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Bond Ratings, Corporate Governance, and Cost of Debt: The Case of Korea*

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Abstract

This study examines whether Korean rating agencies such as Korea Investors Service (KIS), National Information & Credit Evaluation (NICE), and Korea Ratings Corporation (KR), incorporate corporate governance into their corporate bond ratings in Korea. We find that the Korean rating agencies assign higher ratings to the bonds issued by Chaebol (Korean business group) affiliated firms. Our results also indicate that those rating agencies give higher ratings to the bonds with greater foreign investor share ownership. Moreover, if the rating agencies value corporate governance, higher rated firms should issue bonds at lower yield to maturity. We discover that Chaebol affiliation is counted favorably by the rating agencies. We find that investors are willing to pay lower risk premium for bonds with higher institutional ownership, but higher risk premium to bonds with greater equity ownership in the form of depository receipts. Therefore, even if the rating agencies and investors in Korea consider corporate governance (Chaebol affiliation and ownership structure) an important determinant in bond ratings and the yields to maturity, they have opposite views on institutional ownership and share ownership in the form of depository receipts.

Keywords: Corporate Governance, Cost of Debt, Credit Ratings, Korean Capital Markets.

JEL Classification Codes: G10, G14, G15

1. Introduction

Corporate governance encompasses the set of rules or systems that act as a safeguard to ensure that managers properly achieve the goal of the firm, which is the maximization of shareholders' wealth. A recent study reveals that good corporate governance in the U.S. results in higher bond ratings and lower cost of debt by reducing the conflict of interest between the management of a firm and shareholders (Bhojraj & Sengupta, 2003). In addition, there is ample evidence that sound corporate governance leads to strong firm performance in the U.S. (Ertugrul & Hedge, 2009)

and in a foreign country such as South Korea (Choi, Park, & Yoo, 2007). On the other hand, few previous studies have examined whether there is any strong relationship between corporate governance and bond ratings in a foreign country. We examine whether good corporate governance results in higher bond ratings in South Korea.²

The Japan Center for International Finance (1999) reports that Japanese firms complain that global rating agencies such as Moody's and S&P do not consider unique corporate governance in Japan such as main bank and *keiretsu* affiliation and assign lower bond ratings to Japanese firms than Japanese counterparts such as JCR (Japan Credit Rating Agency) and R&I (Rating & Investment Information).³ Shin and Moore (2003) find that global rating agencies assign higher ratings to Japanese financial firms with *keiretsu* affiliation while Japanese agencies do not incorporate the affiliation. They find inconclusive evidence for non-financial firms in Japan. However, Shin and Moore

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² Here after Korea.

³ *Keiretsu* is a type of business group in Japan characterized by interlocking share ownership and corporate directors.

(2003) examined only bond ratings, not bond yields.⁴ On the other hand, there has been no research on the relationship between corporate governance and bond ratings or bond yields in Korea. Korea has a unique form of corporate governance called Chaebol.⁵ Good examples of Chaebol include the Samsung group, the Hyundai group, and the LG group. This study examines whether corporate governance in Korea affects bond ratings and the yields to maturity of new corporate bonds.

There are three domestic credit rating agencies in Korea: KIS (Korea Investors Service), Korea Ratings Corporation (KR), and National Information & Credit Evaluation (NICE). KIS, founded in 1985, is considered the most influential rating agency in Korea out of the three Korean rating agencies. In particular, Korean government designated KIS as ECAI (External Credit Assessment Institution) in 2007.⁶ Although KIS became a subsidiary of Moody's in December 2001 (Moody's owns 50%+1 shares of KIS), KIS issues separate credit ratings from Moody's in Korea.⁷ It even employs the rating symbols of S&P, which are different from those of Moody's. But, according to www.kisrating.co.kr, KIS uses the same rating methodology as Moody's. In addition, Fitch has 73.55% equity ownership of KR as of January 2016. Therefore, KIS and KR are the subsidiaries of the global rating agencies such as Moody's and Fitch. On the other hand, NICE is a pure Korean credit rating agency. According to the corporate rating methodologies of the three Korean raters posted on their websites and interviews with credit analysts working for those rating agencies, KIS, KR, and NICE adopt similar rating methodologies to those of the global rating agencies such as S&P, Moody's, and Fitch. In general, Korean firms hire Moody's or S&P when they issue foreign-currency denominated bonds, but Korean rating agencies when sell Korean won-denominated bonds. In this study, we examine only Korean won-denominated bonds

rated by the three Korean rating agencies.

