of ethical management, and the financial reporting lags.

The following are prior studies analyzing the effect on the audit report lags in terms of auditor characteristics. Choi and Park (2021) examine the relationship between business strategy and audit report lags. They find that there is a significant and positive relationship between business strategy and audit report lags. Also, they provide evidence that defender firms are negatively associated with audit report lags. Cohen and Leventis (2013) provide evidence that Big 4 firms tend to have a stronger incentive to finish their audit work more quickly to maintain their reputation. Jung et al. (2019) analyze the relationship between the statement of emphasis in the audit report and the audit report lags and report that the statement of emphasis in the audit report has a significant and positive relationship with the audit report lags. Park and Choi (2021) investigate the relationship between information asymmetry and audit report lags. They find that there is a significant positive association between information asymmetry and audit report lags. Ahmed and Che-Ahmad (2016) test the effects of corporate governance characteristics on the audit lag of listed banks in Nigeria. Ahmed & Che-Ahmad (2016) present board meetings, the board size, total assets, and board gender as determinants of the audit report lag of Nigerian companies.

In summary, the better the characteristics of the audited company, the lower the audit report lags by reducing the audit effort because auditors judge the company's risk to be low. Conversely, if the risk of the audited company is high, the audit report lags increase because auditors increase the audit effort they put in.

Most of the existing studies related to audit report lags are conducted considering timeliness from the perspective of the audited company. However, research conducted considering the audit effort from the auditor's point of view is not sufficient. The Korean Auditing Standards provide guidelines that external auditors should understand business risk and financial distress to identify and evaluate audit risk. However, there are no studies in Korea that provide empirical results to support whether external auditors actually consider the financial distress of the audited company when conducting external audits

(J. Choi & Kim, 2020). It is necessary to provide empirical results that show whether external auditors actually comply with the regulations related to financial distress and business risk specified in the Korean Auditing Standards. Therefore, this study analyzes whether auditors consider the corporate risk of financial distress to determine the audit effort to be invested.

Research Hypothesis

Financial distress represents corporate risk. In other words, the managers of firms in financial distress have incentives to hide the financial distress to meet market expectations to maximize their compensation (Dichev and Skinner 2002; Efendi et al., 2007; Jaggi and Lee 2002; Purnanandam 2008). In other words, the business risk of a client in financial distress may affect the audit risk. Therefore, the client's business risk, such as financial distress, can affect the behavior of auditors. Choi and Kim (2020) examine whether auditors increase their audit fees as the likelihood of corporate financial distress increases. They provide evidence that financial distress significantly increases audit fees. According to Knechel (2007), Generally Accepted Auditing Standards (GAAS) and International Standards on Auditing (ISA) stipulate that auditors evaluate business risks in performing external audits and set up an audit plan accordingly. Knechel (2007) provides evidence that the Big 4 accounting firms conduct a "business risk audit" that considers the business risk. In other words, if auditors consider the client's business risk in establishing an audit plan, it can be inferred that the amount of audit effort invested by auditors will vary according to the client's likelihood of financial distress.

In summary, financial distress increases a company's business risk. In other words, the managers of companies in financial distress are more likely to distort their financial statements, which increases audit risk. Therefore, auditors evaluate the client's business risk and, if it is judged that the business risk is large, respond by performing more difficult and reinforced audit procedures. Then, as the degree of corporate financial distress increases, auditors will try to increase the audit effort.

The above evidence suggests that there is a positive association between financial distress and audit report lags. Based on the preceding discussion, we formulate the following hypothesis:

H: There is a positive association between financial distress and audit report lags.

