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Chaebol Firms’ Donation Activities and Firm Values

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Received: 9 April 2019; Accepted: 18 April 2019; Published: 24 April 2019

Abstract: This paper aims to investigate the effects of donation activities of chaebol firms on their firm values. The firm values will vary depending on capital market participants’ view on the donation activities of chaebol firms. To verify this hypothesis, data of firms listed in the Korea Composite Stock Price Index (KOSPI) from 2001 to 2017 are empirically analyzed. Whether a firm is a chaebol firm or not is assessed by whether the firm has been designated as a firm in one of the large business groups announced by the Korea Fair Trade Commission, and firm values are measured by Tobin’s Q and market-to-book value ratio (MTB). The results of analysis indicated that donation activities of chaebol firms were negatively related to firm values. The donation activities of chaebol firms seem to be not positively evaluated in the capital market. This paper is meaningful in that it verified how capital market participants evaluate the donation activities of chaebol firms, which account for a large portion of the South Korean economy. To gain public support, chaebol firms should strive to truly fulfill their social responsibilities.

Keywords: chaebol; greenwashing; sustainability management; corporate social responsibility; donation expenses; firm value; Tobin’s Q; MTB

1. Introduction

The goal of firms is to maximize their firm values. In the past, the goal of firms was to maximize their earnings by maximizing their revenues and minimizing their expenses. Today, however, firms do not just pursue short-term earnings; firms are managed with a long-term perspective, bearing corporate sustainable development in mind. Not only financial factors, but also nonfinancial factors are important in determining firm value [1]. A representative example of important nonfinancial factors that do not appear in financial statements is sustainability management activities of the firm. Sustainability management activities of firms are mainly conducted in the fields of economy, society, and environment. As interest in firms’ sustainability management activities has been increasing, firms have been making efforts to meet the demand of stakeholders, such as publishing sustainability management reports. Sustainability management of firms is becoming an irresistible paradigm of the times. Chaebol firms, which are a special form of firms existing only in South Korea, also make great efforts in sustainability management activities. However, chaebol firms are often observed to be managed for the growth of the chaebol family’s wealth, not for the maximization of their firm’s values (Kim, 2007 [2]; Albrecht et al., 2010 [3]). Samsung BioLogics’ accounting manipulation in favor of corporate succession by Vice Chairman Lee Jae-yong (the son of Lee Kun-hee, head of the Samsung Group, the largest chaebol group in South Korea) of the Samsung Group in the process of the merger between Samsung C & T Corp. and Cheil Industries Inc. is a hot issue in the South Korean economy. Chung Eui-sun (the son of Chung Mong-koo, head of the Hyundai Motor Group, the second largest chaebol group in South Korea) is Vice Chairman of the Hyundai Motor Group and the largest shareholder of Hyundai Glovis. The majority of work of Hyundai Glovis is provided by the Hyundai Motor Group through unfair transactions for corporate succession by Vice Chairman Chung...
Eui-sun. Whenever the heads of chaebols were arrested and confined because of their involvement in various kinds of corruption, they were released after promising that they would donate astronomical amounts of money (Lee and Lee, 2006 [4]). One may question whether chaebol firms are conducting donation activities to maximize firm values, the wealth of shareholders, and truly fulfill corporate social responsibility. They might conduct donation activities to escape the crisis every time an incident occurs or as a form of ‘greenwashing’; this is a compound word of ‘green’ and ‘whitewashing’ and refers to firms’ act of putting up environmentally friendly images while producing products that in fact adversely affect the environment. To report firms’ antinomic behaviors as such, CorpWatch, a US multinational corporate watchdog, selects and announces the winners of the ‘Greenwash Awards’ on 22 April, Earth Day, every year (Yoon, 2009 [5]). In order to gratify the curiosity as such, this paper examines how the donation activities of chaebol firms are evaluated in the capital market. The values of chaebol firms will be high if capital market participants positively evaluate the donation activities of chaebol firms and will be low if capital market participants negatively evaluate the donation activities of chaebol firms. Donation activities are measured by the amounts of donation expenses. Institutions such as the Korea Economic Justice Institute (KEJI) and the Korea Corporate Governance Service (KCGS) evaluate and announce firms’ sustainability management activities. Analyses of the responses of the capital market to corporate donation expenditures in place of the responses of the capital market to the indices assessed by third institutions should be sufficiently meaningful work.

2. Literature Review and Hypothesis Development

It is well known that the values of chaebol firms are high in the South Korean stock market. All the top ten stocks in terms of market capitalization are the stocks of chaebol firms. Even when the scope has been expanded to the top 30 stocks, chaebol firms account for most of the stocks, except for those of public corporations and financial institutions. The proportion of chaebol firms in the South Korean economy can as such be said to be enormous. Furthermore, the market capitalization of one firm, Samsung Electronics, which is a representative chaebol firm, accounts for as much as 20% of the entire market capitalization in the Korea Composite Stock Price Index (KOSPI). Investigating the meanings of diverse activities conducted by chaebol firms as such should be quite implicative.

Lim (2000) [6] states that the corporate governance structure in which firms are controlled by the family members of the heads of chaebols is one of the hallmarks of South Korean firms. Such a governance structure means a state where the head of a chaebol and his/her family members in special relationships with him/her practically control several dozens of affiliates with small amounts of shares. The source of control of dozens of chaebol affiliates by chaebol families with low share ratios is cross-shareholding. While the average share ratio of controlling shareholders of chaebol firms is 9.7%, the average share ratio of affiliates is 23.6%, so that the share ratio with which the controlling shareholders exercise voting rights reaches 33.2%. The controlling shareholders, who are chaebol family members, exercise voting rights larger than their claim for dividends. Under such a governance structure, a lot of agency problems occur between controlling shareholders and minority shareholders, and therefore, the possibility of occurrence of chaebol families’ moral hazards is high (La Porta et al., 2000 [7]; An et al., 2002 [8]). In order to reduce the occurrences of such problems, the Korea Fair Trade Commission has been designating and announcing large business groups every year since 2001. A large business group is defined as “a group of companies of which the contents of business are practically controlled by the same person and the scope of the group of companies, that is, whether companies are affiliates, is judged based on share ratios or control” (www.egroup.go.kr). If designated as a large business group, the group is subject to restrictions such as the limit of the total amount of investment, the restriction on cross-shareholding, and the restriction on mutual debt guarantee.

Kim (2012) [9] compares the management performances of firms that introduced sustainability management and those that did not among firms that were listed on KOSPI and Korea Securities Dealers Automated Quotation (KOSDAQ) between 2009 and 2010. Based on the results of the analysis, he argues that sustainability management positively affects return on equity, return on assets, and
total asset growth rates, which are measures of short-term management performance, and Tobin’s Q, which indicates long-term management performance. He regarded those firms that published sustainability reports announced by the Business Institute for Sustainable Development (BISD) as firms that introduced sustainability management.

Min et al. (2015) [10] analyze the effects of sustainability management activities on the short-term and long-term firm values of the firms listed in KOSPI from 2008 to 2013. The firms’ sustainability management activities are measured using donation expense items and whether the firms publish sustainability reports according to the Global Reporting Initiative (GRI) guidelines. During the analysis period, 85 firms published sustainability reports. Short-term firm values are measured with stock returns, and long-term firm values are measured with Tobin’s Q. The results of the analysis indicate that the long-terms values of firms that make donation expenditures and publish sustainability reports are high, but the short-term values of the same firms are not significantly different from other firms.

