Agency Conflicts, Ownership Structure, and Corporate Social Responsibility[†]

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Abstract

This study examines the effect of a firm's ownership structure on its corporate social responsibility (CSR). Using firms that belong to Korean business groups, chaebols, as a sample and their ES ratings to measure CSR, we find a positive relationship between control-ownership disparity (i.e., a divergence between voting and cash-flow rights of controlling shareholders) and ES performance, especially social performance. Additionally, we show that when control-ownership disparities increase due to mergers between other affiliated firms, ES ratings rise significantly. Moreover, we find that firms controlled by descendants are more likely to exhibit higher levels of CSR compared to firms controlled by founders. Our results support the agency view of CSR, which suggests that CSR investment is associated with controlling shareholders' incentives to pursue their own private benefits at the expense of minority shareholders.

JEL classification: G32, G34, M14

Keywords: Corporate Social Responsibility, Ownership Structure, Control-Ownership Disparity, Agency Conflicts, Business Groups

1. Introduction

In the recent decade, market participants' interests in environmental and social (ES) performance have surged in the global capital market. For example, a growing number of firms publish sustainability reports and engage in corporate social responsibility (CSR) activities to enhance their reputation among stakeholders and influence customers' purchase intentions (Brammer and Millington, 2005; Brammer and Pavelin, 2006; Servaes and Tamayo, 2013; Albuquerque, Koskinen, and Zhang, 2019; Bianchi and Bruno, 2019). In particular, the recent COVID-19 pandemic-induced market crash has substantially increased market interest in and demand for CSR (Albuquerque, Koskinen, Yang, and Zhang, 2020; Bae, El Ghoul, Gong, and Guedhami, 2021). According to the Global Sustainable Investment Review (GSIA) in 2020, global sustainable investing assets nearly tripled between 2012 and 2020, from 13.3 trillion dollars to 35.3 trillion dollars. In addition, Governance and Accountability Institute (G&A) reports that 96% of S&P 500 firms published sustainability reports in 2021, while less than 20% of those disclosed information about their ES performance and related issues in 2011.[1]

However, debates on why firms make ES investments are still inconclusive, and particularly, there are two opposing views on how agency conflicts relate to CSR. Several studies attempt to explore the dark side of CSR activities and argue that firms tend to engage in CSR activities as a result of agency conflicts and that managers can pursue their own incentives by investing in CSR at the expense of shareholders, increasing incentive conflicts with their shareholders (Benabou and Tirole, 2010; Cheng, Hong, and Shue, 2013; Di Giuli and Kostovetsky, 2014; Masulis and Reza, 2015). Consistent with this view, for example, Di Giuli and Kostovetsky (2014) find that Democratic-leaning firms with Democratic founders, managers, and directors or headquartered in Democratic-leaning states tend to have higher CSR ratings and larger CSR spending without enhanced sales and performance. Additionally, Masulis and Reza (2015) show that corporate giving is negatively associated with firms'

[1] G&A is a consulting and research organization that helps companies improve their ES and sustainability reporting and profiles. G&A has built a comprehensive database of sustainability reporting since 2011.

market valuation, CEO ownership, and corporate governance quality and positively associated with CEO charity preferences.

In contrast, several other studies suggest that well-governed firms exhibit a higher propensity to engage in CSR. For instance, Ferrell, Liang, and Renneboog (2016) find that firms with lower cash holdings, stronger shareholder protection, and a lower control-ownership disparity are more likely to be socially responsible. Liang and Renneboog (2017) use international data to show that countries with better shareholder protection tend to have higher CSR scores. Kook and Kang (2011) examine data from Korean firms and report similar results. They show that firms with higher scores of shareholder rights protection, indicating better corporate governance, have higher CSR scores. Choi, Jo, Kim, and Kim (2018) show that there is a negative relationship between ownership disparity and CSR.[2]

This study attempts to distinguish between these two opposing views by investigating the effects of a firm's ownership structure on its CSR. Specifically, to capture the incentives of controlling shareholders regarding CSR and agency conflicts between controlling and minority shareholders, we use their control-ownership disparity, which is a divergence between the voting rights and cash-flow rights of controlling shareholders and serves as our key variable. Prior studies often employ the control-ownership disparity of controlling shareholders to estimate the effects of their incentives to expropriate other minority shareholders and stakeholders. For example, Claessens, Djankov, and Lang (2002), Lemmon and Lins (2003), and Baek, Kang, and Park (2004) show that firm value falls more when controlling shareholders have higher voting power than cash flow ownership during the East Asian financial crisis. Lin, Ma, Malatesta, and Xuan (2011) find that the costs of debt is higher for firms with a higher ownership-control disparity of controlling shareholders than for those with a lower disparity,

[2] Our results are different from those documented in Choi et al. (2018), which may be attributable to the following. First, they use the ASSET4 database to collect CSR information and admit that since the coverage of ASSET4 of Korean firms is limited, a sample selection bias may exist. Their use of ASSET4 results in a relatively small sample that consists of 549 firm-years of which 389 are chaebol-affiliated from 2002 to 2015. We use the Korea Institute of Corporate Governance and Sustainability (KCGS) dataset, which is widely used to find the CSR information of Korean firms (Wee, Kang, and Lee, 2022). Second, while their study includes government-owned firms in the sample of chaebol-affiliated firms, we exclude them to focus on the effects of private incentives of controlling shareholders on CSR.

suggesting creditors' concerns about potential expropriation by controlling shareholders.

Since ES investments tend to incur the short-term costs to firms, if controlling shareholders focus more on the short-term expenses of CSR rather than its potential long-term benefits which are relatively uncertain and hard to quantify, they are likely to have incentives to pursue CSR more when they bear lower ES investment costs. Therefore, controlling shareholders would be reluctant to spend their firms' resources when they have higher cash-flow rights, while they are more likely to invest in CSR in case their own cost bearing is smaller due to their lower cash-flow rights, consistent with Masulis and Reza (2015) who show that corporate giving is negatively associated with CEO share ownership. We also expect that the negative association between cash-flow rights of controlling shareholders and ES investments is stronger when they have higher control power by higher voting rights, leading to increasing effects of their control-ownership disparity on CSR.

However, if firms with better governance and lower agency conflicts pursue CSR policies more actively, we can expect those with a higher control-ownership disparity of controlling shareholders to invest less in CSR policies. To the extent that the control-ownership disparity of controlling shareholders is a proper measure of agency conflicts between controlling and minority shareholders, controlling shareholders with excessive control relative to their ownership are more likely to spend corporate resources for their own benefits rather than for the benefits of stakeholders.

This study uses firms that belong to Korean business groups, chaebols, as a sample because of their several advantages in exploring how ownership structure affects CSR. First, chaebols are well known to have excessive agency conflicts. In particular, their controlling shareholders tend to have strong incentives to maximize their own benefits at the expense of other minority shareholders and stakeholders (Bae, Kang, and Kim, 2002; Baek, Kang, and Lee, 2006), providing an ideal testing ground to examine how incentive conflicts arising from ownership structure influence firms' CSR policies. Moreover, a wide divergence between controlling shareholders' voting and cash-flow rights is common in firms affiliated with chaebols since their controlling shareholders frequently control all the member firms by indirect shareholdings through firms affiliated by pyramid ownership structure and circular

shareholdings. Second, since Korean Fair Trade Commission requires both public and private chaebol member firms to disclose detailed information including their ownership structure, the exact ownership structure data necessary to identify controlling shareholders' voting and cash-flow rights are publicly available for chaebol affiliated firms.

Third, the capital market participants in Korea such as pension funds, institutional investors, and retail investors have increased their focus on CSR, thereby increasing the pressure on controlling shareholders of chaebols to expand ES investments.[3] In particular, there has been a remarkable surge in ESG awareness and investments since the stewardship codes were initially adopted and the National Pension Service (NPS) in Korea participated in those in 2016 and 2018, respectively.[4] According to Sustinvest, the volume of ESG investments increased from 2.40 trillion won in 2010 to 7.25 trillion won in 2017 and further to 138.27 trillion won in 2021. Figure 1 shows the evolution of ESG investments by Korean pension funds, including the National Pension Service (NPS), Teachers' Pension, Government Employees' Pension, Korea Post, Public Officials Benefit Association (POBA), from 2010 to 2021.[5] Domestic pension funds' ESG investments have grown substantially over time.

(Insert Figure 1 here)

Moreover, Figure 2 presents the Google Trends search results of "ESG", which reflect the level of public interest in ESG. The numbers in this figure represent the level of interests relative to the highest point recorded during the given time, with a score of 100 representing the ESG term's peak popularity. In recent years, there has been a substantial surge in public interest in ESG issues. As shown in Figure 1, the noticeable increase in public interests coincides with the period when the scale of ESG investment by domestic funds begins to expand. This trend is attributable to the growing awareness and recognition

[3] Noh (2022) reports that investors in the Korean stock market are actively promoting ESG management of firms through various investment instruments such as private equity funds.
[4] NPS started ESG investments with socially responsible investment (SRI) funds in 2006 and has recently become the largest institutional investor in SRI (Jun, 2016). NPS plays an important role in ESG investing, mainly after adopting the stewardship codes in July 2018.
[5] Sustinvest is a consulting and research organization that provides ESG assessment information and fund management strategies to institutional clients.

of the importance of ESG issues.

