J Bus Ethics (2015) 130:423–435
DOI 10.1007/s10551-014-2231-7

From Board Composition to Corporate Environmental Performance Through Sustainability-Themed Alliances

Corinne Post · Noushi Rahman · Cathleen McQuillen

Received: 6 December 2013 / Accepted: 14 May 2014 / Published online: 12 June 2014

Abstract A growing body of work suggests that the presence of women and of independent directors on boards of directors is associated with higher corporate environmental performance. However, the mechanisms linking board composition to corporate environmental performance are not well understood. This study proposes and empirically tests the mediating role of sustainability-themed alliances in the relationship between board composition and corporate environmental performance. Using the population of public oil and gas firms in the United States as the sample, the study relies on renewable energy alliances to measure sustainability-themed alliances and longitudinally analyzes lagged data for independent and control variables. The study found that (1) the higher the representation of women on a firm's board, the more likely the firm is to form sustainability-themed alliances, and (2) the higher the representation of independent directors on a firm's board, the more likely the firm is to form sustainability-themed alliances. Such alliances, in turn, positively contribute to corporate environmental performance. This paper discusses the study's contributions to the board composition-social performance literature.

C. Post (✉)
College of Business and Economics, Lehigh University, 621 Taylor Street, Bethlehem, PA 18015, USA
e-mail: cgp208@lehigh.edu

N. Rahman
Lubin School of Business, Pace University, New York City campus, Room W-465, 1 Pace Plaza, New York, NY 10038, USA
e-mail: nrahman@pace.edu

C. McQuillen
Georgian Court University, 900 Lakewood Ave, Lakewood, NJ 08701, USA
e-mail: cmcquillen@georgian.edu

Introduction

As the literature increasingly suggests, the composition of a board of directors is a meaningful predictor of a firm's environmental performance (e.g., Kassinis and Vafeas 2002; Ortiz-de-Mandojana and Aragon-Correa 2013; Rao et al. 2012; Walls and Hoffman 2013). For example, corporations with a higher proportion of women on their boards exhibit heightened strategic capabilities for environmental performance (Post et al. 2011; Walls et al. 2012), provide more and higher quality environmental reporting (Fodio and Oba 2012; Rao et al. 2012), and enjoy a superior reputation for environmental performance (Kimball et al. 2012). However, the relationship between board composition and corporate environmental performance is not always statistically significant (e.g., Galbreath 2011; Stanwick and Stanwick 1998), underscoring the need to better understand how these two distal concepts are connected. One of the challenges with the literature is that the theoretical framework that supports empirical evaluations of the board composition–corporate environmental performance relationship is overly parsimonious. In particular, the dominant framework fails to model how board involvement in strategy might mediate the "board composition-environmental performance" relationship (Pye and Pettigrew 2005; van Ees et al. 2009). Therefore, this study proposes the formation of sustainability-themed alliances as one mechanism linking board composition to corporate environmental performance. It conceives of sustainability-themed alliances as strategic alliances that

for-profit corporations form with pro-environment organizations (Stafford et al. 1998) to mitigate internal resource needs (e.g., if sustainability is already an industry norm) or to facilitate external growth opportunities (e.g., if sustainability is not yet an industry norm) (Rahman and Korn 2009), by scaling or linking operations (Dussauge et al. 2000).

Informed by the broader construct of corporate social performance (Orlitzky et al. 2003; Wood 1991), corporate environmental performance in this study encompasses environmentally responsible business practices and outcomes (e.g., pollution prevention activities; use of alternative fuels; environmental communications) (Walls et al. 2012). As depicted in Figure 1, this paper suggests that the makeup of a board influences the strategic formation of sustainability-themed alliances and that, in turn, such alliances help explain why board composition is associated with corporate environmental performance. This paper focuses on two dimensions of board composition that are particularly relevant to corporate environmental performance: the representation of women and of independent directors on boards.

This study offers two distinct contributions to the research on board composition and corporate environmental performance. First, it advances the field by conceptually and empirically delineating how board composition might affect a firm's environmental strategies (e.g., sustainability-themed alliances). To date, studies have primarily sought to explain the direct board composition–corporate environmental performance relationship (e.g., Ortiz-de-Mandojana and Aragon-Correa 2013; Post et al. 2011). This study—on the effect that board composition has on environmental strategies—contributes to the literature because environmental strategies are a more proximal outcome of board composition than the corporate environmental performance.

Second, this study contributes to the "board composition-firm outcome" literature by theoretically establishing and empirically testing the mediating role of sustainability-themed alliances in the "board composition–corporate environmental performance" relationship. Despite considerable evidence of the relationship between board composition (for the purpose of this paper, representation of women and/or independent directors on boards) and corporate environmental performance (e.g., Fodio and Oba 2012; Kimball et al. 2012; Rao et al. 2012; Walls et al. 2012), not much is known about the mechanisms linking these distal constructs (Finkelstein and Mooney 2003; Roberts et al. 2005; Tuggle et al. 2010). This paper specifically evaluates how the representation of women and of independent directors on the board affects corporate environmental performance through the formation of sustainability-themed alliances.

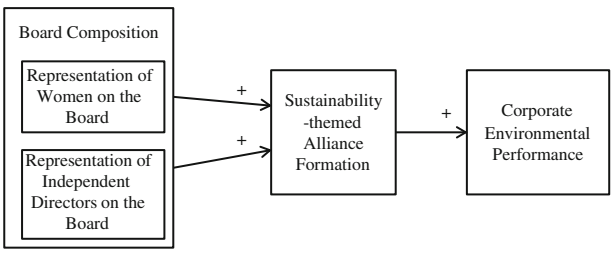

Fig. 1 A model of the board composition and corporate environmental performance relationship, mediated by the formation of sustainability-themed alliances

Additionally, this paper advances the literature on female directors by examining the link between female board representation and firm strategy. While several studies have found that there is a relationship between female board representation and firm social performance (Bear et al. 2010; Boulouta 2013; Mallin and Michelon 2011; Marquis and Lee 2013; Webb 2004; Zhang et al. 2013; Zhang 2012), the effect of female board representation on strategic decision-making pertaining to environmental sustainability has not been explored to date.

Addressing sustainability issues is considered an increasingly critical challenge for organizational success (Accenture and UNGC 2010). In particular, stakeholders' intensified scrutiny of corporations' sustainability efforts has increased the pressure on boards to promote environmental initiatives to improve corporate environmental performance (Darnall et al. 2010; Sharma and Henriques 2005). Responses to stakeholder concerns of environmental sustainability are instrumental in helping a firm achieve and maintain organizational legitimacy in the marketplace. The context for this study is the oil and gas industry because, as one of the most controversial industries in the domain of environmental responsibility, it is subject to heightened stakeholder concerns (Du and Vieira Jr. 2012; Lindgreen et al. 2012; Roeck and Delobbe 2012). In addition, in the oil and gas industry, the development of renewable energy is an accepted pathway for promoting sustainability (Bagliani et al. 2010; Luchsinger 2009). Among traditional oil and gas firms, alliances constitute a legitimate avenue for pursuing the development of renewable energy (Dacin et al. 2007; Olk and Ring 1997). Therefore, this paper specifically focuses on renewable energy alliances, which are defined as sustainability-themed alliances linking for-profit firms with renewable energy organizations to mitigate internal resource needs or to facilitate external growth opportunities in areas such as tidal and wave energy, hydropower, geothermal electricity, biomass, solar energy, and onshore and offshore wind energy. Finally, restricting the sample to a single industry helps reduce the noisy distraction of industry variation in alliance formation and environmental considerations.

