

Social Networks of Firms and Corporate Social Responsibility

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This study investigates whether firms are more active at corporate social responsibility when they are more connected to others. Based on social network theory, this paper hypothesizes that firms, which are centrally located in social networks, tend to be more active at corporate social responsibility. Empirical analyses show that firms' social networks are positively related with corporate social responsibility activities. Our findings are consistent with the view that a firm needs to meet the demand of various stakeholders in order to survive within a society.

Keywords: social networks, corporate social responsibility, board interlock

INTRODUCTION

This study investigates whether firms are more engaged in corporate social responsibility (CSR) activities when they are more connected to others. This study postulates that when firms are more connected to others they have a better reputation and higher legitimacy to achieve and maintain. Investment in CSR is one of the ways with which firms can build a reputation and achieve legitimacy within society (Deegan, Rankin, & Tobin, 2002). Thus, this study predicts a positive relation between firms' connectedness and firms' engagement in CSR activities.

Examining whether more connected firms are more engaged in CSR activities is important for two reasons: first, few previous studies have investigated how firms' social networks interact with the non-financial performance. Research done to date shows that more connected firms enjoy lower interest rates (Engelberg, Gao, & Parsons, 2012; Godlewski, Sanditov, & Burger-Helmchen, 2012), perform better than other firms (Hochberg, Ljungqvist, & Lu, 2007; Horton, Millo, & Serafeim, 2012), have higher stock returns (Larcker, So, & Wang, 2013), and are more active at merge and acquisition (M&A) (Renneboog & Zhao, 2014). However, no study has focused on a direct relation between firms' connectedness and non-financial performance.

Second, many researchers in accounting have explored the results of firms' CSR engagement or CSR disclosure (e.g. D. Dhaliwal, Li, Tsang, & Yang, 2014; D. S. Dhaliwal, Oliver Zhen, Tsang, & Yong George, 2011; Kim, Park, & Benson, 2012). However, few empirical studies have investigated what causes a firm

to report or disclose CSR activities. This paper provides limited evidence that firms are more engaged in CSR activities when they are more connected to other firms, because social networks are a source of reputation and legitimacy. Scrutinizing the cause of firms' CSR engagement is as meaningful as examining the result of firms' CSR engagement.

A firm may decide to spend its resources on CSR activities when it expects economic benefits from investment in CSR. For example, firms can reduce the cost of equity by voluntarily disclosing CSR activities (D. S. Dhaliwal et al., 2011). Banks are more willing to provide loans to CSR-engaged firms but charge higher interest rates for firms with CSR concerns (Goss & Roberts, 2011). Consistent with shareholder value maximization view on CSR, several studies show a positive relation between CSR activities and financial performance. Waddock and Graves (1997) show that CSR activities have a positive relationship with both current and future financial performance. Roman, Hayibor, and Agle (1999) and Margolis and Walsh (2003) review CSR-related papers and conclude that CSR activities are positively associated with financial performance. Orlitzky, Schmidt, and Rynes (2003) conduct a meta-analysis of 52 CSR-related papers and confirms a positive association between non-financial reporting and financial performance.

Unlike a shareholder value maximization perspective that firms are expected to maximize profits and in turn shareholders' wealth, stakeholder theory and legitimacy theory imply that a firm needs to meet the demands of non-shareholders too. Public pressure has been found to affect firms' CSR engagement (e.g. Deegan et al., 2002; D. Dhaliwal et al., 2014; D. S. Dhaliwal, Radhakrishnan, Tsang, & Yong George, 2012; Lanis & Richardson, 2012). The stakeholder theory predicts that firms have incentives to disclose information of CSR activities to powerful stakeholder groups, while legitimacy theory predicts that firms need to meet the demands of society as a whole (Deegan, 2002). Although these two theories provide different reasons for why firms are engaged in CSR activities, both theories agree that a firm exists within a society and thus needs to conduct social responsibilities to the extent which the society requested.

