

Do Investors Truly Value Corporate Social Responsibility in Companies Listed on the Korean Stock Markets?

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Abstract

This study investigates the value relevance and market response of corporate social responsibility (CSR) activities from 2001 to 2010. This paper examines whether donation expenditure (proxies for CSR) is significantly related to next year's earnings and whether Korean investors truly react to the information on CSR activities. The empirical results of this paper indicate that donation expenditure (which proxies for social contribution activities) is significantly associated with firm value and Korean market investors are fully aware of the information content of donation expenditure.

Keywords: donation expenditure, corporate social responsibility, value relevance, firm value, market reaction

1. Introduction

A donation is a gift that is voluntarily given for a charitable purpose. In firms, donation expenditure usually occurs when a company voluntarily provides assets to someone who suffers from financial or economic difficulties, and the company does not expect anything in return. Thus, donation expenditure is different from advertising and entertainment cost, which aims to provide future benefits to the business. Donation activities may help companies to gain a reputation as a reliable company. After a firm establishes a favorable reputation, the public increasingly extends good faith to its product, merchandise, and services. Thus, a firm's donation activities may lead to an unintended increase in firm value.

Many prior studies have explored the impact of donation activities that are substitutes for corporate social responsibility (CSR) on firm performance and value (Waddock & Graves, 1997; McGuire, Sundgren & Schneeweis, 1988; Fombrun et al., 2000; Sen & Bhattacharya, 2001; Smith, 2003; Brown et al., 2006; Fishman et al., 2006; Lev et al., 2006; Yu & Kim, 2006; Bae et al., 2008; Kim et al., 2008; Choi et al., 2009; Choi & Lee, 2009; Choi et al., 2009; Kim & Choi, 2011; Kim & Kim, 2011; Shin et al., 2011). For example, Fombrun et al (2000) and Sen and Bhattacharya (2001) stated that firms' donation activities have a positive impact on financial performance and value. These studies document that CSR activities can promote the image of the product and merchandise and also enhance firms' reputation. Reputation is an important factor in firms' valuation. CSR activities, which are usually created by donation expenditure, can increase firm value. In addition, other studies also report the positive value relevance of CSR activities.

Many previous studies have documented the value relevance of donation expenditure for several decades, but it is still treated as an expense item in financial statements. Contrary to donation expenditure, studies have converted the GAAP and accounting practice on R&D investment from expensing to capitalization after more than 30 years of empirical studies. Similar to R&D investment, many researchers believe that donation expenditure can create future potential cash flows and intangible benefits through the promotion of reputation.

Therefore, this paper investigates the value relevance and market reaction of donation expenditure (which is a proxy for CSR activities) in companies that were listed on the Korean stock markets from 2000 to 2010. Moreover, this study divides the total samples into several subgroups such as stock markets (KOSPI vs. KOSDAQ), firm size (large vs. small and medium), type of production (manufacturing vs. non-manufacturing), technology level (high technology vs. low technology), liability scale (high liability vs. low liability), and

donation expenditure amount (high donation expenditure vs. low donation expenditure) to test the various characteristics of value relevance and market response of donation activities.

This paper is organized as follows. This paper discusses the purpose and aim of the study in the first section and reviews prior literature related to value relevance of donation activities in section two. Then this study develops the hypothesis and empirical models in section three. In section four, this paper discusses the empirical test results, and section five concludes and summarizes the empirical results of this paper.

2. Previous Literature Review on Market Response and Value Relevance of CSR Activities

Many studies on donation expenditure and corporate social responsibility have explored the relationship between donation expenditure and financial performance (that in turn promotes firm value) and the main drivers that increase firms' donation activities.

Fishman et al. (2006) discuss firms that operate in highly competitive industries and have high advertising expenditure; these firms have high donation expenditure. The study documents that donation activities have positive value relevance in these firms. In addition, Brown et al. (2006) document that firms with many board of directors and high debt ratios have more donation activities, and these activities are positively associated with firm value. Moreover, Lev et al. (2006) state that donation expenditure has a positive relationship with future sales and this relationship is stronger in retail trade and financial businesses.

Bae et al. (2008) report that Korean firms with smaller assets show a positive relationship between donation expenditure and firm value. Kim and Choi (2011) document the relationship between donation expenditure (proxies for activities of corporate social responsibility) and financial performance. Their study's empirical results reveal that recent activities of corporate social responsibility have more impact on financial performance than cumulative corporate social responsibility.