Theoretical Background

Both the upper echelons theory (Hambrick 2007; Hambrick and Mason 1984) and the resource dependence theory (Hillman and Dalziel 2003; Pfeffer and Salancik 1978) inform this paper's hypotheses because they both argue that board composition is an important predictor of strategic decision-making (Forbes and Milliken 1999). The upper echelons theory argues that directors' thought processes and decisions reflect their experiences, knowledge, and values (Hambrick 2007). The resource dependence theory postulates that directors on boards represent a strategic set of resources at the service of the organization in that they provide advice and counsel, access to information channels and resources, and enhanced legitimacy to the organization (Pfeffer and Salancik 1978). The resources that directors bring to the board include knowledge, skills, experience, networks, and values (Hambrick 2007; Hillman et al. 2000). Consequently, the more diverse a board is, the wider the variety of perspectives, the broader the differentiated knowledge, and the greater the access to diversified networks—all of which contribute to enhanced decision-making and problem solving (Hambrick and Mason 1984). Empirical evidence supports the contention that boards inform strategic decisions. For example, research has shown that various board compositions are associated with internationalization choices (Carpenter et al. 2003; Tihanyi et al. 2000) and with R&D investment decisions (Baysinger and Hoskisson 1990; Kor 2006). As to the aspects of board composition that are relevant for understanding the formation of environmentally themed alliances, female board representation and board independence are considered to be particularly pertinent (Post et al. 2011).

Female Representation on Boards

Individual differences notwithstanding, a large body of research suggests that women's values are more closely aligned than men's with environmental responsiveness. In particular, meta-analyses show women to be consistently more concerned than men with the environment (Davidson and Freudenburg 1996). Meta-analytical findings also suggest that women, compared to men, are slightly more concerned with responding to the needs of others (Jaffee and Hyde 2000). Further, in a preliminary study of undergraduate business students, although most of the students would not engage in unethical behavior, a larger proportion of women (than of men) stated they would not act unethically because they considered it wrong (McInerney et al. 2010). Environmental, ethical, and caring values are likely to affect decision-making when women assume the power positions usually held by men. Research on gender differences in values extends to studies that target board directors. Compared to their male counterparts, female directors, on average, place more emphasis on self-transcendent values (Adams and Funk 2012) and on discretionary aspects of social responsibility (Ibrahim and Angelidis 1994). Outside of work, female directors tend to show more interest than male directors in activities such as philanthropy and community service (Groysberg and Bell 2013). Yet, as the literature on tokenism (Duguid et al. 2012; Kanter 1977; Yoder 1991) and minority voice (Asch 1955; De Dreu and West 2001; McInerney-Lacombe et al. 2008) suggest, when women are in the numerical minority in a group, there is a serious risk that their voices and values will not be heard or taken into account. These findings extend to boards, for which empirical research has shown that as the proportion of women on the board increases, the risks of tokenism decrease (Konrad et al. 2008; Torchia et al. 2011), making it more likely that women's values will influence board decisions. In summary, the literature suggests that firms with more women on their boards tend to act in more socially responsible ways than those with no women or fewer women.

While past studies have shown links between gender diversity on boards and corporate environmental performance (e.g., Bernardi et al. 2009; Post et al. 2011), this study proposes that the increased representation of women on a board may also affect specific strategic behaviors, such as the formation of renewable energy alliances, and that it is through the enactment of such strategic behaviors that the representation of women on a board contributes to favorable corporate environmental performance. To date, only limited research has explored how female representation on boards may affect board strategy. Konrad et al. (2008) conducted interviews with 50 women directors of Fortune 1000 firms that revealed that women directors are actively involved in organizational strategy for new product and market development and for other strategic issues. Considering the heightened environmental concerns of women as compared to men, it is expected that they will positively influence the formation of renewable energy alliances. Hence, this paper hypothesizes that as the representation of female directors on a board increases, firms are more likely to engage in a renewable energy alliance.

Hypothesis 1 As the representation of female directors on a board increases, firms are more likely to engage in a renewable energy alliance.

Independent Director Representation on Boards

This paper argues that the representation of independent directors on boards is also likely to influence a firm's adoption of renewable energy strategic alliances. Board directors recruited from outside of the firm can be either

affiliated or independent (Gordon 2007, pp. 1473–1476). Following agency theory logic, among the outside directors, the independent ones are expected to have a greater impact on corporate governance. Independent directors are primarily interested in aligning with stakeholder interests and using their contacts and business expertise to participate in the strategy of the focal firm to maintain or enhance their own reputations, which is intertwined with addressing stakeholder issues. Therefore, independent directors contribute to a board by more consistently striving to satisfy stakeholder concerns than inside directors. Past research has shown that independent directors have significant influence on strategic corporate decisions (Rhoades et al. 2000).

Boards are facing increasing pressure from stakeholders around sustainability issues (Kakabadse 2007; Rahim 2012). Proxy statements for change illustrate stakeholders' growing demands that boards be involved in sustainability-related issues. In one instance in the oil industry, large, long-standing investors appealed to the board of directors for a resolution to split the roles of Chairperson and CEO in order to facilitate investment in renewable energy (McNulty 2008). Investors have pressured boards not only to improve corporate environmental performance, but also to consider the long-term viability of their firms in an industry heavily dependent on a diminishing natural resource (McNulty 2008).

Independent directors may be more responsive than insiders to stakeholder pressures around sustainability for at least two important reasons. First, by effectively serving stakeholders' interests, independent directors can enhance their reputations and, thereby, improve their chances of receiving additional board nominations. Directors are not only critiqued on the results of the focal organization, but also on how well they meet their responsibilities of promoting the stakeholders' interests concerning long-term vision, growth, and strategies (Daily et al. 2003). Independent board members are more likely than inside board members to support the firm taking strategic action that varies from action supported by the CEO/Chairperson because the independent directors are not employed by the focal firm (Johnson et al. 1993; Westphal and Fredrickson 2001). Therefore, independent board members have more incentive to align themselves with stakeholders, rather than with the CEO/Chairperson, and to encourage the firm to pursue sustainability-themed strategies, such as renewable energy alliances. For example, independent directors have aligned themselves with stakeholders to lead pre-emptive efforts to improve corporate environmental performance in anticipation of growing environmental litigation (Kassinis and Vafeas 2002). Swann (2013) writes about the clubby nature of corporate boards in the U.S. oil and gas industry. He then highlights examples of boards' lack of independence in Chesapeake, SandRidge, and McMoRan Explorations, which led to serious agency offenses (Swann 2013). Nevertheless, activist shareholders are beginning to exert pressures on these boards—Carl Icahn led shareholders to a successful campaign to overhaul Chesapeake's friendly board to a more independent board with rapid turnover options and the hedge fund TPG-Axon Capital publicly challenged SandRidge's corporate governance. These examples show how independent directors are beginning to play a crucial role in improving the overall governance in the U.S. oil and gas companies.