Social networks are information channels in which firms can send information to other firms and also obtain information from others. Firms centrally located within networks can take informational advantage over competitors (Ahuja, 2000; Reagans & McEvily, 2003; Van Wijk, Jansen, & Lyles, 2008). Also, a firm's social networks are a source of reputation and prestige (Larcker et al., 2013), as well-connected firms have better financial performance (Hochberg et al., 2007; Horton et al., 2012) and higher status (Podolny, 1993, 1994). Thus, more connected firms have more exposure to stakeholders and a stronger incentive to legitimize their business. This study hypothesizes that the more connected firms are more engaged in CSR activities. The association is expected to be stronger for profitable firms because firms' CSR engagement needs shareholders' approval to some extent and investment of resources. Also, the relationship is hypothesized to be stronger when the macroeconomic environment is good because firms experience fewer resource constraints. The relationship is expected to be stronger when firms have lower book-to-market ratios because a firm with higher growth opportunities is more likely to have higher information asymmetry between insiders and outsiders.

This study employs a regression model in order to investigate the association between firms' social networks and firms' CSR activities. *CSR Performance*, *CSR Strength*, and *CSR Concern* are separately employed as proxies of overall CSR performance, positive CSR performance, and negative CSR performance. Control variables on firm characteristics are mainly borrowed from Jo and Harjoto (2011) and Jo and Harjoto (2012). Firm size, R&D expenditures, leverage, ROA, book-to-market ratio, sales growth rate, capital expenditures, advertisement expenses, industry dummies, and year dummies are chosen as control variables for empirical analysis.

Overall, empirical analysis finds evidence consistent with the prediction of this study. U.S. listed firms' networks are positively associated with firms' CSR performance. Specifically, firms' connectedness has a positive relationship with both positive and negative CSR performance. However, the link between firms' networks and positive CSR performance is stronger. Thus, the overall effect on CSR performance is positive. This study finds that separate analyses on positive and negative CSR performance show higher statistical significance than analysis on combined CSR performance, suggesting that positive CSR performance and

negative CSR performance are two distinct constructs. Our findings are consistent with the view that a firm needs to meet the demand of various stakeholders in order to survive within a society.

Finally, additional tests in this study confirm the robustness of empirical findings and provide limited evidence of the causal connection between variables. Empirical analyses on dependent variables with one-year time lag provide limited evidence that firms' connection leads to firms' engagement in CSR activities. These results imply that firms' social connections provide incentives to invest in CSR activities to U.S. listed companies.

This paper makes several contributions. First, this study contributes to the literature of CSR by providing limited evidence on why a firm decides to engage in CSR activities. Second, this study contributes to the literature of social network research in the context of accounting by offering evidence that firms' board interlock networks have a relationship with non-financial performance. Finally, this study contributes to the literature of stakeholder theory by showing that a firm can use its connection to others to legitimize its business within society.

The remainder of this paper is organized as follows. Section 2 discusses the prior literature and develops hypotheses. Section 3 outlines the research design, empirical models, and measurement. Section 4 explains the data and describes the samples. Section 5 shows the main results of regression analyses. Section 6 conducts additional tests. Section 7 concludes this study.

LITERATURE REVIEW AND HYPOTHESIS

Social Networks Theory

Although research using social network theory is often criticized due to the lack of strong theory (Salancik, 1995), strength of weak ties theory (Granovetter, 1973) and structural hole theory (Ronald S. Burt, 1992) are commonly adopted to understand effects of social networks on a wide variety of phenomena in human society. Strength of weak ties theory suggests that when A and B have a mutual friend, a weak tie between A and B can transfer valuable information to each other. Based on this theory, Granovetter (1973) explains why people often find job openings through acquaintances rather than close friends. Structure hole theory argues that A knows a group B and a group C at the same time, A becomes a structural hole which bridges two otherwise separated groups. Although there is a slight difference on Granovetter (1973) and Ronald S. Burt (1992)'s views on a social network, both agree that a social network is social capital from which both an individual and an organization can benefit.

The popularity of social network analysis has increased dramatically for last decades. The number of academic publication with reference to social networks, had increased exponentially from 1970 to 2010 (Borgatti & Halgin, 2011). Researchers in management adopted social network theory to understand innovation (Obstfeld, 2005), promotion (Ronald S. Burt, 1992), and creativity (R. S. Burt, 2004). Recently, accounting and finance researchers also started to investigate the effects of social networks on accounting and finance topics. For instance, Renneboog and Zhao (2014) find that the more connected firms are the more active at bidding other firms, and Larcker et al. (2013) find that firms' social networks have positive effects on risk-adjusted stock returns. Both papers use a board interlock by independent directors as a social network tie. In specific, when two firms share one independent director in their board of directors, two firms are assumed to be connected to each other. By employing a similar approach used by Renneboog and Zhao (2014) and Larcker et al. (2013), this paper investigates the influence of firms' social networks on non-financial performance.

