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Corporate Social Responsibility and Information Asymmetry in the Korean Market: Implications of *Chaebol* Affiliates

Bohyun Yoon¹, Jeong-Hwan Lee²

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Abstract

This paper examines how corporate social responsibility is related to the degree of asymmetric information in the Korean financial market. Recent theory argues that there is a negative relationship between a firm's corporate social responsibility and its information asymmetry. To test this hypothesis, we use the environment, social and governance (ESG) score, published by the Korean Corporate Governance Service, to proxy a firm's management practices toward socially responsible activities. In the entire sample of the Korean firms, we find contrasting results; the ESG score shows negative relationships with the price impact measure but statistically insignificant relationships with the dispersion of analyst forecasts. However, the ESG score shows negative relationships with both measures when we exclude *chaebol* affiliates from the sample. These findings are robust when we examine environmental, social and corporate governance scores separately. This set of results argues for the extant theory, expecting a negative relationship between a firm's engagement in corporate social responsibility and asymmetric information. It further argues for the importance of firm characteristics in determining the influence of socially responsible activities.

Keywords: Corporate Governance, Corporate Social Responsibility, ESG score, Information Asymmetry.

JEL Classification Code: G14, G30, G32.

1. Introduction

Corporate social responsibility (hereafter, CSR) refers to a firm's management practices for the public good beyond legal requirements. In other words, CSR is a firm's management decisions toward its multilevel stakeholders such as customers, suppliers, communities, employees, and investors. A number of firms have spent significant resources to make their policies socially responsible ones. Therefore, a firm's CSR practices are one of the growing research areas in the literature and its relationship to a variety of corporate policies has been extensively examined.

Our work is a part of this effort and investigates the relationship between a firm's CSR practice and the degree of asymmetric information. To be specific, we test the empirical hypothesis developed by Cui, Jo, and Na (2018),

which predicts a negative association of CSR with the level of asymmetric information. They mainly argue that CSR reports tend to deliver additional non-financial information to the financial markets and improve the transparency of firms, and thus tend to reduce information asymmetry between managers and investors.

We test this hypothesis in the Korean financial market, which is deliberately chosen for the following reasons. Most of all, a well-established measure of CSR exists in the Korean market. The Korean Corporate Governance Service provides a corporation's environmental, social, and governance scores, which successfully proxy a firm's level of engagement in CSR practice. Furthermore, the Korean financial market is one of the developing markets, which has received limited attention in the literature evaluating the role of CSR practices. Finally, the Korean market is well-known to have a unique set of large, family-owned conglomerates called *chaebols*, which have different firm characteristics from other non-*chaebol* affiliates. This set of firms opens a venue to examine how firm characteristics affect the influence of CSR practice, which is an emerging research topic in the literature, such as Lin, Chan, and Dang (2015).

¹ First Author, Assistant Professor, Division of Economics and Information Statistics, Kangwon National University.
E-mail: yoonbo@kangwon.ac.kr

² Corresponding Author, Assistant Professor, College of Economics and Finance, Hanyang University, Seoul, Korea. Tel: +82-2-2220-1036, E-mail: jeonglee@hanyang.ac.kr

For this purpose, we use a sample of publicly traded firms in the Korean market from 2011 to 2016. We adopt the sum of the environmental, social and governance score (hereafter, total ESG score) as a benchmark proxy variable for a firm's engagement in CSR practices. Then, each category of the ESG score is also analyzed separately for robustness checks. We consider two widely accepted variables to represent the degree of information asymmetry. The first one is the dispersion of analyst forecasts, which tends to be larger in the face of a greater degree of information asymmetry. The second one is the price impact measure of Amihud (2002). The ordinary least square method is used to investigate how CSR activity affects the degree of information asymmetry.

Our main empirical findings are as follows. In the examination of the entire sample, the total ESG score does not show a statistically significant relationship with the dispersion of analyst forecasts, while it has a significantly negative relationship with the price impact measure. The latter result is generally not well-aligned with the hypothesis of Cui et al. (2018), which predicts a significantly negative relationship.

However, the total ESG score is negatively related with both measures of information asymmetry when we exclude *chaebol* affiliates from our sample. In particular, the coefficient on the ESG score is significantly negative for the sample of non-*chaebol* affiliates, but it is statistically insignificant for the sample of *chaebol* affiliates. The ESG score is negatively related to the price impact measure regardless of the inclusion or exclusion of *chaebol* affiliates in our examination.

This finding appears to rely critically on the characteristics of *chaebol* affiliates. *Chaebol* affiliates are large and provide well-established financial information to the market, which are relatively free from asymmetric information, especially in terms of earnings forecasts. A large number of analysts have built up earnings forecasts for a long period of time due to the importance of *chaebol* affiliates in deciding the overall growth of the Korean economy. Thus, additional non-financial information from CSR practices may play a relatively insignificant role in shaping analyst forecasts, which results in a statistically insignificant CSR-asymmetric information relationship.