In this research, we find that corporate governance in Korea influences bond ratings and the cost of debt significantly. Our research reveals that Korean firms pay different cost of debt when they have different corporate governance, in particular, Chaebol affiliation and ownership structure. This research is the first attempt to investigate the impact of corporate governance on bond ratings and the cost of debt in the Asian credit markets.

This study makes the following contributions. First, we find that Korean credit rating agencies such as KIS, NICE, and KR incorporate corporate governance into their bond ratings. In other words, the rating agencies believe that greater foreign investor share ownership or equity ownership in the form of depository receipts reduce information asymmetry and assign higher ratings to bond issuers. Second, we also determine that Chaebol affiliation and public offerings are viewed favorably by rating agencies. Third, even though previous studies find that firms with greater institutional share ownership or higher percentage of the largest investor share ownership increase firm performance because of enhanced monitoring of managers or reduced agency problems, we uncover that those firms obtain lower bond ratings in Korea. Finally, we learn that firms with higher bond ratings and shorter maturities sell their bonds at lower yields. Moreover, investors are willing to pay lower risk premium for bonds with higher institutional ownership, but higher yields for bonds with greater equity ownership in the form of depository receipts. We conclude that, even if both rating agencies and investors consider corporate governance an important determinant, they have opposite views on institutional share ownership and share ownership through depository receipts.

This study is outlined as follows: Section II discusses literature review, Section III presents hypothesis and methodology; Section IV describes data and sample characteristics; Section V shows the empirical results; and Section VI concludes this research.

2. Literature Review

Firms issuing bonds obtain credit ratings from rating agencies. Credit rating agencies evaluate debt issuers and specific debt issues, calculate default probabilities, and inform financial markets of their evaluation through their ratings. The influence of global rating agencies such as Moody's, S&P, and Fitch is so substantial that they control more than 90% of the global credit ratings market (Wall

⁴ Bonds are long-term debt. Bond yields or bond coupon rates (periodic interest payments of bonds) are used as the most popular proxy for the cost of debt.

⁵ According to the Korea Fair Trade Commission, Chaebol is defined as "a group of firms of which more than 30% of shares are owned by the group's controlling shareholders and its affiliated firms." Most Chaebol firms in Korea have a unique form of ownership and board structure such as cross shareholdings and interlocking directors.

⁶ According to the Basel II agreement of the Basel Committee on Banking Supervision (Bank for International Settlements, 2004), commercial banks can use the credit ratings of ECAI in assessing their capital requirements. Bank regulators in each country can designate ECAI.

⁷ In general, KIS assigns ratings to domestic bonds, i.e. won-denominated bonds, but Moody's, foreign currency-denominated bonds.

Street Journal, 2003).⁸ Most empirical research shows that global rating agencies are more influential than local rating agencies in local capital markets (Li, Shin, & Moore, 2006; Shin & Moore, 2008).⁹ Li et al. (2006) and Han, Pagano, and Shin (2012) find that Moody's and S&P have stronger influence than JCR and R&I in the Japanese capital markets, and Shin and Moore (2008) reports that the global raters have better reputation than a Canadian rating agency, DBRS, in Canadian financial markets. However, Han, Shin, Reinhart, and Moore (2009) discover that the rating downgrades of a Korean rating agency, Korea Investors Service (KIS), results in stronger stock market reactions than those of Moody's or S&P in Korea. It is an interest finding that the local rating agency (KIS) is more influential than global counterparts in Korean capital markets. We infer that Korean investors provide more reputation capital to their home rating agencies rather than the global raters. It is interesting to examine the important determinants of credit ratings assigned by Korean rating agencies. In addition to financial and business risks, which are traditional determinants of credit ratings, several studies reveal that Moody's and S&P incorporate corporate governance into their ratings.

According to Monks and Minow (2001, p. 1), corporate governance is "the relationship among various participants in determining the direction and performance of corporations. The primary participants are the shareholders, the management, and the board of directors." Yermack (1996) finds that board size and firm value have negative relationship because the small number of directors on the board increases firm performance through the efficient monitoring of management.¹⁰ Choi et al. (2007) examine Korean firms after Asian financial crisis period (1997-1998) and discover that the greater proportion of independent outside directors and share ownership held by institutional investors, in particular foreign investors, the more enhanced is firm performance.¹¹ However, they disclose that family share holdings or Chaebol affiliation does not affect firm value in Korea.