Second, independent directors can use their rich and diverse backgrounds, experiences, and network ties to facilitate alliances that require boundary spanning strategic moves (Baysinger and Hoskisson 1990; Carpenter and Westphal 2001). In contrast, the experience and knowledge of inside directors may be more limited. For both of these reasons, this paper advances the following hypothesis.

Hypothesis 2 As the representation of independent directors on a board increases, firms are more likely to engage in a renewable energy alliance.

Renewable Energy Alliances as a Predictor of Corporate Environmental Performance

Alliances for renewable energy between environmentally harmful organizations, such as oil companies, and pro-environment firms can provide many benefits to environmentally harmful oil or gas firms. Of particular interest, the oil company can benefit by diversifying from providing a nonrenewable polluting base product into being a socially respected company providing a renewable resource, thereby reaping pro-environmental credentials. The pro-environmental credentials that a large, socially challenged organization derives from forming an alliance with a smaller, socially responsible firm provides the large firm with enhanced legitimacy (Dacin et al. 2007). For example, Olk and Ring (1997) found that a tobacco firm aligning with another firm for a positive social cause signaled to stakeholders that the focal tobacco firm was more diverse than its controversial product suggested. Thus, oil and gas firms can gain pro-environmental credentials from their renewable energy alliances, and such credentials are expected to positively affect their corporate environmental performance ratings.

Because burning fossil fuel, the product output of the oil and gas industry, is harmful to the natural environment, oil and gas firms often struggle to uphold an image of being environmentally concerned corporate citizens. For example, in the aftermath of a public confrontation with Greenpeace over the decommissioning of the Brent Spar floating oil storage facility, Shell needed to project an

environmentally favorable image to restore public trust in the organization (Arts 2002). By changing its strategy to engage with its critics, issuing several reports on environmental concerns and profits, and formally acknowledging the importance of multiple stakeholders, Shell was eventually able to restore public trust in the organization. The Brent Spar conflict and Shell's accommodation to the demands by environmentalist organizations reflect a higher standard that oil and gas companies must adhere to in order to legitimize their pro-environment position (cf., Grolin 1999 for details on the Brent Spar case). Firms facing strong opposition from stakeholders for their environmentally harmful activities try in numerous ways to redeem themselves. Since a strategic alliance involves another firm, it may be considered a more binding and tangible action toward environment sustainability than an initiative that is strictly governed by the focal firm. Moreover, forming renewable energy alliances is among the most visible redeeming initiatives that an oil and gas firm can take.

In addition, just like partnering firms in alliance arrangements tend to benefit from legitimacy transfer (Podolny and Page 1998), it is expected that environmentally hazardous firms will benefit from the pro-environmental halo of an environment friendly alliance partner. Firms in the oil and gas industry may be able to legitimize their pro-environment position by forming alliances with partnering firms that have a strong reputation for environmental conservancy. The relationship can breed social capital in the form of a pro-environment reputation and enable the oil and gas firm to better compete with rival firms within the industry (Burt 2005; Saxton 1997). For all these reasons, forming renewable energy alliances is expected to increase an oil and gas firm's corporate environmental performance for the following year. Accordingly, this paper proposes the following hypothesis:

Hypothesis 3 Organizations that form renewable energy alliances will reap higher corporate environmental performance scores the following year, as compared to organizations that do not form renewable energy alliances.

Renewable Energy Alliances as Mediator of the Board Composition–Corporate Environmental Performance Relationship

Thus far, this paper has hypothesized that firms with a higher representation of female directors and/or independent directors on their boards are more likely to form strategic renewable energy alliances. This paper has further conjectured a positive relationship between renewable energy alliance formation and corporate environmental performance scores. Thus, it is expected that the formation of renewable energy alliances will mediate the relationship between both the proportion of female directors and the number of independent directors and corporate environmental performance.

Organizations routinely react to legitimacy threats by engaging in strategic alliances, which management and the board consider a low cost avenue for exploring new options (Rahman and Korn 2012). Strategic alliances that address social concerns appear to confer legitimacy on the firms engaging in them (Dacin et al. 2007; Oliver 1990). Therefore, this paper proposes that the legitimacy derived from the formation of a renewable energy alliance yields measureable changes in corporate environmental performance ratings.

Hypothesis 4a Renewable energy alliances mediate the positive relationship between female board representation on the board and corporate environmental performance.

Hypothesis 4b Renewable energy alliances mediate the positive relationship between independent director representation on the board and corporate environmental performance.

Method

Sample

The sampling frame of this research comprises all publicly traded oil and gas companies headquartered in the US that were listed in the 2009 Forbes.com Special Report, The Global 2000. This is a list of the 2000 biggest firms worldwide that Forbes compiles annually based on a proprietary formula of firm sales, profits, assets, and market value data. The Global 2000 list contains 36 oil and gas firms from the US and is reproduced in Appendix 1. We chose the oil and gas industry for this study because it is a target of sustainability concerns for depletion of oil and gas resources and pollution (Du and Vieira Jr. 2012; Lindgreen et al. 2012; Roeck and Delobbe 2012) and because of the reliance on oil and gas for energy (Hart and Milstein 1999). We limited our sample to U.S. firms to restrict the corporate governance variables to a single country and also because of the lack of data available for oil and gas organizations owned by other sovereign nations. To measure corporate environmental performance, defined in this paper as environmentally responsible business practices and outcomes, we computed annual changes in the KLD indicators of a firm's environmental strength. Consistent with the present definition of corporate environmental performance, KLD indicators include an assessment of firms on a range of environmentally responsible business practices and outcomes (e.g., beneficial environmental products and

services; pollution prevention activities; recycling activities) and have been used elsewhere to measure corporate environmental performance (e.g., Post et al. 2011; Walls et al. 2012). Since corporate environmental performance data on an annual basis are needed to compute change scores and since KLD data coverage is dramatically limited before 2003, the longitudinal data for this study needed to cover a number of years had to begin in 2004 (i.e., to compute the change in environmental performance in 2004, KLD data of 2003 were used as the base). We chose not to collect data after 2008 to avoid any contamination in the data due to the global financial crisis. Therefore, we limited the data to the 5-year time span of 2004–2008. This time span is appropriate as sustainability is a relatively new phenomenon that has been growing as a stakeholder concern in recent years and social concerns have increasingly become an integral part of board responsibility during this time period (Money and Schepers 2007).