Method

Financial Distress

This study used two measures of financial distress as follows. First, we used

the measure of financial distress used in the study by Whited and Wu (2006). In 2000, Henderson and Kaplan (2000) cited the problem that the model relied on a small sample and argued that it was difficult to accurately identify the financial situation of a company when it was applied to other periods and large samples. Therefore, to overcome these limitations, a measurement model was presented using six indicators: cash flow, dividend, leverage, company size, industry average sales growth rate, and the company's sales growth rate. As for the WW Index extracted through model (1), the smaller the company, the lower the sales growth rate and cash flow level, the lower the dividend opportunity, and higher financial distress will be found in a company with a high debt ratio (Cheng et al., 2014).

$$\text{WW Index} = -0.091 \times \text{CFO}_{it} - 0.062 \times \text{DIVPOS}_{it} + 0.021 \times \text{LEV}_{it} - 0.044 \times \text{SIZE}_{it} + 0.102 \times \text{IndGROWTH}_{it} - 0.035 \times \text{GROWTH}_{it} \quad (1)$$

WW Index	: Whited and Wu (2006)' financial distress;
CFO	: the ratio of cash flow to total assets;
DIVPOS	: an indicator that takes the value of one if the firm pays cash dividends;
LEV	: the ratio of the long-term debt to total assets;
SIZE	: the natural log of total assets;
Ind_GROWTH	: industry sales growth;
GROWTH	: firm sales growth.

The second measure of financial distress used was the SIZE and AGE model (SA Index) presented by Hadlock and Pierce (2010). Hadlock and Pierce (2010) argue that company size and age are effective in predicting financial difficulties, and suggested a model using only two variables as follows. A firm's size and age are highly correlated with uncertainty, risk, and the cost of raising capital (Botosan & Plumlee, 2005). Thus, the SA Index controls for firm size and age, so some of the variables that are significantly related to constraints in a univariate sense become insignificant. Hence, it appears that common sorting variables are largely proxies for firm size and age (Hadlock & Pierce, 2010). Therefore, the SA Index has an advantage in that it can be identified using only two major variables that can measure a company's financial distress (Liu et al., 2019).

$$\text{SA Index} = (-0.737 \times \text{SIZE}_{it}) + (0.043 \times \text{SIZE}_{it}^2) - (0.040 \times \text{AGE}_{it}) \quad (2)$$

SA Index	: Hadlock and Pierce (2010)' financial distress;
SIZE	: the natural log of total assets;

AGE : the number of years the firm is listed with a non-missing stock price.

Audit Report Lags

Studies into financial reporting and auditing have been conducted for over three decades. The length of an audit is cited as the single most important factor affecting the timeliness of an earnings announcement (Givoly & Palmon, 1982). In much of the prior literature, the timeliness of an earnings announcement is related to the stock price, firms that announce earnings early are viewed positively by the stock market (Kross & Schroeder, 1984). The Korean Securities and Exchange Act (KSEA 1997, Article 194-3) stipulates the matters necessary for annual reports and disclosures by listed corporations. The Act requires that audited financial statements be included in companies' annual reports, together with other important matters prescribed by the Presidential Decree to the Korean Financial Supervisory Commission (FSC), which is the Korean equivalent to the U.S. SEC. Recognizing the importance of the timely release of earnings information, the KSEA (1997, Article 186-2) requires that annual reports be filed with the FSC within 90 days of fiscal year-end. In addition, the Korean Commercial Act (1995, Article 363) requires that firms make the audited financial statements available to shareholders two weeks before the shareholders' meeting. Blankley et al. (2014) define audit report lags as the number of days between the fiscal year-end and the date of the audit report. Following the literature, we measured audit report lags as the logarithm of the cumulative number of calendar days from the year-end to the date of the auditor's report (Ahmed & Che-Ahmad, 2016; Amin et al., 2018; Blankley et al., 2014; Munsif et al., 2012; Robert Knechel & Sharma, 2012).

