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**Article**

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## Corporate Social Responsibility and Financial Constraints: Evidence from Korean Firms

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### ABSTRACT

This paper examines the relationship between corporate social responsibility (CSR) and corporate financial constraints by using a sample 1,584 firm-years of Korea during 2002-2011. We measure corporate social responsibility by both an equal-weighted CSR index and a stakeholder-weighted CSR index suggested by Akpinar et al.(2008) and Choi et al.(2010). Corporate financial constraints are measured by KZ index suggested by Kaplan and Zingales(1997). We find a negative and significant relationship between corporate financial constraints and the stakeholder-weighted CSR index, but not the equal-weighted CSR index. This finding implies that only CSR strategies with which stakeholders are prioritized can provide a positive impact upon the firm's ability to access finance in capital market.

*Keywords: Corporate social responsibility; Corporate financial constraints; KZ index; Korea*

## 1. Introduction

The primary goal of business entities has shifted from a purely profit-orientation toward broader, socially motivated aspirations in recent years (*The Economist*, 2008<sup>1)</sup>). In the past, due to an over-emphasis on short-term profits, the business community was frequently confronted by criticism and protests raised by society at large. Today's corporations are well aware of the importance of maintaining balance between social responsibility and the

pursuit of financial goals to ensure their long-lasting survival and prosperity. As such, business organizations make efforts to enhance their corporate image as a way to improve long-term profitability. With the heightened recognition of corporate social responsibility (CSR) in society, corporate entities have continuously refined their strategies to meet diverse stakeholders' demands (Kaplan and Norton, 2001; Becker *et al.*, 2001).

The importance of CSR has been proved in many cases. Recent controversies, such as the case of an official at Namyang Dairy threatening one its suppliers, have provided persuasive evidence for the importance of CSR(*The Korean Times*; May 8<sup>th</sup>, 2013). After the scandal, Namyang Dairy lost more than 10% of its market value, and product sales plummeted upon consumer boycotting. In addition, Nike was accused of using child labor in the production of its soccer balls in developing countries. Previously, Nike

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1) Specifically, the Economist (2008) reported that nearly 30% of surveyed global executives consider CSR as the highest priority issue for their organizations, with a further 40% assigning it high priority.

had attempted to create a good public image through promotions and advertising, but the scandal tarnished the company's image, and its operating profits fell about 37% (Beder, 2002). As discussed above, CSR is not a matter of choice, but a matter of survival for companies.

In academic circles, extensive research efforts have been undertaken to assess the empirical association between CSR and corporate financial performance (CFP) in diverse geographical contexts (Cochran and Wood, 1984; Teoh and Shiu, 1990; McWilliams and Siegel, 2000; Lev *et al.*, 2010; Choi *et al.*, 2010, and etcetera). Despite all the supporters saying that CSR is a way for a company to improve its reputation among customers, employees, and shareholders (Lev *et al.*, 2006) or legitimize its actions (Berrone and Gomez-Mejia, 2006), more than thirty years of research in the management literature exploring the link between CSR and CFP have yet to reach a broad consensus (Margolis and Walsh, 2001, 2003; McWilliams *et al.*, 2006; Orlitzky *et al.*, 2003). These mixed results about the relationship between CSR and CFP raise the fundamental question of whether CSR leads to value creation, and if so, in what ways?

In this paper, we investigate empirical evidence for one specific mechanism through which CSR may improve firm value in the long-term, by lowering corporate financial constraints. Financial constraint is critical to firms' investment decisions, and investments have an important impact on the survival and performance of firms. Firms with greater financial constraints are not able to finance and choose profitable investments at the proper times, which reduce the value of the firm. In this sense, financial constraints have a crucial impact on firms' investment-decision making, so it is necessary for firms to seek ways to relax financial constraints. Therefore, managers or executives may try to reduce financial constraints to improve corporate long-term value using the CSR strategy.

The purpose of this study is to verify the empirical association between CSR and financial constraints in Korean context. To achieve the afore-mentioned research objective, we employed cross-sectional analyses and time-series analyses complementarily, using firm-specific time-series and cross-sectional data to address any statistical confounding effects between CSR and financial constraints. Specifically, we measure corporate social responsibility by both an equal-weighted CSR index and a stakeholder-weighted CSR index based on the Korea Economic Justice Institute (KEJI) index. KEJI is a

comprehensive evaluation scheme for corporate business ethics and social responsibility developed and implemented in Korea. Financial constraint is measured by the KZ index suggested by Kaplan and Zingales (1997).