Measures

Dependent Variable

We measured corporate environmental performance with scores obtained from the KLD database. In keeping with the practice of recently published research on corporate environmental performance (e.g., Mattingly and Berman 2006; Post et al. 2011), we used KLD scores on environmental performance on a disaggregate basis. For each firm in the sample, we aggregated, on an annual basis, the KLD Environmental Strengths scores into a corporate environmental performance score. KLD includes seven environmental strengths: beneficial environmental products and services; pollution prevention activities; recycling activities; use of alternative fuels; environmental communications; above-average environmental performance for its property, plant, and equipment; and other strengths. We computed changes in corporate environmental performance by subtracting the score for each year from that of the following year. A positive number indicated an increase in the corporate environmental performance score of the firm, whereas a negative number indicated a decrease in the corporate environmental performance score. Because this paper is concerned with whether the formation of renewable energy alliances in 1 year (versus the absence of renewable energy alliances) improves corporate environmental performance scores the following year and because there is no conceptual argument for a decrease in such scores when alliances are not formed, we dichotomized the changes in the corporate environmental performance scores by indicating all instances of increases in corporate environmental performance scores as 1, and as 0 otherwise.

Mediator We identified renewable energy alliances using the Lexis-Nexis search engine for each of the 36 firms. We analyzed the content of all alliance formation announcements to identify alliances for renewable energy technology. Following Resch et al. (2008), we identified renewable energy technology by using the following search terms: tidal and wave energy, hydropower, geothermal electricity, biomass, solar energy, and onshore and offshore wind energy. If alliance announcements contained these keywords, we classified the alliances as renewable energy alliances. For each firm in our sample, we counted the number of renewable alliances that the firm engaged in on a yearly basis.

Independent Variables

We identified women directors and independent directors by searching Bloomberg Research and corporate websites. We identified women directors by their name in the Bloomberg dataset and, if available, by their picture or by references to the female gender pronoun on the corporate website. We counted directors as independent directors if they were identified as being associated with a firm other than the focal firm. In the oil and gas industry, firms tend to recruit more affiliated outside directors in the form of political directors when political competition overtakes market competition (Helland and Sykuta 2004). To exclude political directors from the sample, this study defined independent directors as business executives from outside the focal corporation (Chan and Li 2008). We identified board committees with responsibility for environmental concerns by using proxy filings found on corporate websites or in the SEC Edgar system. We used percentage of women on the board and number of independent directors on the board as the independent variables for representation of women and representation of independent directors. We computed percentage of women by dividing the number of women by board size on an annual basis. Rather than compute independent director representation as a percentage, we left the independent directors as raw data for two reasons. First, by dividing both of the independent variables with the same board size number, we would introduce unnecessary inter-correlation between the independent variables. Second, since boards often have a very small number of women, the conversion to a percentage resulted in a smoother distribution of the variable's data.

Control Variables

Companies may differ in their motivation to enhance their environmental performance depending on industry characteristics (e.g., their proximity to the end consumer and their potential for social and environmental damages)

(Hoepner et al. 2010), on firm characteristics that increase their visibility (e.g., size, public/private status) (Stanwick and Stanwick 1998), and on country of origin characteristics (Zadek and MacGillivray 2007) (e.g., institutionalization of socially responsible business practices). Therefore, industry (i.e., oil and gas), firm size (per Forbes Global 2000 firms), country of origin (i.e., all U.S. firms), and public–private status (i.e., all publicly-traded firms) are controlled for by the sampling approach. Additionally, we statistically controlled for the number of insiders on the board (Chan and Li 2008) because, compared to outside directors (i.e., affiliate and independent directors), insiders place less value on social responsibility (Ibrahim and Angelidis 1995) and are less appreciative of the long-term value of attending to the environmental issues (Johnson and Greening 1999). Because age is associated with concern with environmental issues (Diamantopoulos et al. 2003; Klineberg et al. 1998; Phillips 1999), the analyses also controlled for the age of the youngest member of the board. To control for possible endogeneity, that is, to control for the possibility that the relationship between female board representation and the formation of renewable energy alliances is due to an underlying firm propensity toward social responsibility, we controlled for two factors that may be especially good indicators of a firm's propensity toward social responsibility: the number of women in top management (Fryxell and Lerner 1989) and the presence of a social/environmental concerns committee on the board (Ayuso et al. 2012). Following Bear et al. (2010), we did not include board size as a direct control variable as it is an indicator of the other count-based board characteristics (e.g., number of independent directors).

Model Estimation

Due to the dispersed nature of the data for renewable energy alliances, we used negative binomial regression for panel data to examine whether renewable energy alliance formation is affected by the percentage of women on the board and the number of independent directors on the board. Examining relative efficacy of competing econometric methods to analyze dependent variables that have dispersed count data, scholars favor the negative binomial over poisson, generalized least square, and ordinary least square approaches (Gardner et al. 1995). This view is consistent with the Stata manual's assertion that negative binomial regression is appropriate when the dependent variable comprises over-dispersed count-based observations (Cameron and Trivedi 2009). We used as control variables: the age of the youngest member of the board, social/environmental committees within the board, and the number of women on the top management team. We used logistic regression for panel data to examine the effect of the formation of renewable energy alliances on increases in corporate environmental performance scores (Long 1997). We used the two predictor variables of renewable energy alliances—percentage of women on the board and number of independent directors on the board—as control variables. Since we used two different regression models, the classic approach to mediation (Baron and Kenny 1986) could not be used. We first used the Sobel test to examine mediation. However, since the Sobel test yields inaccurate results for small sample sizes, we also used the bootstrapping test of mediation (Preacher and Hayes 2004).

Results

Table 1 contains descriptive means, standard deviations, and correlations for all of the variables. The 36 firms in the sample experienced a total of 20 increases in corporate environmental performance scores from 2004 to 2008. These firms formed a total of 21 renewable alliances during this period. Among the firms in the sample, the mean of percentage of women on the board was 6.2 %, with a standard deviation of 0.080 and a range from 0 to 37.5 % (among the companies with at least one woman on the board, women represent on average 13.6 % of directors, with a range between 6.3 and 37.5 % of directors). The mean number of independent directors on the board was 7.6, with a standard deviation of 2.7 and a range from 0 to 15. Among the independent directors, fewer than 10 % were female. The correlation between the measures of female board representation and independent business director representation is moderate, suggesting that they capture different aspects of board composition.

Table 2 provides the results of the negative binomial regression analyses of the effect of the two independent variables on the mediating variable (i.e., formation of the renewable energy alliances). We ran the regression under random effects, generating the most conservative results. Hypothesis 1 predicted that an increase in the representation of women on the board would be positively associated with the formation of renewable energy alliances. The coefficient for the representation of women on the board is positive and statistically significant ($p < 0.05$). Therefore, the data supported Hypothesis 1. Hypothesis 2 predicted that the representation of independent directors on the board would be positively associated with the formation of renewable energy alliances. The coefficient is positive and statistically significant ($p < 0.01$). Thus, the findings support Hypothesis 2.