Joh (2003) also reports that independent firms had better profitability than Chaebol firms before the Asian financial crisis and argues that poor corporate governance resulted in

the crisis in Korea because cross shareholdings and interlocking directors among Chaebol member firms blocked effective and efficient monitoring of management. Kang and Shivdasani (1995) conclude that Japanese non-financial firms with main bank share holdings perform better than firms without main bank ties because main banks closely monitor and insure the client firms, while *keiretsu* membership does not affect firm performance. Reeb, Mansi, and Allee (2001) claim that the internalization of U.S. firms measured by the ratio of foreign sales to total sales reduces the cost of debt. Moreover, Baek, Kang, and Park (2004) find that, during the Asian financial crisis, Chaebol firms with controlling family shareholdings lost more firm value while firms with greater share ownership by foreign investors and independent institutional investors and those with main bank ties experienced stronger firm performance.

In summary, we argue that corporate governance can influence firm profitability and the cost of debt significantly. In this study, the relationship between corporate governance and bond ratings and bond yields in Korea is examined. Additionally the research tests whether Korean firms pay different cost of debt domestically when they have different corporate governance. Moreover, the influence of corporate governance on the yields to maturity for new bond issues is studied.

3. Hypothesis and Methodology

This research first investigates the relationship between bond ratings and corporate governance in Korea because higher bond ratings are associated with lower bond yields. With 1,005 new bond issues in the U.S. rated by Moody's, Bhojraj and Sengupta (2003) find that greater institutional share ownership and larger percentage of independent directors increase bond ratings and decrease bond yields because they can reduce agency problem between managers and shareholders through the effective monitoring of managers by shareholders. Hence our first hypothesis is as follows.

<Hypothesis 1> Korean credit rating agencies incorporate corporate governance into bond ratings.

An ordered probit model (Ederington, 1985; Shin & Moore, 2003) is used for the test of hypothesis 1.¹² Moody's (2008) use financial ratios such as size, leverage, profitability, and asset efficiency as important determinants of credit ratings

⁸ According to the Wall Street Journal, S&P and Moody's have combined market share of 79%, followed by Fitch (14%) and other ratings agencies (6%).

⁹ We define Moody's, S&P, and Fitch as global credit rating agencies and other foreign rating agencies as local rating agencies.

¹⁰ Firm performance indicates profitability or return on investors.

¹¹ Hermalin and Weisbach (2003) defines that independent outside directors have neither any business relationship with the firm except their directorship nor employment positions in the firm.

¹² The dependent variable (RAT) is the ordered ranking of bond ratings and the letter ratings are converted into numeric ratings. The dependent variable is defined as: 7=CCC and below, 6=B, 5=BB, 4=BBB, 3=A, 2=AA, 1=AAA. If a bond is rated by multiple rating agencies, we use the average of ratings.

for non-financial firms.¹³ Therefore, total assets, debt ratio, profitability ratio, and asset turnover ratio are employed as control variables in the ordered probit model.¹⁴ These four independent variables are computed using a 2-year arithmetic average of the annual ratios, thus the estimation period is the two years at the fiscal year-end prior to the bond issue date.¹⁵ It is expected that greater total assets, profitability ratio, and interest coverage ratio raise the bond rating, while a high debt ratio reduces the rating.

Whether firms acquire higher or lower bond ratings depends on the types of bonds, namely, bonds with public offerings or private placement. These two types of bonds are different in several aspects including the costs of credit monitoring and the ease of debt renegotiation. Riskier firms may prefer private placement bonds because they expect higher probability of ex-post debt renegotiation with debt claim holders. Denis and Mihov (2003) and Kwan and Carleton (2004) find that firms with the highest credit quality issue bonds through public offerings, but those with the lowest credit quality through private placement. As a result, we assume that bonds with public offerings are sold at higher ratings and lower yields to maturity than those with private placement. We define PUB = 1 for bonds with public offerings and 0 for bonds with private placement.

Baek et al. (2004) and Joh (2003) address that Chaebol firms perform worse than non-Chaebol firms during the Asian financial crisis. There are two opposing arguments about institutional ownership. While more institutional ownership or the largest investor share ownership may have a positive effect on firm value through the active monitoring of managers or less agency problem, it also can have a negative effect because institutions or the largest owners may not have enough skills or knowledge in management. Jung and Kwon (2002) and Choi et al. (2007) find that greater institutional equity ownership enhances earnings information or operating performance in Korea. Koo and Maeng (2006) report that greater foreign ownership positively affects investment in Korea. Also, Baek et al.