Zhang (2018) [11] argues that Korean society has a dual recognition for chaebol firms. She states that chaebol firms have led the Korean economy to compressive growth, but they have been criticized for being involved in deviant behavior, polarization, and corruption. In addition, she claims that the major responsibility for the economic crisis after the foreign exchange crisis in 1997 lies with chaebol firms and that the voices calling for criticism and reform of the chaebol system are increasing. She argues that chaebol firms have not secured cultural hegemony in the past and that they are still unable to exercise cultural hegemony.

There are studies that argue that sustainability management negatively affects firm values or management performances (Friedman, 1970 [12]), and other studies that argue neutral or mixed results (McWilliams and Siegel, 2000 [13]). However, in most studies, sustainability management has been reported to have positive effects on firm values or management performances (Schwartz, 1968 [14]; Cochran and Wood, 1984 [15]). As interest in sustainability management increases, the trend in which sustainability management positively affects firm values will be consolidated further.

Unlike general firms, it cannot be known how stakeholders accept the donation activities of chaebol firms, which are a special form of firms. In particular, chaebol families have been criticized by the public for their legal and moral issues. As a means to avoid criticism, they have been promising to make donations to public foundations. In light of such behaviors of chaebol families, the following hypothesis is established to verify how the capital market evaluates the donation activities of chaebol firms.

Hypothesis 1 (H1). The donation activities of chaebol firms affect their firm values.

3. Research Design

3.1. Measurement of Variables

3.1.1. Chaebol Firms

The Korea Fair Trade Commission has been designating and announcing large business groups every year since 2001. A large business group is defined as “a group of companies of which the contents of business are practically controlled by the same person and the scope of the group of companies, that is, whether companies are affiliates, is judged based on share ratios or control”. If designated as a large business group, the group is subject to restrictions such as the limit of the total amount of investment, the restriction on cross-shareholding, and the restriction on mutual debt guarantee. In this study, firms that belong to one of the large business groups announced by the Korea Fair Trade Commission are considered as chaebol firms. The detailed criteria for chaebol firms are shown in Table 1 below.
Table 1. Criteria for chaebol firms.

| Requirement                  | Criteria                                                                 |
|------------------------------|--------------------------------------------------------------------------|
| Share ratio requirement      | The same person or his/her related persons have at least 30% of the shares of the firms and are the largest investors of the firms; |
| Control (influence) requirement | - The same person appoints at least 50/100 of the executives of the firms; |
|                              | - The same person exercises dominant influences on business execution or major decision-making, such as reorganization and investments in new business; |
|                              | - Executives of the firm controlled by the same person are also the executives of the relevant firms and the personnel are exchanged among the firms; |
|                              | - The firms are recognized as an economic unity based on socially accepted ideas because of transactions of funds, assets, goods, or services with the same person and his/her related persons in excess of normal ranges, debt guarantee for or being guaranteed for debt by the same person and his/her related persons, or acts of declaring that can make the relevant firms recognized as affiliates. |

Source: Korea Fair Trade Commission (www.egroup.go.kr).

3.1.2. Donation Activities

Firms’ sustainability management activities are mainly carried out in the fields of economy, society, and environment. Among them, there is a great interest in corporate social responsibility. Carroll (1979 [16], 1991 [17], 1998 [18]) argues that corporate social responsibility has four stages, the last of which is philanthropic responsibility. In the stage of philanthropic responsibility, firms’ donation types such as support for the underprivileged and support for education, culture, and sports activities are major aspects. Therefore, in this study, firms’ donation expense items are taken as measures of donation activities (DON) of firms. To facilitate the analysis, the value of DON is calculated by dividing the amount of donation expenses by the beginning total assets and multiplying the resultant value by 1000.

3.1.3. Firm Value

Tobin’s Q and market-to-book value ratio (MTB) are used as measures of firm values. These two measures are the most commonly used measures in firm value measurement. Tobin’s Q is calculated by dividing the market value of the firm by the replacement cost of the assets of the firm. Because it is difficult to measure the replacement cost of the assets, the book value of the assets is mainly used. The market value of a firm is the sum of the market values of the equity capital and debt capital of the firm. Since not only the measurement of the market value of the debt capital is difficult, but also the market value is not substantially different from the book value, the book value is used in place of the market value (Chung and Pruitt, 1994 [19]; Hong, 2016 [20]). As for the market value of the equity capital, the market capitalization provided by the FnGuide database is used. To produce robust results, the hypothesis is additionally analyzed by using MTB as a substitute for firm values. MTB is calculated by dividing the market value of the equity capital by the book value of the equity capital (Fairfield, 1994 [21]; Penman, 1996 [22]).

3.2. Research Model

The purpose of this study is to verify the effects of chaebol firms’ donation activities on their firm values. To that end, a research model is designed (see Equation (1)) in which CB × DON, which means chaebol firms’ donation activities, is used as an explanatory variable and Tobin’s Q or MTB is used as a dependent variable. Whether firms are chaebol firms (CB) is determined according to whether the firms are designated as large business groups, their donation activities (DON) are measured using
the amounts of donation expenses, and their firm values (FirmValue) are measured using Tobin’s Q or MTB. If the firm value of a chaebol firm that is active in donation activities is high, the coefficient $\beta_3$ of $CB \times DON$ will have a positive value, and if not, $\beta_3$ will have a negative value. To control other effects on firm values, many variables are added as shown in the research model (Equation (1)). After the introduction of the MM theory (Modigliani and Miller, 1958 [23]), many studies have been conducted on the effects of capital structure (LEV) on firm values. Fama and French (1993) [24] argue that firm size (SIZE) is one of three factors that determine firm value. Cash flow from operations (CFO) and return on assets (ROA) control the firm’s ability to generate cash and profitability. Sales growth rates (GW) and whether the firm is a loss firm (LOSS) can also affect firm values. Sharpe (1964) [25] argues that BETA, which means the risk of the firm, is a key factor of the capital asset pricing model (CAPM). Since firm values may vary according to how long the firm has been established, that is, the age of the firm, the AGE variable is added (Hong, 2016 [20]). Donations may occur as the consequence of previous illegal acts. The CS variable, which means corporate scandals, is added to control for this effect. Finally, to control yearly effects and industrial effects, the year dummy variable $YD$ and industry dummy variable IND are included.

\[
FirmValue_t = \beta_0 + \beta_1 CB_t + \beta_2 DON_t + \beta_3 CB \times DON_t + \beta_4 LEV_t + \beta_5 SIZE_t + \beta_6 CFO_t + \beta_7 ROA_t + \beta_8 GW_t + \beta_9 LOSS_t + \beta_{10} BETA_t + \beta_{11} AGE_t + \beta_{12} CS_t + \Sigma YD + \Sigma IND + \epsilon_t
\]  
(1)

3.3. Data and Sample Selection

The samples of this study are firms listed on the Korea Exchange. In order to secure as many samples as possible, firms listed on the Korea Exchange during the period from 2001, when the Korea Fair Trade Commission began to announce chaebol firms, to 2017 were analyzed. Financial data were collected from a database called TS-2000 operated by the Korea Listed Companies Association (KLCA). Stock price data were collected from DataGuide, a database provided by FnGuide Inc. Data on whether firms are chaebol firms were collected from the Business Group Portal operated by the Korea Fair Trade Commission. In order to increase the comparability between the firms, financial companies were excluded from the analysis, and in order to increase the comparability between the periods, the companies that do not settle accounts at the end of December were excluded from the analysis. Firms with impaired capital that may contain distorted accounting figures were also excluded from the samples. Finally, the extreme values were winsorized at the level of 1% at the top and bottom. The number of finally selected samples is 9295 firm year.