Table 3 provides the results of the logistic regression analyses of the effect of the renewable energy alliances on any change in corporate environmental performance scores. Hypothesis 3 predicted that renewable alliance

Table 1 Correlations, means, and standard deviations

		Mean	SD	1	2	3	4	5	6
1	Change in corporate environ. responsibility[a]	0.111	0.315						
2	Renewable energy alliance formation	0.117	0.637	0.205**					
3	Representation of women on the board (%)	0.062	0.080	0.173*	0.188*				
4	Representation of independent directors on the board (*N*)	7.567	2.660	0.085	0.334***	0.422***			
5	Age of youngest member on board	51.533	4.305	0.040	0.212**	0.188*	0.276***		
6	Environmental concerns committee[a]	0.283	0.452	0.092	0.253***	0.430***	0.516***	0.100	
7	Number of women in management	1.217	1.395	0.142^{+}	−0.085	−0.002	0.280***	0.086	0.159*

$N = 180$ (36 firms over 5 years)

$^{+}$ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

[a] Spearman's rho reported due to nominal scale of the variable

Table 2 Negative binomial regression (with random effects) coefficient and significance level of percentage of women and number of independent directors on the board on renewable energy alliance formation

Variables	Model 1	Model 2
Hypothesized		
Representation of women on the board (%)		13.709* (2.32)
Representation of independent directors on the board (*N*)		0.857** (3.02)
Controls		
Age of youngest member on board	0.429* (2.26)	0.681** (3.04)
Social/environmental concerns committee	2.773^{+} (1.69)	−0.779 (−0.41)
Number of women in top management	−0.140 (−0.25)	−0.283 (−0.47)
Constant	−26.238* (−2.41)	−49.497*** (−3.60)
Wald χ^2	8.08*	22.02***
Probability > χ^2	0.0444	0.0005

$N = 180$ (36 firms over 5 years); *z*-statistic in parentheses

$^{+}$ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 3 Logistic regression (with random effects) coefficient and significant level of renewable energy alliance formation on increases in corporate environmental performance

Variables	Model 1	Model 2
Hypothesized		
Renewable energy alliance formation		0.579* (2.04)
Controls		
Representation of women on the board (%)	5.251^{+} (1.87)	5.078^{+} (1.78)
Representation of independent directors on the board (*N*)	0.011 (0.91)	−0.071 (−0.66)
Constant	−2.565*** (−3.36)	−2.041** (−2.59)
Wald χ^2	4.19	8.46*
Probability > χ^2	0.1230	0.0373

$N = 180$ (36 firms over 5 years); *z*-statistic in parentheses

$^{+}$ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

formation would be positively associated with increases in corporate environmental performance scores. The coefficient is positive and statistically significant ($p < 0.05$), offering support for Hypothesis 3.

Hypotheses 4a and 4b predicted that formation of renewable energy alliances would mediate the relationship between increases in corporate environmental performance and the representation of women on the board (Hypothesis 4a) and the representation of independent directors on the board (Hypothesis 4b). We ran both the Sobel test and the bootstrapping approach to test for the mediation hypotheses. The results are in the expected direction but not statistically significant at the traditional standard of $p < 0.05$ level. However, the one-tailed significance is within the $p < 0.10$ level for the Sobel test result and the confidence interval is within the 90th percentile for bootstrapping results based on the same assumption for both mediation hypotheses (i.e., Hypotheses 4a and 4b). Overall, there is clear evidence of mediation, albeit the effect, based on the small sample, is weak.

Discussion

This study contributes to the literature on board composition and firm social performance by exposing one mechanism—the formation of sustainability-themed alliances—through which board composition might affect the otherwise distal social performance outcome: corporate environmental performance. While this study focuses on one

dimension of social performance (i.e., environmental performance), the study contributes more broadly to the research linking female directors and independent directors to social performance by suggesting one pathway (i.e., strategic alliance formation) through which female and independent directors may indirectly influence a firm's social performance. Results from the 36 firms that make up the U.S. oil and gas industry reveal that as the relative representation of women on the board increases and as the number of independent directors grows, firms are more likely to form renewable energy alliances. In support of this model, sustainability-themed alliances (in particular, renewable energy alliances) enhanced a firm's environmental performance scores. Further, the evidence suggests that the formation of renewable energy strategic alliances partially explains the positive relationships between female board representation and corporate environmental performance and between the representation of independent directors on a board and corporate environmental performance.

We note that the formation of renewable energy alliances only partially explains why firms with a higher representation of female directors and/or independent directors have a higher corporate environmental performance. This suggests that, while forming renewable energy alliances is a significant strategic move indicating a firm's commitment to environmental performance, there may be other strategic initiatives (e.g., ISO 14001 certification, aligning internal business processes to reduce paper waste, reducing the amount of toxins in the environment, etc.) that board members promote to strengthen corporate environmental performance. Because independent and female directors are especially attentive to shareholders' concerns, they may also be more attuned to the public relations strategies that sustainability-themed alliances may present.[1] Female directors, for example, are more likely than their male counterparts to bring to the board specialized expertise, such as public relations (Hillman et al. 2002). Further research should continue to explore how sustainability-themed strategic actions can help explain corporate environmental performance differentials between firms with more or less diverse boards (in terms of female representation and independence of directors).

It is also conceivable that the formation of a renewable energy alliance does not immediately capture actual pro-environmental outcomes of that alliance. We note that renewable energy alliances help oil and gas firms with both short- and long-term goals. Our findings show that the formation of renewable energy alliances was positively associated with increases in corporate environmental performance scores the following year. Such increases may positively impact firm reputation and business opportunities (Bear et al. 2010; Karpoff et al. 2005). Renewable energy alliances also move oil and gas firms closer to their goals of having an alternative energy-based business model, thereby contributing to long-term viability. The intended benefits of strategic alliances may take years to materialize (Rahman and Korn 2012). The following year's corporate environmental scores are unlikely to entirely reflect the pro-environmental outcomes that the renewable energy alliances would eventually generate. Future studies should estimate and account for the lag required for sustainability-themed alliances to bear fruit.

This study is not without limitations. One limitation is that the restriction of the sample to the oil and gas industry calls into question the generalizability of the findings to other industries. In this study, we chose to focus on one of the most heavily polluting industries because it is most likely to be subject to increased stakeholder pressure regarding sustainability (Du and Vieira Jr. 2012; Lindgreen et al. 2012; Roeck and Delobbe 2012). While executives and directors of oil and gas companies are responsible for generating short-term returns on investment for their shareholders, directors in this industry are also required to protect stakeholders' long-term interests. While the results elucidate processes in the oil and gas industry, the study may inform the board composition-firm outcome relationships in other industries where dramatic changes require firms to rethink their business model in order to ensure their long-term viability.

A second limitation relates to the choice of the years for which we collected data: 2004–2008. The financial crisis has had such major influence on corporate performance, that including data from those years would generate excessive noise and instability in our variables. However, given the time span for the study's data, we are not able to account for the critical growth of fracking (since 2008) as an increasing concern in the oil and gas industry. Future research may want to focus on controlling for some of the noise in the data due to the financial crisis, and examine the association between fracking and sustainability-themed alliance formation.