Research Model

To verify the relationship between financial distress and audit report lags, we built the following empirical model (3). The management risk of a company increases the audit risk through the increase in the possibility of the distortion of the financial statements. Therefore, the higher the level of financial distress of a company, the more likely the auditor will respond by not signing a contract from the beginning, or by strengthening the audit procedure even if a contract was made. When a company's financial distress deepens, it leads to an increase in the auditor's audit fee and the strengthening of the audit process. In this regard, we can expect a positive relationship between financial distress and audit report lags. The measurements of audit report lags, ARL (or InARL), are applied to the dependent variable. Further, financial distress (WW Index and SA Index) is applied to the independent variable of interest (β_1) as proxies for the firms' financial distress.

$$\text{ARL(or InARL)}_{it} = \beta_0 + \beta_1 \text{DISTRESS}_t + \beta_2 \text{SIZE}_{it} + \beta_3 \text{LEV}_{it} + \beta_4 \text{ROA}_{it} + \beta_5 \text{BIG4}_{it} + \beta_6 \text{LOSS}_{it} + \beta_7 \text{OPN}_{it} + \beta_8 \text{HOUR}_{it} + \beta_9 \text{OWN}_{it} + \beta_{10} \text{FOR}_{it} + \Sigma \text{IND} + \Sigma \text{YEAR} + \varepsilon \quad (3)$$

Where	:
ARL	: the number of calendar days from fiscal year-end to the date of the auditor's report;
InARL	: the logarithm of the calendar days from fiscal year-end to the date of the auditor's report;
DISTRESS	: two measures of financial distress
WW Index	: Whited and Wu (2006) financial distress
SA Index	: Hadlock and Pierce (2010) financial distress
SIZE	: the natural log of the value of the total assets of a firm;
LEV	: the ratio of the debt to total assets;
ROA	: operating income divided by total asset;
BIG4	: one if auditing is done by one of the Big 4 accounting firms, and zero otherwise;
LOSS	: one if a firm reports negative earnings, and zero otherwise;
OPN	: one if the auditor's opinion is qualified, and zero otherwise;
HOUR	: the natural log of total audit hours of firm i in year t;
OWN	: the percentage of ownership concentration;
FOR	: the percentage of equity ownership by foreign investors in year t;
YR	: year dummy;
IND	: industry dummy.

Based on previous studies (Bamber et al., 1993; Abbott et al., 2006; Alali and Elder 2014), the following set of variables were controlled as they have been shown to affect audit report lags; SIZE, LEV, ROA, BIG4, LOSS, OPN, HOUR, OWN, FOR, YR dummies, and IND dummies. Bigger firms were expected to show a shorter level of ARL (Anderson et al., 2004). We included SIZE, calculated by the logarithm of the total assets value of a firm in year t. We could expect a positive or negative relationship between the firms' size and audit report lags. We controlled for financial leverage (LEV), and the dummy variable of net loss (LOSS), since they were positively related to audit report lags (Ashton et al., 1987; Bamber et al., 1993). Differences in well-programmed audit procedures and technologies could lead to differences in audit report lags between the two groups of auditors (Schwartz & Soo, 1996). We also included the indicator variable for hiring one of the Big 4 audit firms (BIG4). It was expected that the more firms that were audited by a large accounting firm, the longer the audit reporting time lag. We controlled for the profitability measured by return on assets (ROA), audit opinion (OPN), and audit hours (HOUR). There was a possibility of a conflict arising between the auditor and the firms, which might contribute,

to the delay in the release of the annual reports. Hence, we included a percentage of ownership concentration (OWN), and a percentage of foreign equity ownership (FOR). We could expect a negative relationship between the ownership and audit report lags, because the attributes of corporate governance play an important role in the disclosure and the quality of reporting. Thus, a positive association was expected between the audit report lags and foreign equity ownership. Finally, year and industry dummy variables (YR and IND) were included to control for year and industry fixed effects.

Result

Sample and Data

We collected data from companies listed on the Korea Composite Stock Price Index (KOSPI) market during the period from 2011 to 2018. The reason for setting the sample period from 2011 to 2018 was that Korea introduced IFRS in 2011. Therefore, since 2011, all listed companies have applied IFRS, so we set the data to generalize. Time-series data analysis is presented below. For this study, the financial data were extracted from TS-2000 of Korea Listed Companies Association and Fn-Guide to construct our variables. We excluded observations of financial institutions, companies with non-December 31 fiscal year-ends, and firms whose financial statements and audit report data were unavailable. We had a final sample of 2,786 firm-year observations from 2011 to 2018 for our study. All the variables were winsorized at the top and bottom one-percentile to avoid the effects of outliers. Table 1 presents details of the sample selection criteria.