Accounting and finance researchers choose two types of social networks in order to understand accounting- and finance-related issues. The first one is an individual level social network. A socially well-connected individual can exploit his or her position in social networks to be promoted (Ronald S. Burt, 1992), find valuable information (Cohen, Frazzini, & Malloy, 2010), get innovative ideas (R. S. Burt, 2004), or receive higher compensation (Hwang & Kim, 2009). For instance, Cohen et al. (2010) find that stock analysts who are socially connected to senior officers outperformed on stock recommendation but the effects disappeared after the introduction of Regulation Fair Disclosure. Also, Hwang and Kim (2009) investigate CEOs' connections to independent directors and find that CEOs who are socially connected to

independent directors have higher compensation, lower performance-pay sensitivity, and lower turnover-performance sensitivity. This stream of research focuses on how individual managers use their social networks for their own benefits.

The second type of studies employs a whole firm's social networks to understand firm-level consequences. Previous research have found that firm-level social networks are negatively associated with interest rates (Engelberg et al., 2012; Godlewski et al., 2012) but positively related with stock returns (Larcker et al., 2013), firm performance (Hochberg et al., 2007; Horton et al., 2012) and the likelihood of M&As (Renneboog & Zhao, 2014). This paper belongs to the stream of the second research. Research design in this paper is similar to Larcker et al. (2013) and Renneboog and Zhao (2014). By making the firm-year-specific social network measure of U.S. listed firms via board interlocking, Larcker et al. (2013) find that a long position in the most socially connected firms with a short position in the least socially connected firms earns average annual returns of 4.68%, and Renneboog and Zhao (2014) show that better connected firms are more active at M&A with a shorter duration of negotiation.

Hypotheses Development

Economic theory often assumes that the goal of a firm is to maximize profits, and in turn shareholders' values. However, stakeholder theory asserts that a firm evolves within society and thus needs to legitimize its existence by meeting the demands from a variety of stakeholders. Also, it implies that a firm is engaged in CSR activities even in exchange of economic benefits. A firm is expected to invest more resources on CSR activities, when it has strong reputation. Linthicum, Reitenga, and Sanchez (2010) view CSR activities as a process of a firm to build and maintain its reputation. If a firm believes that reputation is intangible but valuable assets, it will engage in socially accepted activities in order to protect its reputation. Social networks of a firm is a natural source of reputation (Larcker et al., 2013), because well-connected firms have better financial performance (Hochberg et al., 2007; Horton et al., 2012), higher status (Podolny, 1993, 1994). and a higher probability of M & A (Cai & Sevilir, 2012; Renneboog & Zhao, 2014). Therefore, this paper expects that firms' social connectedness is positively associated with firms' CSR engagement. Accordingly, this paper makes a following hypothesis:

H: The more socially connected firms are the more socially responsible.

RESEARCH DESIGN

Social Networks Measures

This paper assumes that two firms are socially connected when they share a same director in their boards of directors. The approach in this paper is same as the way that Horton et al. (2012) and Larcker et al. (2013) build social networks of firms. For example, Frank Zarb has board directorships at AIG and FPL Group at the same time. Thus, AIG is board-interlocked with FPL Group. When two firms share two board members, this paper assumes there are two connections between them. Since the board directors of firms monitors corporate governance of public firms (Fama & Jensen, 1983), it seems reasonable to assume that a social network consisting of board interlocking can affect policy and strategy of a firm (Bizjak, Lemmon, & Whitby, 2009; Brown, 2011; Chiu, Teoh, & Tian, 2013; Davis, 1991; Haunschild, 1993; Rao, Davis, & Ward, 2000; Reppenhagen, 2010; Stuart & Yim, 2010). Unlike previous interlock studies, this study does not investigate the direct effects of board interlock but builds social networks by using board interlock and examines the effects of firms' position in social networks.