Yu and Kim (2006) analyze how accounting variables affect donation. Empirical results show that firms with high debt ratio, high liquidity, and high financial performance, have higher donation expenditure. Kim and Kim (2011) developed a theoretical model that explains the relationship between donation expenditure and entertainment expenses. The results document that donation and entertainment expenditures are positively associated with financial performance.

Kim et al. (2008) analyze how corporate ownership structure affects donation expenditure (which is a proxy for corporate social responsibility). They report that the percentage of majority shareholdings, firm scale, R&D investment, and cash flows have a positive effect on donation expenditure, but the percentage of foreigner shareholding and debt ratio are negatively related to donation expenditure. Choi et al. (2009) discuss the relationship between donation expenditure and firm value. They report that a converse U-shape relationship exists between donation expenditure and firm value. Moreover, they also show that the percentage of foreigner shareholding (which is a proxy for corporate ownership structure) has a converse U-shape relationship with firm value.

Choi and Lee (2009) investigate the drivers of donation expenditure and document that the debt ratio and the ratio of operating profit to sales have a positive effect on the scale of donation expenditure, but the percentage of majority shareholding has a converse U-shape relationship with donation expenditure.

Choi et al. (2009) explore the value relevance of donation expenditure; they report that donation expenditure has a positive relationship with firms' value. Moreover, they document that donation expenditure in firms with a high percentage of majority shareholding has a negative effect on firm value, but donation expenditure in firms with a high percentage of foreign shareholding is negatively associated with firm value.

Shin et al. (2011) document that donation expenditure has positive value relevance to some degree, but beyond that degree, donation expenditure is negatively associated with firm value. In addition, they show that donation expenditure has a nonlinear relationship with firm value in large firms, small and medium firms, and non-Chaebol firms.

3. Hypothesis and Empirical Model

3.1 Hypothesis

McGuire, Sundgren, and Schneeweis (1988) report that firms resort to higher expenditure to establish a good reputation. Smith (2003) also documents that CSR activities can promote a corporation, which leads to an increase in firm value. However, until now, this argument was not extended to Korean companies. Therefore, this paper focuses on testing this argument in Korea. This paper explores the value relevance of donation expenditure (proxies for corporate social responsibility) by investigating whether firms' donation activities are

significantly related to future earnings, which is a substitute for firm value in companies that were listed on the Korean stock market over 2000–10. To test this discussion, this study develops the following hypothesis:

Hypothesis 1 (H-1): Donation expenditure has positive value relevance in the Korean stock markets.

This paper assumes that if financial market investors are unable to recognize donation expenditure (proxies for activities of corporate social responsibility), a firm cannot gain a good reputation. Then, the donation expenditure may not guarantee an increase in firm value. Therefore, it is important to test whether market participants respond to the activities of corporate social responsibility.

Therefore, this paper investigates whether the participants in the Korean stock market fully react to donation expenditure (proxies for CSR activities). If investors truly recognize firms' donation expenditure, they have a more reliable relationship with the firms and these relationships lead to a better reputation for the firms. Finally, it creates future potential cash flows, which can increase firm value. Based on this assumption, this paper develops the second hypothesis:

Hypothesis 2 (H-2): Korean stock market participants fully recognize the value relevance of donation expenditure.

3.2 Empirical Model for Hypotheses

This study develops a regression model based on the empirical model of Mishkin (1983) and Sloan (1996), which tests market reactions in financial markets. This paper assumes that donation activities (proxies for CSR) can create firms' reputation, and this leads to the promotion of future abnormal returns, which proxies for market participants' recognition of firms' reputation. Finally, this will be associated with the promotion of firm value. This paper converts the empirical model of Mishkin (1983) and Sloan (1996) to investigate whether donation expenditure is significantly related to abnormal returns. Here is the empirical model of this paper:

$$E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1} \quad (1)$$

$$AR_{t+1} = \alpha_0 + \beta_1 + (E_{t+1} - \gamma_0 + \gamma_1^* EBDON_t - \gamma_2^* DON) + \varepsilon_{t+1} \quad (2)$$

Where, E_{t+1} (one year after earnings) refers to operating income divided by total assets of the year $t+1$. $EBDON_t$ defined as operating income before subtracting donation expenditure in year t , and DON_t is the sum of donation expenditure (Note 1) deflated by total assets in year t . AR_{t+1} is abnormal stock returns in year $t+1$.

Regression model (1) is to test the empirical relationship between donation expenditure and operating income after one year. In equation (1), γ_1 and γ_2 are the coefficients of operating earnings before subtracting donation expenditure and donation expenditure, respectively. Regression model (2) can show the empirical result about market reaction on donation expenditure in the Korean stock markets. If market participants fully recognize firms' donation activities, the coefficient of $EBDE_t(\gamma_1)$ in equation (1) equals that of $EBDE_t(\gamma_1^*)$ in equation (2).