Table 1. Sample selection

Total listed firms in the sample for 2011-2018	5,354
Less: Non-December 31 fiscal year-end firms	(369)
Less: Financial institutions	(180)
Less: missing data for audit report lags	(897)
Less: missing data for dependent and control variables	(1,122)
Total	2,786

Descriptive Statistics

Table 2 presents the descriptive statistics for the main variables used in our empirical analyses based on the sample of firm-years 2011 to 2018. The mean value of audit report lags, ARL and InARL were 42.176 and 4.103, respectively. The mean value of financial distress measures, WW Index, and SA Index were -0.769 and 1.658, respectively. The average firm size, as measured by the natural logarithm value of total assets (SIZE)

was 26.422. The mean value for LEV and ROA was 0.342 and 0.023, respectively. The mean value of BIG4, an indicator for hiring a Big 4 audit firm, was 0.488, which meant that 48.8 percent of the sample firms hire one of the Big 4 audit firms. The mean (median) value of LOSS, an indicator that a firm reports negative earnings, was 0.213 (0.000), which implied that 21.3 percent of the sample firms suffered a net loss. The mean value for the auditor's opinion OPN was 0.010. the mean and median values for the natural log of total audit hours (HOUR) was 5.662. The mean for the percentage of ownership concentration OWN was 0.135. The average FOR was 0.076, showing that foreign investors owned an average of 7.6 percent of the firms' entire equity ownership.

Table 2. Descriptive Statistics (n=2,786)

Variables	Mean	SD	MIN	Q1	Q2	Q3	MAX
ARL	42.179	14.560	36.000	39.000	44.000	53.000	81.000
InARL	4.103	0.190	3.502	3.874	4.262	4.560	4.782
WW Index	-0.769	0.102	-1.103	-0.711	-0.802	-0.927	-0.293
SA Index	1.658	1.303	-0.984	1.025	1.491	2.194	2.556
SIZE	26.422	0.644	23.188	24.356	25.469	26.907	28.310
LEV	0.342	0.125	0.0240	0.278	0.411	0.580	0.766
ROA	0.023	0.071	-0.201	0.016	0.030	0.072	0.181
BIG4	0.488	0.500	1.000	0.000	1.000	1.000	1.000
LOSS	0.213	0.322	0.000	0.000	0.000	1.000	1.000
OPN	0.010	0.030	0.000	0.000	0.000	1.000	1.000
HOUR	5.662	0.648	4.330	4.799	5.820	6.235	8.410
OWN	0.135	0.089	0.000	0.046	0.108	0.201	0.315
FOR	0.076	0.107	0.000	0.008	0.023	0.077	0.443

Correlation analysis

Table 3 shows the Pearson correlation matrix for the variables of our study. As we hypothesized, audit report lags were positively correlated with financial distress (WW Index and SA Index). We anticipated that increased financial distress positively affected audit report lags. The result was as follows. Audit report lags (ARL) was positively correlated with the WW Index (0.203, p-value<0.001) and SA Index (0.421, p-value<0.001). Even though related variables were not controlled for, these results showed that as a firm's financial distress increased, the auditor's audit report lags would also increase. The correlation results corroborated our projections. The highest variance inflation factor (VIF) in the model without was 4.02, which suggested that multicollinearity was not a serious concern. Following Gow et al. (2010), we used the two-way clustered standard errors (by firm and year), controlling for heteroscedasticity and correlation among our firm-year observations.