On the other hand, the price impact measure is a type of illiquidity measure deciding the relationship between stock return and volume. The measure builds upon the perceptions of all investors, which does not rely on the analysis of specialized persons. Hence, the condition of *chaebol* affiliates does not have a specific channel that directly affects the measure, unlike the dispersion measure of analyst forecasts.

Finally, we also find that our results are robust whether we examine the environmental, social and corporate governance score separately in the examination of information asymmetry. The price impact measure is negatively related to all three categories of CSR practices when we include or exclude the sample of *chaebol* affiliates. In contrast, the dispersion of analyst forecasts is negatively associated with each score only when we exclude *chaebol* affiliates from our sample.

Our work mainly contributes to the literature by providing supporting evidence for the recent theory expecting a negative relationship between CSR and information asymmetry (Cui et al., 2018). The theory is empirically confirmed only in the U.S. financial market based on the examination of their own analysis. Our work provides additional evidence in the Korean financial market, which strengthens the validity of their theory.

Furthermore, we add new dimensions to the literature examining the role of CSR practices in developing countries. Due to the absence of a reliable measure for CSR management practices, the role of CSR is examined in developing countries in a limited way (Miralles-Quirós, Miralles-Quirós, & Gonçalves, 2018). The topic itself is restricted in developing markets; most studies focus on CSR-performance or CSR-valuation relationships. However, our work examines the CSR-information asymmetry in developing markets, which confirms multiple roles of CSR practices even in developing markets.

Finally, our work sheds new light on the relationship between CSR and firm characteristics. Lin et al. (2015) argue that each firm confronts different CSR requirements according to industry type, its region of operation and other firm characteristics. In fact, Miralles-Quirós et al. (2018) find that the effect of CSR on firm valuation differs between environmentally sensitive industries and non-sensitive industries. Our work shows that a firm's affiliation to *chaebols* seriously changes the CSR-asymmetric information relationship, which argues for the significance of firm characteristic consideration in CSR literature.

This paper proceeds as follows. Section 2 reviews the literature. Section 3 provides the description of data and our empirical strategies. Section 4 presents our main estimation results. Section 5 is the conclusion.

2. Related Literature

Our testable hypothesis is in line with Cui et al. (2018). They develop an empirical hypothesis expecting a negative relationship between CSR and information asymmetry. Their hypothesis development relies on the reputation-building theory based on Freeman (1984) and Jo and Harjoto (2011).

Freeman (1984) emphasizes that firms adopt CSR practices as a tool for better communication between managers and stakeholders. In fact, Jo and Harjoto (2011) show that CSR engagements reduce conflicts of interest among multiple stakeholders. A firm's management practices toward socially responsible activities imply better communications between insiders and outsiders. Thus, a greater level of CSR practices indicates a lower level of information asymmetry between insiders and outsiders.

This work is also closely related to the literature examining the role of CSR activity in the Korean financial market. However, most of the studies focus on the financial performance and valuation effect of CSR practices. For example, Choi, Kwak, and Choe (2010) document that CSR activities positively affect financial performance based on the stakeholder-weighted CSR index. Han, Kim, and Yu (2016) analyze nonlinear relationships between CSR and the financial performance of Korean firms based on ESG disclosure scores. Kim and Wee (2011) and Jang and Choi (2010) examine the CSR-performance relationship based on the index published by the Korea Economic Justice Institute.

Our work is also related to a branch of corporate governance literature that examines *chaebols*, the large family-owned business conglomerates in Korea. The literature has paid substantial attention to the owner risk problems in *chaebols* affiliates. For instance, their weak governance structures and tunneling problems have been extensively examined in the literature (Baek, Kang, & Lee, 2004; Bae, Kang, & Kim, 2006). From the perspective of CSR, *chaebol* affiliates are widely expected to face greater requirements for CSR practices because these groups have achieved rapid growth of their firms based on extensive government and public support (Na, Hong, & An 2015).

Finally, recent work highlights firm-level heterogeneity in determining the effect of CSR practices on corporate policies. Lin et al. (2015) emphasize that each firm faces distinctive CSR requirements in accordance with the industry type, its region of operation and other firm characteristics. Miralles-Quirós et al. (2018) show how a group of environmentally sensitive firms change the valuation effect of CSR in Brazilian financial markets. These results imply that the effect of CSR on corporate policies might differ depending on various firm characteristics.

3. Data and Empirical Method

3.1. Data and Empirical Model

This work adopts two types of data for statistical estimations. The first one is the financial information required in the construction of the measure of asymmetry

and other firm-level covariates. We obtain every financial statement variable at the end of each fiscal year. This set of financial information is obtained from the WISEfn database.

