

GREEN GOVERNANCE: BOARDS OF DIRECTORS' COMPOSITION AND ENVIRONMENTAL CORPORATE SOCIAL RESPONSIBILITY

Abstract:

We analyze the relationship between boards of directors' (BOD) demographic composition and environmental corporate social responsibility (ECSR) by integrating literatures on BOD composition, firm performance, and individual differences in environmental values. Using disclosed company data and the natural environment KLD scores, we find that ECSR is higher among firms whose boards have the youngest directors and higher proportions of directors with a Western European education and with advanced degrees. Our results suggest that both board diversification and higher educational requirements of directors may improve a firm's ECSR. The study contributes to the work on BOD demographic composition and firm performance by extending it to the domain of ECSR.

The strategic decision making literature recognizes demographic diversity in the composition of boards of directors (BOD) as an important factor in corporate decision-making. For instance, Wiersema and Bantel (1992) argued that the presence of specific demographic traits in top management teams enhances members' receptivity to change and their willingness to take risks. Demographic diversity among board directors improves the chances that different knowledge, perspectives, values, and ideas are considered in the decision-making process. Past research has shown BOD (or top management team) heterogeneity to be positively associated with innovativeness (Bantel & Jackson, 1989), performance (Hambrick, Cho, & Chen, 1996), share price reactions (Cook & Glass, 2007), and internationalization (Sambharya, 1996; Tihanyi, Ellstrand, Daily, & Dalton, 2000). Less is known about how board heterogeneity affects environmental corporate social responsibility (ECSR) (Buchholtz, Brown, & Shabana, 2008). At the same time, board directors are participating more actively in decision-making around corporate environmental policies (Kakabadse, 2007; Kassinis & Vafeas, 2002). Research on individual ethics suggests that ethical and environmental-related values vary across demographic characteristics. We therefore propose to examine the relationship between BOD demographic composition (in terms of gender, age, cultural background, and educational attainment) and ECSR.

The role of BODs in corporate decision-making and on firm performance draws much ink in the strategic management literature. Boards influence firm performance (Hambrick et al., 1996; Peng, 2004), strategic decision-making (Golden & Zajac, 2001; Jensen & Zajac, 2004; Tihanyi et al., 2000; Westphal & Fredrickson, 2001), R&D investment strategies (Kor, 2006), the speed of the decision-making process (Chen & MacMillan, 1992), and share price (Filatotchev & Bishop, 2002).

Finkelstein and Hambrick (1996) argued that top managers, by virtue of their authority and weight in corporate decisions, are partially responsible for firm-level activities including corporate social responsibility activities. Corporate social responsibility appears to have become more salient to board members (Kakabadse, 2007) as thinking at the top of organizations shifts toward more broadly defined performance than just the bottom line. We conceive of corporate social responsibility as a firm's responsibility to stakeholders beyond the return on investment to shareholders. ECSR specifically addresses firms' responsibility toward the natural environment. Environmental issues are an important aspect of corporate social responsibility, especially for companies with high carbon dioxide and chlorofluorocarbons emissions.

Managerial and popular press report with an increasing sense of urgency about our planet's environmental fragility and the role of industrialization in accelerating global warming (Carey & Arndt, 2007; Fisher, 2007). The success of the documentary *An Inconvenient Truth*, which explores global warming and became the third highest grossing documentary thus far, and the allocation of the 2007 Nobel Peace Prize to Vice-President Al Gore and the Intergovernmental Panel on Climate Change further underscore the rising concerns with the role of industrialization in global warming. Hence, corporate decision-makers are increasingly called upon to consider the broader environmental impact of their business decisions. Boards may be moved to address ECSR issues for political reasons (Bendell & Kearins, 2005; Kassinis & Vafeas, 2002), in response to environmental legislation, to preempt environmental litigation (Kassinis & Vafeas, 2002), and in response to shareholder activism (O'Rourke, 2003). In this paper, we argue that the diversity in information, values, and attitudes of directors on a board also shape a firm's ECSR.

We draw on the literature on diversity and performance to form hypotheses about the relationship between BOD demographic composition and ECSR. The rest of this paper is organized as follows. We start by synthesizing the research on the effects of diversity on decision-making. Afterwards, we formulate hypotheses about the relationships between BOD demographic composition (in terms of gender, age, cultural background, and educational attainment) and ECSR. Then, we describe our methods and provide the results from our analyses. Finally, we discuss our results, identify the limitations of our study, and propose implications for research and practice.

LITERATURE AND HYPOTHESES

Diversity has been conceptualized as “the demographic and cultural characteristics of an organization’s labor force, customers, competitors, or population at large” (DiTomaso & Post, 2007: 397). Demographic and cultural characteristics become salient when they affect group members’ ability to work effectively together (DiTomaso & Post, 2007). Jehn and her colleagues (1999) distinguish three types of diversity: informational, social-category, and value diversity. Informational diversity refers to differences in knowledge bases and perspectives (e.g., educational or cultural) among individuals in a group as well as differences in approaches to getting work done (e.g., setting goals, managing teams, and communicating). Social category diversity refers to characteristics that individuals share with members of social groups defined, for example, around gender, age, cultural background, or educational attainment. The processes through which social category diversity affects organizational outcomes may depend on the relative numbers, power, and status of different social groups (DiTomaso, Post, & Parks-Yancy, 2007). For example, female representation on boards of directors does not seem to have much impact on governance effectiveness unless at least three women are present on a board (Kramer,

Konrad, & Erkut, 2006). Value diversity refers to differences in what individuals believe the group should be about (e.g., in terms of its mission, goals, tasks, and targets). For example, inside or outside board directors differ in their values, such that, compared to inside directors, outside directors place less value on economic performance and more value on socially responsible philanthropy (Ibrahim & Angelidis, 1995). Differences in a group along one criteria (e.g., gender, age, cultural background, educational attainment, and insider/outsider status) may carry simultaneously informational diversity (e.g., access to different knowledge or networks), social category diversity (e.g., disparity in power), and value diversity (e.g., differences in beliefs about corporate social responsibility).