One critical issue in empirical research based on social network theory is measurement. Social network measurements are commonly called centrality, because more influential nodes are more centrally located in social networks when social networks are graphically presented. Following recent published papers using similar data (Larcker et al., 2013; Renneboog & Zhao, 2014), this study employs *eigenvector centrality*.

Eigenvector centrality stems from *degree centrality*. Unlike *degree centrality*, this measure takes into account not only the number of directly connected firms but also of indirectly connected firms. In others words, *eigenvector centrality* is high when connected firms have many connections, but indirect

connections do not affect *degree centrality*. The value can be calculated as eigenvector of relational matrix in which an element(i,j) is one if a firm i and a firm j share a director and otherwise zero, and when eigenvalue is largest in absolute value¹.

CSR Measures

This study uses KLD Stats database in measuring CSR performance of firms. KLD is an independent research firm which specializes in analyzing firms' CSR activities. KLD has accumulated data on CSR strengths and weaknesses for a large sample of U.S. listed companies. Many researchers employed the KLD database in CSR-related research (e.g. Deng, Kang, & Low, 2013; D. S. Dhaliwal et al., 2011; El Ghouli, Guedhami, Kwok, & Mishra, 2011; Hoi, Wu, & Zhang, 2013; Servaes & Tamayo, 2013; Waddock & Graves, 1997).

KLD has expanded its coverage over time. From 1991 to 2000, the KLD data included all the firms in the S&P 500 Index and the Domini 400 Social Index. During the period of 2001 and 2002, KLD added firms in the Russel 1000 Index into the dataset. From 2003, KLD data has covered every listed firm in U.S. stock markets.

By using a great variety of sources such as company disclosure, mass media, and non-government data, KLD makes evaluations about firms' CSR activities with seven dimensions: community, corporate governance, diversity, employee relations, environment, human rights, and product quality and safety. For each dimension, KLD makes a binary evaluation to a set of strengths and concerns. For instance, the community dimension has 5 concerns: investment controversies, negative economic impact, indigenous people relations, tax disputes, and other concern, as well as 8 strengths: charitable giving, innovative giving, Non-US charitable giving, support for housing, support for education, indigenous people relations, volunteer programs, and other strength. Each concern and strength has a value of either one or zero. Thus, the maximum score of community strength is eight, while that of community concern is five.

The number of strengths and concerns has changed over the time. For example, in 1990, community dimension had only four strengths and four concerns. However, in 2005, there were seven strengths and four concerns in community dimension. One strength out of seven has different effects from one strength out of four. In order to compare firms' CSR performance in different periods, this paper divided each year's summation of strengths (concerns) with the maximum possible number of strengths (concerns), and multiply minus one to summation of concerns score because concerns in KLD dataset means bad CSR performance. Each of seven dimensions has a CSR score which is summation of normalized strength scores and normalized concern scores.

The first proxy for CSR performance, *CSR Total*, is a mean value of CSR scores of seven dimensions. *CSR Total* ranges from -1 to 1, because each CSR score on seven dimensions has a value between -1 and 1. The higher value of *CSR Total* implies that a focal firm is more actively engaged in CSR activities, while the lower value means that a focal firm avoids CSR activities.

CSR Total is based on the assumption that CSR strength and CSR concern have same magnitude of effects if they have same magnitude in score. However, CSR strength and CSR concern may be proxies for two different constructs. Thus, this paper separates *CSR Total* into two proxies, *CSR Strength* and *CSR Concern*. Because this paper multiplied minus one to the number of concerns, the higher value indicates that firms care about CSR more than firms with lower value for both *CSR Strength* and *CSR Concern*.