Another limitation is that the research does not account for external events affecting the firms in the sample (e.g., violations of the Oil Pollution Act of 1990) that may have put a downward pressure on corporate environmental performance scores, thus introducing the possibility that the results are too conservative. The search for violations of the Oil Pollution Act committed by firms in the sample yielded only one instance of such a violation (in 2007, New York State sued Exxon for a decades old spill in Brooklyn), suggesting that external events warranting a legal lawsuit on the basis of the Oil Pollution Act of 1990 did not affect

[1] We are indebted to one of our anonymous reviewers for this suggestion.

the findings. Nevertheless, there may be other external events (not warranting a legal lawsuit) that we have not accounted for in the study. However, with a small sample size, we are not able to account for additional control variables. Finally, while the use of environmental performance KLD scores on a disaggregate basis addresses important issues with the measurement of corporate environmental performance (Mattingly and Berman 2006), future studies may find it helpful to rely on more transparent measures of environmental performance (e.g., Rahman and Post 2012)

A large body of work has established that firms form alliances when they are faced with novel situations that require adaptation and innovation (Das and Teng 1998). Our understanding of the mechanisms through which board composition affects firm outcomes is more limited (Pye and Pettigrew 2005). The results of this study suggest that board composition affects corporate environmental performance by influencing the adoption of sustainability-themed strategic alliances. These findings, therefore, highlight one mechanism that might explain how board composition affects a firm's overall environmental performance.

Appendix 1

The sample of oil and gas companies for this study (in alphabetic order)

Anadarka Petroleum
Apache
Baker Hughes
BJ Services Company
Cameron International
Chesapeake Energy Corporation
Chevron
ConocoPhillips
Continental Resources
Denbury
Devon Energy
El Paso
Ensco International
EOG resources
ExxonMobil
FMC Technologies
Halliburton
Helmerich & Payne
Hess
Marathon Oil
Murphy Oil Corporation
National Oilwell Varco
Noble Energy
Occidental Petroleum
Petrohawk Energy
Pride International
Range Resources
Smith International
Southwestern Energy Company
Spectra Energy
Sunoco
Tesoro
Ultra Petroleum Corporation
Valero Energy
Western Refining
XTO Energy (formerly Cross Timbers Oil Company)

References

Accenture, & UNGC. (2010). *A new era of sustainability: UN Global Compact-Accenture CEO Study 2010*. New York: United Nations Global Compact and Accenture.

Adams, R. B., & Funk, P. (2012). Beyond the glass ceiling: Does gender matter? *Management Science, 58*(2), 219–235.

Arts, B. (2002). Green alliances' of business and NGOs: New styles of self-regulation or 'dead-end roads'? *Corporate Social—Responsibility and Environmental Management, 9*(1), 26–36.

Asch, S. E. (1955). Opinions and social pressure. *Scientific American, 193*(5), 31–35.

Ayuso, S., Rodríguez, M. A., García-Castro, R., & Ariño, M. A. (2012). Maximizing stakeholders' interests: An empirical analysis of the stakeholder approach to corporate governance. *Business and Society, 20*(10), 1–26.

Bagliani, M., Dansero, E., & Puttilli, M. (2010). Territory and energy sustainability: The challenge of renewable energy sources. *Journal of Environmental Planning and Management, 53*(4), 457–472.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173–1182.

Baysinger, B., & Hoskisson, R. (1990). The composition of boards of directors and strategic control: Effects on corporate strategy. *Academy of Management Review, 15*(1), 72–87.

Bear, S., Rahman, N., & Post, C. (2010). The impact of board diversity and gender composition on corporate social responsibility and firm reputation. *Journal of Business Ethics, 97*(2), 207–221.

Bernardi, R. A., Bosco, S. M., & Columb, V. L. (2009). Does female representation on boards of directors associate with the 'Most Ethical Companies' list? *Corporate Reputation Review, 12*(3), 270–280.

Boulouta, I. (2013). Hidden connections: The link between board gender diversity and corporate social performance. *Journal of Business Ethics, 113*(2), 185–197.

Burt, R. S. (2005). *Brokerage and closure: An introduction to social capital*. Oxford: Oxford University Press.

Cameron, A. C., & Trivedi, P. K. (2009). *Microeconometrics using Stata*. College Station, TX: Stata Press.

Carpenter, M. A., Pollock, T. G., & Leary, M. M. (2003). Governance, the experience of principals and agents, and global strategic intent: Testing a model of reasoned risk taking. *Strategic Management Journal, 24*, 803–820.

Carpenter, M. A., & Westphal, J. D. (2001). The strategic context of external network ties: Examining the impact of director appointments on board involvement in strategic decision making. *Academy of Management Journal, 44*(4), 639–660.

Chan, K., & Li, J. (2008). Audit committee and firm value: Evidence on outside top executives as expert-independent directors. *Corporate Governance: An International Review, 16*(1), 16–31.

Dacin, M. T., Oliver, C., & Roy, J.-P. (2007). The legitimacy of strategic alliances: An institutional perspective. *Strategic Management Journal, 28*(2), 169–187.

Daily, C. M., Dalton, D. R., & Cannella, A. A., Jr. (2003). Corporate governance: Decades of dialogue and data. *Academy of Management Review, 28*(3), 371–382.

Darnall, N., Henriques, I., & Sadorsky, P. (2010). Adopting proactive environmental strategy: The influence of stakeholders and firm size. *Journal of Management Studies, 47*(6), 1072–1094.

Das, T. K., & Teng, B. S. (1998). Resource and risk management in the strategic alliance making process. *Journal of Management, 24*(1), 21–42.

Davidson, D. J., & Freudenburg, W. R. (1996). Gender and environmental risk concerns: A review and analysis of available literature. *Environment and Behavior, 28*(3), 302–339.

De Dreu, C. K. W., & West, M. A. (2001). Minority dissent and team innovation: The importance of participation in decision-making. *Journal of Applied Psychology, 86*(6), 1191–1201.

Diamantopoulos, A., Schlegelmilch, B. B., Sinkovics, R. R., & Bohlen, G. M. (2003). Can socio-demographics still play a role in profiling green consumers? A review of the evidence and an empirical investigation. *Journal of Business Research, 56*(6), 465–480.

Du, S., & Vieira, E. T., Jr. (2012). Striving for legitimacy through corporate social responsibility: Insights from oil companies. *Journal of Business Ethics, 110*(4), 413–427.

Duguid, M. M., Loyd, D. L. T., & Pamela, S. (2012). The impact of categorical status, numeric representation, and work group prestige on preference for demographically similar others: A value threat approach. *Organization Science, 23*(2), 386–401.

Dussauge, P., Garrette, B., & Mitchell, W. (2000). Learning from competing partners: Outcomes and durations of scale and link alliances in Europe, North America and Asia. *Strategic Management Journal, 21*(2), 99–126.