(Insert Figure 2 here)

This study investigates how a firm's ownership structure is associated with its ES performance, using a dataset of nonfinancial chaebol-affiliated firms listed on the Korea Stock Exchange (KSE) from 2011 to 2021. The main sample comprises 2,046 firm-year observations. Measuring CSR by a firm's ES ratings, we find a positive and significant relationship between controlling shareholders' control-ownership disparity and CSR. Moreover, we find that firms have higher CSR when their controlling shareholders hold lower cash-flow rights. When we separate ES ratings into environmental (E) and social (S) ratings, our findings indicate that the CSR increasing effects of the control-ownership disparity of controlling shareholders are mainly derived from firms' S performance rather than their E performance. A higher ES score indicates a higher level of CSR activities and a greater magnitude of related investments (Kook and Kang, 2011). Thus, the results from our main sample are in line with the agency view, indicating that controlling shareholders tend to expropriate minority shareholders by spending more resources on ES policies to earn their own social reputation or networks when they bear limited costs with strong controls.

In our second set of results, we pay significant attention to potential endogeneity concerns in our main results. Since how actively firms invest in ES policies is an endogenous choice, our main results are subject to concerns of biased estimation. As an attempt to mitigate these concerns, we capture changes in controlling shareholders' cash-flow rights and control-ownership disparity by mergers between other affiliated firms within the same chaebol. If there is a merger between affiliated firms and if the bidder or target firms hold shares in the focal firm before the merger or the focal firm owns pre-merger shareholdings in bidder or target firms in the merger, voting and cash-flow rights of controlling shareholders in the focal firm are subject to changes due to the merger. To the extent that mergers between other affiliated firms do not aim to change ES policies in the focal firm, we argue that the changes made in cash-flow rights and the control-ownership disparity of controlling shareholders in the focal firm are likely to be exogenous to its CSR.

Using a sub-sample of 94 firms, which own or are owned by bidder or target firms in mergers between affiliated firms in the same chaebol, we find that the ES ratings of these firms significantly decline when the control-ownership disparity of controlling shareholders decreases after the mergers. When we split this sub-sample into firms that own the affiliated firms in mergers and those that are owned by the merged affiliated firms, the results are more pronounced in the latter firms. These results confirm our prior results that agency conflicts between controlling and minority shareholders increase ES investments, thereby reducing endogeneity concerns in our main findings.

Next, we employ the pyramid layer and position variables, which quantify the ownership distance between the controlling family of a business group and their affiliated firms, as alternative measures of the incentives of controlling shareholders. We find that the farther away the firm is from the controlling shareholder regarding ownership structure, the higher its CSR performance, further supporting the agency view of CSR. Moreover, we investigate whether the effects of controlling ownership on CSR vary across generations of controlling families. Villalonga and Amit (2006) find that firm value is lower when firms are managed by descendant CEOs than when managed by founders as CEOs or board chairs. Classifying our sample firms by generations of controlling families, we find that chaebol groups have higher ES ratings when they are controlled by descendant controlling families than controlled by founders. Moreover, when we divide descendant families into second generation and third or higher generation families, the CSR increasing effects are stronger for the latter generation families. Further, these results support the agency view regarding CSR, to the extent that agency conflicts increase with controlling family generation in chaebol firms.

Finally, we examine recent changes in the effects of ownership structure on CSR, particularly after 2017. In Korea, most institutional and retail investors paid little attention to ES investments until National Pension Service (NPS) in Korea participated in the stewardship codes in July 2018. Since the interests of many institutional and retail investors in ES investments rapidly increase in Korean capital markets in more recent years after 2017, controlling shareholders in chaebols would feel increasing pressures to make ES investments. Especially, chaebol firms, which are more visible firms than non-

chaebol firms, face greater public scrutiny and are more cognizant of the importance of customer awareness and positive reputation building.[6] Therefore, we conjecture that ES investments have increased recently for all the chaebol firms including those with higher cash-flow rights of controlling shareholders. Consistent with our expectation, we find that the increasing effects of cash-flow rights and control-ownership disparity on CSR substantially mitigate after 2019.

Our study relates to the following lines of literature. First, this study contributes to the literature on the agency view regarding CSR, which contends that ES investments by firms are the result of agency problems. For example, Di Giuli and Kostovetsky (2014) show that firms managed by Democratic-leaning executives have higher CSR ratings, but their ES investments do not increase sales and performance. Cronqvist and Yu (2017) also find that firms with CEOs who have daughters are more likely to have higher CSR ratings. Masulis and Reza (2015) show that corporate donations are influenced by managers' individual preferences and interests and are unfavorably valued by the stock market. Kim, Pae, and Yoo (2019) also find that public firms make more corporate charitable contributions than private firms, especially for chaebol affiliated firms, implying that corporate giving by chaebols benefits their controlling shareholders who tend to hold larger ownership in private affiliates. This study extends this stream of literature by showing that chaebol affiliated firms with greater cash-flow rights of controlling shareholders are less likely to invest in CSR.

Second, this research relates to studies that examine how the separation between control and cash-flow rights affects firm value and policies. Prior studies show that firms with higher control-ownership disparity of controlling shareholders have poorer performance during the East Asian financial crisis (Claessens et al., 2002; Mitton, 2002; Lemmon and Lins, 2003; Baek et al., 2004) and lower costs of debt (Lin et al., 2011). Moreover, Kang, Lee, and Na (2010) show that business group affiliated firms

[6] Firms that attract more media attention, such as listed and multinational companies, are often under pressure to demonstrate their commitment to CSR to enhance their corporate reputation (Garcia-Sanchez, Cuadrado-Ballesteros, and Sepulveda, 2014). Moreover, chaebols are likely to adopt more strategic approaches when it comes to investing in CSR initiatives due to the spillover effect of reputation among affiliates (Choi, Han, and Kwon, 2019).

with higher control-ownership disparity of controlling shareholders have a lower likelihood of restructuring actions and lower market reactions to restructuring announcements. Our study adds to this line of literature by showing that a divergence between voting and cash-flow rights of controlling shareholders increases investments in CSR policies.

This paper proceeds as follows. Section 2 develops our hypothesis. In section 3, we describe our data and main variables. In section 4, we present our empirical results regarding the impact of ownership structure on CSR. Section 5 summarizes our results and concludes.

2. Hypothesis development

Prior studies attempt to examine the relationship between ownership structure and CSR. Using international data, Ferrell et al. (2016) show that well-governed firms are more likely to be socially responsible by finding a positive relationship between CSR and good governance such as low cash holdings, high performance-based compensation, strong shareholder protection, and low ownership disparity. Liang and Renneboog (2017) also use international data and show that countries with superior shareholder protection have higher CSR scores. Kook and Kang (2011) examine the relationship between governance and CSR using Korean data and find that firms with higher shareholder rights protection scores (i.e., better corporate governance) have higher CSR scores. Choi et al. (2018) find a negative relationship between ownership disparity and CSR, suggesting the insurance role of CSR in enhancing a company's reputation and mitigating negative events. These studies emphasize the importance of good corporate governance and strong shareholder protection in promoting CSR engagement.

On the other hand, other studies find that CSR is viewed as an activity that potentially wastes a company's resources against the interests of shareholders. For example, CEOs may engage in CSR initiatives to maximize their own personal reputation or social networks, serving their own interests (B'enabou and Tirole, 2010; Masulis and Reza, 2015). In addition, Masulis and Reza (2015) find that

charitable donations are positively related to the CEO's preferences for charitable activities and suggest that CEOs with lower ownership stakes and firms with weak governance are more likely to engage in charitable giving, particularly nonprofit organizations that associated with the CEO. They argue that the CEO's pursuit of personal interests drives corporate donations, and such donations may involve the misuse of company resources. Di Giuli and Kostovetsky (2014) suggest that firms with democratic founders or CEOs tend to invest more in CSR and receive higher CSR scores, especially in Democratic-leaning states. However, they find that the costs of CSR investments may not be recouped through subsequent revenue increases and can have negative relationships with long-term stock returns and operating performances. They argue that CSR investments are driven by the preferences of the management and incurred as costs. Moreover, Kim et al. (2019) find that listed firms and chaebol firms in Korea engage more in social donations than other firms, suggesting that the high levels of donations by listed companies with a high ownership disparity are involved with tunneling practices. According to the agency view of CSR, controlling shareholders use their strong voting rights to expropriate minority shareholders by initiating CSR projects that benefit themselves (Ferrell et al., 2016).

Therefore, managers in firms with poor governance are more likely to pursue CSR activities for their own interests (Beltratti, 2005). It is well known that corporate governance is poor in Korean firms, especially in those affiliated with chaebols (Bae et al., 2002; Baek et al., 2004; Kim and Yi, 2006). In particular, since controlling shareholders in chaebols tend to exert excessive control despite their limited cash-flow rights, they are more likely to invest in ES policies for their private benefits by expropriating minority shareholders. Therefore, in the context of the agency view of CSR, we predict that CSR investment as a response to agency costs will be more active in chaebol firms compared to non-chaebol firms and further hypothesize a positive relationship between control-ownership disparity and ES performance of Chaebol firms.

3. Data and measurement

3.1 Sample

We use firms affiliated with Korean business groups, chaebols, as a sample. According to the Korea Fair Trade Commission (KFTC) classification, a chaebol is a group of firms in which the group's controlling shareholders, their relatives, and its affiliated companies own more than 30% of shares or those in which its controlling shareholders are deemed to have a dominant influence over their management. Each year, KFTC appoints a list of chaebols subject to strict regulations. Business groups above a certain size threshold (i.e., total assets worth 5 trillion Korean won since 2009) are legally required to report their detailed information, including their ownership structure, annually to the KFTC.

Our study utilizes a panel dataset of nonfinancial chaebol-affiliated firms listed on the Korea Exchange (KRX) from 2011 to 2021, with available environmental (E) and social (S) ratings. Our main sample comprises 2,046 firm-year observations. To focus on the agency conflicts from the ownership structure of chaebol-affiliated firms, we exclude government owned groups and firms that do not have ownership held by controlling families. We obtain Chaebol information and ownership structure data from KFTC Portal, Data Analysis, Retrieval and Transfer System (DART), and AICG Large Business Group DB provided by the Asian Institute of Corporate Governance (AICG) at Korea University Business School. We obtain financial data of the sample firms from the DataGuide and TS2000 databases.