We use a sample of 1,584 firm-years from 2002-2011. Our major findings are summarized as follows. First, in a cross-sectional analysis using the entire sample, in which Fama-Macbeth tests are used to test the statistical significance of associations between the constructs of interest, an equal-weighted CSR index does not exhibit any statistically significant influence on financial constraints. On the contrary, a stakeholder-weighted CSR index significantly affects corporate financial constraints in a negative way. Second, the previously mentioned relationships between the two types of CSR indices and financial constraints are reconfirmed in firm-level time-series Granger causality tests. These results imply that it is important for firms to realize which aspects of social responsibility are more important to their primary stakeholders, and that, given the proper measurement of CSR, firms' social initiatives tend to contribute to the bottom line in Korea. In a Granger causality test, we also find that a superior position in terms of financial constraint has a positive impact on the stakeholder-weighted CSR index. Thus, we conclude that, on average, Korean firms do well by doing good, and firms that make money can spend money for good causes at the same time, demonstrating the existence of a virtuous cycle in the Korean business context, despite intermittent cases of CSR anomalies.

This paper contributes to the empirical literature on CSR. In particular, our aim is to explore the link between CSR and financial constraints. At the same time, we attempt to provide various frameworks for measuring financial constraints, which are at the analytic center of this paper. The remainder of the study is organized as follows: in Section 2 we describe previous research and the hypothesis for the study, in Section 3 we develop the research model, in Section 4 we present and discuss the empirical results, and in Section 5 we conclude the paper.

## II. Literature Review and Hypothesis Development

Firms undertake optimal investments to maximize the

value of firms by achieving superior performance and a competitive advantage. To do this, firms need to finance and fund. The ability of a firm to finance for investment is directed linked to its financial constraints. Financial constraints refer to market frictions that may prevent a firm from funding all desired investments (Cheng *et al.*, 2014). For example, financial constraints include inability to borrow or credit constraints. It can be also seen as the inability to issue equity or illiquidity of assets (Lamont *et al.*, 2001). Financial constraint is caused by the gap between the external and internal cost of capital, which may, among other factors, be due to agency costs and information asymmetry from an imperfect market (Kaplan and Zingales, 1997).

In general, investors require a higher interest rate than the market return to compensate for information costs due to information asymmetries (Greenwald *et al.*, 1984; Myers and Majluf, 1984) and agency costs (Bernanke and Gertler, 1990). For that reason, the cost of external financing is higher than the cost of internal capital. The greater this information cost is, the higher the cost of external capital is. It follows that corporate strategies to reduce information asymmetry and agency costs have the effect of reducing financial constraints. Among the various ways to reduce the cost of capital, Cheng *et al.* (2014) suggest that the CSR strategy also may be a good way to reduce financial constraints. Specifically, Cheng *et al.* (2014) investigate whether superior performance of CSR strategies leads to better access to finances. They measure capital constraints using the KZ, WW and SA indexes, and measure CSR performance using ESG scores from Thomson Reuters ASSET4. They find that CSR performance is important in reducing capital constraints.

Recently, as a result of initiatives of institutional investors based in Europe and North America in particular, the Socially Responsible Investment (SRI) movement has spread rapidly throughout global financial markets, with the aim of combining investors' financial objectives with their concerns about social, environmental, and ethical issues (Eurosif 2003; Lewis and Mackenzi 2000). The Korea Exchange and Corporate Governance Service Center also followed suit by developing the Korean version of the SRI index in 2009. When the Korean SRI index is fully implemented, the Korean capital market is expected to become more favorable toward companies which are perceived to be socially responsible. Foreign investors are expected to play leading roles in facilitating such

transitions in the Korean capital market. Korean companies in need of capital resources, being aware of the trend, would become more likely to exhibit socially responsible attitudes. It is generally understood that public voices have vastly changed corporate perception with regard to corporate involvement in society. Corporations are expected to devise corporate strategies that better meet the public demand under such circumstances.

Moreover, the Korean business climate was characterized by compressed growth from the 1970s to the early 1990s, with the result that economic value has enjoyed precedence over softer values such as fair distribution of wealth, environmental protection, community relations, etc. This emphasis upon financial success still lingers on, particularly as the pursuit of profit and social goals tend to collide with each other, as evidenced by two recent cases: the west coast oil spill accident and the large-scale money laundering committed by Korea's leading conglomerates<sup>2)</sup>. These incidents provided the momentum for heated debates in the public arena, and for a rising public outcry that the old-fashioned way of doing business be replaced with increased concern for the environment and transparency in the corporate governance structure. Also, with the publication of Korea's first sustainability report in 2003, corporate social responsibility movements, in which labor unions, NGOs, and governmental agencies alike participate, emerged as a major social agenda. In that sense, the Korean corporate environment provides a pertinent test case for examining the empirical relation between financial constraints and the extent of corporate social initiatives.