Finkelstein, S., & Mooney, A. C. (2003). Not the usual suspects: How to use board process to make boards better. *Academy of Management Perspectives, 17*(2), 101–113.

Fodio, M. I., & Oba, V. C. (2012). Boards' gender mix and extent of environmental responsibility information disclosure in Nigeria: An empirical study. *European Journal of Business and Management, 4*(14), 163–169.

Forbes, D. P., & Milliken, F. J. (1999). Cognition and corporate governance: Understanding boards of directors as strategic decision-making groups. *Academy of Management Review, 24*(3), 489–505.

Fryxell, G. E., & Lerner, L. L. (1989). Contrasting corporate profiles: Women and minority representation in top management positions. *Journal of Business Ethics, 8*(5), 341–352.

Galbreath, J. (2011). Are there gender-related influences on corporate sustainability? A study of women on boards of directors. *Journal of Management & Organization, 17*(1), 17–38.

Gardner, W., Mulvey, E. P., & Shaw, E. C. (1995). Regression analyses of counts and rates: Poisson, overdispersed Poisson, and negative binomial models. *Psychological Bulletin, 118*(3), 392–404.

Gordon, J. N. (2007). The rise of independent directors in the United States, 1950–2005: Of shareholder value and stock market prices. *Stanford Law Review, 59*(6), 1465–1568.

Grolin, J. (1999). Corporate legitimacy in risk society: The case of Brent Spar. *Business Strategy and the Environment, 7*(4), 213–222.

Groysberg, B., & Bell, D. (2013). Dysfunction in the boardroom. *Harvard Business Review, 91*(6), 89–97.

Hambrick, D. C. (2007). Upper echelons theory: An update. *Academy of Management Review, 32*(2), 334–343.

Hambrick, D. C., & Mason, P. A. (1984). Upper echelons: The organization as a reflection of its top managers. *Academy of Management Review, 9*(2), 193–206.

Hart, S. L., & Milstein, M. B. (1999). Global sustainability and the creative destruction of industries. *Sloan Management Review, 41*(1), 23–25.

Helland, E., & Sykuta, M. (2004). Regulation and the evolution of corporate boards: Monitoring, advising, or window dressing? *Journal of Law and Economics, 47*(1), 167–193.

Hillman, A. J., Cannella, A. A., Jr., & Harris, I. C. (2002). Women and racial minorities in the boardroom: How do directors differ? *Journal of Management, 28*(6), 747–763.

Hillman, A., Cannella, A., & Paetzold, R. (2000). The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change. *Journal of Management Studies, 37*(2), 235–255.

Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *Academy of Management Review, 28*(3), 383–396.

Hoepner, A. G. F., Yua, P.-S., & Ferguson, J. 2010. Corporate social responsibility across Industries: When can who do well by doing good? SSRN: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1284703.

Ibrahim, N. A., & Angelidis, J. P. (1994). Effect of board members' gender on corporate social responsiveness orientation. *Journal of Applied Business Research, 10*(1), 35–40.

Ibrahim, N. A., & Angelidis, J. P. (1995). The corporate social responsiveness orientation of board members: Are there differences between inside and outside directors? *Journal of Business Ethics, 14*(5), 405–410.

Jaffee, S., & Hyde, S. J. (2000). Gender differences in moral orientation: A meta-analysis. *Psychological Bulletin, 126*(5), 703–726.

Johnson, R. A., & Greening, D. W. (1999). The effects of corporate governance and institutional ownership types on corporate social performance. *Academy of Management Journal, 42*(5), 564–576.

Johnson, R. A., Hoskisson, R. E., & Hitt, M. A. (1993). Board of director involvement in restructuring: The effects of board versus managerial controls and characteristics. *Strategic Management Journal, 14*(S1), 33–50.

Kakabadse, A. P. (2007). Being responsible: Boards are reexamining the bottom line. *Leadership in Action, 27*(1), 3–6.

Kanter, R. M. (1977). Some effects of proportions on group life: Skewed sex ratios and responses to token women. *American Journal of Sociology, 82*(5), 965–990.

Karpoff, J. M., Lott, J. R., Jr., & Wehrly, E. W. (2005). The reputational penalties for environmental violations: Empirical evidence. *Journal of Law and Economics, 48*(2), 653–675.

Kassinis, G., & Vafeas, N. (2002). Corporate boards and outside stakeholders as determinants of environmental litigations. *Strategic Management Journal, 23*(5), 399–415.

Kimball, A., Palmer, D., & Marquis, C. (2012). *The impact of women top managers and directors on corporate environmental performance*. Davis, CA: University of California.

Klineberg, S., McKeever, M., & Rothenbach, B. (1998). Demographic predictors of environmental concern: It does make a