For CSR data, we use ESG data from Korea Institute of Corporate Governance and Sustainability (KCGS), which provides environmental, social, and governance ratings and scores of publicly traded firms in Korea. In this data, each component's score, such as environmental (E) and social (S) scores, is continuous and varies from 0 to 100. To analyze the effect of ownership structure on a firm's ES performance, we define ES Score as the average of E and S scores divided by 100. Thus, ES Scores range from 0 to 1 in our analyses.

3.2 Control-ownership disparity measurement

We aim to analyze the effect of the ownership structures of a chaebol firm on its CSR performance. Many studies employ cash-flow rights and voting rights as a measure of controlling shareholders' incentives to expropriate minority shareholders and employ the control-ownership disparity to estimate agency conflicts between controlling and minority shareholders (Bae et al., 2002; Claessens et al., 2002; Lemmon and Lins, 2003; Baek et al., 2004; Baek et al., 2006; Lin et al., 2011). Ferrell et al. (2016) also use ownership disparity to investigate the incentives of controlling shareholders towards CSR and agency conflicts between controlling and minority shareholders. Thus, we use the control-ownership disparity, which is defined as a divergence between voting rights and cash-flow rights of controlling shareholders, as a proxy for agency problems.

A company's ownership structure is determined to a large extent by its founders or controlling shareholders (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 2002). Conflicts of interest and moral hazards may arise when controlling shareholders possess higher voting rights than cash-flow rights. The agency conflicts from the misalignment of interests can be particularly salient in the context of CSR decisions since controlling shareholders play an important role in promoting CSR. By quantifying the control-ownership disparity, we attempt to gain insights into the potential impact of agency problems on CSR.

To measure the voting rights and cash-flow rights, we follow Kim, Lim, and Sung (2007). When estimating these variables, we use common shares only and exclude treasury shares.

Voting rights are defined as the sum of direct share ownership held by the controlling shareholder and its related parties. The voting rights for the firm i can be defined as follows:

$$Voting\ rights_i = d_i + r_i + \sum_{j=1}^{n} S_{ij} \quad (1)$$

where d_i is the direct share ownership held by the controlling shareholder in the firm i and r_i is the direct share ownership held by relatives, non-profit organizations, and managers under the controlling shareholders' influence in firm i. S_{ij} is the direct share ownership held by the affiliated firm j in firm i, which is under the controlling shareholder's influence. The number of firms under

the controlling shareholder's influence is denoted by n.

Cash flow rights are defined as the sum of direct and indirect share ownership held by the controlling shareholder and her family. The cash flow rights of firm i can be defined as follows:

$$Cashflow\ rights_i = (I - S)^{-1}(d + f) \quad (2)$$

where N is the number of firms in a business group and I is the $(N \times N)$ matrix of those N firms. S is the $(N \times N)$ matrix of share ownership of for-profit firms in other for-profit firms. d and f is $(N \times 1)$ vectors of direct share ownership held by the controlling shareholder and her relatives, respectively.

In this paper, we use two control-ownership disparity measures. We define Disparity1 variable as the difference between voting rights and cash-flow rights of controlling shareholders (Kim et al., 2007) and Disparity2 variable is defined as the logarithm of the ratio of voting rights to cash-flow rights of controlling shareholders (Bae, Baek, Kang, and Liu, 2012). The disparity measures for firm *i* can be defined as follows:

$$Disparity1_i = Voting\ rights_i - Cashflow\ rights_i \quad (3)$$

$$Disparity2_i = Log(Voting\ rights_i / Cashflow\ rights_i) \quad (4)$$

3.3 Other variables

We control for several variables that could potentially affect ES Score. To control for this possibility that large, profitable, and cash-rich companies are more likely than others to invest in CSR, we include a natural logarithm of a firm's total assets. We measure leverage as the sum of long-term debt and debt in current liabilities divided by total assets, ROA as the firm's return on total assets, cash holdings as cash and marketable securities divided by total assets, and Tobin's Q as the firm's market value of assets divided by the book value of assets. We control for firm age, which is calculated by the number of years

since the firm's founding year, and include a KOSPI firm indicator, which is set to be one if the firm is listed on the KOSPI market and zero otherwise, to control for the difference between stock exchanges. Old and KOSPI market listed firms may be more stable and afford to invest in CSR. In addition, we control for advertising intensity and R&D intensity, defined as the ratios of advertising expenditure to total sales and R&D expenditure to total sales, respectively. Appendix A provides a detailed description of the employed variables. All the regression models use industry fixed effects which are defined using the three-digit SIC codes. The sample distribution by industry using one-digit KSIC codes is provided in Appendix B.[7]

3.4 Summary statistics

Table 1 represents descriptive statistics of CSR measures and control variables employed in our analysis. First, the mean and median ES scores are 0.4254 and 0.398, respectively, and the mean (median) E and S scores are 0.4251 (0.445) and 0.4257 (0.382), respectively. Second, the mean (median) voting rights and cash-flow rights are 0.453 (0.434) and 0.231 (0.185), respectively. The mean difference between voting rights and cash-flow rights, Disparity 1, is measured as 0.223 and the mean of Disparity2, which is defined as the logarithm of the ratio of the voting rights to the cash-flow rights of controlling shareholders, is 0.984. We find that chaebol firms have a unique characteristic in ownership structure compared to Ferrell et al. (2016), who use international data to examine the effect of governance on CSR and report that the mean of the controlling ownership is 0.22, the controlling shareholder's voting rights is 0.236, and the difference between voting and cash-flow rights is 0.017 on average. Thus, the control-ownership disparity appears to be much larger for Korean chaebol-affiliated firms than for the sample firms in Ferrell et al. (2016). Finally, we show that most of our sample firms (86.4%) are included in the KOSPI stock market and present the descriptive statistics of all control variables.

[7] In our sample, half of the firms are included in the manufacturing industry (48.14%). Firms in the industry of wholesale and retail trade, and those in professional, scientific, and technical activities are next with fractions of 11.93% and 11.19%, respectively.

Accounting variables are winsorized at the 1% level of both tails of the distribution to mitigate the effects of outliers.

(Insert Table 1 here)

4. Empirical results

4.1 Control-ownership disparity

In this section, we examine the relationship between CSR and control-ownership disparity using the sample of 2,046 chaebol firm-year observations. According to the agency view of CSR, controlling shareholders have incentives to exploit minority shareholders by using their majority voting rights to foster CSR projects that primarily serve their own interests, suggesting a positive relationship between control-ownership disparity and CSR ratings. (Ferrell et al., 2016). However, if well-governed firms tend to maximize their value by value-enhancing CSR projects, we anticipate that the control-ownership disparity negatively relates to CSR scores. To distinguish these two opposing predictions, in Table 2, we estimate the following regression:

$$CSR_{i,t} = \beta_0 + \beta_1 Disparity_{i,t} + \Sigma\beta_k Control\ Variables_{i,t} + Year\ dummies + Industry\ dummies + \varepsilon_{i,t} \quad (5)$$

where the dependent variable is CSR score, including ES score, E score, and S score of the firm *i* in year *t*. All specifications include year and industry indicators that are defined using the three-digit KSIC codes.

Table 2 shows the panel regression estimates of ES scores on control-ownership disparity and other characteristics. As the dependent variables, we use ES score in columns (1) and (2), E score in columns (3) and (4), and S score in columns (5) and (6). As key explanatory variables, we include Disparity1 in columns (1), (3), and (5) and Disparity2 in columns (2), (4), and (6).

In columns (1) and (2), the coefficients on both Disparity1 and Disparity2 on ES scores are positive

and significant at the 1% level. The coefficient of disparity in column (1) is 0.117, indicating that one standard deviation increases in ownership disparity is associated with 1.86 points higher ES scores. These positive relationships support the agency view of CSR, which suggests that CSR investment can be related to the controlling shareholder's potential expropriation of minority shareholders and their tendency to engage in greenwashing practices. Similar results are also observed in the analysis of individual environmental and social scores. When we employ E score as the dependent variable, the coefficient estimates are positive and significant at the 10% and 5% levels in columns (3) and (4), respectively. In columns (5) and (6), there is a strong positive relationship between ownership disparity and S score and the magnitude and significance level of the estimates on the disparity variables increase. Combined with the strategic utilization of corporate charitable contributions as a channel of tunneling by business groups (Kim et al., 2019), this study reveals a tendency for business group firms with control-ownership disparity to focus on increasing social ratings relative to environmental ratings. For control variables, the positive coefficients on Firm size and KOSPI indicator suggest that larger and more stable companies are more likely to engage in CSR. R&D intensity also has a positive effect on CSR, consistent with a view that firms with more significant long-horizon investments tend to make CSR investments more.

(Insert Table 2 here)

4.2 Voting rights and cash-flow rights

To analyze the individual effects of voting rights and cash-flow rights, in Table 3, we decompose ownership disparity into voting rights and cash-flow rights and re-estimate the relationship between these ownership variables and ES scores. Prior literature suggests that there is a negative relationship between the CEO's ownership stakes and resource consumption or donations for their personal interest (Jensen and Meckling, 1976; Masulis and Reza, 2015). Thus, we expect that there is a positive (negative) relationship between voting rights (cash-flow rights) and their ES score. We also anticipate that cash-flow rights have a stronger association with ES score than voting rights. As dependent variables, we use

ES score in columns (1) to (3), E score in column (4), and S score in column (5). In all specifications, we control for the control variables that are employed in Table 2 and year and industry fixed effects.