4. Empirical Results

Table 2 lists the descriptive statistics of the major variables included in the research model. The mean of $CB$, which indicates whether the samples are chaebol firms, is 0.156. It can be seen that 1450 of the total of 9295 samples are classed as chaebol firms. The mean of $DON$, which indicates firms’ donation activities, is 1.030. To facilitate the analysis, the value of $DON$ is calculated by dividing the amount of donation expenses by the beginning total assets and multiplying the resultant value by 1000. That is, donation expenses account for only 0.00103% (=0.0000103) of the total assets. Among the firm values, the mean of Tobin’s Q is 1.032 and the mean of MTB is 1.095. Since both values are slightly greater than 1, they are considered to be within the normal range. As can be seen from the calculation formulas for Tobin’s Q and MTB, if the mean of MTB is greater than 1, it will be greater than the mean of Tobin’s Q. Since the mean of MTB at 1.095 is greater than the mean of Tobin’s Q at 1.032, the analysis can be regarded to have been normally carried out. The mean of leverage ratios, $LEV$, is 0.433, and the leverage ratios have been steadily decreasing since the 1997 foreign exchange crisis. The mean of $SIZE$, which is the natural logarithm of total assets, is 19.697. The mean of cash flow from operations, $CFO$, standardized with beginning total assets, is shown to be 0.050; the mean of sales growth rates, $GW$, is shown to be 0.069; and the mean of return on assets, $ROA$, is shown to be 0.031. The mean of $LOSS$, which indicates loss firms, is 0.201, indicating that 1868 firms out of the entire
sample recorded net losses during the term. The mean of BETA is 0.711. The mean of BETA of KOSPI firms has been shown to have values of around 0.7 in recent studies (Lee and Lee, 2018 [26]; Jung and Cho, 2018 [27]). The mean of AGE, which is the natural logarithm of the firms’ age, is 3.482, indicating that sample firms have been established for an average of 32.5 years. The mean of CS, which indicates corporate scandals, is 0.023, with 213 of the samples being fined, penalized, or having administrative measures taken against them during the period. It can be seen that the descriptive statistics of the major variables listed in Table 2 are not much different from those used in the previous studies (Hong, 2016 [20]; Kang and Kim, 2017 [28]).

Table 2. Descriptive statistics (n = 9295).

| Variables | Mean  | Std.  | Min   | Median | Max   |
|-----------|-------|-------|-------|--------|-------|
| CB        | 0.156 | 0.363 | 0.000 | 0.000  | 1.000 |
| DON       | 1.030 | 2.093 | 0.000 | 0.209  | 12.671|
| Tobin's Q | 1.032 | 0.566 | 0.367 | 0.882  | 3.935 |
| MTB       | 1.095 | 1.063 | 0.139 | 0.760  | 6.483 |
| LEV       | 0.433 | 0.202 | 0.034 | 0.438  | 0.912 |
| SIZE      | 19.697| 1.496 | 16.934| 19.437 | 23.998|
| CFO       | 0.050 | 0.081 | −0.208| 0.048  | 0.292 |
| GW        | 0.069 | 0.279 | −0.671| 0.045  | 1.663 |
| ROA       | 0.031 | 0.081 | −0.312| 0.033  | 0.263 |
| LOSS      | 0.201 | 0.401 | 0.000 | 0.000  | 1.000 |
| BETA      | 0.711 | 0.376 | −0.040| 0.680  | 1.670 |
| AGE       | 3.482 | 0.658 | 1.099 | 3.664  | 4.443 |
| CS        | 0.023 | 0.150 | 0.000 | 0.000  | 1.000 |

Variable definitions: CB: equal to 1 if the firm is included in the chaebol category, and 0 otherwise; DON: donation expenses × 1000 scaled by beginning total assets; Tobin’s Q: market value of assets divided by book value of assets; MTB: market-to-book value ratio; LEV: total liabilities to total assets; SIZE: the natural logarithm of total assets; CFO: cash flows from operations scaled by beginning total assets; GW: growth rates in sales; ROA: return on assets; LOSS: equal to 1 if the firm reported negative net income, and 0 otherwise; BETA: the risk estimated using the market model; AGE: the natural logarithm of firm age; CS: 1 if the firm has been fined, penalized, or had administrative measures taken against it, and 0 otherwise.

Table 3 shows Pearson’s correlations between major variables. The variable CB, whether the firm is a chaebol firm, and the variable DON, donation activities, are positively correlated with each other. That is, chaebol firms are judged to make a lot of donation expenditures. CB is positively correlated with both Tobin’s Q and MTB, which indicate firm values. That is, the firm values of chaebol firms seem to be high. CB is positively correlated with the leverage ratio, LEV. Chaebol firms have high leverage ratios because they can easily borrow money from financial institutions and issue bonds. It is natural that CB has a very strong positive correlation with the size of the firm, SIZE. CB is positively correlated with cash flow from operations, CFO, and return on assets, ROA. Chaebol firms have better ability to generate cash and higher profitability compared to non-chaebol firms. CB is negatively correlated with loss firms, LOSS, and chaebol firms are less likely to record net loss during the term because they have high profitability. CB is positively correlated with BETA. Chaebol firms are judged to be highly volatile because many of them correspond to business types sensitive to the economy, such as electronics, semiconductors, steel, and petrochemistry. CB is positively correlated with CS. Chaebol firms seem to have a lot of corporate scandals. Donation activities, DON, are positively correlated with both Tobin’s Q and MTB. That is, firms that make large amounts of donation expenditures seem to have high firm values. It can be seen that the correlations between the remaining variables are not much different from the values in previous studies (Hong, 2016 [20]; Seok et al., 2017 [29]).
Table 3. Correlation matrix.

| Variables | CB   | DON  | Tobin's Q | MTB  | LEV  | SIZE | CFO  | GW   | ROA  | LOSS | BETA | AGE |
|-----------|------|------|-----------|------|------|------|------|------|------|------|------|-----|
| DON       | 0.056 *** |     |           |      |      |      |      |      |      |      |      |     |
| Tobin's Q | 0.094 *** | 0.140 *** |     |      |      |      |      |      |      |      |      |     |
| MTB       | 0.094 *** | 0.112 *** | 0.927 *** |      |      |      |      |      |      |      |      |     |
| LEV       | 0.123 *** | −0.107 *** | 0.028 *** | 0.084 *** |      |      |      |      |      |      |      |     |
| SIZE      | 0.558 *** | 0.087 *** | 0.086 *** | 0.059 *** | 0.149 *** |      |      |      |      |      |      |     |
| CFO       | 0.090 *** | 0.202 *** | 0.146 *** | 0.112 *** | −0.151 *** | 0.186 *** |      |      |      |      |      |     |
| GW        | 0.009 | 0.064 *** | 0.098 *** | 0.088 *** | 0.042 *** | 0.025 ** | 0.080 *** |      |      |      |      |     |
| ROA       | 0.046 *** | 0.221 *** | 0.128 *** | 0.079 *** | −0.302 *** | 0.172 *** | 0.489 *** | 0.182 *** |      |      |      |     |
| LOSS      | −0.039 *** | −0.148 *** | −0.018 * | 0.006 | 0.276 *** | −0.133 *** | −0.349 *** | −0.150 *** | −0.685 *** |      |      |     |
| BETA      | 0.178 *** | −0.021 ** | 0.148 *** | 0.145 *** | 0.174 *** | 0.278 *** | −0.001 | 0.030 *** | −0.024 ** | 0.056 *** |      |     |
| AGE       | −0.016 | −0.061 *** | −0.136 *** | −0.128 *** | −0.006 | 0.005 | −0.078 *** | −0.120 *** | −0.071 *** | 0.031 *** | −0.009 |      |
| CS        | 0.033 *** | 0.013 | 0.015 | 0.015 | 0.041 *** | 0.037 *** | −0.014 | 0.003 | −0.008 | 0.025 ** | 0.009 | −0.007 |