In this study, we use two proxy variables to measure the degree of asymmetric information. Our first measure is the price impact measure (PI) following Amihud (2002) and Goyenko Holden and Trzcinka (2009). This measure is defined as the ratio between the absolute value of daily return and trading volume, $|ret_t|/vol_t$. It captures the daily price response from the change in one dollar of trading volume, and accordingly, a higher price impact measure implies a larger illiquidity or greater degree of information asymmetry. Our second measure of information asymmetry is the dispersion of analysts' forecasts (DAF), which represents differences in investor opinions about future earnings per share (Lang & Lundholm, 1996). This measure is defined as the annual mean of the monthly dispersion of analysts' forecasts of the current year earnings per share, normalized by the absolute value of the average forecast.

We also introduce a wide range of covariates to mitigate omitted variable bias problems. RD represents the importance of R&D expenditure, which is defined as the ratio of R&D expenditure to total assets. A large R&D expenditure indicates a significant amount of intangible assets and thus a higher degree of information asymmetry. TANG is asset tangibility measured, which is defined as $0.715 \times \text{Receivables} + 0.547 \times \text{Inventory} + 0.535 \times \text{Fixed Assets} + \text{Cash}$. This measure is also normalized by the total assets and is predicted to have a negative association with the measure of information asymmetry. FCF represents a firm's free cash flow, the sum of cash flow from operating activities minus common and preferred dividends, divided by total assets. SALEG is the growth rate of a firm's total sales. CAPX and ADV represent a firm's capital expenditure and advertising expenses divided by its total sales. LEV is the book leverage ratio, the ratio of total debt to total assets. All five of these factors are expected to have positive associations with the degree of information asymmetry. AGE is the time period after a firm's initial public offering, which reduces the degree of asymmetric information to investors.

We employ the total ESG score as a benchmark proxy variable for a firm's engagements in CSR practices. The Korean Corporate Governance Service (hereafter, KCGS) publishes the ESG scores and they evaluate a listed firm's environmental, social, and corporate governance management practices in the Korean financial market. The KCGS measures the environmental performance of a firm by using the following categories: management practice in response to climate change, green marketing, emission of pollutants, and production of environmentally friendly goods. The social score is evaluated by considering business ethics, sustainable management, job security, working condition,

and human resources development. A firm's governance score is calculated by considering shareholder rights protection, disclosure of information, independence of the board, managerial compensation, quality of auditing, and corporate distribution policy. We define the total ESG as the sum of a firm's environmental, social, and governance scores.

We categorize specific business groups as *chaebols* according to the Financial Supervisory Service of Korea report for the sample period. The Financial Supervisory Service of Korea defines a large-size conglomerate or *chaebol* is a group with total assets over ₩2 trillion, and is operated by a specific controlling shareholder or a founder-family.

Note that there are two major advantages of this database compared to the widely used KEJI index. First, the measure explicitly captures multiple aspects of a firm's CSR performance based on the ESG standard. This ESG standard is an internationally accepted measure of CSR performance, which is widely used by a number of data providers including Bloomberg and KLD. Next, the ESG dataset has a wider coverage of the Korean stock market than the KEJI index, which only covers 200 corporations for each year. However, the ESG score covers most of the firms listed in the KOSPI markets and part of the firms listed in the KOSDAQ market.

It is also noteworthy mentioning our sample construction. Most of the companies listed in the KOSDAQ market are excluded in our sample due to the limitations of ESG score coverage. Even the firms listed in the KOSPI market, a part of firm-year observations are not included in the sample of our examinations if it has only one or no analyst forecast on earnings per share. If we exclude the impact of *Samsung Electronics* that account for substantial proportion of market capitalization in the Korean market, our results remain unchanged.

We use the following empirical model to examine the relationship between CSR practices and information asymmetry:

$$\gamma' \text{CONTROLS}_{t-1} + \varepsilon_t \quad (1)$$

ASYMMETRY indicates the proxy variables for the asymmetric information. We adopt the lagged ESG score rather than the ESG score of the current period to mitigate potential endogeneity problems. The coefficient β represents the relationship between CSR practices and the degree of asymmetric information. The aforementioned firm covariates are included as the set of control variables. The control variables include a wide range of firm-level covariates including sales growth rate, debt to asset ratio, logarithm of total assets, capital expenditure to asset ratio,

R&D to asset ratio, the number of analyst followings and the free cash flow to asset ratio. The amount of advertisement costs and fixed assets are normalized by the book asset value as well. The firm age variable is also included.

To estimate the equation (1), the ordinary least square method is adopted. All of the standard errors and corresponding t-values are calculated by clustering the entity of each firm.

3.2. Data Description

Table 1 presents the summary statistics of the ESG scores and information asymmetry measures along with the descriptive statistics for the firm-level covariates. The table includes the mean, first quartile, median, third quartile, and the standard deviation of each variable. We winsorize every financial variable at the 1% level in each tail, even though we measure ESG scores annually and individually.