Diversity is considered a double-edged sword for group performance. Informational and value diversity may lead to higher quality decisions, because more discussion and debate occur as the group has less unified information and interpretation schemes available to them (Ancona & Caldwell, 1992; Simons, Pelled, & Smith, 1999). Given the prevalent emphasis in the business press on the power of diversity to achieve higher performance, a group may also benefit from motivational advantages associated with perceiving itself to be diverse. From the group's attempts to reconcile disparate and sometimes contradictory information and perspectives and from the motivational thrust of being equipped for performance, high quality and innovative group decisions may emerge. It is generally understood that BOD heterogeneity leads to higher quality decisions based on the variety of information and values that board members contribute to the decision-making process. However, the decision-making process in a heterogeneous group may be more contentious and time-consuming (Hambrick et al., 1996; Jackson, 1992). Members in a group may perceive themselves to be too different from each other to find common ground. Power and status differences, in particular, may impede a group's ability to leverage its diversity

of information and values. Individuals with lower status and power may be less likely to express dissent in heterogeneous group that include high status and high power individuals (Edmondson, 2002).

While the processes characterizing decision-making within heterogeneous BOD are not usually measured, the consistently positive association between BOD heterogeneity and performance outcomes indicates that the benefits of informational and value diversity mute any negative effects of social-demographic diversity. BOD heterogeneity is positively associated with innovativeness (Bantel & Jackson, 1989), performance (Hambrick et al., 1996; Maurer, 2007), share price reactions (Cook & Glass, 2007), and internationalization (Tihanyi et al., 2000). Taken together, these findings suggest that value and informational differences among directors, overall, lead to higher quality decisions.

Research on the effects of top management team or BOD demographic heterogeneity on performance and decision-making has primarily considered dimensions such as tenure, age, and functional differences on corporate decisions. However, these differences fail to capture the full range of diversity that may exist on a board. In this paper, we consider four aspects of demographic composition that may be particularly relevant to boards' ECSR values, and hence, to their corporate actions: number of female directors, age of the youngest director, cultural background (i.e., proportion of directors with Western European education), and educational attainment (i.e., proportion of directors with advanced degrees). We control for slack resources in the prior year, CEO duality, and the proportion of outside directors, as these factors may influence a firm's ECSR.

Women and men appear to differ in values when it comes to social responsibility. Researchers have argued that gender differences in moral reasoning are rooted in early gender

socialization (Chodorow, 1974; Gilligan, 1982). A meta-analysis of gender differences in moral orientation (Jaffee & Hyde, 2000), which relied on 160 independent samples, showed that women are somewhat more likely to use care reasoning (maintaining relationships, responding to the needs of others, and feeling a responsibility not to hurt) but that men and women use similar principles of fairness and equity. Many studies provide support for the assertion that women are more likely than men to identify situations requiring ethical judgment and to behave ethically (Albaum & Peterson, 2006; Burton & Hegarty, 1999; Forte, 2004; Smith, Wokutch, Harrington, & Dennis, 2001). For example, women appear to be more likely than men to recognize unethical actions described in information systems scenarios (Khazanchi, 1995). Similarly, women are more willing than men to behave ethically when presented with hypothetical moral dilemmas in marketing (Malinowski & Berger, 1996).

A few studies find no gender differences in moral reasoning (Ergeneli & Arikan, 2002; Weber & Wasieleski, 2001). An argument advanced for explaining the lack of differences in moral reasoning between men and women holds that workplace socialization, which operates similarly on both men and women, eliminates any gender differences in ethical reasoning. Findings from a study of accountants, for example, show that men and women behave similarly when specific organizational rules are violated or tested, but when a situation is not clearly delineated by organizational policy (i.e., when socialization about a particular issue has not taken place), women are more likely than men to act ethically (Smith & Rogers, 2000).

When it comes to gender differences in attitudes toward the environment, ecofeminists argue that women are generally more concerned about environmental issues than are men, in part because of their nurturing and reproductive roles (Hayes, 2001). Women's environmental concerns may be stronger than men's on environmental issues perceived as directly threatening

to families' and communities' health (Bord & O'Connor, 1997). One cross-cultural study (Hayes, 2001) finds that, in the U.S., gender emerges as a “significant net predictor of protectionist attitudes toward the environment.” Among experienced MBA students, women also appear more likely than men to support the enforcement of environmental accountability standards (Fukukawa, Shafer, & Lee, 2007).

Because of the evidence that suggests that women, more than men, focus on maintaining relationships, respond to the needs of others, and feel a responsibility not to hurt others, and because the empirical evidence suggests that women are generally more concerned than men with environmental issues (especially those issues that carry risks for families and communities), we anticipate that ECSR is higher in firms with more female directors. Furthermore, research suggests that merely having one woman on a BOD is not sufficient for change to happen: on boards with less than three female directors women are less likely to shape board decisions (Kramer et al., 2006).

H1: As the number of female directors on a board increases, so does the firm's ECSR.