This current study similar to Cheng *et al.* (2014), reveals that superior CSR performance has the effect of relaxing financial constraints by two mechanisms in the Korean context. First, firms with superior CSR performance are able to align their strategic interests with key stakeholders

2) On December the 7<sup>th</sup>, 2007, a large-scale oil-spill accident occurred off the coast of Tae-an, South Korea, caused by reckless sailing of a tugboat owned by one of the leading Korean shipbuilders amidst hostile weather conditions. The crude oil leakage of about 12,000 tons was the largest in Korea, resulting in the devastation of the regional economy, with an estimated total damage of \$519 million, with additional colossal damage to the ecosystem. The company involved paid only \$5 million to the affected community, and the compensation case was still unresolved as of early 2010. In another incident committed by a leading Korean conglomerate in 2003, involving a massive earnings manipulation amounting to some \$1.2 billion, the CEO and other responsible executives were sentenced to probation, on the grounds that the accounting fraud was intended to help to alleviate the financial difficulties incumbent upon the whole group.

on the basis of mutual trust and cooperation (Jones, 1995). Consequently, agency costs, transaction costs and production-associated costs all are reduced. Moreover, Choi and Wang (2009) argue that solid engagement with stakeholders can increase a firm's revenue or profit by improving the quality of its relationships with customers, business partners and employees. That is to say, solid engagement with stakeholders may limit short-term opportunistic behavior (Benabou and Tirole, 2010; Eccles et al., 2012), and also leads to a more efficient form of aligning with key stakeholders (Jones, 1995), thereby reducing agency costs and relaxing financial constraints.

Secondly, firms with superior CSR performance are likely to disclose their CSR activities through sustainability reports (Dhaliwal et al., 2011) and also are likely to allow confirmation of such reports by third parties. As a result, CSR reporting increases the transparency and credibility of information, leads to a sound internal control system, reduces information asymmetry and reduces financial constraints. In summary, we argue that firms with greater CSR performance have lower financial constraints owing to two mechanisms: reduced agency costs and reduced information asymmetry. According to above theories and previous studies, we predict that:

[Research Hypothesis] Superior CSR performance will be associated with a lower level of financial constraint.

### III. The Empirical Model and Variable Description

#### A. The Empirical model

This paper aims to investigate whether firms with superior CSR performance face lower financial constraints. The following formula is the structure of the main test:

$$FC_{it} = \beta_0 + \beta_1 CSRindex_{it} + \sum_j \gamma_j CONTROL_{ijt} + \varepsilon_{ijt} \quad (1)$$

where FC denotes corporate financial constraints, CSRindex denotes the corporate social responsibility index, CONTROL stands for various control variables, subscripts denote the index firm (*i*) and time (*t*), and  $\varepsilon_{ijt}$  is an

error term. Equation (1) is designed to investigate the relation between FC and the CSR index on a cross-sectional basis, where the former is measured using firm-level financial constraints. However, cross-sectional regression models are not likely to control any statistical caution. In particular, the cross-sectional approach makes use of comparisons across firms' CSR activities. Comparisons across firms can only isolate the effects of CSR if they control for other influences on financial constraints that may vary from one firm to another. However, it is not always possible to observe and control for all firm differences that could affect financial constraints. This possibility of correlated omitted variable bias is one of the primary disadvantages of cross-sectional models. Furthermore, the coefficient estimates in cross-sectional studies may be influenced by firm outliers, which is likely to be the case in this study.

In other words, cross-sectional analysis reveals the average relationships of the constructs under consideration over the entire sample of firms, without considering idiosyncratic features of such relations at the level of an individual firm. Therefore, the results obtained from time-series analysis of the relation between FC and CSR on the individual firm level may provide empirical evidence complementary to that derived from cross-sectional analysis and applied to the whole sample group. Thus, we employ a time-series Granger causality test in addition to a cross-sectional equation model (1), in order to determine whether financial constraints also incorporate corporate social performance at the level of an individual firm. To test Granger Causality, we use one or two lagged values for FC and CSR variables, based on information criteria such as the Akaike or the Schwarz information criterion. The Granger Causality test is conducted by separately estimating the following two OLS models respectively, with the assumption that all the information needed to forecast FC and CSR is included in the time-series data of those two variables. In here, we use first differenced variables for both FC and CSR to achieve stationary of time-series data, according to previous studies (Chang et al., 2014; Kabongo et al., 2013). Also, lag length for causality test are determined based on AIC (Akaike Information Criterion) and SIC (Schwarz Information Criterion).