4. Empirical Results

4.1 Sample Selection and Data Source

The sample data consists of firms listed on the Korean stock markets from 2000 to 2010. The empirical test data is obtained from the KIS-VALUE (Korea Investors Service-Financial Analysis System) database. Sample data are excluded if firm observations do not have data to calculate accounting variables being used in the empirical test of this paper. The sample data excluded banking, insurance, and public business firms and impairment of capital firms on the KIS-VALUE database. This resulted in a sample of 11,419 firm-year observations. This paper excluded outliers in the data with Cook's Distance greater than 0.5 and absolute value of student residuals greater than 2. This paper shows the sample selection process in Table 1.

Table 1. Sample selection

Sum of listed companies at the end of 2000–2010 (firm-year)	22,120
Minus (-):	(10,701)
①Firms that do not settle their accounts in December	
②Financial banking business	
③Issues in administration	
④Capital encroachment firms	
Total sample firms (firm-year)	11,419

4.2 Empirical Results

4.2.1 Descriptive Statistics

Table 2 presents descriptive statistics on the variables used in this study. Dependent variable, AR_{t+1} has a mean value of 0.10102, a minimum value of -4.23927, and a maximum value of 25.12288. Independent variable, E_{t+1} has a mean value of 0.03140, a minimum value of -4.33477, and a maximum value of 1.39606. A mean of $EBDON_t$ is 0.02924; maximum value is 1.39606. A mean of DON_t is 0.00121, and standard deviation of DON_t is 0.00334.

Table 2. Descriptive statistics of data

Year	Number	Variables	Mean	Standard deviation	Min	Max
2000-2010	11,419	AR_{t+1}	0.10102	0.65256	-4.23927	25.12288
		E_{t+1}	0.03140	0.15740	-4.33477	1.39606
		$EBDON_t$	0.02924	0.14786	-4.38973	1.39606
		DON_t	0.00121	0.00334	0	0.11892

Variable definitions: AR_{t+1} = Abnormal stock returns at the end of fiscal year $t+1$, where year $t+1$ is the event year; E_{t+1} = Accounting earnings in period $t+1$ deflated by total assets of year $t+1$; $EBDON_t$ = Accounting earnings before deducting total donation expenditure in period t deflated by total assets of year t ; DON_t = Total donation expenditure in period t deflated by total assets of year t .

4.2.2 Correlation Analysis

Table 3 presents the result of the Pearson Correlation analysis between dependent and independent variables used in this analysis. AR, E, and EBDON are positively correlated at the 1 % level of significance, while AR and DON are negatively correlated without any significance. This result leaves the possibility that DON is negatively associated with AR. However, the correlation analysis is not for the test of cause and effect, and this issue is examined in more detail in the next regression analysis.

Table 3. Pearson correlations

Variables	AR	E	EBDON	DON
AR	1.00000			
E	0.10453***	1.00000		
EBDON	0.03590***	0.32772***	1.00000	
DON	-0.01457	0.05614***	0.02395**	1.00000

1) Pearson's coefficient of correlation, two-sided test, Variable definitions: Refer to <Table 2>

2) * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.2.3 The Value Relevance of Donation Expenditure

This paper divides the total sample data into several sub-sample groups according to financial markets (KOSPI vs. KOSDAQ), firm size (large vs. small and medium), type of production (manufacturing vs. non-manufacturing), technology level (high technology vs. low technology), liability scale (high debt ratio vs. low debt ratio), and scale of donation expenditure (high donation expenditure vs. low donation expenditure) to test the various characteristics of value relevance and market response of firms donation activities. Therefore, the discussion on the regression results is divided into five sections according to the test of the sub-sample groups.

1) The Value Relevance and Market Reaction on Donation Expenditure: Total Sample Firm

This section investigates the value relevance and market response of donation expenditure to test hypothesis 1 and hypothesis 2 in the total sample firm. Table 4 shows that a negatively significant relationship exists between

current year donation expenditure and one year after operating earnings at the 1% level of significance. This result suggests that donation expenditure has a negative value relevance, and it also supports hypothesis 1 (i.e., donation expenditure has a positive value relevance in the Korean stock markets) in the total sample.