The capacity for moral reasoning is thought to develop over time and age has consistently been found to explain a large proportion of variance in moral judgment, with older individuals exhibiting higher moral reasoning (e.g., Forte, 2004; McCabe, Ingram, & Dato-on, 2006; Ruegger & King, 1992). Hence, one may expect boards with older directors to have higher ECSR because of the more developed moral reasoning of its older members. However, age is also consistently associated with measures of environmental concern (Klineberg, McKeever, & Rothenbach, 1998), such that younger Americans are more concerned about the environment

than older ones. Hence, as younger directors show more concern for ECSR specifically, we predict more ECSR in firms whose boards have the youngest directors.

H2: ECSR is higher in firms with the youngest board directors.

Organizational practices stem from political, educational and labor systems and, therefore, are highly correlated with national cultures (Hofstede, 1983). People from different cultures have access to different information and hold different values about environmental issues. In addition, because legalities and other environmental directives vary by country and geographic locations, directors' cultural backgrounds and experiences may shape their views on ECSR corporate policies. In this context, we note the rising European Union leadership in environmental regulation since the late 1980s when environmentalists gained political power in several member states (Mair, 2001; Vogel, 2003). A study of managers in 15 countries suggests that cultural characteristics of the countries in which firms operate are correlated with the corporate social responsibility values of firms' top management teams (Waldman, deLuque, Washburn, & House, 2006). Hence, managers' behavioral dispositions toward ECSR are guided not only by the legal context that they are most familiar with, but also by characteristics of their culture. Given the expectations that attitudes toward ECSR may vary by culture, and given the rise of Europe in environmental regulation, we anticipate higher ECSR in firms with a higher proportion of board members educated in Western Europe.

H3: ECSR is higher in firms with a higher proportion of board directors educated in Western Europe.

Educational attainment is positively associated with measures of environmental concern (Elm, Kennedy, & Lawton, 2001; Rest & Narvaez, 1994), such that the more educated show more concern about the environment than those with less education,

perhaps in part because those with more education learn to hold broader views and develop a larger breadth of understanding. Hence, we anticipate that boards with a higher proportion of directors who have an advanced degree (masters degree or above) exhibit more concern about, and give more attention to, their firms' ECSR.

H4. Firms with a higher proportion of directors with an advanced degree have higher ECSR.

METHODS

Sample

Our population consists of 49 U.S.-based electronic manufacturing firms found in the 2006 list of Fortune 1000 companies. The electronics manufacturing industry, while representing a range of industries, is extremely dynamic and has its own set of environmental issues. From the population of companies in the 2006 Fortune 1000 electronics manufacturing firms, we removed two that merged with or were bought by other firms in the timeframe for which we collected data about them. We also removed from the sample six companies for which the 2007 KLD¹ STATS ratings of corporate social performance did not provide data. After deletion of those companies our sample is 41. The sample size remains large enough to yield reliable statistical information and reduces any biases that would be found if the sample included firms outside the electronic manufacturing industry. The companies in our sample are listed in Table 1.

{Insert Table 1 about here}

Measures

Environmental Corporate Social Responsibility

¹ KLD is a proprietary data set issued by Kinder, Lydenberg, Domini, Inc. that provides annual environmental, social, and governance ratings of over 3,000 publicly traded companies through the KLD STATS database.

We measure ECSR in two different ways. First, we rely on ECSR disclosures as reported in firm's annual reports, corporate environmental reports, corporate websites, and government web sites. Corporate disclosures on environmental matters provide a measure of ECSR involvement (Morhardt, Baird, & Freeman, 2002) that is reasonably well aligned with corporate environmental performance (Clarkson, Lie, Richardson, & Vasvari, 2007). Second, we use data from the proprietary KLD STATS database, issued by Kinder, Lydenberg, Domini, Inc. (KLD) that provides annual ratings of the environmental, social, and governance actions of over 3,000 publicly traded companies.

ECSR Disclosure. In an effort to operationalize ECSR disclosure, Initch and her colleagues (1998) decomposed the ECSR Disclosure construct into four environmental performance metrics. Clarkson and his colleagues (2007) expanded the operationalization of ECSR disclosure to seven performance metrics: governance structure and management systems (e.g., environmental auditing policies), credibility (e.g., participation in voluntary environmental initiatives), environmental performance indicators (e.g., greenhouse gas emissions), environmental vision and strategy claims (e.g., CEO statement to shareholders on environmental performance), environmental spending (e.g., disclosure of fines paid for violating environmental requirements), environmental profile (e.g., overview of the firm's environmental performance relative to peer firms in that industry), and internal environmental initiatives (e.g., employee training in environmental management issues). For each of the seven performance metrics, Clarkson and colleagues (2007) propose between 3 and 10 specific disclosure items that correspond closely to the Global Reporting Initiative (GRI) sustainability reporting guidelines. In total, Clarkson et al.'s (2007) score is composed of 45 items. For our study, we relied on the items from Clarkson et al.'s (2007) operationalization that best predicted performance and that

attained a reasonable number of responses in their sample. Our scoring system initially included thirty-six items: six items for governance structure and management systems fourteen items for credibility, six items for environmental performance indicators, one item for environmental vision and strategy claims, four items for environmental spending, and three items for internal environmental initiatives.