*, **, and *** indicate significance at $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively, with two-tailed probability levels for variables. All variables are defined in Table 2.
Panel A in Table 4 shows the results of a univariate analysis that compared the mean of firm values between chaebol firms and non-chaebol firms. The mean of Tobin’s Q of non-chaebol firms is 1.009, while that of chaebol firms is 1.156, and the difference in the mean of Tobin’s Q between non-chaebol firms and chaebol firms is 0.147. That is, it can be said that the firm value of chaebol firms measured with Tobin’s Q is greater than that of non-chaebol firms. The mean of MTB of non-chaebol firms is 1.052, while that of chaebol firms is 1.326, and the difference in the mean of MTB between non-chaebol firms and chaebol firms is 0.274. That is, it can be said that the firm value of chaebol firms measured with MTB is greater than that of non-chaebol firms.

|       | Panel A |           | Panel B |           |
|-------|---------|-----------|---------|-----------|
|       | Mean    | Tobin’s Q | MTB     |            |
| CB = 0| 1.009   | 1.052     | Small DON| 0.972      |
| CB = 1| 1.156   | 1.326     | Large DON| 1.092      |
| Difference | 0.147 *** | 0.274 *** | Difference | 0.120 *** |

*, **, and *** indicate significance at p < 0.10, p < 0.05, and p < 0.01, respectively, with two-tailed probability levels for variables. All variables are defined in Table 2.

Panel B in Table 4 shows the results of univariate analysis in which the entire samples were divided into two groups based on the sizes of DON and the mean of firm values were compared between the two groups. A significant difference of 0.120 is shown, as the mean of Tobin’s Q of the group with the smaller amount of donation expenses is 0.972, while that of the group with the larger amount of donation expenses is 1.092. That is, it can be said that firms with large amounts of donation expenses have higher firm values measured by Tobin’s Q than those with small amounts of donation expenses. A significant difference of 0.162 is shown, as the mean of MTB of the group with the smaller amount of donation expenses is 1.014, while that of the group with the larger amount of donation expenses is 1.176. That is, it can be said that firms with large amounts of donation expenses have higher firm values measured by MTB than those with small amounts of donation expenses. The results of the univariate analysis are consistent with those of the correlation analysis.

The analysis of this paper is based on the commonly used pooled OLS regression; however, additional analyses with a fixed effects model and two-way clustering tests are performed to increase robustness and reduce statistical errors.

The unit root tests for stationarity between the dependent variable FirmValue (Tobin’s Q and MTB) and the independent variable CB×DON were performed using the methods of Dickey and Fuller (1979) [30] and Phillips and Ouliaris (1990) [31]. The results of the tests show that t/tau statistics are sufficiently small, and therefore, the two variables appear to be cointegrated and stationary.

Table 5 shows the results of pooled OLS regression analysis in which firm values were measured with Tobin’s Q to verify the hypothesis that the donation activities of chaebol firms affect their firm values.
Table 5. Pooled OLS regression analysis using Tobin’s Q.

| Variables | Panel A | Panel B | Panel C |
|-----------|---------|---------|---------|
|           | Coefficient | t-Value | Coefficient | t-Value | Coefficient | t-Value |
| Intercept | 1.229 | 13.03 *** | 0.978 | 11.97 *** | 1.229 | 13.10 *** |
| CB        | 0.102 | 5.45 *** | 0.124 | 5.86 *** | 0.031 | 10.31 *** |
| DON       | 0.028 | 10.17 *** | 0.031 | 10.31 *** | 0.031 | 10.31 *** |
| CB × DON  | -0.020 | -2.59 *** | -0.020 | -2.59 *** | -0.020 | -2.59 *** |
| LEV       | 0.068 | 2.23 ** | 0.090 | 2.95 *** | 0.085 | 2.80 *** |
| SIZE      | -0.008 | -1.74 * | 0.003 | 0.75 * | -0.011 | -2.20 ** |
| CFO       | 0.708 | 8.78 *** | 0.631 | 7.81 *** | 0.627 | 7.79 *** |
| ROA       | 1.062 | 10.13 *** | 0.934 | 8.91 *** | 0.956 | 9.12 *** |
| GW        | 0.126 | 6.04 *** | 0.119 | 5.76 *** | 0.120 | 5.79 *** |
| LOSS      | 0.169 | 8.65 *** | 0.165 | 8.51 *** | 0.166 | 8.57 *** |
| BETA      | 0.200 | 12.65 *** | 0.206 | 13.07 *** | 0.203 | 12.90 *** |
| AGE       | -0.095 | -11.00 *** | -0.093 | -10.76 *** | -0.092 | -10.72 *** |
| CS        | 0.037 | 0.99 | 0.034 | 0.91 | 0.031 | 0.81 |
| YD        | Included | Included | Included |
| IND       | Included | Included | Included |
| Adj. R²   | 0.077 | 0.084 | 0.088 |
| F-value   | 78.64 | 86.61 | 75.29 |
| Sample size | 9295 | 9295 | 9295 |

Tobin’s Q = β0 + β1CB + β2DON + β3CB×DON + β4LEV + β5CFO + β6ROA + β7GW + β8LOSS + β9BETA + β10AGE + β11CS + ΣYD + ΣIND + εit; *, **, and *** indicate significance at p < 0.10, p < 0.05, and p < 0.01, respectively, with two-tailed probability levels for variables. All variables are defined in Table 2.

Panel A in Table 5 shows the results of analysis of the relationship between chaebol firms and firm values. The dependent variable is Tobin’s Q and the independent variable is CB, which means chaebol firms. The coefficient β1 of CB is 0.102, which is a significant positive value. That is, it can be seen that the firm values of chaebol firms are higher than those of non-chaebol firms.

Panel B in Table 5 shows the results of analysis of the effects of donation activities on firm values. The dependent variable is Tobin’s Q and the independent variable is DON, which means donation expenses. The coefficient β2 of DON is 0.028, which is a significant positive value. That is, it can be seen that the values of firms that make large donation expenditures are high.

Panel C in Table 5 shows the results of analysis intended to verify the hypothesis that the donation activities of chaebol firms affect their firm values. The dependent variable is Tobin’s Q and the independent variable is CB × DON, which means the donation activities of chaebol firms. CB × DON is an interaction term between the chaebol firm dummy variable CB and the amount of donation expenses DON. The coefficient β3 of CB × DON is -0.020, which is a significant negative value.

Although CB is positively related to Tobin’s Q and DON is positively related to Tobin’s Q, CB × DON is negatively related to Tobin’s Q. That is, it seems that chaebol firms’ donation activities are negatively related to their firm values.

Table 6 shows the results of pooled OLS regression analysis in which firm values were measured with MTB to verify the hypothesis that the donation activities of chaebol firms affect their firm values.

Panel A in Table 6 shows the results of analysis of the relationship between chaebol firms and firm values. The dependent variable is MTB and the independent variable is CB, which means chaebol firms. The coefficient β1 of CB is 0.240, which is a significant positive value. That is, it can be seen that the firm values of chaebol firms are higher than those of non-chaebol firms.
“greenwashing”, rather than as an act to truly fulfill their corporate social responsibility. The results of which is an insignificant negative value.