This paper performs a nonlinear generalized least square regression of next year abnormal returns on current year donation expenditure to test hypothesis 2 in the total sample groups. Table 4 shows that coefficients of γ_1 is 0.40658 and the coefficients of γ_1^* is 0.405399 in the total sample group. The likelihood ratio statistics ($\gamma_1 = \gamma_1^*$) in nonlinear generalized least square regression show no significant estimates. Table 4 also shows that coefficients of γ_2 is 2.118054 and the coefficients of γ_2^* is 4.225618 in the total sample group. The likelihood ratio statistics ($\gamma_2 = \gamma_2^*$) show no significance in nonlinear generalized least square regressions.

This result indicates that the participants in the Korean financial market fully recognize the positive value relevance of donation expenditure for stock prices. This result also suggests that Korean investors truly estimate the information content of donation expenditure, and this supports hypothesis 2 (i.e., Korean stock market participants fully recognize the value relevance of donation expenditure).

Table 4. Market reaction on donation expenditure: total firm

(A) Equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$							
Number	Variables	Coefficients	t value	Adj R ²	F-value		
11,419	Intercept(γ_0)	0.02946	50.97**	0.3695	3029.02		
	EBDON _t (γ_1)	0.40658	75.69**				
	DON _t (γ_2)	2.11838	12.80**				
(B) Forecasting equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$							
Valuation equation: $AR_{t+1} = \alpha_0 + \beta_1 + (E_{t+1} - \gamma_0^* + \gamma_1^* EBDON_t - \gamma_2^* DON) + \varepsilon_{t+1}$							
Number	γ_1	γ_1^*	γ_2	γ_2^*	Test of market efficiency	Likelihood ratio statistic	Marginal significance level
11,419	0.406519**	0.405399**	2.118054**	4.225618**	$\gamma_1 = \gamma_1^*$	0.02	0.8975
					$\gamma_2 = \gamma_2^*$	2.32	0.1276

Variable definitions: Refer to <Table 2>, * (**): Significant at the .05 (.01) level.

2) The Value Relevance and Market Reaction of Donation Expenditure: KOSPI vs. KOSDAQ

Table 5 shows the value relevance and market reaction of donation expenditure in two subgroups (KOSPI vs. KOSDAQ) that are based on the Korean financial markets. Generally, the Korean stock market is classified into the KOSPI market and KOSDAQ market. KOSPI stands for “*Korea Composite Stock Price Index*” and KOSDAQ stands for “*Korea Securities Dealers Automated Quotation*.” The listed examination standard of KOSPI is higher than that of KOSDAQ. Moreover, the firm size and operating period of KOSPI is larger and longer than that of KOSDAQ.

Table 5 shows that donation expenditure of year t is positively associated with earnings of year t+1 at the 1% level of significance in the KOSPI (2.57248) and KOSDAQ (1.27537) sample groups. Further, adjusted R² of the KOSPI and KOSDAQ firm groups are at 0.2567 and 0.4043, respectively. These results indicate that donation activity of the current year increase future firm value and value relevance of donation expenditure in KOSPI is higher than that of KOSDAQ.

Next, this study runs a nonlinear generalized least square regression of next year abnormal returns on current year donation expenditure to examine market recognition of donation activities in the KOSPI and KOSDAQ firm groups. Table 5 shows that the likelihood ratio statistics ($\gamma_1 = \gamma_1^*$) in the nonlinear generalized least square regression does not show any significance in the KOSPI and KOSDAQ firm sample groups. Moreover, the likelihood ratio statistics ($\gamma_2 = \gamma_2^*$) in the nonlinear generalized least square regressions present no significance estimates in the KOSPI and KOSDAQ firm sample groups.

Table 5. Market reaction on donation expenditure: KOSPI and KOSDAQ

(A) Equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Group	Number	Variables		Coefficients	t value	Adj R ²	F-value	
KOSPI	5,251	Intercept(γ_0)		0.03242	49.26**	0.2567	819.10	
		EBDON _t (γ_1)		0.28618	35.79**			
		DON _t (γ_2)		2.57248	13.54**			
KOSDAQ	6,165	Intercept(γ_0)		0.02913	31.20**	0.4043	1883.41	
		EBDON _t (γ_1)		0.44898	60.91**			
		DON _t (γ_2)		1.27537	5.28**			
(B) Forecasting equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Valuation equation: $AR_{t+1} = \alpha_0 + \beta_1 + (E_{t+1} - \gamma_0^* + \gamma_1^* EBDON_t - \gamma_2^* DON_t) + \varepsilon_{t+1}$								
Group	Number	γ_1	γ_1^*	γ_2	γ_2^*	Test of market efficiency	Likelihood ratio statistic	Marginal significance level
KOSPI	5,251	0.286184**	0.242948**	2.57248**	3.289355**	$\gamma_1 = \gamma_1^*$	0.71	0.4008
						$\gamma_2 = \gamma_2^*$	0.34	0.5579
KOSDAQ	6,165	0.4488**	0.46858**	1.274862**	3.63909	$\gamma_1 = \gamma_1^*$	0.06	0.8039
						$\gamma_2 = \gamma_2^*$	0.85	0.3561

Variable definitions: Refer to <Table 2>, * (**): Significant at the .05 (.01) level.