Corporate self-disclosure scores on environmental matters are usually derived from the content analysis of corporate documents such as annual reports and corporate environmental reports (Abbott & Mosen, 1979; Clarkson et al., 2007; Morhardt et al., 2002) and of corporate websites (Jose & Lee, 2007). In our data collection effort, we relied on data disclosed by companies in their annual reports, social responsibility reports or environmental corporate responsibility reports (when available), and corporate web sites. We also relied on information disclosed on government web sites such as those of the Environmental Protection Agency (EPA). Two graduate assistants served as raters and assessed ECSR characteristics of the firms in our sample during the third and fourth quarter of 2008 (within a timeframe of two months). The raters gathered data on each of the initial thirty-six items in our scoring system. Upon initial comparison of the raters' assessments, we dropped the environmental vision and strategy claim item, environmental spending items, and internal environmental initiative items as the raters were unable to reach noticeable agreement. Our final ECSR measure comprised twenty-six items grouped into three categories: Governance Data, Credibility Data, and Environmental Performance Indicators. The appendix provides a description of and the data sources for each item.

The preliminary inter-rater agreement was 88.3 percent. To assess the chance correlation effects, we calculated the kappa coefficient for the two raters (Cohen, 1960; Fleiss, 1981). The

two raters evaluated 1066 items (i.e., 26 items for each of the 41 firms) and the preliminary kappa coefficient was 0.68 (statistically significant at $p \leq 0.001$ level) which falls well within the range of substantial agreement (Landis & Koch, 1977). A reconciling session between the two raters removed all existing disagreements, yielding 100 percent agreement or a revised kappa coefficient of 1.00.

For all items in our scoring system an affirmative response usually garnered one point. For two of the credibility items, companies could earn two points. For example, companies that were Energy Star partners received 1 point and those that were Energy Star award winners received 2 points. We computed the composite scores for all three categories (Disclosed ECSR Governance, Disclosed ECSR Credibility, and Disclosed ECSR Environmental Performance Indicators) by adding all points in each category. To compute a Total Disclosed ECSR score, we summed the three composite scores for Disclosed ECSR Governance, Disclosed ECSR Credibility, and Disclosed ECSR Environmental Performance Indicators ².

KLD. We also measured ECSR using the natural environment dimension of the 2007 KLD Corporate Social Responsibility audit, which measures firms' environmental performance in seven areas of strengths (beneficial products and services, pollution prevention, recycling, clean energy, communications, property, plant, and equipment, management systems, and other strengths) and in seven areas of concern (hazardous waste, regulatory problems, ozone depleting chemicals, substantial emissions, agricultural chemicals, climate change, and other areas of concern). KLD assigns a rating of 0, 1, or 2 for each strength and concern area. The KLD score used in our study, which we call Total KLD, is the sum of environmental strengths from which

² Because the Credibility scores is the sum of 14 items are the Governance and EPI scores each are the sum of 6 items, Credibility scores may put an undue weighted on the Total Disclosed ECSR score. To ascertain this possibility, we computed a weighted sum of the three scores. Using the weighted score as our dependent variable does not alter results.

we subtract the sum of environmental concerns (Deckop, Merriman, & Gupta, 2006). While there is some controversy around this additive method (Mattingly & Berman, 2006), a growing number of studies use it to compute a single KLD dependent variable (e.g., Chen, Patten, & Roberts, 2008; Cho, Patten, & Roberts, 2006; Deckop et al., 2006; Shropshire & Hillman, 2007) based on Sharfman's (1996) recommendation.

BOD Composition

Using annual reports and Dun & Bradstreet, we compiled the list of directors, in 2006, for the boards in our sample. In our sample, the total number of directors is 374. We collected data about directors' gender, age and education (i.e., degree attained and place of education) using Dun & Bradstreet, Reuters, and Lexus Nexus Academic. Corporate websites were perused for any information the reference materials could not supply.

Directors' gender. We found gender information for 100 percent of the directors in our sample. On average, the firms in our sample had one female director. Fourteen companies had no women on their board. In the remaining companies, women made up between 8 percent and 50 percent of the BOD. Only two firms had 3 female directors; all other firms had fewer women on their boards.

Age of youngest director. We were successful in collecting age data for 97 percent of the directors. The directors in our sample are on average 61 years old. The youngest director in our sample was 38 and the oldest one was 89. Among the boards in our sample, the age of the youngest board member ranged from 38 to 61.

Proportion of board with Western European education. We were successful in collecting education location data for 88 percent of the directors. Among the directors for whom we had data, 89 percent completed all or part of their higher education in the U.S., 8 percent in Western

Europe, 2 percent in Asia (primarily Japan and India), and 1 percent in the Middle East. For each board, we computed the percentage of directors with Western European education. Among the 41 companies in our sample 18 boards had at least one director who was educated in Western Europe. Among those 18 boards, the proportion of directors with a Western European education ranges from 8 to 25 percent with an average of 14 percent.

Educational attainment. We were successful in collecting degree attainment data for 85 percent of the directors. Among those directors, 77 percent had received advanced degrees (i.e., M.A, M.S, M.B.A, J.D., or Ph.D.). The percent of directors with advanced degrees among the boards in our sample ranged from 30 to 100 percent.

Control Variables

The general assumption in extant research is that ECSR is expensive and cannot directly maximize shareholder value (Rose, 2007). However, firms that have the requisite financial slack can more readily shoulder ECSR expenses and investments. To account for the effect of financial slack on 2007 ECSR, we control for slack resources of all the firms in our sample in 2006 (Tan & Peng, 2003). Using company data obtained through COMPUSTAT, we computed Slack 2006 as follows: $Slack = \{(Cash + Short\ term\ investments) - Current\ liabilities\} / Net\ sales$.

Studying 394 socially responsible firms and a matched sample of non-socially responsible firms, Webb (2004) found that CEO duality was less prevalent in socially responsible firms as opposed to non-socially responsible firms. Therefore, we control for CEO duality, because it may affect a firm's ECSR. We computed CEO duality with data collected from the Company Insight Center of Business Week Online and created a dummy variable (1 = CEO is chairman of board; 0 = CEO is not chairman of board).