The dependent variable is the MTB variable is

Table 6. Pooled OLS regression analysis using MTB.

| Variables | Panel A | Panel B | Panel C |
|-----------|---------|---------|---------|
| Intercept | 1.877   | 1.286   | 1.874   |
| CB        | 0.240   | 0.047   | 0.049   |
| DON       | 0.047   | 8.84*** | 8.72*** |
| CB × DON  | −0.025  | −1.70*  |         |
| LEV       | 0.418   | 7.23*** | 7.46*** |
| SIZE      | −0.043  | −4.68***| −5.06***|
| CFO       | 1.213   | 1.091   | 1.081   |
| ROA       | 1.506   | 1.279   | 1.333   |
| GW        | 0.208   | 0.198   | 0.199   |
| LOSS      | 0.251   | 0.245   | 0.247   |
| BETA      | 0.363   | 0.374   | 0.368   |
| AGE       | −0.171  | −0.168  | −0.166  |
| CS        | 0.066   | 0.062   | 0.055   |

| Included | Included | Included |
|----------|----------|----------|
| YD       | 0.067    | 0.070    | 0.075    |
| Ind      | 0.067    | 0.070    | 0.075    |
| Adj. R²  | 67.78    | 71.23    | 63.51    |
| F-value  | 9295     | 9295     | 9295     |

Panel B in Table 6 shows the results of analysis of the effects of donation activities on firm values. The dependent variable is MTB and the independent variable is DON, which means donation expenses. The coefficient \( \beta_2 \) of DON is 0.047, which is a significant positive value. That is, it can be seen that the values of firms that make large amounts of donation expenditures are high.

Panel C in Table 6 shows the results of analysis intended to verify the hypothesis that the donation activities of chaebol firms affect their firm values. The dependent variable is MTB and the independent variable is CB × DON, which means the donation activities of chaebol firms. CB × DON is an interaction term between the chaebol firm dummy variable CB and the amount of donation expenses DON. The coefficient \( \beta_3 \) of CB × DON is −0.025, which is a significant negative value.

Although CB is positively related to MTB and DON is positively related to MTB, CB × DON is negatively related to MTB. That is, it seems that chaebol firms’ donation activities are negatively related to their firm values.

It can be seen that the results in Table 6 obtained by regression analysis of firm values measured with MTB are not much different in quality from the results in Table 5 obtained by regression analysis of firm values measured with Tobin’s Q.

Capital market participants seem to evaluate chaebol firms’ act of donations as a form of ‘greenwashing’, rather than as an act to truly fulfill their corporate social responsibility. The results of analysis as such seem to have fully reflected the public views on chaebol firms.

Table 7 describes the results of pooled OLS regression analysis for each group after dividing the group into two, depending on the size of DON.

Panel A in Table 7 is the result of analysis for the group with small donation expenditures. In Panel A-1, the dependent variable is Tobin’s Q and the independent variable is CB × DON. The coefficient \( \beta_3 \) of CB × DON is −0.746, which is a significant negative value. In Panel A-2, the dependent variable is MTB and the independent variable is CB × DON. The coefficient \( \beta_3 \) of CB × DON is −0.666, which is an insignificant negative value.
which is a significant negative value.

That is, it seems that chaebol firms’ donation activities are negatively related to their firm values. The coefficient \( \beta_3 \) of \( CB \times DON \) is \(-0.021\), which is a significant negative value. In Panel B-2, the dependent variable is \( MTB \) and the independent variable is \( CB \times DON \). The coefficient \( \beta_3 \) of \( CB \times DON \) is \(-0.026\), which is a significant negative value.

Although there are differences in significance, the results of the analysis by dividing the group into two according to the size of donation expenditures are not different compared to Tables 5 and 6. That is, it seems that chaebol firms’ donation activities are negatively related to their firm values.

Table 8 shows the results of pooled OLS regression analysis using changes in donation expenses (\( \Delta DON \)) instead of the level of donation expenses (\( DON \)). The dependent variable is \( Tobin’s Q \) and the independent variable is \( CB \times \Delta DON \). Firm value can be affected not only by the size of donations, but also by the amount of change in donations.

Panel A in Table 8 is the result of analyzing the entire sample. The coefficient \( \beta_3 \) of \( CB \times \Delta DON \) is \(-0.074\), which is an insignificant negative value.

Panel B in Table 8 is the result of analyzing the group with decreased donation expenditure. The coefficient \( \beta_3 \) of \( CB \times \Delta DON \) is \(-0.904\), which is an insignificant negative value.

Panel C in Table 8 is the result of analyzing the group with increased donation expenditure. The coefficient \( \beta_3 \) of \( CB \times \Delta DON \) is \(-2.417\), which is a significant negative value.
Table 8. Additional analysis 2-1: Pooled OLS regression analysis using Tobin’s Q.

| Variables | Entire Sample | Negative ∆DON Group | Positive ∆DON Group |
|-----------|---------------|----------------------|----------------------|
|           | Coefficient   | t-Value              | Coefficient          | t-Value              |
| Intercept | 1.227         | 13.00 ***            | 1.187                | 8.75 ***             |
|           | 1.092         | 7.53 ***             |                      |                      |
| CB        | 0.102         | 5.43 ***             | 0.072                | 0.36                 |
|           | 0.086         | 6.59 ***             |                      |                      |
| ∆DON      | 0.086         | 0.70                 | −0.904               | −0.79                |
|           | 0.119         | 4.48 ***             | −0.007               | −1.04                |
| CB × ∆DON | −0.074        | −0.47                | −0.015               | −0.003               |
|           | −0.008        | −1.71 *              | −0.007               | −0.003               |
| LEV       | 0.068         | 2.22 **              | 0.105                | 2.36 **              |
|           | 0.076         | 6.58 ***             | 0.798                | 6.72 ***             |
| SIZE      | 1.061         | 11.11 ***            | 1.328                | 8.41 ***             |
|           | 0.097         | 2.90 ***             | 0.031                | 1.02                 |
| ROA       | 0.068         | 6.02 ***             | 0.119                | 6.20 ***             |
|           | 0.072         | 6.58 ***             | 0.225                | 7.40 ***             |
| GW        | 0.200         | 12.64 ***            | 0.169                | 7.61 ***             |
|           | 0.168         | 9.70 ***             | 0.225                | 9.70 ***             |
| LOSS      | 0.500         | −0.095               | −0.099               | −0.112               |
|           | −1.00 **      | −7.97 ***            | −8.83 ***            |
| BETA      | 0.467         | 1.14 **              | 0.053                | 0.98                 |
|           | 0.097         | 1.02                 | 0.023                | 0.41                 |
| CS        | 0.037         | 0.99                 | Included             | Included             |
|           | 0.053         | 0.98                 | Included             | Included             |
| YD        | Included       | Included             | Included             | Included             |
| IND       | Included       | Included             | Included             | Included             |
| Adj. R²   | 0.077         | 0.086                | 0.131                |
| F-value   | 65.57         | 32.42                | 54.07                |
| Sample size | 9295          | 3998                 | 4235                 |

Tobin’s Q = β₀ + β₁CB + β₂ΔDONt + β₃CB×ΔDONt + β₄LEVt + β₅SIZEt + β₆ROAt + β₇GWt + β₈LOSSt + β₀₁BETAt + β₀₂AGEt + β₀₃CS₁t + ΣYD + ΣIND + εt; *, **, and *** indicate significance at p < 0.10, p < 0.05, and p < 0.01, respectively, with two-tailed probability levels for variables. ∆DON: changes in donation expenses = DONt − DONt−1. Other variables are defined in Table 2.