This result indicates that the participants in the Korean stock market recognize the information content of firms' donation activity and they reflect this information on firm value in the KOSPI and KOSDAQ firm sample groups. This finding also suggests that investors in the KOSPI and KOSDAQ fully expect the positive value relevance of donation expenditure to reflect in the Korean securities markets.

3) The Value Relevance and Market Reaction of Donation Expenditure: Large Firm vs. Small and Medium Firm

Table 6 presents the value relevance and market response of donation expenditure in the two subgroups classified into large firm group and small and medium firm group. The *minor enterprise basic law of Korea* defines large firms as firms with more than 1,000 employees or assets amounting to 500 billion won (USD 550 million). It also stipulates that the other firms that are not being included in the Large firm belong to the Small and Medium firm group.

Table 6 shows that donation expenditure of year t is positively associated with earnings of year t+1 at the 1% level of significance in the large firm (2.28937) and small and medium firm (1.31215) sample groups. Adjusted R² of the large firm and small and medium firm groups are at 0.3594 and 0.3809, respectively.

This result of the nonlinear generalized least square regression of abnormal returns in year t+1 on earnings and donation expenditure in year t shows that the likelihood ratio statistics ($\gamma_1 = \gamma_1^*$) are not significant in the large firm and small and medium firm groups. In addition, Table 6 also shows that the likelihood ratio statistics ($\gamma_2 = \gamma_2^*$) presents no significance in the large firm and small and medium firm groups.

This result indicates that the participants in the Korean stock market recognize the information content of firms' donation activity and they truly react to this information through firm value for the large firm and small and medium firm groups. This finding also suggests that investors in the large firm and small and medium firm groups fully expect the positive value relevance of donation expenditure to reflect in the Korean securities markets, and these results are consistent with Table 5.

Table 6. Market reaction on donation expenditure: large vs. small and medium

(A) Equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Group	Number	Variables		Coefficients	t value	Adj R ²	F-value	
Large	6,121	Intercept(γ_0)		0.03187	53.72**	0.3594	1469.57	
		EBDON _t (γ_1)		0.37907	50.03**			
		DON _t (γ_2)		2.28937	13.55**			
Small and Medium	5,298	Intercept(γ_0)		0.02588	24.39**	0.3809	1475.69	
		EBDON _t (γ_1)		0.41943	54.11**			
		DON _t (γ_2)		1.31215	4.93**			
(B) Forecasting equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Valuation equation: $AR_{t+1} = \alpha_0 + \beta_1 + (E_{t+1} - \gamma_0^* + \gamma_1^* EBDON_t - \gamma_2^* DON_t) + \varepsilon_{t+1}$								
Group	Number	γ_1	γ_1^*	γ_2	γ_2^*	Test of market efficiency	Likelihood ratio statistic	Marginal significance level
Large	6,121	0.379068**	0.388165**	2.289373**	3.852855**	$\gamma_1 = \gamma_1^*$	0.04	0.8496
						$\gamma_2 = \gamma_2^*$	2.14	0.1432
Small and Medium	5,298	0.419367**	0.281477**	1.311943**	5.216516	$\gamma_1 = \gamma_1^*$	2.07	0.1502
						$\gamma_2 = \gamma_2^*$	1.41	0.2355

Variable definitions: Refer to <Table 2>, * (**): Significant at the .05 (.01) level.

4) The Value Relevance and Market Reaction of Donation Expenditure: Manufacturing vs. Non-manufacturing

Table 7 presents the value relevance and market reaction of donation expenditure in the manufacturing and non-manufacturing firm groups. A manufacturing firm group is defined as firms involved in manufacturing industries through the middle-level classification by the Korean Investors Service (KIS), and non-manufacturing firm group is defined as firms that do not belong to the manufacturing industry classification.

Table 7 indicates that donation expenditure in year t is positively associated with earnings in year t+1 in the manufacturing and non-manufacturing firm groups; the coefficient of DON shows positively significant (1% level) estimates in the manufacturing firm (2.31921) and non-manufacturing firm (2.11658) groups.