Table 3. Pearson Correlations (n=2,786)

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. ARL	1.000												
2. InARL	0.891***	1.000											
3. WW Index	0.203***	0.266***	1.000										
4. SA Index	0.421***	0.453***	-0.652***	1.000									
5. SIZE	0.133***	0.108***	-0.351***	-0.229***	1.000								
6. LEV	0.129***	0.159***	0.239***	0.387***	0.098***	1.000							
7. ROA	-0.039***	-0.107***	-0.366***	-0.109***	0.037***	-0.197***	1.000						
8. BIG4	0.434***	0.486***	-0.165***	-0.101***	0.322***	-0.172	0.077***	1.000					
9. LOSS	0.502***	0.552***	0.058***	0.115***	-0.021***	0.019***	-0.089***	-0.032	1.000				
10. OPN	-0.080	-0.092	0.008	0.010	0.001*	-0.003***	0.105	0.002	0.112	1.000			
11. HOUR	0.338***	0.312***	0.172***	0.296***	0.268***	0.351***	0.106	0.033***	0.009***	0.027	1.000		
12. OWN	0.192	0.165	-0.050***	-0.092***	0.009	0.018	-0.039	0.022	-0.132	0.292	0.496	1.000	
13. FOR	0.074*	0.108	0.011	0.023	0.010***	0.006	0.058***	0.071	0.033	0.281	0.330	-0.091	1.000

Notes:

1) *, **, and *** denote the significance at 10%, 5%, and 1% level, respectively.

2) Detailed definition of variables is in the note of Table 2.

Regression Analysis

Table 4 presents the results of testing H1 by using model (3). The financial distress was measured using the WW Index and SA Index, which have been frequently used in previous studies, and the audit reporting lag was used as a proxy for the auditor's efforts. To solve multicollinearity and heteroscedasticity problems, we performed clustering analysis by firm-year. *DISTRESS_1* (WW Index) had a positive (0.667 and 0.587) coefficient at the 1 percent level, suggesting that increased company financial distress implied greater auditors' audit report lags. Consistent results could be confirmed by measuring the value obtained by taking the natural logarithm of the audit report lag. Concerning the control variables, we observed significantly positive coefficients on firm size (*SIZE*), debt ratio (*LEV*), the total return on assets (*ROA*), *BIG4*, audit hour (*HOUR*), and foreign ownership ratio (*FOR*), and significantly negative coefficients with audit opinion (*OPN*).

This result meant that in a situation of high financial distress, the motivation for managers to make profit adjustments through accounting manipulation or fraud increased, and in this case, the auditor responded to the firm's risk more sensitively. Therefore, in the process of performing the audit, the auditor would be more conservative in the audit process and would try to reduce the distortion of the financial statements by increasing the audit hours (O'Keefe et al., 1994).

Table 4. The effect of financial distress on audit report lags: WW index

$$ARL(\text{or } \ln ARL)_{i,t} = \beta_0 + \beta_1 \text{DISTRESS}_{i,t} + \beta_2 \text{SIZE}_{i,t} + \beta_3 \text{LEV}_{i,t} + \beta_4 \text{ROA}_{i,t} + \beta_5 \text{BIG4}_{i,t} + \beta_6 \text{LOSS}_{i,t} + \beta_7 \text{OPN}_{i,t} + \beta_8 \text{HOUR}_{i,t} + \beta_9 \text{OWN}_{i,t} + \beta_{10} \text{FOR}_{i,t} + \Sigma \text{IND} + \Sigma \text{YEAR} + \varepsilon_{i,t}$$

Variable	ARL	<i>ln</i> ARL
<i>Intercept</i>	0.039*** (3.81)	0.044*** (4.05)
<i>DISTRESS_1</i>	0.667*** (3.51)	0.587*** (3.72)
<i>SIZE</i>	0.210*** (2.64)	0.218*** (2.89)
<i>LEV</i>	0.162*** (3.14)	0.183*** (3.02)
<i>ROA</i>	0.101** (2.18)	0.107** (2.10)
<i>BIG4</i>	0.098*** (6.76)	0.071** (6.48)
<i>LOSS</i>	0.051 (1.13)	0.029 (1.22)
<i>OPN</i>	-0.116** (-2.19)	-0.101** (-2.38)

<i>HOUR</i>	0.070*** (4.24)	0.081*** (4.35)
<i>OWN</i>	-0.056 (-0.11)	-0.064 (-0.10)
<i>FOR</i>	0.019** (2.55)	0.012** (1.93)
Industry/Year Dummy	Included	Included
No. of observations	2,786	2,786
Adj.R ²	0.289	0.272
F-value	82.30***	80.87***

Notes:

1) *, **, and *** denote the significance at 10%, 5%, and 1% level, respectively.