$$FC_t = \sum_{i=1}^n \omega_i CSR_{t-1} + \sum_{k=1}^n \theta_k FC_{t-1} \quad (2)$$

$$CSR_t = \sum_{i=1}^n \sigma_i CSR_{t-1} + \sum_{k=1}^n \mu_k FC_{t-1} \quad (3)$$

## B. Variable Description

### 1. Financial Constraints

For firms' financial constraints, we follow the literature and use the KZ index by Kaplan and Zingales (1997). The KZ index is a linear combination of five variables, the signs of which are indicated in parentheses: cash flow to capital (-), dividends to capital (-), cash holdings to capital (-), debt to total capital (+), and Tobin's Q (+). Thus, the KZ index to be estimated is as follows:

$$KZ = -1.002(CF/Kt-1) - 39.368(DIV/Kt-1) - 1.315(Cash/Kt-1) + 3.139(Lev) + 0.283Q \quad (4)^3$$

where CF denotes the cash flow of year t, and DIV and Cash denote the cash dividends and cash equivalent of year t, respectively. All aforementioned variables are standardized by Kt-1, which is measured by the property, plant, and equipment (PP&E) of year t-1. Lev is defined as long-term debt divided by total capital. Finally, Q denotes Tobin's Q of year t, which is computed as (market capitalization<sub>t</sub> + total shareholder's equity<sub>t</sub> - book value of common equity<sub>t</sub> - deferred tax assets<sub>t</sub>) / total shareholder's equity<sub>t</sub>. Firms with higher values for cash flow to total assets, dividends to total assets, and cash to total assets, with lower values for the market-to-book value ratio and the leverage ratio, are less financially constrained. In other words, the higher the KZ index is, the more financially constrained firms are.<sup>4)</sup>

### 2. Corporate Social Responsibility

To measure the corporate social performance of Korean firms, we use two proxies based on the KEJI index

developed by the Citizens' Coalition for Economic Justice. The KEJI index evaluates the level of Korean firms' business ethics and social responsibility.<sup>5)</sup> One of the distinctive features of the KEJI index is that it is a product of an independent rating service that focuses on the evaluation of multidimensional corporate social performance. It generates a score for seven individual categories of CSR: soundness, fairness, contribution to society, consumer protection, environmental performance, employee satisfaction, and contribution to economic development. We develop two proxies based on the KEJI index. However, the original KEJI index assigns different maximum scores to different individual categories<sup>6)</sup>. The maximum value of the score in each of the seven categories is converted to 100. For example, the maximum value of the soundness category is 25, so a score of 20 in the soundness category is converted to  $20 \times (100/25) = 80$ . In this way, the maximum total score becomes 700, which is then divided by 7 to calculate the average score.

The first proxy for CSR is defined as the equally weighted CSR index:

$$Equal\text{-weighted CSR index}(EW\text{-}CSR)_{it} = \frac{1}{7} \sum_{k=1}^7 \tau \times x_{ikt} \quad (5)$$

Where  $x_{ikt}$  is the score for firm i, for year t and KEJI category k, and  $\tau$  is the weight factor to generate the maximum value in each category. This approach has an

5) The KEJI index is the first comprehensive evaluation scheme for corporate business ethics and social responsibility developed and implemented in Korea. It is comparable to the Council of Economic Priorities (CEP) index in the US, the Asahi Foundation index of Japan, and several other corporate ethics indices of European countries.

6) Specifically, the soundness category comprises stockholder composition, capital expenditure, and financing efforts, and is assigned a maximum score of 25. The fairness category consists of fair trade, economic concentration, transparency, and cooperation with suppliers, and is assigned a maximum score of 15. The contribution to society category considers care for minority groups and corporate donations, with a maximum score of 10. The consumer protection category comprises protection of consumer sovereignty and product quality, and is assigned a maximum score of 10. The environmental protection category covers environmental improvement efforts, environmental friendliness, and compliance with environmental regulations, with a maximum score of 15. The employee satisfaction category consists of workplace safety, human resource investment, wage and welfare, labor-management relationships, and gender equality, with a maximum score of 15. The contribution to economic development category relates to R&D efforts and operating performance, for which a maximum score of 10 is given.

3) The coefficients for variables included in equation (4) are equal to Korean previous studies (for example, Ban et al., 2012; Shin and Kim, 2008, printed in Korean) which are used KZ index as proxy of financial constraints.