Table 1: Summary Statistics

STATS	Mean	p25	p50	p75	SD
DAF	0.14	0.07	0.11	0.18	0.30
PI	0.01	0.00	0.01	0.01	0.02
ESG-score	324.4	240.0	312.6	391.4	112.3
E-score	113.7	40.0	121.5	171.5	75.7
S-score	112.5	69.0	96.0	147.5	59.4
G-score	105.4	85.0	103.0	124.0	32.9
SALESG	1.21	0.99	1.08	1.24	0.6
LEV	0.48	0.30	0.49	0.63	0.21
RD	0.01	0.00	0.00	0.01	0.03
CAPX	0.07	0.02	0.04	0.09	0.08
FCF	0.00	-0.04	0.00	0.05	0.10
ADV	0.01	0.00	0.00	0.01	0.02
TANG	0.31	0.15	0.31	0.43	0.19
AGE	30.85	14.00	30.00	44.00	18.63

Table 1 shows that each category of the environmental, social, and governance scores contributes almost equally to the total ESG score, on average. The average of each score ranges from 105.4 to 113.7, and the sum of these average values is quite close to the average of the total ESG score. However, the standard deviation of each score has significantly different values. For instance, the standard deviation of E-score is 75.7, which is more than twice as much as that of G-score, 32.9. The standard deviation of S-score is in the middle of these two values, 59.4. Finally, the average values of E-score and G-score distribution are smaller than their corresponding median values, which implies slightly left-skewed distribution. In contrast, the mean and median value of S-score indicates a slightly right-skewed distribution.

In Table 2, we calculate the correlation coefficients among our variables of interest. The pairwise correlation coefficients are calculated for the measures of asymmetric information, the set of ESG scores, and other control variables.

Table 2: Correlation Coefficients

No.	Variable	1	2	3	4	5	6	7
1	DAF	1.00						
2	PI	-0.01	1.00					
3	ESG-score	0.02	-0.22	1.00				
4	E-score	0.03	-0.22	0.82	1.00			
5	S-score	0.03	-0.26	0.76	0.73	1.00		
6	G-score	-0.01	-0.12	0.76	0.26	0.45	1.00	
7	SALESG	-0.02	-0.06	-0.03	-0.11	-0.09	0.07	1.00
8	LEV	0.03	-0.13	0.29	0.22	0.28	0.25	0.04
9	RD	0.04	-0.03	-0.08	-0.06	-0.07	-0.07	-0.04
10	CAPX	0.04	-0.05	0.01	0.05	-0.01	-0.05	-0.02
11	FCF	-0.04	0.01	-0.04	-0.05	0.00	-0.01	0.01
12	ADV	-0.05	-0.04	-0.12	-0.16	0.02	-0.02	0.01
13	TANG	0.02	0.03	0.10	0.32	0.07	-0.20	-0.09
14	AGE	0.04	-0.07	0.14	0.19	0.18	0.02	-0.08
No.	Variable	8	9	10	11	12	13	14
1	DAF							
2	PI							
3	ESG-score							
4	E-score							
5	S-score							
6	G-score							
7	SALESG							
8	LEV	1.00						
9	RD	-0.27	1.00					
10	CAPX	-0.13	0.12	1.00				
11	FCF	-0.22	-0.02	-0.40	1.00			
12	ADV	-0.23	0.08	-0.01	0.14	1.00		
13	TANG	-0.03	-0.06	0.49	-0.12	-0.08	1.00	
14	AGE	0.16	-0.12	-0.06	0.03	-0.08	0.11	1.00

Table 2 provides a number of noticeable results. First, the table shows weak correlations or even a positive correlation between the ESG score and the dispersion of analyst forecasts. For instance, DAF and ESG-score have a weakly positive correlation at 0.02, which is contradictory to the hypothesis of Cui et al. (2018). Such a weak or positive correlation is robust whether we separately examine the environmental, social and scores with the dispersion measure. In contrast, the price impact measure of Amihud (2002) is negatively related to the set of ESG scores. Next, there exists a relatively weak correlation between the G-

score and the E/S scores. For instance, G-score has a correlation coefficient of 0.25 with respect to E-score, which is significantly lower than other correlation coefficients among the set of ESG scores.

4. Main Results

4.1. ESG-score

Table 3 provides the estimation results of our empirical model. We employ the total ESG score as our benchmark measure of socially responsibility activities. For each measure of information asymmetry, the first model excludes any other control variables and the second model includes these firm-level covariates. The first two columns use the dispersion of analyst forecasts as the dependent variable. The next two columns use the price impact measure of Amihud (2002) as the dependent variable. The table reports the estimated coefficients and corresponding t-statistics (in parenthesis). The standard errors are clustered by each firm. The number of observations and adjusted R^2 value are reported as well.