(2004) find that Korean firms with greater foreign ownership or those with the American Depository Receipts (ADRs) perform better over the Asian financial crisis. We assume that greater foreign equity ownership or share ownership with voting rights held by depository receipts such as ADRs may reduce information asymmetry in the financial markets.

Therefore, the following governance variables are added to the ordered probit model as independent variables.

CHA = a dummy variable equal to 1 if a firm belongs to one of the 30 Chaebol business groups in Korea (0 otherwise)¹⁶;

FO = the percentage of share ownership with voting rights held by foreign investors;

LGE = the percentage of share ownership with voting rights held by the largest shareholder;

INST = the percentage of share ownership with voting rights held by institutional investors such as banks, insurance, investment, and pension funds companies;

DR = the percentage of share ownership with voting rights held by depository receipts (such as ADRs);

Year Dummies: To control for time effects, dummy variables are included for bonds issued during each year.

The full ordered probit model is:

$$\text{RAT} = \text{TA} + \text{DET} + \text{AT} + \text{ROA} + \text{PUB} + \text{CHA} + \text{INST} + \text{LGE} + \text{FO} + \text{DR} + \varepsilon \quad (1)$$

Our sample is a panel data set, which consists of new bonds issued from 2001 to 2010 with cross-sectional and bond-specific variables.¹⁷ As a result, it is important for us to use fixed effects models to control for time-specific effects as well as to adjust the standard errors for time clustering because the same firm may issue several bonds in a cluster or many firms may issue bonds at the same time due to a lower interest rate environment. If rating agencies value corporate governance in the ratings, higher rated firms should issue bonds at lower yield to maturity. The argument leads to the following second hypothesis.

<Hypothesis 2> Firms with higher bond ratings and better corporate governance can sell bonds at lower yields.

To test hypothesis 2, we suggest the following linear regression model (2).

$$\text{YS} = \text{RAT} + \text{MAT} + \text{IA} + \text{PUB} + \text{CHA} + \text{INST} + \text{LGE} + \text{FO} + \text{DR} + \varepsilon \quad (2)$$

Following the study of Han et al. (2012), which states that bond ratings, issue amount, issue method, and maturity affect yield spreads between Japanese corporate bonds and

¹³ The rating methodology of financial firms is slightly different from that of non-financial firms. For example, banks include capital adequacy ratio and bad loan ratio as the important factors of credit ratings.

¹⁴ The independent variables are defined as follows: (1) TA = Natural log of total assets; (2) DET = Total debt/Total assets; (3) ROA = Net Income/Total Assets; (4) AT = Total Sales/Total Assets. We exclude financial firms in the model because they use a different rating methodology.

¹⁵ Moody's (2008) considers financial and business risks in assigning credit ratings. With regard to financial risk, Moody's incorporates the 3-year average of annual financial ratios mentioned above to avoid the influence of a single-year financial ratio.

¹⁶ Firms in the 30 largest Chaebol business groups are updated each year by the Korea Fair Trade Commission.

¹⁷ Our sample period ends in 2010 due to the availability of data.

comparable maturity Japanese government bonds, we use RAT, MAT, IA and PUB variables in equation (2) to control for yield determinants in addition to governance variables such as CHA, INST, LGE, FO, and DR. YS is defined as yield spreads between the yields of new corporate bonds and the yields to maturity of comparable maturity Korean government bonds, and it is employed to control for the term structure of interest rates. For independent variables, we include additional control variables such as MAT for the maturities of corporate bonds and IA for the natural log of bond issue amounts.

It is expected that RAT and IA affect YS negatively, but MAT influence YS positively because investors require higher yields for longer maturity bonds and lower yields for larger issue amounts.¹⁸ If the RAT variable incorporates all the effect of corporate governance, the coefficients of governance variables will be insignificant in equation (2). We have assumed so far that the cost of debt (YS) is affected by governance variables. However, according to Hermalin and Weisbach (2003), the cost of debt may also influence corporate governance and it may be decided endogenously. To address the possibility of the endogeneity problem, we use simultaneous equations models such as two-stage least squares method.

3.1. Data

The data consist of Korean corporate bonds rated by KIS, KR, and NICE from 2001 to 2010. The ratings, maturities, issue amounts, and Korean government bond yields are obtained from the KIS bond database. Corporate bonds with call or convertible provisions are excluded from the sample. Only long-term straight bonds with longer than one year of maturity are included, and only Korean won-denominated bonds are examined. We do not include dollar-denominated corporate bonds because the sample size of dollar-denominated bonds rated by Moody's or S&P is very small,¹⁹ and their yields spreads are not directly comparable with Korean government bonds. Additionally, financial variables such as total assets and debt come from KISVALUE database. Corporate governance variables are obtained from the Listed Company Database of the Korean Listed Companies Association and the Korea Fair Trade Commission.