In Table 5, we find a negative but insignificant relationship between the control rights of controlling shareholders and the ES score in column (1), while the cash-flow rights of controlling shareholders are negatively related to the ES score at the 1% level in column (2). In column (3), we add the control and cash-flow rights of controlling shareholders together and find that the coefficient estimate on the voting rights is insignificant and that on the cash-flow rights is negative and significant. We also replace the dependent variables with E score and S score in columns (4) and (5), and find similar results, showing the coefficient on the cash-flow rights is negative and significant at the 1% level. Our results reveal no significant impact of the voting rights of controlling shareholders on CSR, whereas the cash-low rights of controlling shareholders exhibit a significant negative association with ES scores, suggesting that cash-flow rights mainly derive CSR-increasing effects of the control-ownership disparity.

(Insert Table 3 here)

4.3 Mergers between affiliated firms

To further examine the impact of control-ownership disparity on ES Score, we employ mergers between affiliates as events that can influence the ownership structure of chaebol firms. Because mergers between affiliated firms within the same business group make changes in the ownership structure of the acquirer and target firm, these mergers are expected to make changes in the control-ownership disparity of other firms that are connected with the bidder and the target through ownership structure in the same group. However, since it is less likely that such mergers occur by a motivation to affect CSR of other affiliates, we argue that mergers between affiliates are likely to be an exogenous shock to the CSR of chaebol firms. That is, the changes in control-ownership disparity resulting from these mergers between affiliated firms can be viewed as exogenous shocks to the ES policies of the third-party firms, especially

those that hold shares of merging firms or those whose shares are held by merging firms, in the same chaebol.

Therefore, we explore whether changes in control-ownership disparity caused by mergers between affiliates affect ES score changes between before and after mergers. Based on our hypothesis under the agency view, we anticipate that chaebol firms experiencing an increase (decrease) in the control-ownership disparity after the mergers between affiliates experience an increase (decrease) in their ES scores. Through this analysis, we aim to gain a clearer understanding regarding the effect of ownership structure on CSR.

We manually collect the market disclosure information of mergers between chaebol-affiliated firms within the same chaebol group from the Data Analysis, Retrieval, and Transfer System (DART) operated by Financial Supervisory Service. Only completed mergers are included in our sample and changes in ownership structure are measured before and after the merger based on the deal completion date. Our final merger sample consists of 53 mergers between affiliates between 2011 and 2020. We also identify 94 affiliated firms that have stock ownership in the acquirers/targets or whose shares are owned by the acquirers/targets, excluding the acquirers from the sample.[8] Thus, we investigate the effect of changes in control-ownership disparity on the CSR of firms that experience mergers of affiliated firms that hold the sample firm's shares or of which the sample firm holds shares.

We define Decreased Disparity as an indicator variable of ownership changes, which takes a value of one if a firm experiences a decrease in control-ownership disparity after a merger of affiliated firms, and zero otherwise. The control-ownership disparity is defined as the difference between voting rights and cash-flow rights of controlling shareholders. Similarly, we define Decreased Voting Rights and Decreased Cash-flow Rights as an indicator variable set equal to one if a firm's voting rights and cash-flow rights decline after a merger between affiliates, and zero otherwise, respectively. By employing

8 Target firms are excluded because they become a part of acquirers after mergers.

these measures, we aim to examine the relationship between changes in ownership structure and changes in CSR performance between before and after mergers between affiliates.

Table 4 presents the regression estimates of ES score changes by affiliated firms' mergers on changes in control-ownership disparity, voting rights, and cash-flow rights. As our variables of interest, we use Decreased Disparity in Panel A and use Decreased Voting Rights and Decreased Cash-Flow Rights in Panel B. All control variables are winsorized at both the 1st and 99th percentiles of their distribution and industry fixed effects are defined using one-digit KSIC codes.[9] The robust standard errors are clustered at the firm level. In columns (1) to (4), we use the dependent variable as the change in ES score between before and after the mergers between affiliates. The first two columns include year and industry fixed effects, and the next two columns include merger fixed effects. In columns (5) and (6), we use changes in E Score and S Score, respectively, as dependent variables and include year and industry fixed effects.

In column (1) of Panel A, our results show that Decreased Disparity has a negative relationship with the change in ES score. This result suggests that firms experiencing decreased control-ownership disparity after mergers between affiliates have lower ES Scores compared to firms that are not experiencing control-ownership disparity reduction after such mergers. In column (2), including all control variables, we find that the coefficient on Decreased Disparity is still negative and significant at the 10% level. When we replace year and industry fixed effects with merger fixed effects, we again find similar results in columns (3) and (4). In columns (5) and (6), the coefficient on the change in E score is negative but statistically insignificant, while the coefficient on the change in S score is negative and significant at the 10% level. Thus, we again find that ownership disparity changes significantly affect the S score rather than E Score.

[9] We use one-digit KSIC code to define fixed effects because the number of observations is not high enough to apply two-digit KSIC codes which are employed in our main analysis.

In Panel B of Table 5, we use Decreased Voting Rights and Decreased Cash-Flow Rights indicators together and find that the coefficients on Decreased Cash-Flow Rights are significantly positive when we include year and industry fixed effects. However, Decreased Voting Rights are insignificant in all the columns, suggesting that changes in cash-flow rights of controlling shareholders mainly derive the CSR-increasing effects of control-ownership disparity. Overall, we find that the ES scores of firms significantly decline when their control-ownership disparity decreases by mergers between affiliates, consistent with our main findings in Tables 2 and 3.

(Insert Table 4 here)

In Table 5, we divide the sample based on whether firms' shares are owned by merging firms or they own shares of merging firms and conduct the sub-sample analysis by repeating the regression of Panel A in Table 5. Panel A includes 47 firms whose shares are owned by the acquirer or target firms. We expect that the ownership structure of those firms is highly affected by mergers between affiliates. The results show that all the coefficients on Decreased Disparity are negative, and in four columns except for columns (2) and (6) they are statistically significant. Panel B consists of 54 firms that own shares of the acquirer or target firms before mergers. The coefficients on Decreased Disparity are negative and statistically significant at the 10% level in columns (2) and (6) only. These results confirm our prior findings that agency conflicts between controlling and minority shareholders increase ES investments, mitigating potential endogeneity concerns in our results.

(Insert Table 5 here)

4.4 Pyramid layer and position

Prior literature uses the ownership distance between a business group's controlling family and its affiliated firms as a proxy for agency problems. First, we define Pyramid Layer 1 as the number of layers of firms that exist between the ultimate controlling shareholder and an affiliated firm (Masulis, Pham, and Zein, 2011). We measure the shortest controlling chain in the case of multiple chains. For

example, Pyramid Layer 1 has the value of 1 if the controlling family directly owns Firm A, 2 if the controlling family indirectly owns Firm B through Firm A, 3 if the controlling family indirectly owns Firm C through Firms A and B, and so forth. We also use Pyramid Layer 2, which counts the number of layers in the longest controlling chain in the case of multiple chains (Fan, Wong, and Zhang, 2013; Gama and Bandeira-de-Mello, 2021). Lastly, we measure Position as the weighted average of layer numbers between the controlling family and the affiliated firm using the proportion of cash-flow rights contributed by each path of a layer as a weight (Almeida, Park, Subrahmanyam, and Wolfenzon, 2011).

Figure 3 presents a simple example that is illustrated in Almeida et al. (2011). The controlling family directly owns 40% of Firm 1. In the case of Firm 2, the controlling family holds 10% ownership directly and Firm 1 owns 50% of shares in this firm. Thus, the cash-flow rights of controlling shareholders in Firm 1 is 40% and those of Firm 2 is 30% (= 0.1 + 0.4×0.5).

Due to the fact that Firm 1 has only one chain leading to this firm, its Position is as follows:

$$Position_1 = \frac{0.4}{0.4} \times 1 = 1 \quad (6)$$

Firm 2 has two ownership chains. One is direct 10% ownership of the controlling family and the other is 20% cash-flow rights of controlling shareholders through Firm 1, therefor the Position value is calculated as follows:

$$Position_2 = \frac{0.1}{0.3} \times 1 + \frac{0.2}{0.3} \times 2 = 1.7 \quad (7)$$

If we compute the pyramid layers for this example, Pyramid Layer 1 has a value of 1 in both Firm 1 and Firm 2, because they have direct ownership of the controlling family. For Pyramid layer 2, Firm 1 has a value of 1 (Controlling Family → Firm 1), while Firm 2 has a value of 2 (Controlling Family → Firm 1 → Firm 2) since we count the number of layers in the longest chain.

(Insert Figure 3 here)

Table 6 presents the panel regression estimates of the ES Score on Pyramid Layer/Position and other firm characteristics. All the presented specifications in Table 6 include all control variables

included in Table 2. In columns (1) to (6), we find positive and significant associations between Pyramid Layers and ES Scores, expect column (2). Our results show that Position is significantly and positively related to S Score in column (9). Therefore, the farther away the firm is from the controlling shareholder in the ownership structure, the more it invests in CSR. Thus, positive coefficients on Pyramid Layers or Position support the agency view. In addition, our results reverify that the positive relationships between ES ratings and CSR are mainly derived from the firms' S performance rather than their E performance.

(Insert Table 6 here)

4.5 Family generations

We use the family generations of controlling shareholders of Chaebols as another proxy variable for agency problems. Prior studies report that a founder-CEO and a descendant-CEO can have different impacts on firm value (Morck, Shleifer, and Vishny, 1988; Villalonga and Amit, 2006). Villalonga and Amit (2006) find that agency problems vary depending on whether the family CEO is a founder or a descendant. They show that firm value is destroyed when family descendants serve as CEOs rather than founder CEOs. Thus, we anticipate the differential effects of different generations of controlling families on ES performance, and the agency problem is expected to be greater for later generations of controlling families.