Table 3: CSR and Information Asymmetry: Entire Sample

Measure	Dispersion		Price Impact	
ESG-score	0.004	-0.000	-0.005***	-0.004***
	(0.62)	(-0.06)	(-8.65)	(-7.74)
SALESG		-0.010		-0.002***
		(-1.20)		(-3.54)
LEV		0.048		-0.013***
		(1.01)		(-2.91)
RD		0.589**		-0.048*
		(2.12)		(-1.73)
CAPX		0.147		-0.040***
		(0.98)		(-3.18)
FCF		-0.021		-0.012
		(-0.22)		(-1.51)
ADV		-0.625**		-0.086*
		(-2.48)		(-1.95)
TANG		-0.007		0.011**
		(-0.11)		(2.25)
AGE		0.001		-0.000*
		(1.60)		(-1.72)
_Intercept	0.128***	0.104***	0.029***	0.039***
	(6.15)	(3.01)	(13.18)	(10.28)
N	1956	1956	1956	1956
adj. R-sq	-0.000	0.005	0.046	0.074

NOTE: The symbols *, ** and *** represent statistical significance levels of 10%, 5% and 1%, respectively.

Table 3 presents contrasting results for these two different measures of information asymmetry. For the measure of analyst forecast dispersions, there does not exist a statistically significant relationship between the total ESG score and the degree of information asymmetry. The coefficients are statistically insignificant whether we introduce the set of other control variables or not. However, the total ESG score is negatively related to the price impact measures of Amihud (2002). For instance, the coefficient on the ESG-score is -0.004 with the set of control variables, which is significantly negative.

The results of the examination of the dispersion measure are not aligned satisfactorily with the prediction of Cui et al. (2018). The prediction expects significantly negative coefficients for all of the empirical models. This prediction applies well for the case of the price impact measure. However, our results show that the estimated coefficients are statistically insignificant in the case of the analyst forecast dispersion measures, which is not explained well by the role of CSR practices in enhancing communication between insiders and outsiders.

As discussed above, the Korean market is well known to have a unique business system where large family-owned conglomerates called *chaebols* play an important role in leading the growth of the overall economy. *Chaebol* affiliates are widely accepted to confront different requirements for CSR practices because the group of firms have grown rapidly by exploiting extensive government and public support (Na et al., 2015). Moreover, the publicly traded *chaebol* affiliates tend to be large and provide well-established financial information to the market. Investment analysts pay a great deal of attention to the performance of *chaebol* affiliates due to their significance in driving the overall Korean economy. For example, Samsung Electronics accounts for more than 15% of the total market capitalization of Korean firms. Accordingly, the characteristics of *chaebol* affiliates might significantly affect the CSR-asymmetric information relationship.

Table 4: CSR and Information Asymmetry: *Chaebol*/Non-*Chaebol*

Measure	Dispersion	Price Impact		
<i>Chaebol</i> Affiliates	<i>Chaebol</i>	Non- <i>Chaebol</i>	<i>Chaebol</i>	Non- <i>Chaebol</i>
ESG-score	0.017 (1.20)	-0.016*** (-3.09)	-0.003*** (-3.88)	-0.003*** (-3.23)
SALESG	-0.014 (-0.99)	-0.013 (-1.22)	-0.002** (-2.61)	-0.002** (-2.52)
LEV	0.188 (1.29)	0.035 (1.21)	-0.010 (-1.40)	-0.013** (-2.40)
RD	2.287** (2.04)	0.123 (0.41)	-0.041 (-1.53)	-0.052 (-1.63)
CAPX	0.350 (0.84)	0.032 (0.24)	-0.051** (-2.21)	-0.040*** (-2.65)

FCF	0.289 (1.19)	-0.124 (-1.50)	0.001 (0.04)	-0.018** (-2.34)
ADV	-1.045* (-1.68)	-0.418 (-1.61)	0.023 (0.19)	-0.121*** (-2.61)
TANG	-0.180 (-1.14)	0.060 (1.25)	0.014 (1.38)	0.013** (2.23)
AGE	0.001 (1.52)	-0.000 (-0.42)	-0.000 (-1.14)	-0.000 (-0.54)
_Intercept	-0.028 (-0.31)	0.175*** (5.82)	0.029*** (3.63)	0.037*** (7.75)
N	672	1284	672	1284
adj. R-sq	0.020	0.011	0.064	0.051

NOTE: The symbols *, ** and *** represent statistical significance levels of 10%, 5% and 1%, respectively.

Table 4 documents the estimation results of our empirical model for two different samples, *Chaebol* and Non-*chaebol* affiliates. We employ the total ESG score as the benchmark measure for CSR management practices. For each measure of information asymmetry, the first model investigates the sample of *Chaebol* affiliates and the second model examines the sample of Non-*chaebol* affiliates. The first two columns adopt the dispersion of analyst forecasts as the dependent variable. The next two columns use the price impact measure of Amihud (2002) as the dependent variables. All empirical models include the set of firm-level covariates. The table reports the estimated coefficients and corresponding t-statistics (in parenthesis). The standard errors are clustered by each firm. The number of observations and adjusted R2 value are documented as well.

Table 4 confirms the significant role of *chaebol* categorization in estimating the relationship between CSR practices and information asymmetry, especially in terms of the analyst forecast dispersion measure. For instance, the coefficient on the ESG score becomes significantly negative at -0.0016 in the sample of non-*chaebol* affiliates for the analyst forecast dispersion measure, while it is statistically insignificant at 0.017 for the sample of *chaebol* affiliates. This contrasting result implies that the statistically insignificant coefficient reported in Table 3 is mainly driven by the effect of *chaebol* affiliates. In the case of the price impact measure of Amihud (2002), the table shows consistently negative coefficients for both samples. These negative coefficients are consistent with the prediction of Cui et al. (2018).