2) Detailed definition of variables is in the note of Table 2.

Table 5 presents the results of testing H1 by using model (3). *DISTRESS_2* (SA Index) had a positive (0.132 and 0.110) coefficient at the 1 percent level, suggesting that increased company financial distress implied greater auditors' audit report lags. As a result of measuring financial distress using the SA INDEX, it was found that the higher the financial distress, the greater the audit reporting lag. These results indicated that the auditor was performing auditing in consideration of the financial distresses and firm risks of the audited company. Therefore, it could be said that the hypothesis of this study was supported.

Table 5. The effect of financial distress on audit report lags: SA index

$$ARL(or InARL)_{i,t} = \beta_0 + \beta_1 DISTRESS_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 ROA_{i,t} + \beta_5 BIG4_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 OPN_{i,t} + \beta_8 HOUR_{i,t} + \beta_9 OWN_{i,t} + \beta_{10} FOR_{i,t} + \Sigma IND + \Sigma YEAR + \epsilon_{i,t}$$

Variable	ARL	InARL
<i>Intercept</i>	0.060*** (4.57)	0.053*** (4.20)
<i>DISTRESS_2</i>	0.132*** (4.19)	0.110*** (3.96)
<i>SIZE</i>	0.108*** (3.31)	0.121*** (3.42)
<i>LEV</i>	0.092*** (3.14)	0.155*** (3.67)
<i>ROA</i>	0.121** (2.18)	0.107** (2.10)
<i>BIG4</i>	0.075*** (7.25)	0.084*** (7.93)

<i>LOSS</i>	0.009 (0.82)	0.003 (1.05)
<i>OPN</i>	-0.144 (-0.97)	-0.152 (-1.06)
<i>HOUR</i>	0.025*** (11.90)	0.046*** (10.27)
<i>OWN</i>	-0.003 (-0.24)	-0.000 (-0.20)
<i>FOR</i>	0.172*** (4.68)	0.140*** (5.32)
Industry/Year Dummy	Included	Included
No. of observations	2,786	2,786
Adj.R ²	0.314	0.305
F-value	47.22***	42.51***

Notes:

1) *, **, and *** denote the significance at 10%, 5%, and 1% level, respectively.

2) Detailed definition of variables is in the note of Table 2.

Additional Analyses

Lastly, in this study, in addition to the measurement of financial distress by a statistical model, where limitations in the model's construction, such as generalization, can be pointed out, additional analysis was conducted using dividends related to financial distress. Dividends are signals that contain information about a firm's cash flows and are adjusted according to business risks and financial constraints. The possibility of low dividends and financial distress is highly correlated, as managers significantly reduce dividends at the beginning of financial constraints (DeANGELO & DeANGELO, 1990). Therefore, the financial distress of a company means restrictions on external financing, and financial distress can be viewed from the perspective of the possibility of bankruptcy. In other words, firms in financial distress are expected to increase their reliance on internal financing, so they choose to reduce their dividends.

Table 6 presents the results of testing the hypothesis of this study by measuring financial distress with the dividend payout ratio. As a result of the analysis, a significant positive result was confirmed in the dividend payout ratio (PAYOUT). It can be confirmed that these results are the same as the main analysis results. In other words, it can be confirmed that there is a significant positive relationship with the audit report lag even when measured by the three financial distresses frequently used in previous studies. Taken together, it can be interpreted that the audit report lag is prolonged because auditors understand the financial constraints of a company as audit risks and perform comprehensive and precise audits by increasing the quantity and quality of the audit

procedures.