In this section, we examine whether the level of ES performance varies across family generations of controlling shareholders who involve in management. Table 7 presents the sample distribution by year and generation of controlling families in chaebol firms. Among 2,046 samples, the founder generation family exerts control in 395 (19.3%) firms. We also find that the second-generation family controls 1,234 (60.3%) sample firms and the firms controlled by the third and fourth generation families are 380 (18.6%) and 37 (1.8%), respectively.

(Insert Table 7 here)

Table 8 presents the panel regression estimates of ES score on the generations of controlling

families and other firm characteristics. All specifications include the same control variables as those in Table 2. In columns (1) to (3), using the continuous variable of controlling family generations, we find positive associations between the generations of controlling families and ES Score and S Score. These results suggest that chaebol firms with descendant-controlling families rather than founders have higher ES ratings. In columns (4) to (6), we use generation indicators that represent the generation of each controlling shareholder. If the current controlling shareholder is in the second generation of the controlling family, the Second Generation equal is set to one and zero otherwise. Similarly, the Third & Fourth Generation is equal to one if the current controlling shareholder is in the third or fourth generation of the controlling family, and zero otherwise. Due to the limited sample size and the relatively recent emergence of the fourth generation of chaebol family members from 2019, as shown in Table 7, we combine the third and fourth generations into a single dummy variable.

In column (4) that uses ES score as the dependent variable, the coefficient on Second Generation is positive and significant at the 10% level and that on the Third & Fourth Generation is also positive and significant at the 5% level. We also find a significant and positive relationship between the generation indicators and S score in column (6). Further, we conduct tests of difference in coefficient estimates between Second Generation and Third & Fourth Generations in column (6) and find that the difference is statistically significant at the 5% level. Thus, this result indicates that ES scores increase as management controls are inherited by the descendants of controlling families. Our findings support the agency perspective on CSR to the extent that agency conflicts increase with generations of controlling families in chaebols. Furthermore, we shed light on the influence of generational shifts on management dynamics and potential agency conflicts over the implementation of ES policies.

(Insert Table 8 here)

4.6 ES Score and control-ownership disparity in recent trends

The rise in interests and engagement of market participants in ESG investing can derive a shift toward a more sustainable and responsible approach to capital markets. As shown in Figures 1 and 2, there has

been a remarkable surge in ESG awareness and investment in Korea since 2017. In addition, the Korean government recently announced regulations to further promote ESG practices and disclosure. For example, from 2025, firms listed on the KOSPI market with assets exceeding 2 trillion won will be required to include E and S information in their sustainability reports, and this will enhance reporting on sustainable management practices. By 2030, this requirement will apply to all KOSPI-listed firms. Overall, these developments in ESG investing and regulatory requirements demonstrate a growing emphasis on sustainable and responsible business practices and represent a positive trajectory towards a more sustainable and ESG-oriented market environment. Thus, controlling shareholders in chaebols would face increasing pressures on ES investments. We expect that ES investments for all chaebol firms, including those with high cash-flow rights of controlling shareholders, have increased in recent years.

To recognize the significance of the recent trends and shed light on the evolving landscape of ESG investments, we examine recent changes in the effects of ownership structure on CSR, particularly after 2017. Table 9 presents panel regression estimates of ES score on the interaction between control-ownership disparity and indicators for later years in the sample period and other firm characteristics. Each year indicator is set equal to one if the firm-year observation is in the particular year, and zero otherwise. The coefficient on the interaction term between control-ownership disparity and year dummies captures the differential impact of disparity on ES Score from year to year, after controlling for the firm's characteristics and the industry' average ES score (industry fixed effects) over the entire period. In column (1) of Table 9, our findings reveal that there is a decreasing trend in the effects of control-ownership disparity on ES investments. We find that in 2020 and 2021, the positive relationships between control-ownership disparity and ES Score significantly decrease. Although the coefficients on the interaction terms between control-ownership disparity and the indicators for 2018 and 2019 are not statistically significant, their signs are negative. Therefore, consistent with our expectation, we find that the increasing effects of control-ownership disparity on CSR substantially mitigate after 2019. This

suggests that the influence of agency problems on ES investment reduces over time. [10] We also find similar results in column (2) when we use E score as the dependent variable, while column (3) represents that the social score is still highly related to the control-ownership disparity in recent years. Overall, our results suggest that although ES investment is driven by agency problems, the growing attention towards ES management increasingly leads many companies to actively participate in ES investment, irrespective of their agency problems. This result indicates a possibility that factors other than the agency problem contributes to the recent increase in the ES investment. Moreover, the increasing prominence of ES investments is expected to lead to a continuous rise in more authentic and genuine CSR policies in the future.

(Insert Table 9 here)

5. Conclusion

Our study investigates how a chaebol firm's ownership structure is associated with corporate social responsibility (CSR) measured by its ES ratings. We find a positive relationship between control-ownership disparity and ES performance, particularly S performance. Consistent with the agency view, our results suggest that controlling shareholders are more likely to actively participate in CSR activities as a strategic approach to enhance their social reputation or networks, particularly when they bear limited costs due to their limited cash-flow rights. These findings remain robust after addressing potential endogeneity concerns. We find that changes in control-ownership disparity resulting from mergers between affiliated firms in the same group have a significant impact on CSR scores.

Moreover, we use other proxy variables for measuring agency conflicts such as Pyramid Layers and Position, which measure the ownership distance between the controlling family of a business group

10 According to our unreported results, when we employ voting rights and cash flow rights together instead of control-ownership disparity, we find significantly positive coefficients and negative coefficients on cash-flow rights and voting rights, respectively. Further, we find positive and significant coefficients when we employ the Position variable.

and affiliated firms. We find that the more distantly the firm is owned by its controlling shareholders, the higher its CSR performance. Our study also explores the influence of controlling family generations on CSR. We observe that chaebol firms controlled by descendant controlling families exhibit higher CSR ratings than those controlled by founders. Additionally, the effects are more pronounced for third-generation or higher-generation families, indicating that agency conflicts increase as the number of controlling family generations increases. However, the results of recent trends analysis reveal that the impact of control-ownership disparity on CSR gradually diminishes after 2019, suggesting a diminishing role of agency problems in deriving CSR investments, possibly due to the increasing ES awareness and initiatives.

Overall, our research highlights the potential influence of agency problems on CSR investments in chaebol firms, suggesting that CSR investment is related to controlling shareholders' incentives to pursue their own private incentives at the expense of minority shareholders. This study contributes to the literature on the agency view of CSR and highlights that ownership structure is an important determinant of CSR investments.

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Figure 1. Domestic Pension Funds: ESG Investment Trend

This figure shows the evolution of ESG investments in Korean pension funds from 2010 to 2021. This includes such as National Pension Service, Teachers' Pension, Government Employee's Pension, Korea Post, and Public Officials Benefit Association (POBA).

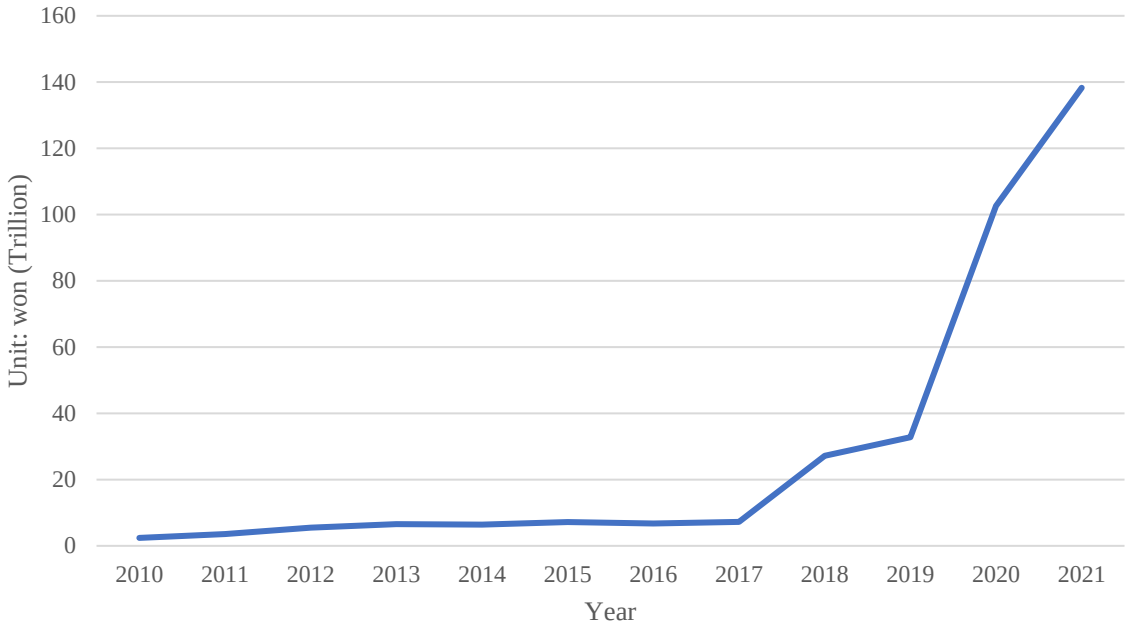

Figure 2. Google Trend Scores for ESG

This figure presents the scores of Google trend that reflect the degree of interests in the searched term "ESG". The highest and lowest degrees of searched interests are represented by 100 and 0, respectively.