difference how it's measured. *Social Science Quarterly, 79*(4), 734–753.
Konrad, A. M., Kramer, V. W., & Erkut, S. (2008). The impact of three or more women on corporate boards. *Organizational Dynamics, 37*(2), 145–164.
Kor, Y. Y. (2006). Direct and interaction effects of top management team and board compositions on R&D investment strategy. *Strategic Management Journal, 27*(11), 1081–1099.
Lindgreen, A., Maon, F., Reast, J., & Yani-De-Soriano, M. (2012). Guest editorial: Corporate social responsibility in controversial industry sectors. *Journal of Business Ethics, 110*(4), 393–395.
Long, J. S. (1997). *Regression models for categorical and limited dependent variables*. Thousand Oaks, CA: Sage.
Luchsinger, V. (2009). Strategy issues in business sustainability. *Business Renaissance Quarterly, 4*(3), 163–174.
Mallin, C. A., & Michelon, G. (2011). Board reputation attributes and corporate social performance: An empirical investigation of the U.S. Best Corporate Citizens. *Accounting and Business Research, 41*(2), 119–144.
Marquis, C., & Lee, M. (2013). Who is governing whom? Executives, governance, and the structure of generosity in large U.S. firms. *Strategic Management Journal, 34*(4), 483–497.
Mattingly, J. E., & Berman, S. L. (2006). Measurement of corporate social action: Discovering taxonomy in the Kinder Lydenburg Domini ratings data. *Business and Society, 45*(1), 20–46.
McInerney, M. L., Mader, D. D., & Mader, F. H. (2010). Gender differences in responses to hypothetical business ethical dilemmas by business undergraduates. *Journal of Diversity Management, 5*(1), 37–42.
McInerney-Lacombe, N., Bilimoria, D., & Salipante, P. F. (2008). Championing the discussion of tough issues: How women corporate directors contribute to board deliberations. In S. Vinnicombe, V. Singh, R. J. Burke, D. Bilimoria, & M. Huse (Eds.), *Women on Corporate Boards of directors: International research and practice* (pp. 123–139). Cheltenham: Edward Edgar.
McNulty, S. (2008). Pressure on ExxonMobil to appoint 'green' chief. *Financial Times*.
Money, K., & Schepers, H. (2007). Are CSR and corporate governance converging? A view from boardroom directors and company secretaries in FTSE 100 companies in the UK. *Journal of General Management, 33*(2), 1–11.
Oliver, C. (1990). Determinants of interorganizational relationships: Integration and future directions. *Academy of Management Review, 15*(2), 241–265.
Olk, P., & Ring, P. S. (1997). Part V: Other consequences of corporate reputation: Strategic alliances and firm-based legitimacy. *Corporate Reputation Review, 1*(2), 109–114.
Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. *Organization Studies, 24*(3), 403–441.
Ortiz-de-Mandojana, N., & Aragon-Correa, J. A. (2013). Boards and sustainability: The contingent influence of director interlocks on corporate environmental performance. *Business Strategy and the Environment*.doi:10.1002/bse.1833.
Pfeffer, J., & Salancik, G. R. (1978). *The external control of organizations: A resource dependence perspective*. New York: Harper Row.
Phillips, L. A. (1999). Green attitude. *American Demographics, 21*(4), 46–47.
Podolny, J. M., & Page, K. L. (1998). Network forms of organization. *Annual Review of Sociology, 24*(1), 57–76.
Post, C., Rahman, N., & Rubow, E. (2011). Green governance: Boards of directors' composition and environmental corporate social responsibility. *Business and Society, 50*(1), 189–223.
Preacher, K. J., & Hayes, A. F. (2004). SPSS and SAS procedures for estimating indirect effects in simple mediation models. *Behavior Research Methods, Instruments, & Computers, 36*(4), 717–731.
Pye, A., & Pettigrew, A. (2005). Studying board context, process and dynamics: Some challenges for the future. *British Journal of Management, 16*, S27–S38.
Rahim, M. M. (2012). Corporate governance as social responsibility: A Meta-regulation approach to raise social responsibility of corporate governance in a weak economy. In S. Boubaker & D. K. Nguyen (Eds.), *Board directors and corporate social responsibility* (pp. 145–166). New York: Palgrave Macmillan.
Rahman, N., & Korn, H. J. (2009). Fit between corporate strategy and alliance purpose: Implications on partnering firms' performance. *International Journal of Strategic Business Alliances, 1*(2), 132–149.
Rahman, N., & Korn, H. J. (2012). Alliance longevity: Examining relational and operational antecedents. *Long Range Planning*. doi:10.1016/j.lrp.2012.05.003.
Rahman, N., & Post, C. (2012). Measurement issues in environmental corporate social responsibility (ECSR): Toward a transparent, reliable, and construct valid instrument. *Journal of Business Ethics, 105*(3), 307–319.
Rao, K. K., Tilt, C. A., & Lester, L. H. (2012). Corporate governance and environmental reporting: An Australian study. *Corporate Governance, 12*(2), 143–163.
Resch, G., Held, A., Faber, T., Panzer, C., Toro, F., & Haas, R. (2008). Potentials and prospects for renewable energies at global scale. *Energy Policy, 36*(11), 4048–4056.
Rhoades, D. L., Rechner, P. L., & Sundaramurthy, C. (2000). Board composition and financial performance: A meta-analysis of the influence of outside directors. *Journal of Managerial Issues, 12*(1), 76–91.
Roberts, J., McNulty, T., & Stiles, P. (2005). Beyond agency conceptions of the work of the non-executive director: Creating accountability in the boardroom. *British Journal of Management, 16*, S5–S26.
Roeck, K. D., & Delobbe, N. (2012). Do environmental CSR initiatives serve organizations' legitimacy in the oil industry? Exploring employees' reactions through organizational identification theory. *Journal of Business Ethics, 110*(4), 397–412.
Saxton, T. (1997). The effects of partner and relationship characteristics on alliance outcomes. *Academy of Management Journal, 40*(2), 443–461.
Sharma, S., & Henriques, I. (2005). Stakeholder influences on sustainability practices in the Canadian forest products industry. *Strategic Management Journal, 26*(2), 159–180.
Stafford, E. R., Polonsky, M. J., & Hartman, C. L. (1998). Environmentalist-business collaboration and strategic bridging: An analysis of the Greenpeace–Foron alliance. *Business Strategy and the Environment, 9*(2), 122–135.
Stanwick, P. A., & Stanwick, S. D. (1998). The determinants of corporate social performance: An empirical examination. *American Business Review, 16*(1), 86–93.
Swann, C. (2013). Oil barons and tech hipsters share a dark side. In Reuters (Ed.), *Breakingviews*. Retrieved from http://blogs.reuters.com/breakingviews/2013/01/07/oil-barons-and-tech-hipsters-share-a-dark-side/.
Tihanyi, L., Ellstrand, A. E., Daily, C. M., & Dalton, D. R. (2000). Composition of the top management team and international diversification. *Journal of Management, 26*(6), 1157–1177.
Torchia, M., Calabrò, A., & Huse, M. (2011). Women directors on corporate boards: From tokenism to critical mass. *Journal of Business Ethics, 102*(2), 299–317.
Tuggle, C. S., Schnatterly, K., & Johnson, R. A. (2010). Attention patterns in the boardroom: How board composition and

processes affect discussion of entrepreneurial issues. *Academy of Management Journal, 53*(3), 550–571.

van Ees, H., Gabrielsson, J., & Huse, M. (2009). Towards a behavioral theory of boards and corporate governance. *Corporate Governance: An International Journal, 17*(3), 307–319.

Walls, J. L., Berrone, P., & Phan, P. H. (2012). Corporate governance and environmental performance: Is there really a link? *Strategic Management Journal, 33*(8), 885–913.

Walls, J. L., & Hoffman, A. J. (2013). Exceptional boards: Environmental experience and positive deviance from institutional norms. *Journal of Organizational Behavior, 34*(2), 253–271.

Webb, E. (2004). An examination of socially responsible firms' board structure. *Journal of Management and Governance, 8*(3), 255–277.

Westphal, J. D., & Fredrickson, J. W. (2001). Who directs strategic change? Director experience, the selection of new CEOs, and change in corporate strategy. *Strategic Management Journal, 22*(12), 1113–1137.

Wood, D. J. (1991). Corporate social performance revisited. *Academy of Management Review, 16*(4), 691–718.

Yoder, J. D. (1991). Rethinking tokenism: Looking beyond numbers. *Gender & Society, 5*(2), 178–192.

Zadek, S., & MacGillivray, A. (2007). The state of responsible competitiveness 2007: Making sustainable development count in global markets. *AccountAbility*. http://www.accountability.org/images/content/0/7/075/The%20State%20of%20Responsible%20Competitiveness.pdf.

Zhang, L. (2012). Board demographic diversity, independence, and corporate social performance. *Corporate Governance, 12*, 686–700.

Zhang, J. Q., Zhu, H., & Ding, H.-B. (2013). Board composition and corporate social responsibility: An empirical investigation in the post Sarbanes-Oxley era. *Journal of Business Ethics, 114*(3), 381–392.