Although the entire sample and the sample with decreased donation expenditure did not show significant results, the value of the chaebol firms with increased donation expenditure was low. Table 9 shows the results of pooled OLS regression analysis using changes in donation expenses (∆DON) instead of the level of donation expenses (DON). The dependent variable is MTB and the independent variable is CB × ∆DON. Firm value can be affected not only by the size of donations, but also by the amount of change in donations.

Panel A in Table 9 is the result of analyzing the entire sample. The coefficient β₃ of CB × ∆DON is −0.063, which is an insignificant negative value.

Panel B in Table 9 is the result of analyzing the group with decreased donation expenditure. The coefficient β₃ of CB × ∆DON is −1.380, which is an insignificant negative value.

Panel C in Table 9 is the result of analyzing the group with increased donation expenditure. The coefficient β₃ of CB × ∆DON is −3.986, which is a significant negative value.

Although the entire sample and the sample with decreased donation expenditure did not show significant results, the value of the chaebol firms with increased donation expenditure was low. Table 9 shows that the results are not significantly different from Table 8.

The level of corporate donation expenditure may not adequately reflect the sustainability management activities. To complement these limitations, additional analysis results are described in Table 10 using ESG rating as a proxy variable for sustainability management activities. The Korea Corporate Governance Service (KCGS) has been evaluating companies and announcing ESG ratings every year since 2010. Table 10 is the results of the analysis of samples from 2010 to 2017. ESG is one of the representative indicators in evaluating sustainability management of Korean companies. Detailed ESG rating evaluation criteria are described in Appendix A.
which means ESG Sustainability 2019 significant negative value. FirmValue × Sample size 10 Variables Adj. R 56.51 24.93 46.90 F-value 0.067 0.067 0.115 Sample size Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included Included 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Table 9. Additional analysis 2-2: Pooled OLS regression analysis using MTB.

| Variables | Panel A Entire Sample | Panel B Negative ADON Group | Panel C Positive ADON Group |
|-----------|-----------------------|-----------------------------|-----------------------------|
|           | Coefficient | t-Value | Coefficient | t-Value | Coefficient | t-Value |
| Intercept | 1.873       | 10.50 ***| 1.708       | 6.71 ***| 1.525       | 5.57 ***|
| CB        | 0.239       | 6.74 ***| 0.245       | 4.93 ***| 0.218       | 4.23 ***|
| ADON      | 0.133       | 0.57    | 0.191       | 0.51   | 3.829       | 5.80 ***|
| CB × ADON | −0.063      | −0.21   | −1.380      | −0.64  | −3.986      | −5.74 ***|
| LEV       | 0.418       | 7.23 ***| 0.343       | 4.09 ***| 0.498       | 5.56 ***|
| SIZE      | −0.042      | −4.65 ***| −0.032      | −2.48 **| −0.028      | −1.99 **|
| CFO       | 1.211       | 7.94 ***| 1.203       | 5.50 ***| 1.557       | 6.85 ***|
| ROA       | 1.504       | 7.59 ***| 2.047       | 6.90 ***| 2.789       | 9.02 ***|
| GW        | 0.208       | 5.29 ***| 0.116       | 1.83 *  | 0.071       | 1.23    |
| LOSS      | 0.251       | 6.81 ***| 0.240       | 4.72 ***| 0.363       | 6.31 ***|
| BETA      | 0.363       | 12.15 ***| 0.285       | 6.82 ***| 0.438       | 10.09 **|
| AGE       | −0.171      | −10.43 ***| −0.176      | −7.52 ***| −0.203      | −8.52 ***|
| CS        | 0.066       | 0.92    | 0.104       | 1.04   | 0.036       | 0.34    |
| YD        | Included    | Included| Included    | Included| Included    | Included|
| IND       | Included    | Included| Included    | Included| Included    | Included|
| Adj. R²   | 0.067       | 0.067   | 0.115       |        |            |        |
| F-value   | 56.51       | 24.93   | 46.90       |        |            |        |
| Sample size | 9295      | 3998    | 4235        |        |            |        |

MTB = β₀ + β₁CB + β₂ΔDON₁ + β₃CB×ΔDON₁ + β₄LEV + β₅CFO + β₆ROA + β₇GW + β₈LOSS₁ + β₉BETA + β₁₁AGE + β₁₂CS₁ + ΣYD + ΣIND + ε; *, **, and *** indicate significance at p < 0.10, p < 0.05, and p < 0.01, respectively, with two-tailed probability levels for variables. All variables are defined in Tables 2 and 8.

Table 10. Additional analysis 3: Pooled OLS regression analysis using ESG ratings.

| Variables | Panel A FirmValue = Tobin’s Q | Panel B FirmValue = MTB |
|-----------|--------------------------------|-------------------------|
|           | Coefficient | t-Value | Coefficient | t-Value |
| Intercept | 2.681       | 15.93 ***| 4.270       | 14.04 ***|
| CB        | 0.095       | 2.82 ***| 0.211       | 3.46 ***|
| ESG       | 0.297       | 7.79 ***| 0.516       | 7.50 ***|
| CB × ESG  | −0.104      | −1.94 * | −0.176      | −1.82 *|
| LEV       | 0.010       | 0.22    | 0.422       | 4.90 ***|
| SIZE      | −0.077      | −8.95 ***| −0.157      | −10.13 ***|
| CFO       | 1.064       | 7.63 ***| 1.994       | 7.91 ***|
| ROA       | 1.428       | 8.20 ***| 1.943       | 6.17 ***|
| GW        | 0.201       | 6.05 ***| 0.352       | 5.85 ***|
| LOSS      | 0.175       | 5.94 ***| 0.231       | 4.34 ***|
| BETA      | 0.172       | 7.47 ***| 0.297       | 7.12 ***|
| AGE       | −0.100      | −7.85 ***| −0.173      | −7.56 ***|
| CS        | 0.067       | 1.06    | 0.130       | 1.14    |
| YD        | Included    | Included| Included    | Included|
| IND       | Included    | Included| Included    | Included|
| Adj. R²   | 0.099       | 0.091   | 0.091       |        |
| F-value   | 44.54       | 40.46   | 40.46       |        |
| Sample size | 4747      | 4747    | 4747        |        |

FirmValue = β₀ + β₁CB + β₂ESG + β₃CB×ESG + β₄LEV + β₅CFO + β₆ROA + β₇GW + β₈LOSS + β₉BETA + β₁₁AGE + β₁₂CS + ΣYD + ΣIND + ε; *, **, and *** indicate significance at p < 0.10, p < 0.05, and p < 0.01, respectively, with two-tailed probability levels for variables. ESG: 1 if the ESG rating from KCGS is higher than grade B, and 0 otherwise. Other variables are defined in Table 2.

The dependent variable of Panel A in Table 10 is Tobin’s Q and the independent variable is CB×ESG, which means ESG ratings of the chaebol firms. The coefficient β₃ of CB×ESG is −0.104, which is a significant negative value.
The dependent variable of Panel B in Table 10 is MTB and the independent variable is CB × ESG. The coefficient β₃ of CB × ESG is −0.176, which is a significant negative value. The value of chaebol firms with high ESG ratings appears to be low.