Regression Model

This study employs a regression model to examine what leads firms to anticipate CSR activities. The proxy of CSR performance includes *CSR Total*, *CSR Strength*, and *CSR Concern*. A regression model includes firm characteristics control variables which are related with firms' investment decisions on CSR. Firm characteristics control variables are generally borrowed from Jo and Harjoto (2011) and Jo and Harjoto (2012). Control variables in regressions include firm size, R&D expenditures, leverage, ROA, a book-to-market ratio, sales growth rate, capital expenditures, advertisement expenses, industry dummies, and year dummies. The model tested is as follows:

$$CSR_{i,t} = \beta_0 + \beta_1 NETWORK_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 R\&D_{i,t} + \beta_4 LEV_{i,t} + \beta_5 ROA_{i,t} + \beta_6 BTM_{i,t} + \beta_7 CAPEX_{i,t} + \beta_8 GROW_{i,t} + \beta_9 AD_{i,t} + IND_DUM_i + YEAR_DUM_t$$

where:

$CSR_{i,t}$ = a proxy for firm i's engagement in CSR activities. Three proxies, *CSR Total*, *CSR Strength*, and *CSR Concern*, are separately employed in this paper.

$NETWORK_{i,t}$ = eigenvector centrality for a firm i in year t.

$SIZE_{i,t}$ = natural log of total assets for firm i at year t,

$R\&D_{i,t}$ = R&D expenditures divided by total assets for firm i at year t,

$LEV_{i,t}$ = long term debt divided by total assets for firm i at year t,

$ROA_{i,t}$ = net income divided by total assets for firm i at year t,

$CAPEX_{i,t}$ = capital expenditures divided by total assets for firm i at year t,

$GROW_{i,t}$ = sales growth measured as change in revenue from year t-1 to year t divided by revenue at year t for firm i,

$BTM_{i,t}$ = the book-to-market ratio for firm i at year t, and

$AD_{i,t}$ = advertisement expense divided by total assets for firm i at year t, and

IND_DUM_i = dummy variables based on two-digit SIC code for firm i,

$YEAR_DUM_t$ = year dummy variables for year t, and

Firm size (SIZE) is controlled because firm size captures a firm's various motivations to engage in CSR activities like public pressure or financial resources (Lang & Lundholm, 1993; Russo & Perrini, 2010; Sen & Cowley, 2013). SIZE is measured as the natural logarithm of total assets at the end of each year. Expenditures on research and development (R&D) is controlled because firms with high R&D expenditures may not have enough financial and human resources for CSR activities (Jo & Harjoto, 2011, 2012). R&D is defined as R&D spending divided by total assets for each year. A debt ratio (LEV) is also controlled because debtholders play monitoring roles and ask higher disclosure (Leftwich, Watts, & Zimmerman, 1981). LEV is defined as a ratio of long-term debt to total assets. Firms which perform better than other are more likely to have more resources for CSR activities (D. S. Dhaliwal et al., 2011). Thus, return on assets (ROA) is controlled. ROA is calculated as net income deflated by total assets.

Firms which need to invest more resources to meet customers' demands are less likely to have resources for CSR activities (Jo & Harjoto, 2011). Therefore, both capital expenditures (CAPEX) and sales growth (GROW) are controlled in this paper. CAPEX is measured as capital expenditures divided by total assets, while GROW is computed as change in revenue from year t-1 to year t deflated by revenue at year t-1. Fast growing firms tend to be more financial constrained and as a result have fewer resources for CSR activities, but have higher information asymmetry and as a result stronger motivation to signal positive information (D. S. Dhaliwal et al., 2011). Thus, growth opportunities (BTM) are controlled in this paper. BTM is defined as a book-to-market ratio. Firms may use CSR investment as a marketing strategy. Therefore, advertisement expense (AD) is controlled. AD is calculated as advertisement expense divided by total assets. Different industries have different level of social pressure from public. Firms in industry with strong public pressure have strong motivation to involve in CSR activities. Also, institutional theory (DiMaggio & Powell, 1983) proposes that firms in a same industry feel similar institutional pressure and become isomorphic. Two-digit SIC code industry dummy variables are included in a regression model to control industrial variance in firms' motivation on CSR activities. Firms may become more or less concerned of CSR over time. Year dummy variables are included to control time variance on firms' CSR activities.

DATA AND DESCRIPTIVE STATISTICS

Data

The sample in this paper consists of listed companies in U.S. stock exchanges such as New York Stock Exchange or NASDAQ between 1996 and 2011. The period started from 1996, because board director information was not available until 1996. Data about board directorship is downloaded from RiskMetrics,

which provides information about individual board members. Accounting data is downloaded from Compustat and CSR activity data is provided by KLD. The NBER website publically provides the data on the U.S. macroeconomic condition. This study constructs social networks by using all available board interlock data. Therefore, social networks in this study include nearly every board interlock connection of U.S. listed firms. All continuous variables are winsorized at 1th and 99th percentiles in order to minimize the effects of outliers.

