The British Accounting Review xxx (2014) 1–16

Contents lists available at ScienceDirect

The British Accounting Review

journal homepage: www.elsevier.com/locate/bar

Gender diversity, board independence, environmental committee and greenhouse gas disclosure☆

Lin Liao [a], Le Luo [b], Qingliang Tang [c,*]

[a] Research Institute of Economics and Management, Southwestern University of Finance and Economics, Chengdu, China
[b] Newcastle Business School, University of Newcastle, Sydney, Australia
[c] School of Business, University of Western Sydney, Locked Bag 1797, Penrith South DC, Sydney, NSW 2751, Australia

ARTICLE INFO

Article history:
Received 11 March 2013
Received in revised form 30 November 2013
Accepted 24 January 2014

Keywords:
Female director
Independent director
Environmental committee
GHG disclosure

ABSTRACT

This paper examines the impact of corporate board's characteristics on the voluntary disclosure of greenhouse gas (GHG) emissions in the form of a Carbon Disclosure Project report. Using both univariate and regression models with a sample of the 329 largest companies in the United Kingdom, we find a significant positive association between gender diversity (measured as the percentage of female directors on the board) and the propensity to disclose GHG information as well as the extensiveness of that disclosure. In addition, a board with more independent directors or environmental committee show a higher tendency to be ecologic transparent. However, if the committee is not sufficiently large, independent or active, its effect seems insignificant. The results are consistent with stakeholder theory, suggesting that a diversified and independent board and the existence of a board-level environmental committee may balance a firm's financial and non-financial goals with limited resources and moderate the possible conflicting expectations of stakeholders who have disparate interests. The findings should be useful for top managers and regulators who are interested in improving corporate governance practices and climate-change strategies.

1. Introduction

There is growing scientific evidence of the effects of greenhouse gas (GHG) emissions on global warming (Stern, 2006). Corporate business and assets are influenced by the potential for increasingly severe climate change. Therefore, firms need to become resistant to such impacts and to take initiatives that "green" firm-specific advantages (Pinkse & Kolk, 2009). However, corporate strategies can vary substantially, from proactive approaches that require firms to build specific capabilities to reactive solutions that simply comply with legislations and minimally meet regulatory standards (Hart, 1995). Thus, information about a firm's strategies and activities and their impact on GHG emissions is vital for the decisions of stakeholders. Some firms, in the absence of specific public-policy requirements, voluntarily report their GHG information. Although the role

☆ This paper was conducted while Lin Liao was a PhD student at the University of New South Wales. We thank the participants at the 2013 European Accounting Association Annual Conference, and the research workshops at the University of Western Sydney and University of Wollongong, Professor Gary Tian, two anonymous reviewers and the associate editor. Qingliang Tang gratefully acknowledges the financial support from the School of Business, University of Western Sydney.

* Corresponding author.
E-mail address: q.tang@uws.edu.au (Q. Tang).

http://dx.doi.org/10.1016/j.bar.2014.01.002
0890-8389/© 2014 Elsevier Ltd. All rights reserved.

that corporate governance (CG) plays in corporate social responsibility (CSR) is well recognised (Michelon & Parbonetti, 2012), there has been limited study on its impact on GHG disclosure (e.g. Terjesen, Sealy, & Singh, 2009). This study fills the gap by investigating the association between some characteristics of CG and GHG disclosure.

We argue that a firm's climate strategy and decisions often involve large investments with complex and somewhat ambiguous consequences that may affect each stakeholder group in a distinct way. Because these stakeholders may have broader objectives—for example, some stakeholders may focus on financial returns whereas others are concerned with the adverse impact of the firm's operation on the environment, so a board environmental decision may represent the compromise of conflicting demands. Therefore, a board must be sufficiently representative to address issues raised by various stakeholders. In this decision-making context, a diverse and independent board is more likely to provide better CG through the sharing of a broader and different range of experiences and opinions (Singh, Vinnicombe, & Johnson, 2001), and to represent inherently discrete interest groups including financial and non-financial stakeholders (Wang & Dewhirst, 1992). For example, prior literature suggests that, compared to male directors who are more interested in economic performance, female directors exhibit a strong orientation toward corporate social responsibility (Ibrahim & Angelidis, 1994). Similarly, appointment of independent directors, who are less aligned with management and are more likely to be inclined to encourage firms to disclose a wider range of information demanded by stakeholders, is an effective monitoring mechanism that restricts the opportunistic behaviours of top executives assumed by agency theory (Hillman & Dalziel, 2003). Finally, a board with an environmental committee is expected to be more environmentally responsive, resulting in a more transparent GHG reporting for the firm (Peters & Romi, 2012).