The analysis results of Panels A and B in Table 10 show that they are not qualitatively different from those of Tables 5 and 6. That is, it seems that chaebol firms’ sustainability management activities are negatively related to their firm values.

Table 11 shows the results of additional analysis using a fixed effects model. It is appropriate to use the fixed effects model when the width of the panel data is wide and the length of the panel data is short; that is, the number of observations in the cross-section is large and the number of observations in the time-series is small (Hill et al., 2010 [32]). It is appropriate to use the fixed effects model in this study since the width of the panel data is 670, which is greater than the length, 17. This study targets all KOSPI firms, not randomly selected samples. In addition, the Hausman test results show that the test statistic value is sufficiently large to use the fixed effects model (Hausman, 1978 [33]; Hausman and Taylor, 1981 [34]).

Table 11. Additional analysis 4: fixed effects model.

| Variables | Panel A | Panel B |
|-----------|---------|---------|
|           | FirmValue = Tobin’s Q | FirmValue = MTB |
| Intercept | −0.512 | −0.303 | −0.36 |
| CB        | 0.092  | 0.203  | 2.07 ** |
| DON       | 0.007  | 0.014  | 1.76 *  |
| CB × DON  | −0.002 | −0.029 | −1.51 |
| LEV       | 0.166  | 1.053  | 5.68 *** |
| SIZE      | −0.018 | −0.142 | −2.91 *** |
| CFO       | 0.239  | 0.468  | 2.67 *** |
| ROA       | 0.731  | 1.166  | 3.63 *** |
| GW        | 0.106  | 0.158  | 3.64 *** |
| LOSS      | 0.031  | 0.015  | 0.36 |
| BETA      | 0.172  | 0.319  | 8.49 *** |
| AGE       | 0.473  | 0.981  | 9.07 *** |
| CS        | 0.051  | 0.092  | 1.62 |
| Adj. R²   | 0.080  | 0.074  |       |
| F-value   | 19.53  | 18.56  |       |
| Sample size | 9295  | 9295   |       |

In Panel A of Table 11, where the dependent variable is Tobin’s Q, the coefficient β₃ of CB × DON showed a significant negative value.

In Panel B of Table 11, where the dependent variable is MTB, the coefficient β₃ of CB × DON showed an insignificant negative value.

Although there is some difference in significance, the results of the additional robustness analysis are not different from those of Tables 5 and 6.

Two-way clustering tests were performed to compensate for the shortcomings of the pooled OLS regression analysis. Two-way clustering tests are methods designed by Petersen (2009) [35] and Gow et al. (2010) [36] to correct the time-series and cross-sectional dependency problems.

Table 12 shows the firm year clustering test results. In Panel A of Table 12, where the dependent variable is Tobin’s Q, the coefficient β₃ of CB × DON showed a significant negative value.
Table 12. Additional analysis 5: two-way clustering tests.

| Variables | Panel A | Panel B |
|-----------|---------|---------|
|           | $\text{FirmValue} = \text{Tobin's Q}$ | $\text{FirmValue} = \text{MTB}$ |
| Coefficient | t-Value | Coefficient | t-Value |
| Intercept | 1.229 | 13.18 *** | 1.874 | 10.27 *** |
| CB | 0.124 | 3.41 *** | 0.265 | 4.36 *** |
| DON | 0.031 | 3.56 *** | 0.049 | 3.19 *** |
| $\text{CB} \times \text{DON}$ | −0.020 | −2.01 ** | −0.025 | −1.48 |
| LEV | 0.085 | 5.45 *** | 0.446 | 9.46 *** |
| SIZE | −0.011 | −0.62 | −0.046 | −3.57 *** |
| CFO | 0.627 | 6.35 *** | 1.081 | 5.41 *** |
| ROA | 0.956 | 7.45 *** | 1.333 | 5.36 *** |
| GW | 0.120 | 4.02 *** | 0.199 | 3.63 *** |
| LOSS | 0.166 | 8.17 *** | 0.247 | 6.08 *** |
| BETA | 0.203 | 12.75 *** | 0.368 | 12.18 *** |
| AGE | −0.092 | −8.69 *** | −0.166 | −8.31 *** |
| CS | 0.031 | 0.83 | 0.055 | 0.79 |
| YD | Included | | Included |
| IND | Included | | Included |
| Adj. $R^2$ | 0.133 | | 0.113 |
| F-value | 56.25 | | 44.99 |
| Sample size | 9295 | | 9295 |

$\text{FirmValue} = \beta_0 + \beta_1 \text{CB}_t + \beta_2 \text{DON}_t + \beta_3 \text{CB} \times \text{DON}_t + \beta_4 \text{SIZE}_t + \beta_5 \text{CFO}_t + \beta_6 \text{ROA}_t + \beta_7 \text{GW}_t + \beta_8 \text{LOSS}_t + \beta_9 \text{BETA}_t + \beta_{10} \text{AGE}_t + \beta_{11} \text{CS}_t + \epsilon_t$, *, **, and *** indicate significance at $p < 0.10$, $p < 0.05$, and $p < 0.01$, respectively, with two-tailed probability levels for variables. All variables are defined in Table 2.

In Panel B of Table 12, where the dependent variable is $\text{MTB}$, the coefficient $\beta_3$ of $\text{CB} \times \text{DON}$ showed an insignificant negative value. Although there is some difference in significance, the results of the additional robustness analysis are not different from those of Tables 5 and 6.

5. Conclusions

The purpose of this study was to investigate the relationship between the donation activities of chaebol firms and their firm values. If we accept the level of donations as a factor illustrating sustainability management activities, the following conclusions can be drawn. The public views on chaebol firms are contradictory (Zhang, 2018 [11]). While there are positive views that chaebol firms lead the South Korean economy with investments in new technologies, research and development, job creation, and export, there are negative views due to the collusive links between politicians and businessmen, the polarization of wealth, hereditary succession of management, and ‘power trips’. Chaebol firms are engaged in diverse activities for sustainable development and are active in making donations to meet the demand of stakeholders. However, due to the news of chaebol families’ misconducts poured out by the mass media on a daily basis, the public do not seem to positively view even chaebol firms’ acts of donation. The repertoire is repeated every time a chaebol head is arrested and confined due to his/her involvement in corruption and released after promising a massive amount of donations. The results of empirical analysis of firms listed on the Korea Exchange from 2001 to 2017 are interpreted to show negative relationships between chaebol firms’ donation activities and their firm values, reflecting such emotions. The analysis of this paper is based on commonly used pooled OLS regression; however, additional analyses with a fixed effects model and two-way clustering tests are performed to increase robustness and reduce statistical errors. Analyses using Tobin’s Q showed significant results in pooled regression, fixed effects model, and two-way clustering tests. Analyses using $\text{MTB}$ showed significant results in only pooled regression. The results of the analysis by fixed effects model and two-way clustering tests showed a slight decrease in significance, but the direction is consistent with other analysis results, and the overall analysis results are considered to be sufficient to draw conclusions regarding the negative relationships between chaebol firms’ donation activities.
and their firm values. To help satisfy the reader’s curiosity, this paper has presented various analysis results as much as possible.

This paper is meaningful in that it verified how capital market participants evaluate the donation activities of chaebol firms, which account for a huge portion of the South Korean economy. In general, the firm values of chaebol firms are high, and the values of firms that are active in making donations are high. However, the fact that the value of chaebol firms that actively make donations is not so high clearly tells how capital market participants view chaebol firms. Chaebol firms should strive to truly fulfill their social responsibilities. In this study, there is a limitation that the level of donation expenditure may be more affected by the situation on the market than the assessment of sustainability management activities.