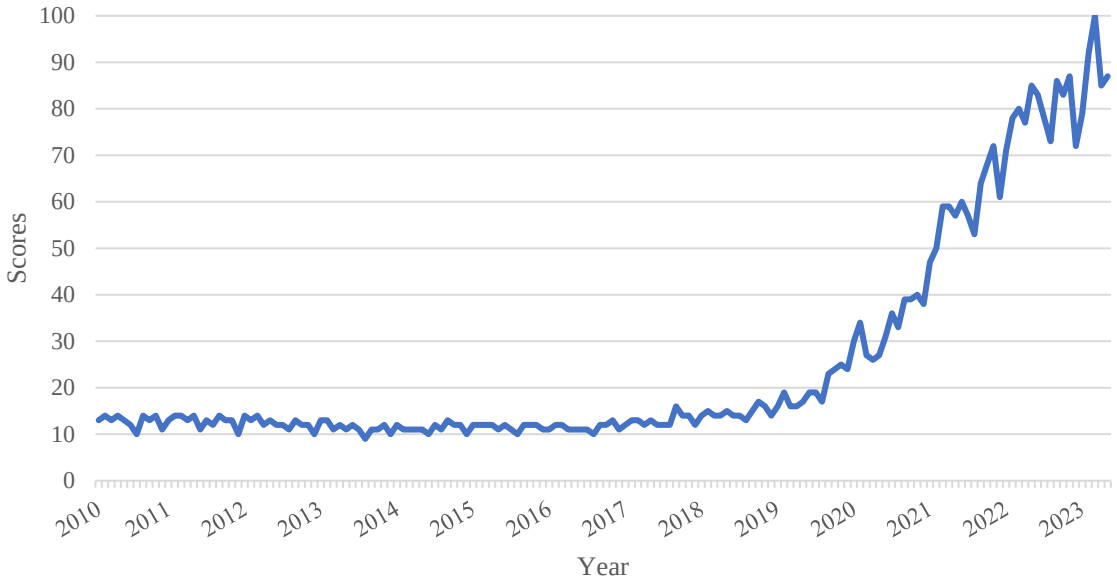

Figure 3. Ownership Structure of a Simple Group

This figure describes a simple example of a firm which is illustrated in Almeida, Park, Subrahmanyam, and Wolfenzon (2011). The controlling family directly owns 40% of Firm 1. In the case of Firm 2, the controlling family owns 10% directly and Firm 1 owns a 50% share in this firm.

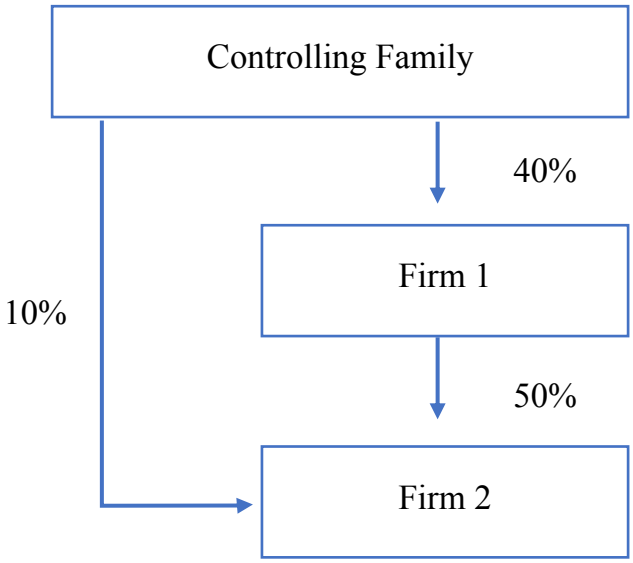

Table 1 Descriptive Statistics

This table presents summary statistics for the sample, which consists of 2,046 non-financial chaebol firm-years from 2011 to 2021. The sample firms are required to belong to a business group, chaebol, to be listed on Korea Exchange (KRX), and to have their environmental (E) and social (S) ratings. ES Score is the average score of a firm's environmental (E) and social (S) scores and ranges from 0 to 1. Accounting variables are winsorized at both the 1st and 99th percentiles of their distributions. Appendix A defines all the variables used.

Variables	N	Mean	SD	25%	Median	75%
ES variables:						
ES Score	2,046	0.4254	0.217	0.253	0.398	0.599
E Score	2,046	0.4251	0.248	0.231	0.445	0.630
S Score	2,046	0.4257	0.219	0.249	0.382	0.597
Governance variables:						
Voting rights	2,046	0.453	0.164	0.335	0.434	0.565
Cash-flow Rights	2,046	0.231	0.177	0.095	0.185	0.340
Disparity1	2,046	0.223	0.159	0.087	0.219	0.330
Disparity2	2,046	0.984	0.907	0.218	0.866	1.478
Pyramid layer1	2,046	1.400	0.606	1.000	1.000	2.000
Pyramid layer2	2,046	3.613	3.016	2.000	3.000	4.000
Position	2,046	1.941	0.768	1.246	1.995	2.375
Control variables:						
Firm Size	2,046	28.137	1.519	27.016	28.141	29.209
Leverage	2,046	0.200	0.155	0.069	0.177	0.295
ROA	2,046	0.023	0.061	0.004	0.026	0.053
Cash Holdings	2,046	0.057	0.062	0.014	0.037	0.077
Tobin's Q	2,046	1.243	0.799	0.823	1.018	1.344
Firm age	2,046	36.854	19.767	20.000	38.000	51.000
Advertising	2,046	0.011	0.027	0.000	0.001	0.009
R&D	2,046	0.016	0.033	0.000	0.003	0.015
KOSPI	2,046	0.864	0.343	1.000	1.000	1.000

Table 2 Regression Estimates of ES Score on Control-Ownership Disparity

This table presents the panel regression estimates of the ES Score on control-ownership disparity and other firm characteristics. The sample consists of 2,046 non-financial chaebol firm-years that are listed on Korea Exchange (KRX) and have environmental (E) and social (S) ratings from 2011 to 2021. ES Score is the average of E and S scores and ranges from 0 to 1. All control variables are winsorized at both the 1st and 99th percentiles of their distribution. All specifications include year dummies and industry dummies that are defined using the three-digit KSIC codes. Appendix A defines all the variables used. The standard errors are adjusted for heteroskedasticity, clustered at the firm level, and reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% level, respectively.

Variables	ES Score		E Score		S Score	
	(1)	(2)	(3)	(4)	(5)	(6)
Disparity1	0.117***		0.087*		0.148***	
	(0.044)		(0.052)		(0.045)	
Disparity2		0.023***		0.016**		0.030***
		(0.006)		(0.007)		(0.007)
Firm Size	0.083***	0.081***	0.077***	0.075***	0.089***	0.086***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.006)	(0.006)
Leverage	0.144***	0.154***	0.200***	0.206***	0.089*	0.101**
	(0.048)	(0.048)	(0.054)	(0.054)	(0.050)	(0.049)
ROA	0.031	0.032	0.071	0.070	-0.009	-0.006
	(0.071)	(0.074)	(0.088)	(0.090)	(0.079)	(0.082)
Cash Holdings	0.141*	0.127	0.132	0.124	0.149*	0.129
	(0.081)	(0.080)	(0.096)	(0.095)	(0.089)	(0.089)
Tobin's Q	0.019*	0.018*	0.017	0.016	0.021	0.020
	(0.011)	(0.011)	(0.012)	(0.011)	(0.013)	(0.013)
Firm age	0.001	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Advertising	0.178	0.205	-0.269	-0.252	0.625**	0.661**
	(0.300)	(0.303)	(0.349)	(0.353)	(0.311)	(0.314)
R&D	0.541**	0.485**	0.541**	0.503*	0.541**	0.468**
	(0.230)	(0.226)	(0.262)	(0.260)	(0.237)	(0.231)
KOSPI	0.067***	0.065***	0.047*	0.046*	0.087***	0.084***
	(0.022)	(0.022)	(0.025)	(0.025)	(0.023)	(0.023)
Constant	-2.219***	-2.146***	-2.044***	-1.988***	-2.394***	-2.304***
	(0.155)	(0.152)	(0.191)	(0.191)	(0.159)	(0.151)
Year Fixed Effects	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES
Observations	2,046	2,046	2,046	2,046	2,046	2,046
Adjusted R-squared	0.653	0.654	0.636	0.636	0.593	0.596

Table 3 Regression Estimates of ES Score on Voting and Cash-flow Rights

This table presents panel regression estimates of the ES Score on voting and cash-flow rights of controlling shareholders and other firm characteristics. The sample consists of 2,046 non-financial chaebol firm-years that are listed on Korea Exchange (KRX) and have environmental (E) and social (S) ratings from 2011 to 2021. ES Score is the average of E and S scores and ranges from 0 to 1. All control variables are winsorized at both the 1st and 99th percentiles of their distribution. All specifications include year dummies and industry dummies that are defined using the three-digit KSIC codes. Appendix A defines all the variables used. The standard errors are adjusted for heteroskedasticity, clustered at the firm level, and reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% level, respectively.