4) As a robustness check, we also replicate the analysis using an equally weighted KZ index, in which the five variables are assigned equal weights, and arrive at qualitatively similar results.

obvious drawback in that it assumes all the KEJI categories are equally important to all stakeholders. However, as discussed in the previous literature, firms with different interests may need to attend to different stakeholders differently (Wood and Jones, 1995). Depending on the specific areas of social responsibility considered to be important by major stakeholders, firms may exert different levels of effort to different categories of social responsibility, hence are likely to receive different scores for different CSR categories. Regarding this point, our first proxy for CSR suffers from the lack of a weighting scheme for the different categories of CSR. In other words, EW\_CSR variable does not control “*stakeholder misalignment*” problem discussed in previous literature - relating stakeholder specific variables to a set of aggregated stakeholder variables ignoring many differences that exist between different stakeholder groups. We thus introduce weighted measures of CSR, as proposed by Akpinar et al.(2008) and Choi et al.(2010).

The second proxy is the stakeholder-weighted CSR index suggested by Akpinar et al. (2008) and Choi et al. (2010). This is a new CSR measure that reflects the relative importance of each stakeholder group based on the industry to which an individual firm belongs. In order to calculate the second proxy for CSR, we first separate our sample firms into 17 industries according to the Korea Standard Industry Code (KSIC). After the sample firms are categorized into 17 industry groups for each year, the KEJI index score for each of the seven dimensions is calculated, and the scores are summed to obtain an aggregate score of social performance for that particular industry-year. Then, the individual sums for each of the seven dimensions are divided by this overall sum to compute the weight of each of the seven dimensions for every industry-year. After calculating the weights for every industry-year, we multiply the raw KEJI index scores by the associated weights to determine the stakeholder-weighted CSR index for every firm-year.

$$\begin{aligned} & \text{Stakeholder - weighted CSR index(SW - CSR)}_i \\ &= \sum_{k=1}^7 x_{ijk} \times \text{weight}_{jkt} \end{aligned} \quad (6)$$

where  $x_{ijk}$  is the score for firm  $i$  in industry  $j$ , KEJI category  $k$  and year  $t$ ,  $\text{weight}_{jkt}$  is  $(\text{Average}_{jkt} /$

$\sum_{k=1}^7 \text{Average}_{jkt})$ , and  $\text{Average}_{jkt}$  is the average score for industry  $j$ , KEJI category  $k$  and year  $t$ .

### 3. Control variables

As control variables in the cross-sectional regression model, we use firm size and sales growth, which are consistently shown to be related to corporate financial constraints (De, 1992; Whited and Wu, 2006; Hadlock and Pierce, 2010). To control for the past corporate performance, we also lag sales growth by 1 year and include it as an additional control. We take the logarithm of total assets to measure firm size, and define sales growth for year  $t$  using the log of sales in year  $t$  divided by the sales of year  $t-1$ . We also include lagged sales growth for year  $t$ , which is calculated as the log of sales in year  $t-1$  divided by the sales of year  $t-2$ . Lastly, we also control for industry and year effects by including 16 industry- and 9 year-dummy variables to distinguish the 17 industries and 10 years covered in this study. Thus, our control variables are  $\text{SIZE}=\log(\text{total assets})$ ,  $\Delta \text{Sales}t=\log(\text{Sales for year } t / \text{Sales for year } t-1)$ , and  $\Delta \text{Sales}t-1 = \log(\text{Sales for year } t-1 / \text{Sales for year } t-2)$ .

## IV. Empirical Results

### A. Sample and data collection

The sample of this study is drawn from companies listed on the Korea Exchange (KRX) for which the KEJI index is available from KEJI annual brochures. These firms appear in the list of firms scrutinized by KEJI to determine the winners of the annual Economic Justice Award. The KEJI award-winner selection procedure consists of both quantitative and qualitative evaluation processes. Quantitative evaluation is applied to Korean companies listed in the KRX on the basis of annual reports, news reports, and other information available from governmental authorities such as the National Tax Service, Fair Trade Commission, and KRX, excluding those firms in serious financial trouble. Qualitative evaluation is subsequently conducted by sending questionnaires to the overall top 10% and top 20% industry leaders to collect

**Table 1.** Sample distribution by industry

Industry	Frequency	Industry	Frequency
Basic metal	95	Vehicles	121
Rubber and plastic	62	Fabricated metal	19
Other machinery and equipment	91	Professional services	42
Wholesale, retail	80	Electronic components	164
Non-metallic	74	Construction	107
Textile, clothing	46	Pulp and paper	40
Food	123	Chemical	231
Medicine	219	Coke, hard-coal	26
Electricity, gas supply	44	Total	1,584

publicly unavailable information. KEJI discloses the scores of the top 200 companies in its brochure with the names of 3 or 4 award-winners on an annual basis.