<Table 1> shows the descriptive statistics of new

Korean won-denominated bonds rated by the three Korean rating agencies. Panel A reports the number of annual new bond issues, Panel B new bond issues by each rating agency, Panel C new bonds with single and multiple ratings, and Panel D new bonds with the same or split ratings. In Panel A, we cannot find any specific time trends in new bond issues. Out of 2,671 new bonds rated by the three Korean raters, the largest number of bonds (555 bonds, 20.78%) was issued in 2001. In Panel B, KR assigned the greatest number of ratings by rating 2,340 bonds, followed by NICE (2,221) and KIS (2,002). The majority of ratings are investment grades (BBB and above). For example, KR provides investment grade ratings to 88.15% of rated bonds, NICE 86.85%, and KIS 87.91%, respectively. In Panel C, most bonds have multiple ratings, and only 5.06% of bonds have single ratings. While 1,352 bonds (50.62%) have ratings from the three ratings agencies, NICE and KR combination (567 bonds, 21.23%) is the most preferred rating agencies when it comes to obtain two ratings, followed by KIS and KR (370 bonds, 13.85%) and KIS and NICE (247 bonds, 9.25%). In Panel D, 2,521 bonds (94.38%) out of 2,671 bonds have the same ratings, but only 150 bonds (5.62%) have split ratings. The finding implies that in general the Korean rating agencies agree on the credit risk of bonds, while split ratings are very common to bonds rated by Moody's, S&P, or Fitch.

<Table 2> reports the descriptive statistics of issue and issuer characteristic and corporate governance variables. We estimate the mean and standard deviation of each variable. When it comes to issuer characteristics, mean asset turnover ratio is 1.03 times, mean debt ratio 64.69%, mean return on assets 0.719%, and mean total assets 4,439,808,447 thousand Korean won.²⁰ Regarding issue specific variables, mean maturity is 2.58 years, and mean issue amount 63,188,970 thousand Korean won.²¹ In addition, while 1,588 bonds (59.45%) are issued by Chaebol firms, 1083 bonds (40.55%) by non-Chaebol firms. The majority of bonds (1,981 bonds, 74.17%) are sold through public offerings, and the small number of bonds (690 bonds, 25.83%) through private placement. For corporate governance variables, mean institutional ownership is 9.62%, mean largest ownership 24.69%, mean foreign ownership 2.83%, and mean DR rate 0.51%.

¹⁸ Larger issues are believed to be more liquid.

¹⁹ Korean won-denominated bonds are barely rated by Moody's or S&P because Korean firms request ratings to the Korean rating agencies when they sell bonds in Korea. Korean firms hire Moody's, S&P, and Fitch to issue foreign currency denominated bonds to employ the reputation of the global rating agencies.

²⁰ The amount is equivalent to \$3,699,840,000 based on the average foreign exchange rate in January 2016 (1,200 Korean won/\$).

²¹ The amount is approximately \$52,657,475 based on the average foreign exchange rate in January 2016 (1,200 Korean won/\$).

<Table 1> Descriptive Statistics of New Korean Won-Denominated Bonds Rated by Korean Rating Agencies.

Panel A. Number of Annual New Bond Issues.

Year	N	Percent
2001	555	20.78
2002	318	11.91
2003	260	9.73
2004	325	12.17
2005	236	8.84
2006	146	5.47
2007	158	5.92
2008	138	5.17
2009	296	11.08
2010	239	8.95
Total	2671	100.00

Panel B. New Bond Issues by Each Rating Agency.

Rating	KR		NICE		KIS	
	N	Percent	N	Percent	N	Percent
AAA	64	2.74	61	2.75	64	3.20
AA	289	12.35	281	12.65	322	16.08
A	565	24.15	597	26.88	544	27.17
BBB	1145	48.93	990	44.57	830	41.46
BB	207	8.85	223	10.04	154	7.69
B	64	2.74	61	2.75	56	2.80
CCC and Below	6	0.26	8	0.36	32	1.60
Total	2340	100.00	2221	100.00	2002	100.00

Panel C. New Bonds with Single or Multiple Ratings.