We also control for the proportion of outside directors, because outside directors reduce agency problems, lessen information asymmetry (Howton, Howton, & Olson, 2001), and widen the boards' networks. Studies on the relationships between board structure, governance, and corporate social responsibility suggest that boards with a higher proportion of outside directors provide superior governance (Core, Holthausen, & Larcker, 1999; Dahyaa & McConnell, 2004; John & Senbet, 1998), have less attachment to economic performance (Ibrahim & Angelidis, 1995) and are more concerned with corporate social responsibility (Ibrahim & Angelidis, 1995; Webb, 2004). Boards with more outside directors may be more likely to anticipate and respond to political (Bendell & Kearins, 2005; Kassinis & Vafeas, 2002), legislative (Kassinis & Vafeas, 2002), and shareholder activism (O'Rourke, 2003) pressures. The outsider/insider status of directors was obtained through the Company Insight Center of Business Week Online. We were successful in collecting CEO duality and insider/outsider data for 100 percent of the directors in our sample.

RESULTS

Table 2 reports the means, standard deviations, and Pearson correlation coefficients of the variables used in our analyses. The Total Disclosed ECSR score is highly correlated with the Total KLD score ($r = 0.73$, $p \leq 0.01$), suggesting that in our sample the additive method for computing Total KLD scores is valid. The standard deviation of the Total KLD score is much larger compared to its mean than it is for the Total Disclosed ECSR score, meaning that there is more variation in environmental corporate social responsibility when it is measured along more than three dimensions and when it is measured using subjective assessment rather than relying on publicly disclosed data.

As expected, the correlations between the three ECSR Disclosure measures and the Total

Disclosed ECSR score are all high and statistically significant. With the exception of the number of women on the board, each independent variable is highly correlated, and in the expected direction, with at least one of the dependent variables. The correlation between the proportion of directors with advanced degrees and Disclosed ECSR Governance is positive and statistically significant. One of our three control variables, the proportion of outside directors, is positively and significantly correlated with the Disclosed ECSR Credibility and the Total Disclosed ECSR score.

{Insert Table 2 about here}

Table 3 displays the regression results for each dependent variable. The controls and independent variables best explain the variance in Disclosed ECSR Governance (adjusted $R^2 = 0.28$, $p \leq 0.05$) and in Disclosed ECSR Credibility (adjusted $R^2 = 0.19$, $p \leq 0.05$). They also explain the variance in Disclosed Environmental Performance Indicators (adjusted $R^2 = 0.14$, $p \leq 0.10$), Total Disclosed ECSR (adjusted $R^2 = 0.19$, $p \leq 0.10$), and Total KLD (adjusted $R^2 = 0.17$, $p \leq 0.10$).

The number of women on boards is not a statistically significant predictor of Disclosed ECSR (in any form) or of Total KLD. Hence, these results fail to support H1. H2 is supported for Disclosed ECSR Governance ($b = -0.25$, $p \leq 0.10$). As the age of the youngest board member increases so decreases the Disclosed ECSR Governance score. Conversely, boards with the youngest directors have a higher Disclosed ECSR Governance score. We also find support for H3: corporate boards with a higher proportion of directors educated in Western Europe have higher Disclosed ECSR Governance ($b = 0.30$, $p \leq 0.05$), better Disclosed Environmental Performance Indicators ($b = 0.35$, $p \leq 0.05$), and higher Total Disclosed ECSR ($b = 0.30$, $p \leq 0.10$), and Total KLD ($b = 0.27$, $p \leq 0.10$). H4 is supported for Disclosed ECSR Governance (b

= 0.37, $p \leq 0.05$): firms with a higher proportion of highly educated board members also have higher Disclosed ECSR Governance scores.

{Insert Table 3 about here}

Because of the controversy around the practice of subtracting the sum of KLD environmental concerns from the sum of environmental strengths (Mattingly & Berman, 2006), we also assessed the relationship between BOD composition and the separate KLD scores for environmental strengths and concerns. The correlations shown in Table 2 suggest that the Total KLD score is positively correlated with KLD strength ($r = 0.86$, $p \leq 0.01$) and negatively correlated with KLD concerns ($r = -0.32$, $p \leq 0.05$) and that KLD strengths and concerns are not statistically correlated. Furthermore, results shown in Table 4 indicate that control variables and BOD composition help explain the variability in KLD environmental strengths (adjusted $R^2 = 0.26$, $p \leq 0.05$) but not in KLD environmental concerns. In particular, companies whose boards had a higher proportion of board directors educated in Western Europe received higher KLD environmental strengths scores ($b = 0.31$, $p \leq 0.05$). Hence, H3 is supported for KLD strengths.