Such a contrasting finding appears to be closely related to the characteristics of firms belonging to *chaebol*. As explained above, *chaebol* affiliates are large and provide transparent financial statement information to investors. A large number of analysts have built up earnings forecasts for a long period of time due to the significance of *chaebol* affiliates in deciding the overall growth of the Korean economy. Accordingly, additional non-financial communications from practicing CSR activities may not

significantly affect the earnings forecasts of investment analysts, which may lead to a statistically insignificant relationship between the ESG score and the dispersion of analyst forecasts. If we exclude the sample of chaebol affiliates, the communicating role of CSR appears to enhance the transparency of a corporation, resulting in a negative CSR-information asymmetry relationship, as expected in the literature.

Note that the price impact measure is a market-based measure reflecting overall investors' responses in the financial market, unlike the forecast dispersion measure shaped by the group of specialized analysts. In the case of the price impact measure, the set of outsiders is the group of general investors, and accordingly, the affiliations of chaebol may not affect the communicating role of CSR practices between insiders and these outsiders. However, in the case of the analyst forecast dispersion measure, the set of outsiders is restricted to specialists who have already accumulated substantial knowledge about chaebol affiliates. CSR practices may not provide additional information to these specialists.

4.2. Estimation Results: Environmental, Social and Governance Score.

Now, we turn to examine each category of the ESG score separately and examine its relationship to the measure of asymmetric information.

Table 5 reports the estimation results of our empirical model for three different samples, the entire sample, Chaebol and Non-chaebol affiliates, when we employ the environmental score as a proxy for CSR practices. For each measure of information asymmetry, the first model investigates the entire sample of firms. The second and third model examine the sample of Chaebol affiliates and the sample of Non-Chaebol affiliates, respectively. The first three columns adopt the dispersion of analyst forecasts as the dependent variable. The last three columns employ the price impact measure of Amihud (2002) as the dependent variables. All empirical models include the set of firm-level covariates. The table reports the estimated coefficients and corresponding t-statistics (in parenthesis). The standard errors are clustered by each firm. The number of observations and adjusted R² value are documented as well.

Table 5: CSR and Information Asymmetry: Environmental Score

Measure	Dispersion			Price Impact		
<i>Chaebol</i> Affiliates	<i>ALL</i>	<i>Chaebol</i>	<i>Non-Chaebol</i>	<i>ALL</i>	<i>Chaebol</i>	<i>Non-Chaebol</i>
E-score	0.000	0.000	-0.000**	-0.000***	-0.000***	-0.000***
	(0.43)	(1.52)	(-2.59)	(-8.16)	(-3.88)	(-4.24)
SALESG	-0.009	-0.011	-0.013	-0.003***	-0.003***	-0.003***
	(-1.17)	(-0.78)	(-1.30)	(-4.19)	(-3.12)	(-2.80)
LEV	0.045	0.180	0.023	-0.013***	-0.008	-0.015***
	(0.98)	(1.26)	(0.82)	(-3.22)	(-1.14)	(-2.83)
RD	0.583**	2.188*	0.139	-0.040	-0.010	-0.049
	(2.11)	(1.92)	(0.47)	(-1.44)	(-0.36)	(-1.51)
CAPX	0.150	0.385	0.011	-0.049***	-0.059**	-0.046***
	(0.99)	(0.90)	(0.08)	(-3.89)	(-2.55)	(-3.04)
FCF	-0.021	0.294	-0.131	-0.013*	-0.001	-0.019**
	(-0.22)	(1.19)	(-1.58)	(-1.72)	(-0.08)	(-2.43)
ADV	-0.611**	-1.035	-0.438*	-0.099**	0.023	-0.133***
	(-2.40)	(-1.64)	(-1.65)	(-2.26)	(0.19)	(-2.89)
TANG	-0.013	-0.202	0.083	0.020***	0.019*	0.020***
	(-0.20)	(-1.23)	(1.63)	(3.98)	(1.93)	(3.45)
AGE	0.001	0.001	-0.000	-0.000	-0.000	-0.000
	(1.54)	(1.45)	(-0.35)	(-1.39)	(-0.93)	(-0.43)
Intercept	0.102***	-0.002	0.147***	0.033***	0.025***	0.033***
	(3.16)	(-0.03)	(5.78)	(9.16)	(3.40)	(7.56)
N	1956	672	1284	1956	672	1284
adj. R-sq	0.005	0.021	0.010	0.090	0.082	0.062

NOTE: The symbols *, ** and *** represent statistical significance levels of 10%, 5% and 1%, respectively.