We restricted our sample to the FTSE350 companies in the United Kingdom (UK) where climate-change issues are salient. More importantly, these firms may have heterogeneous stakeholders with different vested interests. In addition, since 2010, all listed companies are required to implement the new UK Corporate Governance Code (the Code) devised by the UK Financial Reporting Council (FRC). One of the main characteristics of this code is to explicitly encourage a well-balanced board with an appropriate combination of skills, experiences, independence and knowledge of the company (the Code, Principle B.1). In addition, the Code recommends that the appointment of directors should take into account the gender diversity of the board (the Code, Principle B.2). In this study, we use both univariate and multivariate regression models to analyse how the percentage of women and independent directors on a board and the existence of an environmental committee influence the decisions of publicly listed UK firms regarding their voluntary GHG disclosure in Carbon Disclosure Project (CDP) reports.

The findings are generally consistent with our expectations. First, board gender diversity increases the likelihood of GHG disclosure (in terms of both propensity and extensiveness). Second, the percentage of independent directors on the board level has an observable impact. In addition, the presence and independence of an environmental committee are significantly and positively associated with the tendency to disclose GHG information. Finally, to exert sufficient influence on disclosure, an environmental committee should be large, independent or active ("activity" is measured using the number of committee meetings). We delineate new evidence that such a board is more likely to allow a firm to balance financial and non-financial goals and to negotiate compromise between divergent stakeholders with conflicting demands. It appears that agency theory and legitimacy theory, although widely applied, are inadequate to explain GHG-reporting phenomena. Instead, stakeholder theory is a more valid theoretical perspective in our context, in which the preferences of one interest group with regard to climate-change activities may not be congruent with those of other groups. Thus, our study extends the applicability and predictive power of stakeholder theory.

This archival study will enrich both the academic and empirical literature in several ways. First, we extend environmental accounting to carbon accounting. GHG differs from water, air, and other types of pollution, hazardous waste, toxic chemical emissions, because the problem is global and long-term, and the harm is essentially irreversible (Lash & Wellington, 2007). Thus, carbon management requires firm-specific capabilities and capital investment and is guided by a different set of regulations with its own reporting criteria (Luo, Tang, & Lan, 2013). Their associative patterns are expected to vary and deserve a separate investigation (Walls, Phan, & Berrone, 2011). The prior studies often provide fragmented and contradictory evidence on the association between CG and CSR (Johnson & Greening, 1999; Neubaum & Zahra, 2006). The equivocality of the findings may be due in part to the fact that although CSR is a multidimensional construct and companies adopt different policies, no distinction is made in these studies between types of CSR.[1] We explore this complex organisational phenomenon in a tightly focused manner by considering only the GHG dimension within it. Second, we chose UK firms because the UK is one of the largest carbon emitters in the world and the European Union (EU) and the UK government have introduced a series of innovative GHG legislations (such as an emission trading scheme, ETS) that incentivise many businesses to adopt carbon pollution protection measures. For example, the UK government has set up an ambitious target to reduce its emissions by 80% by 2050 and set legally binding carbon budgets that restrict the total amount of GHG the country can emit and has proposed an Energy Savings Opportunity Scheme that will enable companies to improve energy efficiency and save the UK about £1.9 billion (The UK Department of Energy and Climate Change, 2013). Using UK data allows us to provide extra insight beyond that of the prior studies conducted in the United States (Aguilera, Williams, Conley, & Rupp, 2006). Third, whereas other studies used an overall aggregated quality index (e.g. Cong & Freedman, 2011), we focus on some specific CG dimensions that have most significant influence on GHG disclosure. Fourth, Peters and Romi (2012) showed that some CG characteristics—*inter alia* an environmental committee and a chief sustainability officer—are related to GHG risk disclosures, but they

[1] It appears that the aggregation of different corporate social responsibility (CSR) dimension measures is akin to the aggregation of different currencies.

Please cite this article in press as: Liao, L., et al., Gender diversity, board independence, environmental committee and greenhouse gas disclosure, *The British Accounting Review* (2014), http://dx.doi.org/10.1016/j.bar.2014.01.002