Rating Agencies	N	Percent
KIS, NICE, KR	1352	50.62
KIS, NICE	247	9.25
KIS, KR	370	13.85
NICE, KR	567	21.23
KIS	32	1.20
NICE	55	2.06
KR	48	1.80
Total	2671	100.00

Panel D. New Bonds with Same or Split Ratings.

	N	Percent
New Bonds with Same Ratings	2521	94.38
New Bonds with Split Ratings	150	5.62
Total	2671	100.00

N is the number of bonds. The ratings are obtained from the KIS bond database.

<Table 2> Descriptive Statistics of Issue and Issuer Characteristics and Corporate Governance Variables.

Panel A.

Variable	N	Mean	STD	Min	Max
Asset Turnover Ratio	2645	1.0321	1.8503	0	29.94
Debt Ratio	2671	0.6469	0.1832	0.0830	3.2803
Return on Assets	2645	0.0072	0.1043	-1.5279	0.3267
Institutional Ownership	2671	0.9619	0.1812	0	0.7978
Largest Ownership	2671	0.2469	0.1993	0	0.9271
Foreign Ownership	2671	0.0282	0.0675	0	0.8155
DR	2671	0.0051	0.3487	0	0.3532
Total Assets	2671	4,439,808,447	5,202,821,979	33,226,700	48,190,245,081
Maturity	2360	2.5787	1.1367	0.29863	10.00822
Issue Amount	2630	6,318,897	7,900,732.75	10,000	91,229,100

Panel B. Issue Method and Chaebol Affiliation.

Method and Chaebol	N	Percent
Private Placement	690	25.83
Public Placement	1981	74.17
Chaebol Affiliation	1588	59.45
Non-Chaebol Affiliation	1083	40.55

N is the number of new bonds. The unit of total assets is 1,000 Korean won, and the unit of issue amount is 10,000 Korean won. DR is the percentage of share ownership with voting rights held by depository receipts (such as ADRs). Firm characteristics variables and corporate governance variables are collected from KIS-VALUE database. Bond specific variables are obtained from the KIS bond database.

<Table 3> Annual Yield Spreads.

Year	N	Mean	STD
2001	488	0.0287	0.0242
2002	231	0.0259	0.0255
2003	229	0.0255	0.0214
2004	279	0.0234	0.0208
2005	210	0.0156	0.0202
2006	129	0.0107	0.0131
2007	144	0.0088	0.1127
2008	135	0.0224	0.0163
2009	284	0.0364	0.0199
2010	231	0.0226	0.0173

N is the number of new bonds. Yields spreads are defined as the difference between the yield to maturity of a new corporate bond and the comparable maturity Korean government bond yield.

4. Empirical Results

We show annual mean yield spreads in <Table 3> and unpaired two sample t-tests for yield spread differences in <Table 4>. In <Table 3>, the yield spreads are very sensitive to economic condition. For instance, even though the annual mean yield spreads have decreased from 2.87% in 2001 to 0.88% in 2007, they spiked up to 2.24% in 2008, peaked at 3.64% in 2009, and went down to 2.26% in 2010 due to global financial crisis from 2008 to 2009. In <Table 4>, we find significant mean yield differences between bonds with different characteristics. First, while the mean yield spread of the bonds with public placement is 1.82%, the yield

spread of the bonds with private placement is 3.90%. The mean yield difference (2.08%) between the issue methods is significant at the 1% level ($t = 22.94$). We confirm previous studies that bonds with public offerings are issued at lower yields than those with private placement. Second, although the mean yield spread of the bonds with Chaebol affiliation is 2.16%, the mean yield spread of the bonds without Chaebol affiliation is 2.77%. The mean yield difference is 0.61%, and it is significant at the 1% level ($t = 6.63$). We find that Chaebol firms can borrow at lower costs. Third, the bonds with institutional ownership are sold at lower yields than those without any institutional ownership. The mean yield difference (0.33%) between them is significant at the 1%

level ($t = 3.43$). Fourth, the mean yield spread (1.5%) of the bonds with foreign investor equity ownership is significantly lower ($t = 12.01$) than the mean yield spread (2.71%) of the bonds without any foreign ownership. Finally, while the mean yield spread of the bonds with DR is 0.99%, the mean yield spread of the bonds without any DR is 2.47%. The

mean difference (1.48%) is significant at the 1% level ($t = 6.72$). We conclude that firms with Chaebol affiliation, higher institutional equity ownership, greater foreign investor equity ownership, and more DR can issue bonds at lower interest rates.

<Table 4> Unpaired Two-Sample t-test for Yield Spread Differences.