This study runs a nonlinear generalized least square regression of abnormal returns in year t+1 on donation expenditure in year t in manufacturing and nonmanufacturing firm groups. Table 7 shows that the likelihood ratio statistics ($\gamma_1 = \gamma_1^*$) in the nonlinear generalized least square regression have no significant estimates in the manufacturing firm and nonmanufacturing firm groups. Similarly, the likelihood ratio statistics ($\gamma_2 = \gamma_2^*$) in nonlinear generalized least square regressions shows no significant estimates in the manufacturing and non-manufacturing firm groups. This result is similar to the results of Table 6.

This result shows that the participants in the Korean stock market in the manufacturing and non-manufacturing firm groups truly expect the positive value relevance of donation expenditure to be reflected in stock prices. Moreover, this result also suggests that Korean investors in the manufacturing and non-manufacturing firms fully respond to the information on donation activities.

Table 7. Market reaction on donation expenditure: manufacturing vs. non-manufacturing

Equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Group	Number	Variables		Coefficients	t value	Adj R ²	F-value	
Manufacturing	7,818	Intercept(γ_0)		0.03008	45.30**	0.3806	2147.50	
		EBDON _t (γ_1)		0.40033	63.47**			
		DON _t (γ_2)		2.31921	11.36**			
Non-manufacturing	3,601	Intercept(γ_0)		0.02881	26.06**	0.3698	960.43	
		EBDON _t (γ_1)		0.40466	42.60**			
		DON _t (γ_2)		2.11658	7.31**			
(B) Forecasting equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Valuation equation: $AR_{t+1} = \alpha_0 + \beta_1 + (E_{t+1} - \gamma_0^* + \gamma_1^* EBDON_t - \gamma_2^* DON_t) + \varepsilon_{t+1}$								
Group	Number	γ_1	γ_1^*	γ_2	γ_2^*	Test of market efficiency	Likelihood ratio statistic	Marginal significance level
Manufacturing	7,818	0.400239**	0.430339**	2.318685**	2.863832*	$\gamma_1 = \gamma_1^*$	0.67	0.4126
						$\gamma_2 = \gamma_2^*$	0.21	0.6466
Non-manufacturing	3,601	0.404662**	0.15819	2.116582**	8.791956	$\gamma_1 = \gamma_1^*$	1.88	0.1698
						$\gamma_2 = \gamma_2^*$	1.48	0.2232

Variable definitions: Refer to <Table 2>, * (**): Significant at the .05 (.01) level.

5) The Value Relevance and Market Reaction of Donation Expenditure: High Technology vs. Low Technology

Table 8 presents the empirical results of market reaction and value relevance of donation expenditure in the high technology and low technology firm groups.

This paper classifies total sample firms into high and low technology firm groups in accordance with Himmelberg and Petersen (1994) classification in Table 8. Chemicals, pharmaceuticals, metal, electronic components, medical, precision and optical instruments, and electrical equipment firms belong to the high technology industry and the others are included in the low technology industry.

Table 8 shows that donation expenditure in year t is positively associated with earnings in year t+1 in the high technology firm and low technology firm groups; the coefficient of DON shows significantly positive estimates of 1.83654 and 2.09402 in the high technology and low technology firm groups, respectively.

This paper performs nonlinear generalized least square regression of abnormal returns in year t+1 on donation expenditure in year t in the high and low technology firm groups. Table 8 also shows that the likelihood ratio statistics ($\gamma_1 = \gamma_1^*$) and ($\gamma_2 = \gamma_2^*$) in nonlinear generalized least square regression are not significant in the high technology and low technology firm groups. This result is similar with the results in Table 7.

This empirical result indicates that the participants in the Korean financial market in the high technology and low technology firm groups predict the positive value relevance of donation expenditure for the prices of the securities. Moreover, this result also suggests that Korean stock market investors in the high technology and low technology firm groups truly understand the information on donation activities.

Table 8. Market reaction on donation expenditure: high technology vs. low technology

(A) Equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Group	Number	Variables		Coefficients	t value	Adj R ²	F-value	
High Technology	5,279	Intercept(γ_0)		0.03099	33.79**	0.3963	1546.85	
		EBDON _t (γ_1)		0.41286	54.86**			
		DON _t (γ_2)		1.83654	6.06**			
Low Technology	6,140	Intercept(γ_0)		0.02875	38.60**	0.3338	1410.23	
		EBDON _t (γ_1)		0.39203	51.04**			
		DON _t (γ_2)		2.09402	10.26**			
(B) Forecasting equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Valuation equation: $AR_{t+1} = \alpha_0 + \beta_1 + (E_{t+1} - \gamma_0^* + \gamma_1^* EBDON_t - \gamma_2^* DON_t) + \varepsilon_{t+1}$								
Group	Number	γ_1	γ_1^*	γ_2	γ_2^*	Test of market efficiency	Likelihood ratio statistic	Marginal significance level
High Technology	5,279	0.412865**	0.433362**	1.83653**	4.434119*	$\gamma_1 = \gamma_1^*$	0.16	0.6862
						$\gamma_2 = \gamma_2^*$	1.62	0.2030
Low Technology	6,140	0.392**	0.345147**	2.09386	4.15836**	$\gamma_1 = \gamma_1^*$	0.39	0.5320
						$\gamma_2 = \gamma_2^*$	1.08	0.2995

Variable definitions: Refer to <Table 2>, * (**): Significant at the .05 (.01) level.