Consequently, our sample inevitably suffers from sample selection bias, as it consists of those companies which scored relatively high in the KEJI indexing procedure. However, to the extent that we rely on the KEJI index to measure corporate social performance or the level at which Korean sample firms accomplish social responsibilities, this bias is an inevitable cost. To our knowledge, there is no reliable alternative measure of CSR in Korea that can be compared to the KEJI index in its coverage and measurement validity. The sample period covers 10 years, from 2002 through 2011. KEJI has published the KEJI index since 1991, and the list of selected firms is subject to change from year to year. KEJI index data are used as proxies for CSR scores, and financial data are retrieved from the TS-2000 database. In the end, we found CSR data for at least two years for 342 publicly traded companies, which constituted our final unbalanced panel and represented 1,584 firm-year observations. We classify sample firms into nine industries using firm-level KSIC codes. The distribution of sample firms based on their industry classification is shown in Table 1.

## B. Descriptive statistics

Table 2 presents descriptive and correlation statistics for the variables used in the estimation. In panel A, we present descriptive statistics for the variables. The mean (median) values of EW\_CSR and SW\_CSR variables are 58.03 (57.94) and 60.27 (59.85), respectively. The standard

deviations of the EW and SW variables are relatively small, suggesting that our sample consists of a relatively homogeneous group of firms, characterized by their superior position based on the KEJI index. The mean firm size measured by the natural logarithm of total assets is 12.8, suggesting our sample consists of relatively large firms. In panel B, we present Pearson correlation statistics among the variables to be used in the cross-sectional regression model. We note that both the EW\_CSR and SW\_CSR variables are negatively correlated with the KZ index, based on the significance levels of 0.1 and 0.01, respectively. These results imply that companies with better CSR performance tend to have lower financial constraints, which is consistent with our prediction. We examine these results more rigorously below. Meanwhile, we also find significant negative associations between financial constraints and size, sales growth and lagged sales growth.

## C. Cross-sectional regression analysis

The results of cross-sectional regression analyses, in which equal-weighted / stakeholder-weighted CSR performance, along with control variables, are used to explain variations in financial constraints measured by the KZ index, are presented in Table 3. In Table 3, Model 1 reports the results when the equal-weighted CSR index (EW) and three control variables are used as independent variables, while Model 2 reports the results when the stakeholder-weighted CSR index (SW) is used with the same set of control variables. Both models use dummy variables to control for industry- and year-effects. As noted in the table, both models possess significant explanatory



**Table 2.** Descriptive statistics

Panel A: Descriptive statistics (N=1,584)						
Variable	Mean	Std. Dev.	Min.	Median	Max.	
<i>EW_CSR</i>	58.031	4.284	45.026	57.935	73.824	
<i>SW_CSR</i>	60.273	4.687	47.824	56.851	59.945	
<i>KZ</i>	1.267	0.882	-3.829	1.308	4.211	
<i>control variables</i>						
<i>SIZE</i>	12.811	1.521	10.040	12.450	18.094	
$\Delta Salest$	0.0392	0.064	-0.152	0.0365	0.432	
$\Delta Sales_{t-1}$	0.0318	0.059	-0.143	0.0294	0.427	
Panel B: Pearson Correlation statistics (N=1,584)						
	<i>KZ</i>	<i>EW</i>	<i>SW</i>	<i>SIZE</i>	$\Delta Salest$	$\Delta Sales_{t-1}$
<i>KZ</i>		-0.104*	-0.293***	-0.285***	-0.238***	-0.194**
<i>EW</i>			0.475***	0.219**	0.146*	0.087
<i>SW</i>				0.297***	0.121*	0.093
<i>SIZE</i>					0.135*	0.182**
$\Delta Salest$						0.231***

Note: \*, \*\*, \*\*\* represent significance at the level of 10%, 5%, and 1%, respectively.