Variable	N	Mean	Mean Difference
Bonds with Public Placement	1692	0.0182	-0.0207578
Bonds with Private Placement	668	0.0390	(-22.9426)***
Bonds with Chaebol Affiliation	1401	0.0216	-0.0060297
Bonds without Chaebol Affiliation	959	0.0277	(-6.6306)***
Bonds with Institutional Ownership	787	0.0219	-0.0032689
Bonds without Institutional Ownership	1573	0.0252	(-3.4272)***
Bonds with Foreign Ownership	592	0.0150	-0.0121267
Bonds without Foreign Ownership	1768	0.0271	(-12.0133)***
Bonds with DR	101	0.0099	-0.0148179
Bonds without DR	2259	0.0247	(-6.7164)***

DR is the percentage of share ownership with voting rights held by depository receipts (such as ADRs)

N is the number of new bonds. The symbols *, **, and *** show significance at the 0.10, 0.05 and 0.01 levels, respectively.

<Table 5> Empirical Results of the Ordered Probit Model with Standard Errors Adjusted for 10 Clusters in Year (Equation 1).

Variable	Coefficient	z-stat	p-value
TA	-0.5650	(-3.39)***	(0.001)
DET	1.3801	(1.93)*	(0.054)
AT	-0.0825	(-4.62)***	(0.000)
ROA	-2.6445	(-2.88)***	(0.004)
PUB	-1.1707	(-10.54)***	(0.000)
CHA	-0.3466	(-4.41)***	(0.000)
INST	1.7713	(3.9)***	(0.000)
LGE	0.6908	(3.32)***	(0.001)
FO	-1.4808	(-4.27)***	(0.000)
DR	-15.3353	(-10.84)***	(0.000)
2002	0.2170	(5.47)***	(0.000)
2003	-0.1325	(-2.12)**	(0.034)
2004	-0.0976	(-1.16)	(0.245)
2005	-0.1221	(-1.47)	(0.141)
2006	-0.3164	(-4.44)***	(0.000)
2007	-0.5179	(-6.97)***	(0.000)
2008	-0.9399	(-13.03)***	(0.000)
2009	-1.0409	(-15.06)***	(0.000)
2010	-0.9774	(-11.97)***	(0.000)

N=2645
 Log pseudo-likelihood = -3146.3962
 Pseudo R-Square = 0.2841

The dependent variable (RAT) is the ordered ranking of credit ratings and the letter ratings are converted into numeric ratings. The dependent variable is defined as: 7=CCC and below, 6=B, 5=BB, 4=BBB, 3=A, 2=AA, 1=AAA. If a bond is rated by multiple rating agencies, we use the average of ratings.

The independent variables are defined as follows: TA = Natural log of total assets; DET = Total debt/Total assets; ROA = Net Income/Total Assets; AT = Total Sales/Total Assets; PUB = 1 for bonds with public offerings and 0 for bonds with private placement; CHA = a dummy variable equal to 1 if a firm belongs to one of the 30 Chaebol business groups in Korea (0 otherwise); FO = the percentage of share ownership with voting rights held by foreign investors; LGE = the percentage of share ownership with voting rights held by the largest shareholder; INST = the percentage of share ownership with voting rights held by institutional investors such as banks, insurance, investment, and pension funds companies; DR = the percentage of share ownership with voting rights held by depository receipts (such as ADRs) N is the number of new bonds. The symbols *, **, and *** show significance at the 0.10, 0.05 and 0.01 levels, respectively.

<Table 6> Empirical Results of the Linear Regression with Standard Errors Adjusted for 10 Clusters in Year (Equation 2).

Variable	Coefficient	t-statistics	p-value
RAT	0.0092	(7.23)***	(0.000)
IA	0.0013	(0.44)	(0.672)
MAT	-0.0051	(-3.69)***	(0.005)
PUB	-0.0127	(-5.04)***	(0.001)
CHA	0.0010	(0.84)	(0.423)
INST	-0.0155	(-2.99)**	(0.015)
LGE	-0.0031	(-1)	(0.344)
FO	-0.0105	(-1.69)	(0.125)
DR	0.0681	(5.5)***	(0.000)
2002	-0.0032	(-2.74)**	(0.023)
2003	0.0042	(3.27)**	(0.010)
2004	0.0088	(4.7)***	(0.001)
2005	0.0037	(1.92)*	(0.087)
2006	-0.0004	(-0.27)	(0.795)
2007	-0.0009	(-0.53)	(0.610)
2008	0.0142	(10.49)***	(0.000)
2009	0.0260	(17.54)***	(0.000)
2010	0.0163	(9.94)***	(0.000)
N = 2360			
R-square = 0.4820			

The dependent variable is yield spreads (YS) between the yield to maturity of a corporate bond and its comparable maturity Korean government bond.