Table 6. The effect of financial distress on audit report lags: PAYOUT

$$ARL(or InARL)_{i,t} = \beta_0 + \beta_1 PAYOUT_t + \beta_2 SIZE_{i,t} + \beta_3 LEV_{i,t} + \beta_4 ROA_{i,t} + \beta_5 BIG4_{i,t} + \beta_6 LOSS_{i,t} + \beta_7 OPN_{i,t} + \beta_8 HOUR_{i,t} + \beta_9 OWN_{i,t} + \beta_{10} FOR_{i,t} + \Sigma IND + \Sigma YEAR + \varepsilon_{i,t}$$

Variable	ARL	InARL
<i>Intercept</i>	0.009*** (5.32)	0.012*** (5.10)
<i>PAYOUT</i>	0.150*** (3.68)	0.174*** (3.97)
<i>Control variables</i>	Included	Included
Industry/Year Dummy	Included	Included
No. of observations	2,786	2,786
Adj.R ²	0.181	0.173
F-value	34.52***	33.28***

Notes:

- 1) *, **, and *** denote the significance at 10%, 5%, and 1% level, respectively.
- 2) Detailed definition of variables is in the note of Table 2.

Discussion

This study empirically tests the relationship between financial distress and audit report lags. Through this analysis, we intend to reveal whether auditors consider the clients' financial distress when performing external audits. Financial distress is a factor constraining corporate decision-making. If firms are in financial distress, it means they don't have enough internal capital. Therefore, there is a great incentive for managers to choose arbitrarily when making financial reports and future investment decisions. In other words, the managers of companies experiencing financial distress have a great incentive to overestimate profits to avoid negative evaluations in the market during financial reporting. As a result, we find that there is a positive and significant association between financial distress and audit report lags. Consistent results can be confirmed even by measuring the value obtained by taking the natural logarithm of the audit report lag. These results are consistent with the findings of Choi and Kim (2020) and Gul et al. (2018). This result means that in a situation of high financial distress, the motivation for managers to make earnings management through accounting manipulation or fraud increases, and in this case, the auditor responds to the firm's risk more sensitively. Therefore, in the process of performing the audit, the auditor will be more conservative in the audit process and will try to reduce the distortion of the financial statements by increasing the audit hours.

This result supports the hypothesis. From these empirical results, we confirm that external auditors actually follow the guideline specified in the Korean Auditing Standards that they should understand the financial distress of the audited company to identify and evaluate the material misstatement risk.

Conclusion

This study examines the association between a firm's financial distress and audit report lags. Through this analysis, we intend to reveal whether auditors consider the clients' financial distress when performing external audits. This study employs 2,786 firm-year observations from 2011 to 2018. The sample of this study consists of companies listed on the Korea Composite Stock Price Index (KOSPI) and Korea Securities Dealers Automated Quotation (KOSDAQ). We perform OLS regression analysis to test our hypothesis. The OLS regression analysis is conducted through the SAS and STATA programs. Consistent with our hypothesis 1, we find that there is a significant and positive association between financial distress and audit report lags. The audit report lags increase as the likelihood of the clients' financial distress increases. The result indicates that auditors increase their audit effort as the likelihood of their clients' financial distress increases. In other words, we provide evidence that auditors increase the amount of audit effort when the likelihood of clients' financial distress is high. In the absence of studies on how external auditors respond to audited firms' financial distress, this study analyzes whether external auditors change their audit efforts by assessing audited firms' financial distress. Second, the empirical result shows that external auditors actually follow the guidelines related to business risk and financial distress specified in the Korean Auditing Standards. The result supports the effectiveness of the business risk-related regulations specified in the Korean Auditing Standards. In future research, it is necessary to investigate the extent to which the auditor reflects and what is the difference depending on the degree of financial distresses.

Limitation

However, in this study, there is a limitation from using the international model to test the hypothesis using a sample of companies listed in Korea. However, this study has contributed to presenting evidence that the hypotheses tested in previous studies produce the same results in Korean-listed companies. There may be a problem of self-selection bias, in which companies with relatively high profitability and financial soundness are analyzed as a sample. Also, there may be a problem with omitted variables that are not considered in the research model in the model's design. This may be a common problem

that can often occur in empirical studies that perform empirical analysis. However, to solve this limitation of the analysis, we attempted to supplement it through clustering analysis and time series analysis. We expect follow-up studies to examine the associations between financial distress and audit effort using more diverse financial distress prediction models.

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