Variables	ES Score			E Score	S Score
	(1)	(2)	(3)	(4)	(5)
Voting rights	-0.055		0.044	0.007	0.080
	(0.043)		(0.050)	(0.057)	(0.052)
Cash-flow rights		-0.158***	-0.180***	-0.155***	-0.205***
		(0.039)	(0.048)	(0.057)	(0.052)
Firm Size	0.078***	0.079***	0.080***	0.074***	0.086***
	(0.006)	(0.006)	(0.006)	(0.008)	(0.006)
Leverage	0.140***	0.139***	0.140***	0.195***	0.085*
	(0.048)	(0.048)	(0.048)	(0.053)	(0.050)
ROA	0.003	0.025	0.031	0.071	-0.009
	(0.077)	(0.073)	(0.072)	(0.088)	(0.080)
Cash Holdings	0.173**	0.130*	0.124	0.114	0.134
	(0.082)	(0.078)	(0.079)	(0.093)	(0.088)
Tobin's Q	0.019*	0.017	0.017	0.015	0.020
	(0.011)	(0.011)	(0.011)	(0.011)	(0.013)
Firm age	0.001	0.001	0.001	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Advertising	0.159	0.191	0.194	-0.251	0.640**
	(0.300)	(0.303)	(0.303)	(0.350)	(0.317)
R&D	0.490**	0.403*	0.423*	0.413	0.432*
	(0.232)	(0.229)	(0.229)	(0.261)	(0.235)
KOSPI	0.068***	0.067***	0.066***	0.047*	0.086***
	(0.022)	(0.021)	(0.021)	(0.024)	(0.022)
Constant	-2.033***	-2.031***	-2.082***	-1.896***	-2.268***
	(0.174)	(0.158)	(0.168)	(0.206)	(0.172)
Year Fixed Effects	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES
Observations	2,046	2,046	2,046	2,046	2,046
Adjusted R-squared	0.649	0.657	0.658	0.640	0.598

Table 4 Regression Estimates of ES Score Changes on Control-Ownership Disparity Changes

This table presents the cross-sectional regression estimates of change in the ES Score on Decreased Disparity. This table presents regression estimates of ES Score changes by affiliated firms' mergers on changes in controlling shareholders' control-ownership disparity and voting and cash-flow rights. The sample consists of 94 chaebol firms that experience mergers of their affiliated firms that hold the sample firm's shares or of which the sample firm holds shares. Decreased Disparity takes a value of one if a firm experiences a decrease in the control-ownership disparity of controlling shareholders after mergers of affiliated firms, and zero otherwise. Decreased Voting rights and Decreased Cash-flow rights are set equal to one if a firm's voting rights and cash-flow rights decrease, and zero otherwise, respectively. Disparity is defined as the difference between voting rights and cash-flow rights of controlling shareholders. ES Score is the average of environmental (E) and social (S) scores and ranges from 0 to 1. All control variables are winsorized at both the 1st and 99th percentiles of their distribution. Industry fixed effects are defined using one-digit KSIC codes. Appendix A defines all the variables used. The standard errors are adjusted for heteroskedasticity, clustered at the firm level, and reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Control-Ownership Disparity

Variables	Δ ES Score				Δ E Score	Δ S Score
	(1)	(2)	(3)	(4)	(5)	(6)
Decreased Disparity	-0.050*	-0.066*	-0.071**	-0.079*	-0.048	-0.084*
	(0.028)	(0.033)	(0.035)	(0.045)	(0.032)	(0.044)
Firm Size		0.002		-0.007	-0.033**	0.019
		(0.011)		(0.016)	(0.014)	(0.015)
Leverage		-0.052		-0.059	-0.130	0.096
		(0.119)		(0.162)	(0.140)	(0.165)
ROA		-0.098		-0.226	-0.302	0.227
		(0.279)		(0.434)	(0.360)	(0.355)
Cash Holdings		-0.557		-0.561	-0.785*	-1.020*
		(0.480)		(0.551)	(0.445)	(0.575)
Tobin's Q		0.101**		0.065	0.107***	0.116*
		(0.044)		(0.051)	(0.032)	(0.066)
Firm age		0.001		-0.000	0.000	0.000
		(0.001)		(0.001)	(0.001)	(0.001)
Advertising		0.029		-0.337	-0.659	0.145
		(0.309)		(0.375)	(0.480)	(0.427)
R&D		-0.533		-0.228	-0.274	-0.429
		(0.618)		(0.786)	(0.533)	(0.989)
KOSPI		-0.091		-0.126	-0.066	-0.110
		(0.120)		(0.114)	(0.075)	(0.159)
Constant	0.157***	0.096	0.075***	0.391	1.035**	-0.369
	(0.041)	(0.288)	(0.023)	(0.417)	(0.387)	(0.396)
Year Fixed Effects	YES	YES	No	No	YES	YES
Industry Fixed Effects	YES	YES	No	No	YES	YES
Merger Fixed Effects	No	No	YES	YES	No	No
Observations	94	94	94	94	94	94
Adjusted R-squared	0.381	0.373	0.576	0.584	0.398	0.298

Panel B: Voting Rights and Cash-flow Rights

Variables	Δ ES Score				Δ E Score	Δ S Score
	(1)	(2)	(3)	(4)	(5)	(6)
Decreased Voting rights	0.015	0.004	-0.002	0.004	-0.031	-0.051
	(0.022)	(0.026)	(0.030)	(0.036)	(0.026)	(0.032)
Decreased Cash-flow	0.090***	0.090**	0.065	0.032	0.062*	0.121**
	(0.031)	(0.037)	(0.046)	(0.049)	(0.034)	(0.050)
Control Variables	No	YES	No	YES	YES	YES
Year Fixed Effects	YES	YES	No	No	YES	YES
Industry Fixed Effects	YES	YES	No	No	YES	YES
Merger Fixed Effects	No	No	YES	YES	No	No
Observations	94	94	94	94	94	94
Adjusted R-squared	0.444	0.410	0.529	0.518	0.403	0.401

Table 5 Regression Estimates of ES Score Changes on Control-Ownership Disparity Changes: sub-sample analyses

This table presents regression estimates of ES Score changes by affiliated firms' mergers on changes in controlling shareholders' control-ownership disparity and voting and cash-flow rights. The sample consists of 94 chaebol firms that experience mergers of their affiliated firms that hold the sample firm's shares in Panel A or of which the sample firm holds shares in Panel B. Decreased Disparity takes a value of one if a firm experiences a decrease in control-ownership disparity of controlling shareholders after mergers of affiliated firms, and zero otherwise. Decreased Voting rights and Decreased Cash-flow rights are set equal to one if a firm's voting rights and cash-flow rights decrease, and zero otherwise, respectively. ES Score is the average of environmental (E) and social (S) scores and ranges from 0 to 1. All control variables are winsorized at both the 1st and 99th percentiles of their distribution. Industry fixed effects are defined using the one-digit KSIC codes. Appendix A defines all the variables used. The standard errors are adjusted for heteroskedasticity, clustered at the firm level, and reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% level, respectively.

Panel A: Firms Owned by Acquirers or Targets

Variables	Δ ES Score				Δ E Score	Δ S Score
	(1)	(2)	(3)	(4)	(5)	(6)
Decreased Disparity	-0.072*	-0.073	-0.102**	-0.129*	-0.084*	-0.062
	(0.042)	(0.062)	(0.047)	(0.062)	(0.045)	(0.092)
Firm Size		-0.003		0.021	-0.022*	0.017
		(0.018)		(0.019)	(0.012)	(0.027)
Leverage		-0.030		0.170	-0.147	0.087
		(0.193)		(0.213)	(0.178)	(0.298)
ROA		0.648		0.812	0.224	1.072
		(0.547)		(0.565)	(0.473)	(0.714)
Cash Holdings		-0.673		0.230	-0.710	-0.637
		(0.714)		(0.750)	(0.588)	(1.036)
Tobin's Q		-0.004		0.006	0.059	-0.066
		(0.083)		(0.056)	(0.083)	(0.107)
Firm age		-0.001		-0.004*	-0.000	-0.001
		(0.001)		(0.002)	(0.001)	(0.002)
Advertising		-0.147		0.273	-0.728	0.434
		(0.678)		(1.427)	(0.587)	(1.181)
R&D		-0.564		-0.795	-0.237	-0.891
		(0.804)		(0.956)	(0.642)	(1.208)
KOSPI		-0.203**		-0.289***	-0.151**	-0.256*
		(0.091)		(0.083)	(0.060)	(0.142)
Constant	0.189***	0.529	0.099***	-0.141	0.944**	0.113
	(0.056)	(0.442)	(0.035)	(0.443)	(0.353)	(0.660)
Year Fixed Effects	YES	YES	No	No	YES	YES
Industry Fixed Effects	YES	YES	No	No	YES	YES
Merger Fixed Effects	No	No	YES	YES	No	No
Observations	47	47	47	47	47	47
Adjusted R-squared	0.424	0.463	0.514	0.591	0.545	0.285

Panel B: Firms that Own Acquirers or Targets

Variables	Δ ES Score				Δ E Score	Δ S Score
	(1)	(2)	(3)	(4)	(5)	(6)
Decreased Disparity	-0.049	-0.113*	-0.062	-0.049	-0.090	-0.136*
	(0.045)	(0.059)	(0.047)	(0.057)	(0.058)	(0.069)
Firm Size		-0.005		0.005	-0.006	-0.004
		(0.021)		(0.025)	(0.027)	(0.021)
Leverage		0.236		-0.076	0.083	0.389
		(0.190)		(0.320)	(0.188)	(0.240)
ROA		-0.161		-0.774	-0.761**	0.440
		(0.268)		(0.764)	(0.330)	(0.425)
Cash Holdings		-0.323		-0.374	0.414	-1.060
		(0.959)		(0.653)	(1.168)	(0.941)
Tobin's Q		0.254**		0.185	0.143	0.365**
		(0.123)		(0.147)	(0.114)	(0.142)
Firm age		0.002		0.002	0.002	0.001
		(0.001)		(0.001)	(0.001)	(0.001)
Advertising		0.391		0.305	0.442	0.340
		(0.367)		(0.613)	(0.484)	(0.374)
R&D		0.067		1.008	-0.673	0.807
		(0.970)		(1.182)	(1.271)	(1.067)
KOSPI		0.310***		0.139	0.138	0.481***
		(0.089)		(0.101)	(0.121)	(0.119)
Constant	0.117**	-0.378	0.066**	-0.479	-0.063	-0.693
	(0.049)	(0.532)	(0.025)	(0.753)	(0.672)	(0.567)
Year Fixed Effects	YES	YES	No	No	YES	YES
Industry Fixed Effects	YES	YES	No	No	YES	YES
Merger Fixed Effects	No	No	YES	YES	No	No
Observations	54	54	54	54	54	54
Adjusted R-squared	0.236	0.442	0.776	0.852	0.315	0.508

Table 6 Regression Estimates of ES Score on Pyramid Layer and Position

This table presents panel regression estimates of ES Score on the pyramid layer or position, and other firm characteristics. The sample consists of 2,046 non-financial chaebol firm-years that are listed on Korea Exchange and have environmental (E) and social (S) ratings from 2011 to 2021. ES Score is the average of E and S scores and ranges from 0 to 1. All control variables are winsorized at both the 1st and 99th percentiles of their distribution. All specifications include year dummies and industry dummies that are defined using the three-digit KSIC codes. Appendix A defines all the variables used. The standard errors are adjusted for heteroskedasticity, clustered at the firm level, and reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% level, respectively.