**Funding:** This research received no external funding.

**Conflicts of Interest:** The author declares no conflicts of interest.

### Appendix A. ESG Rating Evaluation Criteria

| Category                        | Division                            | Section                                                                 |
|---------------------------------|-------------------------------------|------------------------------------------------------------------------|
| Environmental Strategy and Organization | CEO’s will                          | - CEO’s commitment to environmental management                           |
|                                 |                                     | - Environmental management promotion organization and environmental performance management |
|                                 | Environmental strategy and policy   | - Establishment of environmental strategy and policy                     |
|                                 |                                     | - Environmental strategy and policy establishment with process appropriateness |
|                                 | Environmental organization culture  | - Providing information and communication programs to improve environmental awareness |
|                                 |                                     | - Environmental education and appropriateness                           |
|                                 | Environmental organization system   | - Presence of environmental management practice organization             |
|                                 |                                     | - Decision-making organization for environmental management            |
|                                 | Goals and planning                  | - Establishment of short-, mid-, and long-term environmental targets    |
|                                 |                                     | - Specificity of detailed plan                                         |
| Environmental accounting       | Environment accounting              | - Level of application of environmental accounting information and system construction |
|                                 |                                     | - Linkage with internal management system                              |
| Environmental performance management | Environment performance management | - Establishment of environmental performance evaluation system and enhancement of implementation |
|                                 |                                     | - Linkage with internal performance evaluation system                  |
| Environmental audit            |                                     | - Performing environmental audits                                       |
|                                 |                                     | - Environmental Management System (EMS) Certification                   |
Table A1. Cont.

| Category | Division | Section |
|----------|----------|---------|
|          |          | • Use of green purchasing policy/guidelines and enhancement of implementation  
|          |          | • Supplier support system and environmental performance evaluation management system  
| Environmental Management Activities | Supply chain management |          |
|          | Clean production system | • Water, energy, and raw materials’ usage management and reduction activities  
|          |          | • Waste management and abatement activities  
|          |          | • Eco-friendly product/service design activity  
|          | Environmental risk management | • Response to environmental laws, accidents, and regulations  
|          |          | • Hazardous chemical management activities  
|          |          | • GHG reduction activities  
| Environmental Performance | Resources | • Water saving and reuse performance  
|          |          | • Waste reduction and recycling performance  
|          | Climate change | • Energy saving and GHG reduction performance  
|          | Coping with environmental pollution and regulation | • Major air/water pollutant management performance  
|          |          | • Reduction of harmful chemical substances  
|          |          | • Disclosure of violations of environmental regulations and follow-up management  
|          | Eco-friendly products and services | • Sales and purchasing of eco-friendly products and services  
|          |          | • Green certification  
| Responses to Stakeholders | Environmental Report | • Availability and appropriateness of environmental information  
|          |          | • External verification to ensure reliability of environmental information  
|          | Activities for stakeholders | • Communication with key stakeholders  
|          |          | • Activities to preserve community environment  
|          |          | • Solidarity with external initiatives to preserve the environment  

Table A2. Social (S) rating evaluation criteria.

| Category | Division | Section |
|----------|----------|---------|
| Employees | Employment and working conditions | • Employment stabilization policy  
|          |          | • Welfare benefit level  
|          | Labor relations | • Labor-management council performance  
|          |          | • Average turnover rate  
|          | Safety and health at work | • Establishment of safety and health policy for workers  
|          |          | • Average industrial accident rate disclosure  
|          | Workforce development and support | • Employee education and training policy and retirement support system  
|          |          | • Annual education and training expenses  
|          | Basic rights in the workplace | • Prohibition of forced labor, prohibition of child labor, prohibition of discrimination policy  
|          |          | • Employment rate of women and the disabled  

### Table A2. Cont.

| Category Division | Section |
|-------------------|---------|
| Partners and Competitors | Establishment of fair-trade policy for suppliers |
| | Establishment of fair-trade activation policy for competitors |
| | Conduct fair-trade-related education |
| Anti-corruption | Establishment of internal principles to prevent corruption in dealings with suppliers |
| | Corruption prevention organization |
| | Conducting ethics education |
| Promoting social responsibility | Evaluate suppliers’ human rights and ethical management level when selecting suppliers |
| | Regular monitoring of human rights and ethics management at suppliers |
| | Technical and funding programs for suppliers |
| Consumers | Establishment of fair-trade principles for consumers |
| | Sanctions due to unfair contract practices |
| Fair trade with consumers | Establishment of principles of providing products and services considering consumer safety and health |
| | Acquired domestic and overseas certification for safety of products and services |
| Consumer safety and health | Establishment of consumer privacy management policy |
| | Conducted education on consumer privacy protection for employees |
| Consumer privacy | Establishment of policies to enhance customer satisfaction |
| | Consumer complaint-handling performance |
| Communication with consumers | Introduction of communication channels with local residents |
| Community | Establishment of policies for community development |
| | Community support programs (health, education, etc.) |
| Community involvement | Establishment of local supplier preferential care policy |
| | Establishment of local resident priority employment policy |
| Regional economic development | Protection of Shareholders’ Rights |
| | Introduction of corporate governance charter and employee ethics regulations |
| | Introduction of concentrated voting system, written voting system, and electronic voting system |
| | Introduction of fundamental defensive measures against hostile M & A |
| | Status of exercise minority shareholder rights |
| | Provision of related information prior to the annual shareholders’ meeting |
| Ownership structure | Total shareholding ratio of a major shareholder and related parties |
| | Total shareholding ratio of registered officers |
| | Total shareholding ratio of affiliated companies |
| Transaction with related parties | Transaction performance with a major shareholder and related parties |
| | Transaction performance with affiliated companies |
Table A3. Cont.

| Category          | Division                                      | Section                                                                 |
|-------------------|-----------------------------------------------|------------------------------------------------------------------------|
| Board of Directors| Form of the BOD                               | • Status of outside directors within the BOD                            |
|                    |                                               | • Separation of the CEO and Chairman of the BOD                        |
|                    |                                               | • Committee of recommendation for outside directors, status of committee of compensation |
|                    | Operation, evaluation and compensation of the BOD | • Activities and evaluation results of the BOD and the committee within the BOD |
|                    |                                               | • Activities and evaluation results of outside directors              |
|                    |                                               | • Stock bonus to registered officers                                   |
| Disclosure         | General disclosure                            | • IR performance and prior notice                                      |
|                    |                                               | • Voluntary, correction, inquiry, and post-closing disclosure           |
|                    |                                               | • Business performance and forecast information such as operating income |
|                    |                                               | • Concurrent status of outside directors                               |
|                    | Homepage disclosure                           | • BOD and the committee within the BOD                                 |
|                    |                                               | • Sales reports and occasional disclosure                              |
|                    |                                               | • Differences from the corporate governance best practices and ratings |
|                    |                                               | • Remuneration of individual registered officers                       |
| Audit Function     | Audit function                                | • Form of audit organization                                           |
|                    |                                               | • Existence of an independent audit department to support the audit organization |
|                    |                                               | • Constitution, personnel, and operation status of audit committee     |
|                    |                                               | • Non-audit service status of external auditor                        |
|                    |                                               | • Establish provision of protection of whistleblower and transparency management system for transactions with affiliated companies|
| Dividend Payment   | Dividend Payment                              | • Dividend yield and dividend payout trend over the past three years   |
|                    |                                               | • Interim and quarter dividend payments                                |

Source: Korea Corporate Governance Service (www.cgs.or.kr).

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