6) The Value Relevance and Market Reaction of Donation Expenditure: High Donation Expenditure vs. Low Donation Expenditure

This section deals with the test of value relevance of donation by splitting the total samples into high donation expenditure and low donation expenditure firm groups. This study runs multiple regressions by classifying all data into two equal groups in accordance with the magnitude of donation expenditure in Table 9.

The empirical result shows that donation expenditure in year t is positively associated with earnings in year t+1 at 1% level of significance (1.28368) in the high donation expenditure firm group, and it also has a positive relationship with next year earnings proxies for firm value at 5% level of significance (18.33848) in the low donation expenditure firm group. This result shows that the value relevance of donation expenditure in the low donation firm group is higher than that in the high donation firm group.

This study also runs a nonlinear generalized least square regression of abnormal stock returns in year t+1 on donation expenditure in year t in the high and low donation firm groups. Table 9 provides the likelihood ratio estimates ($\gamma_1 = \gamma_1^*$) and ($\gamma_2 = \gamma_2^*$) in the nonlinear generalized least square regression. It presents no significant statistics in the high donation expenditure and low donation expenditure firm groups.

This empirical result indicates that Korean stock market investors in high donation firm and low donation firm groups truly predict the positive value relevance of donation activity through stock prices. Moreover, this result suggests that the participants in the Korean stock market truly understand the information of donation activities in the high donation firm and low donation firm groups.

Table 9. Market reaction on donation expenditure: high donation expenditure vs. low donation expenditure

(A) Equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Group	Number	Variables		Coefficients	t value	Adj R ²	F-value	
High Donation Expenditure	5,711	Intercept(γ_0)		0.03375	41.41**			
		EBDON _t (γ_1)		0.41386	57.60**	0.3980	1719.06	
		DON _t (γ_2)		1.28368	8.52**			
Low Donation Expenditure	5,708	Intercept(γ_0)		0.02521	20.41**			
		EBDON _t (γ_1)		0.39391	49.19**	0.3207	1215.00	
		DON _t (γ_2)		18.33848	1.80			
(B) Forecasting equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$ Valuation equation: $AR_{t+1} = \alpha_0 + \beta_1 + (E_{t+1} - \gamma_0^* + \gamma_1^* EBDON_t - \gamma_2^* DON_t) + \varepsilon_{t+1}$								
Group	Number	γ_1	γ_1^*	γ_2	γ_2^*	Test of market efficiency	Likelihood ratio statistic	Marginal significance level
High Donation Expenditure	5,711	0.41386**	0.398153**	1.283685**	2.906364*	$\gamma_1 = \gamma_1^*$	0.06	0.8099
						$\gamma_2 = \gamma_2^*$	1.41	0.2346
Low Donation Expenditure	5,708	0.393714**	0.376151**	18.32937	40.171	$\gamma_1 = \gamma_1^*$	0.07	0.7917
						$\gamma_2 = \gamma_2^*$	0.06	0.7989

Variable definitions: Refer to <Table 2>, * (**): Significant at the .05 (.01) level.

This section provides the precise examination of value relevance change of donation expenditure in accordance with the magnitude of debt ratio in listed companies in the Korean stock markets. This paper runs multiple regressions by splitting the total sample data into two equal groups in accordance with the magnitude of the debt ratio.

The empirical result shows that donation expenditure in year t is positively associated with earnings in year t+1 at 1% level of significance in the high debt ratio firms (1.74406) and low debt ratio firms (1.56569) at the 1% level of significance in table 10. This result indicates that the value relevance of donation expenditure in the high debt ratio firm group is higher than that in the low debt ratio firm group.

This paper also carries out a nonlinear generalized least square regression of abnormal stock returns in year t+1 on donation expenditure in year t in the high and low donation firm groups. Table 10 presents the likelihood ratio estimates ($\gamma_1 = \gamma_1^*$) and ($\gamma_2 = \gamma_2^*$) in the nonlinear generalized least square regression. It presents no significant statistics in the high debt ratio and in low debt ratio firm groups.