Descriptive Statistics

Table 1 presents the descriptive statistics of variables employed in regression models. The mean value of CSR Total is negative, implying that the average firm in a sample period has more CSR concerns than CSR strengths. Accordingly, the mean value of CSR Strength of sample firms is 0.0347, while that of CSR Concern is -0.0724. The median value of eigenvector centrality measures(NETWORK) is zero, meaning that more than half of sample firms do not have board interlock with other firms. On average long-term debt is 18.62% of total assets and net income is 2.23% of total assets during the sample period. The average firm has grown at 13.7%, and the market value of the average firm is approximately twice of the book value.

Table 2 report correlations between the key variables. Network measures have significantly positive correlation with CSR Total scores and CSR Strength scores, but have significantly negative correlation with CSR Concern scores. Control variables are reasonably chosen so that they are significantly correlated with at least two out of three dependent variables. The maximum value of VIF for control variables is 1.67, meaning that the regression model does not have a multicollinearity problem.

EMPIRICAL RESULTS

The regression results on firms' overall CSR performance appears in Table 3. As predicted by the hypothesis, firms' network measurements have a positive association with overall CSR performance. This result implies that when firms are more connected to other listed firms via board interlock, they are more likely to receive more positive evaluation from KLD. AD has a positive significant association with a dependent variable, suggesting that firms may use CSR investment as a marketing strategy. LEV also has a positive significant relationship, meaning that firms with lower debt ratios are more positively evaluated in CSR performance. The positive coefficients of ROA indicate that more profitable firms show better overall CSR performance, and the negative coefficients of BTM suggest that firms with bigger market capitalization compared to book value demonstrate better overall CSR performance.

Table 3 also reports regression results only on firms' positive CSR performance and negative CSR performance. Networks measure is positively associated with CSR Strength scores but negatively associated with CSR Concern scores. CSR Concern scores have negative values when firms have negative CSR performance. Thus, the results in Table 3 implies that KLD find more concerns on firms' CSR activities if firms are more connected to other firms. The coefficients of network measurement are negative for CSR Concern scores but positive for CSR Strength scores and CSR Total scores. This result should be interpreted as that firms' networks are related with both positive and negative CSR performance but association with positive CSR performance is stronger. Therefore, firms' connectedness has positive relationship with overall CSR performance.

These two findings suggest that positive CSR performance and negative CSR performance are two separate constructs and separate analyses on CSR Strength and CSR Concern can provide additional insight to understand firms' CSR behaviors. Network measures in Table 3 also show decent economic significance. For instance, one standard deviation increase in eigenvector centrality causes 0.0173 increase which is equivalent to 30% of one standard deviation of CSR Strength scores.

ADDITIONAL TESTS

The study intentionally avoids implying causal connection between dependent variables and independent variables. However, showing limited evidence of causality will make findings of this study

more meaningful. The regression model is rerun with one year time lag. The dependent variable is from year t+1, while all other variables are from year t. The unreported results are consistent with prior findings, implying that well-connected firms are more likely to have better CSR performance next year.

CONCLUSION

This study examines whether more socially connected companies are more socially responsible or not. The empirical results provide evidence that firms' board interlock networks have a positive association with firms' CSR activities. Consistent with the prediction from social networks theory, more connected firms have a stronger incentive to keep their reputation by investing in CSR activities. This study also finds that firms' networks enhance both positive and negative CSR performance but the effect on positive CSR performance is stronger. Thus, the overall effect of firms' networks on CSR activities is positive. The study also provides weak evidence of causality, although the hypotheses in this study do not imply a causal connection between variables. Empirical results remain qualitatively consistent even when there is one-year gap between independent variables and dependent variables.

The findings of this study highlight the importance of firms' connection in understanding firms' CSR engagement. This study is the first to thoroughly examine the relationship between firms' connection and CSR activities by using social network analysis. Findings are of potential interest to investors and regulators in understanding board interlock of U.S. listed companies. Overall, this study contributes to the literature by connecting CSR research and social network analysis and presenting the evidence that social network approach is useful in investigating firms' non-financial performance.