Variables	ES Score	E Score	S Score	ES Score	E Score	S Score	ES Score	E Score	S Score
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Pyramid layer1	0.022**	0.014	0.029**						
	(0.010)	(0.013)	(0.010)						
Pyramid layer2				0.006**	0.007**	0.005**			
				(0.002)	(0.002)	(0.002)			
Position							0.010	0.001	0.019**
							(0.009)	(0.011)	(0.009)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry Fixed	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	2,046	2,046	2,046	2,046	2,046	2,046	2,046	2,046	2,046
Adjusted R-squared	0.650	0.634	0.590	0.652	0.638	0.589	0.648	0.634	0.589

Table 7 Sample Distribution by Controlling Family Generation

The sample consists of 2,046 nonfinancial chaebol observations that are listed on Korea Exchange (KRX) and have ES ratings from 2011 to 2021. This table reports the distribution of sample firms by year and generation of controlling families.

Year	First	Second	Third	Fourth	Total
2011	23(21.7%)	72(67.9%)	11(10.4%)	0(0.0%)	106
2012	37(21.8%)	108(63.5%)	25(14.7%)	0(0.0%)	170
2013	41(21.8%)	119(63.3%)	28(14.9%)	0(0.0%)	188
2014	29(16.1%)	122(67.8%)	29(16.1%)	0(0.0%)	180
2015	34(17.8%)	127(66.5%)	30(15.7%)	0(0.0%)	191
2016	43(22.8%)	115(60.8%)	31(16.4%)	0(0.0%)	189
2017	44(23.0%)	118(61.8%)	29(15.2%)	0(0.0%)	191
2018	32(16.8%)	114(59.7%)	45(23.6%)	0(0.0%)	191
2019	32(16.0%)	112(56.0%)	45(22.5%)	11(5.5%)	200
2020	41(18.6%)	124(56.1%)	43(19.5%)	13(5.9%)	221
2021	39(17.8%)	103(47.0%)	64(29.2%)	13(5.9%)	219
Total	395(19.3%)	1,234(60.3%)	380(18.6%)	37(1.8%)	2,046

Table 8 Regression Estimates of ES Score on Controlling Family Generations

This table presents panel regression estimates of the ES Score on the generations of controlling families and other firm characteristics. The sample consists of 2,046 non-financial chaebol observations that are listed on Korea Exchange and have environmental (E) and social (S) ratings from 2011 to 2021. ES Score is the average of E and S scores and ranges from 0 to 1. Second Generation (Third & Fourth Generations) is (are) set equal to one if the current controlling shareholder is in the second generation (third or fourth generations) of the controlling family, and zero otherwise. All control variables are winsorized at both the 1st and 99th percentiles of their distribution. All specifications include year dummies and industry dummies that are defined using the three-digit KSIC codes. Appendix A defines all the variables used. The standard errors are adjusted for heteroskedasticity, clustered at the firm level, and reported in parentheses. P-values are reported for Test of Difference in Coefficient Estimates between Second Generation and Third & Fourth Generations. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% level, respectively.

Variables	ES Score	E Score	S Score	ES Score	E Score	S Score
	(1)	(2)	(3)	(4)	(5)	(6)
Generation	0.023**	0.012	0.034***			
	(0.010)	(0.012)	(0.011)			
Second Generation (A)				0.033*	0.030	0.037**
				(0.018)	(0.020)	(0.018)
Third & Fourth Generations (B)				0.055**	0.034	0.076***
				(0.022)	(0.024)	(0.023)
Test of Difference in Coefficient Estimates between (A) and (B)				0.189	0.836	0.030**
Control Variables	YES	YES	YES	YES	YES	YES
Year Fixed Effects	YES	YES	YES	YES	YES	YES
Industry Fixed Effects	YES	YES	YES	YES	YES	YES
Observations Effects	2,046	2,046	2,046	2,046	2,046	2,046
Adjusted R-squared	0.651	0.634	0.593	0.652	0.635	0.593

Table 9 Regression Estimates of ES Score on Control-Ownership Disparity: Recent Trends

This table presents panel regression estimates of the ES Score on the interaction between control-ownership disparity and indicators of later years in the sample period and other firm characteristics. The sample consists of 2,046 non-financial chaebol observations that are listed on Korea Exchange (KRX) and have environmental (E) and social (S) ratings from 2011 to 2021. Disparity1 is defined as the difference between voting rights and cash-flow rights of controlling shareholders. ES Score is the average of E and S scores and ranges from 0 to 1. All control variables are winsorized at both the 1st and 99th percentiles of their distribution. All specifications include year dummies and industry dummies that are defined using the three-digit KSIC codes. Appendix A defines all the variables used. The standard errors are adjusted for heteroskedasticity, clustered at the firm level, and reported in parentheses. ***, **, and * denote the statistical significance at the 1%, 5%, and 10% level, respectively.

Variables	ES Score	E Score	S Score
	(1)	(2)	(3)
Disparity1 (A)	0.155***	0.133**	0.177***
	(0.045)	(0.053)	(0.048)
(A) × Year2018	-0.035	-0.052	-0.018
	(0.059)	(0.065)	(0.069)
(A) × Year2019	-0.037	-0.028	-0.045
	(0.055)	(0.065)	(0.061)
(A) × Year2020	-0.131**	-0.181**	-0.081
	(0.060)	(0.072)	(0.064)
(A) × Year2021	-0.167*	-0.200**	-0.133
	(0.087)	(0.101)	(0.090)
Year2018	-0.034**	-0.041**	-0.027
	(0.016)	(0.017)	(0.020)
Year2019	-0.050***	-0.094***	-0.007
	(0.017)	(0.020)	(0.019)
Year2020	0.010	-0.022	0.041**
	(0.017)	(0.020)	(0.019)
Year2021	0.093***	0.058**	0.128***
	(0.024)	(0.027)	(0.024)
Control Variables	YES	YES	YES
Industry Fixed Effects	YES	YES	YES
Observations	2,046	2,046	2,046
Adjusted R-squared	0.606	0.594	0.552

Appendix A. Variable definitions

This table provides detailed definitions of the variables used in this study.

Variables	Description
ES Score	Average of environmental and social scores divided by 100. Environmental and social scores are continuous and range from 0 to 100.
E Score	Environmental score divided by 100. The environmental score is continuous and ranges from 0 to 100.
S Score	Social score divided by 100. Social score is continuous and ranges from 0 to 100.
Voting rights	The sum of direct share ownership held by the controlling shareholder and its related parties. (Kim, Lim, and Sung, 2007)
Cash-flow Rights	The sum of direct and indirect share ownership held by the controlling shareholder and its related parties. (Kim, Lim, and Sung, 2007)
Disparity1	Difference between voting rights and cash-flow rights of a firm's controlling shareholders.
Disparity2	Natural logarithm of the ratio of voting rights to cash-flow rights of a firm's controlling shareholders.
Pyramid Layer1	The number of layers that exist between the ultimate controlling shareholder and an affiliated firm. The number of layers in the shortest controlling chain is chosen in the case of multiple chains.
Pyramid Layer2	The number of layers that exist between the ultimate controlling shareholder and an affiliated firm. The number of layers in the longest controlling chain is chosen in the case of multiple chains
Position	The weighted average of layer numbers between the controlling family and the affiliated firm using the proportion of cash-flow rights contributed by each path of the layer as a weight. (Almeida, Park, Subrahmanyam, and Wolfenzon, 2011)
Decreased Disparity	One if a firm experiences a decrease in Disparity1 after a merger of affiliated firms, and zero otherwise.
Second Generation	One if the current controlling shareholder is in the second generation of the controlling family, and zero otherwise.
Third & Fourth Generation	One if the current controlling shareholder is in the third or fourth generation of the controlling family, and zero otherwise.
Firm Size	Natural logarithm of total assets.
Leverage	Sum of Long-term debt and Debt in current liabilities divided by total assets.
ROA	Return on total asset.
Cash Holdings	Cash and marketable securities divided by total assets.
Tobin's Q	The market value of assets over the book value of assets.
Firm age	Number of years since a firm's foundation.
Advertising	Advertising expenditure divided by sales.
R&D	R&D expenditure over sales.
KOSPI	One if a firm is listed in the KOSPI market, and zero otherwise.

Appendix B. Industry Distribution

This table reports the industry distribution of our sample firms using one-digit KSIC codes.

Industry	Full sample	
	N	%
Agriculture, forestry, and fishing	5	0.24
Manufacturing	985	48.14
Sewerage, waste management, materials recovery, and remediation activities	34	1.66
Electricity, gas, steam, and water supply	1	0.05
Construction	157	7.67
Wholesale and retail trade	244	11.93
Transportation	120	5.87
Accommodation and food service activities	10	0.49
Information and communications	198	9.68
Real estate activities, renting and leasing	6	0.29
Professional, scientific, and technical activities	229	11.19
Business facilities management and business support services	22	1.08
Education	12	0.59
Arts, sports, and recreation related services	19	0.93
Membership organizations, repair, and other personal services	4	0.2
Total	2,046	100