This empirical result explains that the participants in the Korean stock market in high debt ratio firm and low debt ratio firm groups really expect the positive value relevance of donation expenditure to reflect in stock prices. Moreover, this result suggests that investors recognize the information on donation activities in high debt ratio and low debt ratio firm groups.

Table 10. Market reaction on donation expenditure: high debt ratio vs. low debt ratio

(A) Equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Group	Number	Variables		Coefficients	t value	Adj R ²	F-value	
High Donation Expenditure	5,710	Intercept(γ_0)		0.02015	25.03**	0.2580	914.76	
		EBDON _t (γ_1)		0.34218	41.86**			
		DON _t (γ_2)		1.74406	6.73**			
Low Donation Expenditure	5,709	Intercept(γ_0)		0.04074	52.09**	0.4483	2012.64	
		EBDON _t (γ_1)		0.41110	62.29**			
		DON _t (γ_2)		1.56569	7.72**			
(B) Forecasting equation: $E_{t+1} = \gamma_0 + \gamma_1 EBDON_t + \gamma_2 DON_t + \varepsilon_{t+1}$								
Valuation equation: $AR_{t+1} = \alpha_0 + \beta_1 + (E_{t+1} - \gamma_0^* + \gamma_1^* EBDON_t - \gamma_2^* DON_t) + \varepsilon_{t+1}$								
Group	Number	γ_1	γ_1^*	γ_2	γ_2^*	Test of market efficiency	Likelihood ratio statistic	Marginal significance level
High Donation Expenditure	5,710	0.342175**	0.332755**	1.744062**	3.512346	$\gamma_1 = \gamma_1^*$	0.02	0.8798
						$\gamma_2 = \gamma_2^*$	0.80	0.3703
Low Donation Expenditure	5,709	0.411101**	0.389543**	1.565689**	2.712913	$\gamma_1 = \gamma_1^*$	0.15	0.6986
						$\gamma_2 = \gamma_2^*$	0.45	0.5023

Variable definitions: Refer to <Table 2>, * (**): Significant at the .05 (.01) level.

5. Conclusion

This paper investigates the value relevance and investors response to donation expenditure from 2001 to 2010 in companies listed on the Korean stock markets. This study examines the value relevance of donation expenditure (proxy for CSR) by testing whether donation expenditure is significantly associated with future earnings. This study tests market reaction on donation expenditure by running a nonlinear generalized least square regression of future abnormal returns on the present year donation activity. The empirical results of this paper provide the evidence whether Korean market participants truly understand the information content of donation expenditure.

To test this, the paper develops hypothesis 1 (expenditure has a positive value relevance in Korean stock markets) and hypothesis 2 (Korean stock market participants fully recognize the value relevance of donation expenditure). For the test of value relevance and market reaction changes, this study divides the total samples into several subgroups (KOSPI vs. KOSDAQ, large vs. small and medium, manufacturing vs. non-manufacturing, high technology vs. low technology, high debt ratio vs. low debt ratio, and high donation expenses vs. low donation expenses) in companies listed on the Korean stock markets.

The empirical results of this paper show that the present year donation expenditure is positively associated with future earnings (proxies for firm value). This provides the evidence that donation expenditure has a positive value relevance in listed companies on the Korean stock markets, and this also supports hypothesis 1 (expenditure has a positive value relevance in the Korean stock markets).

Moreover, the empirical results of this paper also support the second hypothesis (Korean stock market participants fully recognize the value relevance of donation expenditure). The results of this paper provide the evidence that current Korean stock market participants fully recognize the information content of donation expenditure in total firm group and every sub-group samples (such as KOSPI vs. KOSDAQ, large vs. small and medium, manufacturing vs. non-manufacturing, high technology vs. low technology, high debt ratio vs. low debt ratio, and high donation expenses vs. low donation expenses).

The empirical results of this paper are similar to the empirical results of prior literature. Many previous studies demonstrate that donation activity can promote firm value and financial performance. In addition, this paper provides new evidence that the investors in the Korean securities market truly know the reputation of firms created by their donation activities.

The empirical evidence of this paper has important implications for companies listed on the Korean stock markets, because it suggests new value relevant factors in business activities. However, this paper still has a basic limitation that does not include sample firms of developed countries for comparison. Thus, the empirical results of this paper should be restricted only to companies that are listed on the Korean stock markets.

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Note

Note 1. In this paper, donation expenditure is computed by summing up donation expenditure reported on income statement and statement of the costs of goods manufactured in period t.