{Insert Table 4 about here}

As expected, CEO duality is associated with lower Disclosed ECSR Credibility ($b = -0.35$, $p \leq 0.10$), Total KLD ($b = -0.41$, $p \leq 0.05$) and KLD strengths scores ($b = -0.40$, $p \leq 0.05$). Furthermore, as anticipated, boards with a high proportion of outside directors display higher Disclosed ECSR Governance ($b = 0.26$, $p \leq 0.10$), Disclosed ECSR Credibility ($b = 0.44$, $p \leq 0.01$), Disclosed ECSR Environmental Performance Indicators ($b = 0.41$, $p \leq 0.05$), Total Disclosed ECSR scores ($b = 0.45$, $p \leq 0.01$), Total KLD scores ($b = 0.33$, $p \leq 0.10$) and KLD strengths scores ($b = 0.38$, $p \leq 0.05$). Contrary to expectations, however, firms with more slack resources exhibit lower Disclosed ECSR Credibility ($b = -0.30$, $p \leq 0.10$), Disclosed

Environmental Performance Indicators ($b = -0.30, p \leq 0.10$), Total Disclosed ECSR score ($b = -0.28, p \leq 0.10$), and KLD strengths scores ($b = -0.26, p \leq 0.10$) net all other factors. This could indicate the existence of some priorities that BODs give to certain ECSR issues. Perhaps, from the firms' perspective, Governance ECSR is the most readily achievable type of ECSR goal; thus, this variable is the first type that firms tend to address when they have funds and decide to engage in ECSR activities. The potential prioritization of ECSR issues is a topic that deserves future research attention.

DISCUSSION, LIMITATIONS AND FUTURE DIRECTIONS

The purpose of this study was to examine the relationship between board composition (i.e., gender, age, cultural background, and educational attainment) and ECSR among Fortune 1000 electronics manufacturing firms. In general, our results correspond with those of others (e.g., Bantel & Jackson, 1989; Hambrick et al., 1996; Tihanyi et al., 2000; Wiersema & Bantel, 1992), who find BOD composition to be associated with firm differences in organizational strategy. Our unique contribution to that body of work is the evaluation of the relationship between boards' demographic composition and environmental corporate social responsibility. Drawing on evidence of demographic differences in ethical and environmental standards, we expected to find more ECSR among firms whose boards had younger directors, more members with a Western European education, and more members with an advanced degree.

For the firms in our sample, BOD demographic composition explains a non-trivial amount of variance in Disclosed ECSR Governance and in KLD environmental strengths. In particular, Disclosed ECSR Governance scores were higher among firms whose boards had younger directors, a higher proportion of directors with a Western European education, and a higher proportion of directors with advanced degrees. The KLD environmental strengths scores

were higher among firms whose boards had a higher proportion of directors with a Western European education.

Because of the research suggesting that that women are generally more concerned than men about environmental issues (Albaum & Peterson, 2006; Burton & Hegarty, 1999; Forte, 2004; Jaffee & Hyde, 2000; Smith et al., 2001), we expected ECSR to increase with the number of women on BODs. However, contrary to expectations, the number of female board directors did not influence ECSR in our sample, irrespective of how ECSR was measured. It is possible that the boards in our sample did not have the critical mass of women (i.e., at least three) necessary to make a difference (Kramer et al., 2006). In contrast to the population of U.S. firms, among which 92 percent had three or more female directors in 2008 (Catalyst, 2008), only two firms in our sample have three female directors on their boards. No firm had more than three female directors. It is also possible that workplace socialization (Smith & Rogers, 2000), particularly socialization into BODs, wipes out gender differences in environmental reasoning. A third explanation for why the number of female directors was not associated with higher ECSR, is that sex role orientation, rather than sex, appears to influence moral reasoning (Elm et al., 2001; Kracher & Marble, 2008).

Our results are consistent with research indicating that younger Americans are more concerned than older ones about environmental issues (Klineberg et al., 1998). In particular, as our results suggest, young directors may heighten a board's attention to ECSR governance issues. Inclusion of just one young board member may have a significant positive impact on the ECSR performance of the firm. Our findings also agree with the results of other studies about cultural differences in attitudes toward ECSR (Mair, 2001; Vogel, 2003; Waldman et al., 2006). In particular, our findings suggest that boards have a heightened preoccupation with and

attention to both ECSR governance and environmentally proactive actions in firms when a higher percentage of directors have been educated in Western Europe. In addition, having more Western European-educated directors on a board appears also to contribute to higher environmental performance indicator scores, higher Total Disclosed ECSR score, and higher Total KLD and KLD strengths scores. In analyses not presented here, we explored whether board composition reflects the geographical reach of a firm's operation, such that, for example, boards with more Western European educated directors may have a larger share of their sales in Europe, where environmental regulations are more stringent. Using Hoovers online, we collected regional sales data for each company in our sample and computed the percentage of total sales that were made in Europe. The correlation between the proportion of sales in Europe and the proportion of Directors with Western European education was small and not statistically significant. Furthermore, in separate analysis, we reran our regression models with a control for firm's proportion of sales in Europe. The control was not statistically significant and did not alter the pattern of our results. However, the adjusted R-square dropped for several of the outcome variables, suggesting that introducing this control variable weakened the fit of our models.

Finally, our findings corroborate prior work on the positive relationship between educational attainment and moral reasoning (Elm et al., 2001; Rest & Narvaez, 1994), suggesting that when the proportion of board members who hold broader views increases, ECSR governance grows stronger.

It is also noteworthy that when we evaluate the role of BOD composition on environmental KLD strengths and concerns separately, we find that the relationship between proportion of Western European-educated board members and KLD is positive and statistically significant for environmental strengths but not statistically associated with concerns. Using

exploratory factor analysis, Mattingly and Berman (2006) argued that the social activities captured by the KLD can be categorized into different types of social action, and called for more research on the antecedents and consequences of different types of social action. Our finding, that one facet of BOD composition is positively associated with KLD strengths but not associated with KLD concerns, provide a rejoinder to Mattingly and Berman's (2006) caution about the additive method of combining KLD strengths and concerns scores into one KLD score.