**Table 3.** Estimation results from the cross-sectional model

Independent variable	Predicted sign	Dependent Variable = KZ index			
		Model 1		Model 2	
		Parameter estimate	t-statistic	Parameter estimate	t-statistic
<i>Intercept</i>		0.1071	2.19**	0.3059	2.71***
<i>EW_CSR</i>	(-)	<b>-0.0128</b>	<b>-1.18</b>		
<i>SW_CSR</i>	(-)			<b>-0.0492</b>	<b>-2.46***</b>
<i>SIZE</i>	(-)	-0.1636	-2.90***	-0.1538	-2.77***
$\Delta Salest$	(-)	-0.0418	-3.13***	-0.0387	-2.13**
$\Delta Sales_{t-1}$	(-)	-0.0223	-1.77*	-0.0149	-1.65*
<i>Industry Dummies</i>			YES		YES
<i>Year Dummies</i>			YES		YES
<i>Model F-statistic</i>			206.39***		272.63***
<i>Adj. R-squared</i>			0.1746		0.2802

Note: \*, \*\*, \*\*\* represent significance at the level of 10%, 5%, and 1%, respectively.

power at the conventional level. In Model 1, the estimated coefficients for the equal-weighted CSR (*EW\_CSR*) are negative but statistically insignificant, whereas in Model 2, the estimated coefficients for the stakeholder-weighted CSR (*SW\_CSR*) are negative and statistically significant. This implies that CSR which prioritizes stakeholders can

have a negative impact on financial constraints, whereas CSR without this emphasis might not have this result. Thus, we adopt the research hypothesis proposed in this study only when the CSR index reflects the relative importance of specific sub-dimensions evaluated by each stakeholder group.<sup>7)</sup>

However, we do note that our results from the cross-sectional model should not be interpreted as direct support for our prediction. While we predict a negative link between CSR and financial constraints, the results reported in Table 3 do not imply causality in either direction, the determination of which would require longer or more comprehensive time-series data. We discuss this issue in Section D.

#### D. Time-series analysis (Granger causality tests)

As discussed previously, similar to our prediction, the slack resources theory also suggests a negative association between CSR and corporate financial constraints. However, it proposes a different temporal ordering - namely, that corporate financial constraints directly impact CSR (Ullmann, 1985; Waddock and Graves 1997). If we consider the slack resources theory, we need to estimate the equations in a way that shows that the two variables (CSR and corporate financial constraint) are related to each other reciprocally, using a time-series data set. To address this causality issue between CSR and financial constraints, we also conduct Granger causality tests. Since the selection of firms in the KEJI index varies year to year, we could identify only 37 firms in our sample that had 10 consecutive years of time-series data in the KEJI index. The partial results from the Granger causality test for this sub-sample are presented in Table 4.

Panels A and B show that causality runs in neither direction when CSR is measured by EW\_CSR. On the other hand, Panels C and D suggest bilateral causality when CSR is measured by SW\_CSR. Table 4 shows that CSR strategies which take into account stakeholders' priorities lead to better access to finances, and lower financial constraints in turn tend to motivate extended engagements in stakeholder-oriented CSR activities. These results also indirectly support Waddock and Graves' (1977) argument in favor of a 'virtuous cycle' between CSR and corporate financial performance.

## V. Conclusions

Previous empirical studies provide mixed results on the relationship between CSR strategies and corporate financial performance(CFP). As stated earlier, the mixed results reported in the previous studies about the relationship between CSR and CFP raise the fundamental question of whether CSR leads to value creation, and if so, in what ways(Cheng *et al.*, 2014)? Our study is motivated by the lack of consistent evidence and the relative paucity of research devoted to this topic in the Korean context. In this paper, we investigate the relation between CSR strategies and financial constraints using a sample of Korean firms for which both CSR data measured by the KEJI index and financial data are available.

The main contribution of this paper is twofold. First, our research design improves upon many existing studies in several ways. In particular, in order to alleviate the 'stakeholder misalignment' problem discussed in previous literature, we use a stakeholder-weighted CSR index, which accounts for stakeholders' priorities when measuring CSR performance. Furthermore, to improve the robustness of our results from the cross-sectional regression model, we conduct additional analysis of the bi-directional relation between CSR and financial constraints by using a Granger causality test based on the time-series data for an individual firm. Second, our study provides the first comprehensive evidence from Korea on the relation between multi-dimensional CSR and corporate financial constraints.

The empirical evidence from the series of aforementioned analyses consistently corroborates that stakeholder-weighted CSR strategies have a negative impact on financial constraints, whereas this impact disappears when CSR is measured with stakeholders given equal weights. In other words, only CSR strategies in which stakeholders are prioritized can have a positive impact upon a firm's ability to access finances in the capital market. These results suggest that it is important for a firm to realize which aspects of social responsibility are more important to its primary stakeholders.<sup>8)</sup> We also

7) To check the robustness, we assess significance of regression coefficients using firm fixed-effects estimation model to solve some heteroscedasticity problems. In addition, we also compute significance level using bootstrapping. Untabulated findings result in no change in inferences from those based on reported finding [table 3]. The results are not reported, but available from the authors.