Table 6: CSR and Information Asymmetry: Social Score

Measure	Dispersion			Price Impact		
<i>Chaebol</i> Affiliates	<i>ALL</i>	<i>Chaebol</i>	<i>Non-Chaebol</i>	<i>ALL</i>	<i>Chaebol</i>	<i>Non-Chaebol</i>
S-score	0.000	0.001*	-0.000***	-0.000***	-0.000***	-0.000***
	(0.70)	(1.85)	(-2.83)	(-9.15)	(-3.85)	(-5.00)
SALESG	-0.009	-0.008	-0.013	-0.003***	-0.003***	-0.003***
	(-1.10)	(-0.55)	(-1.32)	(-4.18)	(-3.25)	(-2.81)
LEV	0.039	0.182	0.039	-0.011**	-0.011	-0.010*
	(0.82)	(1.26)	(1.35)	(-2.47)	(-1.43)	(-1.75)
RD	0.586**	2.104*	0.128	-0.048*	-0.048*	-0.052
	(2.11)	(1.91)	(0.44)	(-1.72)	(-1.67)	(-1.64)
CAPX	0.144	0.323	0.030	-0.039***	-0.047**	-0.040***
	(0.96)	(0.78)	(0.22)	(-3.12)	(-2.07)	(-2.66)
FCF	-0.025	0.294	-0.118	-0.010	0.002	-0.015**
	(-0.26)	(1.20)	(-1.42)	(-1.28)	(0.13)	(-2.01)
ADV	-0.648**	-1.213*	-0.280	-0.052	0.033	-0.086*
	(-2.50)	(-1.75)	(-1.07)	(-1.16)	(0.26)	(-1.80)
TANG	-0.009	-0.181	0.055	0.011**	0.013	0.011**
	(-0.15)	(-1.15)	(1.16)	(2.19)	(1.30)	(1.98)
AGE	0.001	0.001	-0.000	-0.000	-0.000	-0.000
	(1.47)	(1.51)	(-0.20)	(-1.21)	(-1.15)	(-0.17)
Intercept	0.098***	-0.045	0.157***	0.035***	0.026***	0.036***
	(3.05)	(-0.50)	(6.16)	(9.82)	(3.61)	(8.17)
N	1956	672	1284	1956	672	1284
adj. R-sq	0.005	0.025	0.011	0.091	0.061	0.068

NOTE: The symbols *, ** and *** represent statistical significance levels of 10%, 5% and 1%, respectively.

Table 5 confirms the robustness of our empirical results, as described in Tables 3 and 4. The coefficients on the environmental score are insignificant when we examine the entire sample and the sample of chaebol affiliates by adopting the analyst forecast dispersion as a measure of information asymmetry. For all other models, the coefficients on the environmental score turn out significantly negative. All of these characteristics are exactly in line with the case of ESG score as a proxy variable for CSR practices.

Table 6 reports the estimation results of our empirical model for three different samples, the entire sample, Chaebol and Non-chaebol affiliates, when we employ the social score as a measure for CSR practices. We also use the analyst forecast dispersion measure in the first three

columns and the price impact measure of Amihud (2002) in the last three columns. All other model specifications are identical to those of Table 5, which investigates the role of environmental scores.

Table 6 also confirms the robustness of our empirical results, as reported in Tables 3 and 4. One slight difference lies in the significantly positive coefficient of the social score for chaebol affiliates, but this coefficient is still inconsistent with the prediction of Cui et al. (2018). The coefficients on the environmental score for the last four columns still support the negative influence of CSR practice on the degree of asymmetric information.

Table 7: CSR and Information Asymmetry: Governance Score

Measure	Dispersion			Price Impact		
<i>Chaebol</i> Affiliates	<i>ALL</i>	<i>Chaebol</i>	<i>Non-Chaebol</i>	<i>ALL</i>	<i>Chaebol</i>	<i>Non-Chaebol</i>
G-score	-0.000	0.000	-0.000*	-0.000***	-0.000*	-0.000
	(-0.50)	(0.61)	(-1.80)	(-3.44)	(-1.91)	(-0.55)
SALESG	-0.009	-0.016	-0.011	-0.002***	-0.002**	-0.002**
	(-1.16)	(-1.05)	(-1.10)	(-3.00)	(-2.55)	(-2.24)
LEV	0.053	0.200	0.031	-0.017***	-0.012	-0.017***
	(1.05)	(1.37)	(1.03)	(-3.77)	(-1.60)	(-2.92)
RD	0.584**	2.512**	0.115	-0.052*	-0.088**	-0.051
	(2.09)	(2.21)	(0.39)	(-1.85)	(-2.51)	(-1.58)
CAPX	0.154	0.326	0.049	-0.038***	-0.047**	-0.040**
	(1.01)	(0.77)	(0.36)	(-2.91)	(-2.01)	(-2.58)
FCF	-0.018	0.274	-0.127	-0.013	0.004	-0.020**
	(-0.19)	(1.12)	(-1.53)	(-1.62)	(0.26)	(-2.58)
ADV	-0.621**	-1.000*	-0.362	-0.074	0.012	-0.112**
	(-2.43)	(-1.67)	(-1.38)	(-1.61)	(0.10)	(-2.32)
TANG	-0.013	-0.162	0.037	0.007	0.011	0.011*
	(-0.20)	(-1.04)	(0.71)	(1.21)	(1.08)	(1.74)
AGE	0.001	0.002	-0.000	-0.000**	-0.000	-0.000
	(1.61)	(1.58)	(-0.47)	(-2.09)	(-1.27)	(-0.53)
Intercept	0.115***	-0.007	0.173***	0.035***	0.023***	0.031***
	(3.11)	(-0.07)	(4.86)	(9.34)	(3.13)	(6.60)
N	1956	672	1284	1956	672	1284
adj. R-sq	0.005	0.019	0.009	0.043	0.039	0.040