While we attempt in this paper to provide a multifaceted picture of the relationship between board composition (in terms of gender, age, cultural background, and educational attainment) and ECSR, our study has several limitations. First, we fail to measure the processes that we assume underlie the relationship between demographic composition of boards and ECSR. For example, we assume that female directors, younger directors, directors with a Western European education, and directors with higher educational attainment are more concerned about the environment, and that boards with such composition come to higher quality decisions based on the variety of information and values contributed by all board members. However, we measure neither directors' environmental values nor boards' ECSR decision-making process. Instead, as many others have done before us (Carpenter, Geletkanycz, & Sanders, 2004), we use demographic characteristics as proxies for psychological constructs that are otherwise difficult to observe. Others (e.g., Simons et al., 1999) have shown that group processes, such as debate, moderate and mediate the relationship between top management team demographic diversity and firm performance. Hence, future research should collect data on directors' environmental values and on the group processes that are assumed to affect ECSR decisions.

Another limitation in our study that continues to be a challenge for all researchers in the

ECSR domain is the lack of standardized ECSR measure, combined with voluntary reporting by firms. For our measure, we rely on information made available on corporate documents, corporate websites, and government websites. The high correlation between our ECSR measure and the Total KLD measure and even more so with the KLD strengths, suggests that we have captured some of the most important elements of ECSR. Finally, our study applies only to the electronics manufacturing firms. Future research could assess the external validity of our findings by evaluating the relationships described here across other industries.

Despite its limitations, our study is important because it is a first attempt at examining the relationship between BOD demographic composition (e.g., gender, age, cultural background, and educational attainment) and ECSR by drawing on the strategic decision-making literature and on the literature on individual differences in moral reasoning and environmental values. There is a strong impetus in the U.S. and abroad to increase diversity in corporate boards (Bilimoria, 2000; Kramer et al., 2006; Ramírez, 2003; Sellers, 2007). At the same time, the benefits of having such socio-demographic diversity are not clearly established (Burke, 2003; Sellers, 2007). Broadly speaking, our results suggest that, in the electronics manufacturing industry, ECSR is higher in firms whose boards have the youngest directors, a higher proportion of directors with a Western European education, and a higher proportion of directors with advanced degrees. In addition, the differences we find in the predictors of overall KLD scores, KLD strengths, and KLD concerns, provide credence to the growing concern around the additive method for operationalizing corporate social action using KLD data (Mattingly & Berman, 2006). More research is needed to assess whether the number of female board directors influences ECSR and how board composition affects the decision-making processes around environmental issues such as

disclosure and environmentally proactive action, and to evaluate the validity of these findings outside the electronics manufacturing industry.

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Appendix

A. Disclosed Governance:

Item	Data Source(s)
1 Are terms of conditions for suppliers, regarding environmental practices, reported?	Annual Report, Environmental Report, Corporate Social Responsibility Report
2 Is the stakeholder involved in setting corporate environmental policies?	Annual Report
3 Is executive compensation linked to environmental performance?	Edgar Online, DEF 14A SEC Filing
4 Does a department of pollution and/or senior management position for environment exist?	Hoover's Online.
5 Is there an environmental and/or public issues committee in the board of directors?	Business Week website
6 Has ISO 14001 been implemented at the plant and/or firm level?	Annual Report OR Web Search

B. Disclosed Credibility:

Item	Data Source(s)
1 Does the company have an environmental report (ER)?	Company web site and Google
2 If the company does not have an ER: Does the company have a corporate social responsibility report (CSR) report?	CorporateRegister.Com: http://www.corporateregister.com/
3 If the company does not have an ER, but has a CSR: Does the CSR have a section on environmental responsibility?	Corporate social responsibility report
4 Does the company adhere to GRI or CERES reporting guidelines?	Environmental Report, Corporate social responsibility report, Annual Report, Website
5 Does company provide information about environmental audits?	Environmental Report, Corporate social responsibility report, Annual Report, Website

B. Disclosed Credibility (continued):

- | | | |
|----|---|---|
| 6 | Has the company submitted a GRI report since January 2008? | http://www.globalreporting.org/GRIReports/2008ReportsList/ |
| 7 | Is the company a CERES member? | http://www.ceres.org/NETCOMMUNITY/Page.aspx?pid=426&srcid=553#list |
| 8 | Does the company participate in the industry-specific association, the Electronic Industry Citizenship Coalition, to improve environmental practices? | http://www.eicc.info/membership.html |
| 9 | Does the company participate in the Climate Leader EPA partner government initiative to improve environmental practices? | http://www.epa.gov/climateleaders/partners/index.html |
| 10 | Does the company participate in the Combined Heat and Power Partnerships government initiative to improve environmental practices? | http://www.epa.gov/chp/partnership/partners.html |
| 11 | Does the company participate in the Energy Star government initiative to improve environmental practices? | http://www.energystar.gov/index.cfm?fuseaction=estar_partner_list.showPartnerResults&s_code=ALL&partner_type_id=ALL&cntry_code=US&award_search=N&award_category=ALL&award_year=ALL&letter=ALL&current_sort_column=NAME&current_sort_order=ASC&layout=default&startnum=1&resultsperpage=14433 |
| 12 | Does the company participate in the EPA Green Power Partnership government initiative to improve environmental practices? | http://www.epa.gov/greenpower/partners/index.htm |
| 13 | Does the company participate in National Partnership for Environmental Priorities (NPEP) government initiative to improve environmental practices? | http://www.epa.gov/epaoswer/hazwaste/minimize/npep/partners.htm |
| 14 | Does the company participate in the Wastewise government initiative to improve environmental practices? | http://wastewise.tms.icfi.com/wisearch/results.asp |
-

C. Disclosed Environmental Performance Indicators (EPI):

Item	Data Sources for all EPI questions
1 Does the company disclose its Energy use (in reduction or absolute numbers)?	Environmental Report, Corporate Social Responsibility Report, or Annual Report (if ER or CSRR not available)
2 Does the company disclose its Water use (in reduction or absolute numbers)?	
3 Does the company disclose its Greenhouse Gas Emissions (in reduction or absolute numbers)?	
4 Does the company disclose its Electricity use (in reduction or absolute numbers)?	
5 Does the company disclose its Toxics Release Inventories (TRI) (in reduction or absolute numbers)?	
6 Does the company disclose any other information on discharges or spills (in reduction or absolute numbers)?	