The independent variables are defined as follows:

RAT = the ordered ranking of credit ratings and the letter ratings are converted into numeric ratings. RAT is defined as: 7=CCC and below, 6=B, 5=BB, 4=BBB, 3=A, 2=AA, 1=AAA. If a bond is rated by multiple rating agencies, we use the average of ratings.

IA = natural log of issue amounts; MAT = maturity of a bond; PUB = 1 for bonds with public offerings and 0 for bonds with private placement; CHA = a dummy variable equal to 1 if a firm belongs to one of the 30 Chaebol business groups in Korea (0 otherwise);

FO = the percentage of share ownership with voting rights held by foreign investors;

LGE = the percentage of share ownership with voting rights held by the largest shareholder;

INST = the percentage of share ownership with voting rights held by institutional investors such as banks, insurance, investment, and pension funds companies;

DR = the percentage of share ownership with voting rights held by depository receipts (such as ADRs)

N is the number of new bonds. The symbols *, **, and *** show significance at the 0.10, 0.05 and 0.01 levels, respectively.

<Table 5> represents the empirical results of the ordered probit model (equation 1) with standard errors adjusted for 10 clusters in year. When it comes to control variables affecting bond ratings, all the variables such as TA, DET, AT, ROA, and PUB are statistically significant, and the signs of the coefficients are consistent with our expectations. While higher debt ratio (DET) lowers bond ratings, greater firm size (TA), asset efficiency ratio (AT), and profitability ratio (ROA) increase ratings. Public offerings (PUB) also sharply upgrade ratings because the coefficient of the PUB variable is significant at the 1% level ($t = -10.54$). With regard to the corporate governance variables, we also find that all of the test variables are significant at the 1% level. For instance, although Chaebol affiliation (CHA), greater foreign investor equity ownership (FO), and higher DR rate (DR) increase bond ratings, more institutional share ownership (INST) and largest investor equity ownership (LGE) decrease ratings. Therefore, we do not reject the first hypothesis that corporate governance significantly affects bond ratings in Korea.

In <Table 6> we provide the empirical results of the linear regression model (equation 2) with standard errors adjusted for 10 clusters in year. We discover that some corporate governance variables affect bond yields significantly after we control for issue-specific variables. Regarding the control variables, while lower ratings (RAT) boost yield spreads significantly ($t = 7.23$), shorter maturity bonds (MAT) are sold at lower yields ($t = -3.69$). Even though the issue amount (IA) does not influence yield spreads, public placement significantly reduces them at the 1% level ($t = -5.04$). Those findings imply that not only rating agencies but also investors believe that issue method is very important. On the other hand, when it comes to corporate governance variables, while foreign investor equity ownership (FO) and largest investor share ownership (LGE) are not statistically significant, institutional investor share ownership (INST) and DR rate (DR) affect yield spreads significantly. For example, institutional investor share ownership lowers yield spreads by 1.56% ($t = -2.99$), but the DR variable boosts yield spreads by 6.81%. We conjecture that bond investors

consider higher proportion of depository receipts negatively.

5. Conclusions

We examine whether Korean rating agencies such as KIS, NICE, and KR, incorporate corporate governance into bond ratings. We find that the rating agencies believe that greater foreign investor share ownership and equity ownership in the form of depository receipts reduce information asymmetry with regard to the credit risk of issuers and assign higher ratings to the bond. While previous studies have found that greater institutional share ownership and higher percentage of the largest investor share ownership boost firm performance due to reduced agency problems and through the effective monitoring of managers by shareholders, we find that the two factors lower bond ratings in Korea. Also, we discover that Chaebol affiliation is counted favorably by the rating agencies.

In addition, we conjecture that, if the rating agencies value corporate governance in the ratings, higher rated firms should issue bonds at lower yield to maturity. We find that investors are willing to pay lower risk premium for bonds with higher institutional ownership, but higher risk premium to bonds with greater equity ownership in the form of depository receipts. We conclude that, even if both the rating agencies and investors in Korea consider corporate governance (Chaebol affiliation and ownership structure) an important determinant in bond ratings and the yields to maturity, they have opposite views on institutional ownership and share ownership in the form of depository receipts.

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