NOTE: The symbols *, ** and *** represent statistical significance levels of 10%, 5% and 1%, respectively.

Table 7 documents the estimation results of our empirical model for three different samples, the entire sample, *Chaebol* and *Non-chaebol* affiliates, when we adopt the governance score as a proxy measure for CSR practices. We use the analyst forecast dispersion measure in the first three columns and the price impact measure of Amihud (2002) in the last three columns as in the previous tables. All other model specifications are identical to those of Tables 5 and 6.

Table 7 verifies the robustness of our main empirical results, reported in Tables 3 and 4. The coefficients on the governance score are statistically insignificant when we examine the entire sample and the sample of *chaebol* affiliates with the measure of analyst forecast dispersion. However, the coefficients on the governance scores are significantly negative for the entire sample of firms and the sample of *chaebol* affiliates if we adopt the price impact measure as the dependent variable. The statistically insignificant coefficient on the governance score for the sample of *non-chaebol* affiliates emphasizes the qualitative difference between two measures of asymmetric information, as discussed in the previous chapter. Unlike the measure of

analyst forecast dispersion, the price impact measure capture the degree of asymmetric information even for *chaebol* affiliates.

It is also noteworthy that all of the results emphasize the significant role of *chaebol* affiliations in determining the CSR-information asymmetry relationship. Such an emphasis on firm characteristics is in line with recent developments in the CSR literature. For example, Lin et al. (2015) argue that each firm faces distinctive CSR requirements in accordance with the industry type, its region of operation and other firm characteristics. Miralles-Quirós et al. (2018) show empirically how a group of environmentally sensitive firms influence the valuation effect of CSR in Brazilian financial markets.

5. Concluding Remarks

This paper examined whether CSR practices reduce the degree of asymmetric information between insiders and outsiders in the Korean financial market. For this purpose, we employ the ESG published by the Korean Corporate

Governance Service as a proxy variable for CSR management practices. To measure the degree of asymmetry, we also adopt two widely accepted measures of information asymmetry, the dispersion of analyst forecasts and the price impact measure of Amihud (2002). The sample of publicly traded firms covers a period from 2011 to 2016 in our examination.

We found that the ESG score shows a negative relationship with the price impact measure, but a statistically insignificant relationship with the dispersion of analyst forecasts in the entire sample of Korean firms. However, the ESG score turns out to have a negative relationship with both measures of information asymmetry when we exclude the sample of *chaebol* affiliates from the sample. These results are robust if we examine the environmental, social and corporate governance score as the proxy variable for the level of CSR management practices.

We suggest that the characteristics of *chaebol* affiliates drive such contrasting results. *Chaebol* affiliates tend to be large and provide transparent financial statement information to investors. A large number of analysts have already built up earnings forecasts for a long period of time due to the significance of *chaebol* affiliates in determining the overall growth of the Korean economy. Accordingly, the non-financial information from CSR practices may not significantly affect the earnings forecasts of these specialist groups, leading to a statistically insignificant CSR-information relationship. Robustly negative relationships between the price impact measures and various CSR variables in our analysis are in line with this argument.

Our findings contribute to the literature by providing new empirical evidence for the recent theory expecting a negative relationship between CSR and information asymmetry (Cui et al., 2018), which emphasizes a communicating role of CSR practices between insiders and outsiders. Our results are also significant for the literature of CSR practices because we examine the implication of CSR practices in developing countries. Studies on developing countries are limited in the extant literature, which is mainly due to a lack of reliable CSR performance measures. Our work is also consistent with recent developments in CSR literature highlighting heterogeneous CSR requirements for each individual firm according to region, industry and other firm characteristics.

Finally, we conclude by highlighting the limitations of our work. We propose an economic channel for how the affiliations of *chaebol* affect the degree of information asymmetry, but this argument should be tested to see if it is a valid economic mechanism. In terms of empirical methodology, our study still does not overcome the problems of reverse-causality, as Hart and Ahuja (1996) noted. While we included a wide range of control variables

and adjust the time period of independent variables, our estimation methodology does not fully control omitted variable biases and other potential biases. These issues need to be addressed in future studies.

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