Table 1. List of Companies in Sample (n=41) ³

A.O. Smith	Hubbell	Scansource INC.
Acuity Brands	Intel	SPX
AMD	Jabil Circuit	Superior Essex
Amkor Technology	KLA-Tencor	Thomas & Betts
Amphenol	Lam Research	TI
Analog Devices	Lexmark	Vishay Intertechnology
Applied Materials	LSI Logic	Western Digital
Arrow Electronics	Maxim Integrated Product	Whirlpool Corp.
Atmel	Micron Technology	Xilinx
Avnet Inc.	Molex	
Benchmark Electronics	National Semiconductor	
Broadcom	Nvidia	
Diebold	Regal-Beloit	
EMC	Rockwell Automation	
Emerson Electric	Sanmina-SCI Corp.	
Harman Intl. Industries	SanDisk	

³ The 41 Fortune 1000 electronics manufacturing firms in our sample represent the following industries: semiconductors and related devices, computer storage devices, printed circuit boards, special industry machinery, motors and generators, current-carrying wiring devices, electronic connectors, electronic parts and equipment, nonferrous wiredrawing & insulating, computer peripheral equipment, calculating and accounting equipment, industrial machinery, electrical industrial apparatus, household laundry equipment, commercial lighting fixtures, household audio and video equipment, electronic resistors, process control instruments, optical instruments and lenses, and computers, peripherals & software.

Table 2. Means, standard deviations, and Pearson correlation coefficients (n = 41).

	Mean	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1) Disclosed ECSR Governance	2.07	.91													
(2) Disclosed ECSR Credibility	2.29	2.84	.55**												
(3) Disclosed Environmental Performance Indicator:	1.90	2.30	.60**	.77**											
(4) Total Disclosed ECSR Score	6.27	5.44	.71**	.94**	.93**										
(5) Total KLD Score (strengths minus concerns)	.40	.90	.52**	.75**	.61**	.73**									
(6) KLD Strengths	.60	.87	.61**	.79**	.70**	.81**	.86**								
(7) KLD Concerns	.20	.46	.14	.03	.14	.10	-.32*	.20							
(8) Slack Resources	.03	.27	.16	-.12	-.13	-.09	.04	-.09	-.25						
(9) CEO Duality	.54	.50	-.09	-.18	.00	-.11	-.27	-.25	.07	-.14					
(10) Outsiders on BOD (%)	.57	.17	.28	.34*	.30	.35*	.26	.29	.03	.22	.24				
(11) Number of Women	1.00	.81	.17	.23	.19	.23	.20	.27	.12	-.15	.25	.22			
(12) Age of Youngest Director	48.41	5.32	-.27	.01	-.14	-.10	.04	-.01	-.09	-.05	.27	.12	-.06		
(13) With Western European Education (%)	.06	.08	.26	.14	.25	.22	.28	.28	-.02	.10	-.11	-.10	.01	.08	
(14) With Masters Degree or More (%)	.77	.17	.37*	.12	.07	.16	.10	.13	.05	.23	.07	.24	.10	-.11	-.12

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 3. Regression of ECSR variables on Board of Director diversity information (standardized coefficients; n = 41).

	Disclosed ECSR Governance	Disclosed ECSR Credibility	Disclosed Environmental Performance Indicators	Total Disclosed ECSR Score	Total KLD
Control Variables					
Slack	0.05	-0.30 †	-0.30 †	-0.28 †	-0.10
CEO duality (1=CEO is Chairman)	-0.13	-0.35 *	-0.04	-0.22	-0.41 *
Proportion of Outsiders	0.26 †	0.44 **	0.41 *	0.45 **	0.33 †
Board of Directors					
Number of Women	0.05	0.18	0.07	0.13	0.20
Age of Youngest Director	-0.25 †	0.05	-0.22	-0.11	0.10
Proportion Educated in Western Europe	0.30 *	0.19	0.35 *	0.30 †	0.27 †
Proportion with Masters Degree or Above	0.37 *	0.10	0.03	0.12	0.09
Adj. R-square	0.28 *	0.19 *	0.14 †	0.19 †	0.17 †

† p ≤ 0.10; * p ≤ 0.05; ** p ≤ 0.01

Table 4. Regression of KLD environmental strengths and concerns on Board of Director diversity information (standardized coefficients; n = 41).

	KLD environmental strengths	KLD environmental concerns
Control Variables		
Slack	-0.26 †	-0.28
CEO duality (1=CEO is Chairman)	-0.40 *	0.04
Proportion of Outsiders	0.38 *	0.08
Board of Directors		
Number of Women	0.24	0.05
Age of Youngest Director	0.05	-0.11
Proportion Educated in Western Europe	0.31 *	0.05
Proportion with Masters Degree or Above	0.12	0.06
Adj. R-square	0.26 *	0.09 □

† p ≤ 0.10; * p ≤ 0.05; ** p ≤ 0.01