8) Additionally, we investigate the weights for each of the seven KEJI categories for each industry. These weights are used to calculate the stakeholder-weighted CSR index on an annual basis. Untabulated findings show that different industries have different priority for seven KEJI categories. For example, environmental protection is given the highest weight in the chemical and hard-coal industry

**Table 4.** Granger causality test for CSR and corporate financial constraints measured by KZ

Panel A : EW_CSR Granger Cause financial constraints								
	Unrestricted Model		Restricted Model			p-value	Causality	
	Mean Estimate	FM t-statistic	Mean Estimate	FM t-statistic				
<i>Intercept</i>	0.1927	4.17***	0.0032	2.04*	2 Lags	0.39	No	
KZ <sub>t-1</sub>	0.1835	2.85***	0.1523	3.97***	1 Lag	0.21	No	
KZ <sub>t-2</sub>	0.1956	3.17**	0.1288	2.84***				
EW_CSR <sub>t-1</sub>	-0.0654	-0.96						
EW_CSR <sub>t-2</sub>	-0.0361	-1.13						

  

Panel B : Financial constraints Granger Cause EW_CSR								
	Unrestricted Model		Restricted Model			p-value	Causality	
	Mean Estimate	FM t-statistic	Mean Estimate	FM t-statistic				
<i>Intercept</i>	0.0292	0.27	0.0028	1.97*	2 Lags	0.32	No	
EW_CSR <sub>t-1</sub>	0.1128	2.94***	0.1395	3.22***	1 Lag	0.19	No	
EW_CSR <sub>t-2</sub>	0.0904	2.32**	0.1106	2.81***				
KZ <sub>t-1</sub>	-0.0083	-0.90						
KZ <sub>t-2</sub>	-0.0004	-0.43						

  

Panel C : SW_CSR Granger Cause financial constraints								
	Unrestricted Model		Restricted Model			p-value	Causality	
	Mean Estimate	FM t-statistic	Mean Estimate	FM t-statistic				
<i>Intercept</i>	0.1827	2.96***	0.2858	5.75***	2 Lags	0.00	Yes	
KZ <sub>t-1</sub>	0.2019	3.14***	0.2792	4.28***	1 Lag	0.00	Yes	
KZ <sub>t-2</sub>	0.1832	2.83***	0.2061	3.79***				
SW_CSR <sub>t-1</sub>	-0.1026	-2.96***						
SW_CSR <sub>t-2</sub>	-0.0093	-2.07*						

  

Panel D : Financial constraints Granger Cause SW_CSR								
	Unrestricted Model		Restricted Model			p-value	Causality	
	Mean Estimate	FM t-statistic	Mean Estimate	FM t-statistic				
<i>Intercept</i>	0.0972	1.89*	0.1183	2.06**	2 Lags	0.00	Yes	
SW_CSR <sub>t-1</sub>	0.2419	3.56***	0.2628	4.11***	1 Lag	0.00	Yes	
SW_CSR <sub>t-2</sub>	0.1123	2.27**	0.1417	2.99***				
KZ <sub>t-1</sub>	-0.2702	-3.28***						
KZ <sub>t-2</sub>	-0.1688	-2.76***						

Note: 1) \*, \*\*, \*\*\* represent significance at the level of 10%, 5%, and 1%, respectively.  
 2) FM t-statistic is the Fama-MacBeth t-statistic.  
 3) All variables are first differenced value.

show empirically that a lower level of financial constraint tends to increase CSR in which stakeholders are prioritized, consummating in a bilateral connection between the two constructs.

However, this study is not without its own limitations,

(weight = 0.23) while consumer protection is the highest in the retail trade industry (weight = 0.19). These results indicate that firms really prioritize their CSR activities based on their stakeholder interests.

which need to be considered in future studies. Most of all, our study does not clearly address concerns regarding sample selection bias because our sample is drawn from a population of firms selected by CCEJ, which are characterized by their larger size and superior position in terms of financial performance as well as CSR. This limitation is inevitable, however, as far as data availability on reliable CSR performance in Korea is concerned. In

addition, although the KEJI index is widely cited as presumably the most reliable measure of CSR currently available in Korea, it still has room for future improvement. Second, it is possible that the KZ index to measure financial constraints has measurement error. To reduce this error, as mentioned in footnote 2, we replicate our regression analysis by using a modified equal-weighted KZ index in which the five factors included in the original KZ model are assigned equal weights. Finally, this study includes data from a 10-year time span, which may not be long enough to generalize the results. Because of these limitations and some others, it is necessary to exercise caution to derive meaningful inferences from the results of this study. Future research is expected to extend the coverage of sample firms, both by using augmented datasets on corporate social responsibility, and by experimenting with alternative model specifications.

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