ENDNOTE

- ¹ Newman (2010) provides more detailed explanation for four proxies used in this paper.

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**TABLE 1
DESCRIPTIVE STATISTICS**

	Mean	S.D.	25%	Median	75%	N
CSR_total	-0.0376	0.0734	-0.0833	-0.0357	0	25386
CSR_str	0.0347	0.0583	0	0.0179	0.0417	25386
CSR_con	-0.0724	0.0665	-0.0952	-0.0571	-0.0286	25386
NETWORK	0.0086	0.0199	0	0	0.0067	25386
SIZE	7.3851	1.7351	6.1149	7.3075	8.503	25386
RND	0.1011	0.4308	0	0	0.0361	25386
AD	0.0102	0.0242	0	0	0.0094	25386
LEV	0.1862	0.1935	0.0136	0.1351	0.2936	25386
ROA	0.0223	0.1293	0.0071	0.0365	0.0783	25386
CAPEX	0.0815	0.168	0.0152	0.0327	0.0699	25386
GROW	1.137	0.3256	0.9942	1.085	1.2048	25386
BTM	0.5282	0.4001	0.2695	0.4511	0.6974	25386

This table reports the descriptive statistics of the variables. All variables are defined in Chapter 3. All continuous variables are winsorized at the top and bottom one percentile.

**TABLE 2
CORRELATION TABLE**

CSR_total	1											
CSR_str	0.510*	1										
CSR_con	0.656*	-0.314*	1									
NETWORK	0.076*	0.504*	-0.358*	1								
SIZE	0.016*	0.444*	-0.371*	0.505*	1							
RND	-0.001	-0.056*	0.048*	-0.072*	-0.255*	1						
AD	0.078*	0.086*	0.01	0.049*	-0.038*	-0.035*	1					
LEV	-0.075*	-0.019*	-0.066*	0.022*	0.196*	-0.046*	-0.019*	1				
ROA	0.045*	0.097*	-0.035*	0.106*	0.182*	-0.522*	0.040*	-0.096*	1			
CAPEX	-0.034*	-0.029*	-0.012*	-0.046*	-0.034*	0.253*	-0.065*	0.136*	-0.158*	1		
GROW	-0.004	-0.061*	0.048*	-0.074*	0.107*	0.087*	-0.006	-0.024*	0.024*	0.111*	1	
BTM	-0.055*	-0.071*	0.001	-0.089*	0.131*	-0.133*	-0.086*	-0.081*	-0.111*	-0.015*	-0.151*	1

This table reports Pearson correlations among variables in the regress model. All variables are defined in Chapter 3. * denotes statistical significance level at five percent.

TABLE 3
REGRESSION RESULTS

	CSR_total	p-value	CSR_str	p-value	CSR_con	p-value
NETWORK	0.2057**	0.019	0.8780***	0	-0.6724***	0
SIZE	-0.0012	0.2	0.0126***	0	-0.0138***	0
RND	0.0025	0.229	0.0008	0.544	0.0017	0.326
AD	0.1680***	0	0.1463***	0	0.0216	0.491
LEV	-0.0131**	0.013	-0.0312***	0	0.0181***	0
ROA	0.0303***	0	-0.0021	0.532	0.0324***	0
CAPEX	0.0222***	0	0.001	0.71	0.0212***	0
GROW	0.0022	0.106	-0.0030***	0.001	0.0052***	0
BTM	-0.0049*	0.023	-0.0099***	0	0.0051***	0.003
Year Fixed	Included		Included		Included	
Industry Fixed	Included		Included		Included	
R squared	0.1224		0.3611		0.3502	
N	25386		25386		25386	

This table presents the effect of firms' connectedness on overall CSR performance, CSR strength, and CSR concerns. All variables are defined in Chapter 3. All continuous variables are winsorized at the top and bottom one percentile. The t-statistics in a table are calculated from standard errors which are robust to heteroskedasticity and firm clustering. ***, **, and * denote statistical significance level at 1%, 5%, and 10%, respectively.