Stakeholder pressures, EMS implementation, and green innovation in MNC overseas subsidiaries

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ARTICLE INFO

ABSTRACT

In this paper, we address the issue of green innovation by the overseas subsidiaries of multinational corporations (MNCs). Drawing upon stakeholder theory and institutional theory, we propose a conceptual model to explain how stakeholder pressures in host countries prompt MNC subsidiaries to undertake green product and process innovations. Our findings indicate that MNC subsidiaries need to meet market stakeholders' pressures in order to achieve social legitimacy in host countries, and that the implementation of formal environmental management systems (EMS) is an important mechanism translating these pressures into green innovation initiatives. Furthermore, we find that the positive relationship between market stakeholder pressures and EMS implementation is reinforced by global 'green' institutional pressures in the different host countries.

1. Introduction

It is broadly acknowledged that MNCs must develop locally-designed green strategies in a timely manner to meet enhanced expectations in host country markets (Peng & Lin, 2008; Rugman & Verbeke, 1998; Tatoglu, Demirbag, Bayraktar, Sunil, & Glaister, 2014; Yang & Rivers, 2009). MNC leaders are increasingly devoting attention to their subsidiaries' greening initiatives for value creation and opportunity discovery (Watanabe, 2015), whilst also being mindful of the potential adverse effects of subsidiaries' environmental negligence on the reputation and image of the MNC as a whole[1] (Christmann, 2004; Zyglidopoulos, 2002). It has recently been observed that MNC subsidiaries help the local economy transform into a more environmentally sustainable society through their green investments. For example, the Chinese-based division of General Motors expands its involvement in green R&D activities relating to battery manufacturing for hybrid and electric vehicles (Noailly & Ryfisch, 2015). Ford engineers in Europe have been successful in inventing a cutting-edge green technology for the 1.0-l EcoBoost petrol engine (Ford Sustainability Report, 2016). To date, researchers anecdotally argue that MNC subsidiaries have become very essential for promoting the diffusion of green technologies to local firms (Li, Xue, Truong, & Xiong, 2017) and greening their regional and global value chain networks (Park, Song, Choe, Baik, 2015). Few studies, however, have considered the issue of green strategies pursued by

overseas subsidiaries, and none to our knowledge have empirically analyzed the subsidiary-level green innovation process.

This paper focuses on the antecedents of green innovation in a sample of US and European subsidiaries of Japanese MNCs. Chen, Lai, and Wen (2006: 332) define green innovation "as hardware or software innovation that is related to green products or processes, including the innovation in technologies that are involved in energy-saving, pollution-prevention, waste recycling, green product designs, or corporate environmental management", and categorize green innovation as either green product innovation or green process innovation. Green product innovation represents sustainable innovations in products to enable firms to significantly reduce environmental damage and to achieve higher levels of efficiency in resource allocation over their entire product life cycles (Albino et al., 2009; Chen et al., 2006; Dangelico & Pujari, 2010). Green process innovations are those that constantly develop processes needed to facilitate the efficient use of natural resources and prevent pollution (Chen et al., 2006).

Green product and process innovations may potentially yield a range of benefits to the innovating firm. First, the firm has the opportunity to develop a positive image, differentiate itself from its rivals, and then pursue premium pricing (Hart, 1995; Porter & Van der Linde, 1995). Second, Chang (2011) argues that reinforcing the capacity of a firm to create new environmental products and processes results in improvements in product design and production methods. In a similar

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vein, Hart (1995) and Frondel, Horbach, and Rennings, (2008) suggest that green product and process innovations counterweigh the financial costs involved in overcoming environmental challenges. Third, Porter and Van der Linde (1995: 132) emphasize that pioneering green product and process innovations enables firms to mobilize their strategic and organizational resources more efficiently. They suggest that the early adoption of strict environmental standards may give the firm first-mover advantages, and lead to net benefits. In short, many commentators argue that integrating environmental considerations into corporate strategies may provide a source of sustained competitive advantage (Christmann, 2000).

But there are also costs/obstacles to green innovation. First, green innovations (like all innovations) are costly and the returns are uncertain, so positive net returns are not guaranteed (Walley & Whitehead, 1994). Second, green innovations will still face competition from existing (dirtier) products/processes which may enjoy an installed-base cost advantage at least in the short-term. Third, customers may be reluctant initially to accept the green products, and thus the innovating firms may experience significant additional marketing costs. Finally, and most importantly, many of the benefits from green innovation are public, and firms may be reluctant to engage in innovation when they are not able to appropriate fully the resultant benefits.

This consideration of the costs and benefits of green innovation highlights the fact that the social benefits often outweigh the private benefits to the innovating firm, and thus outside stakeholders have incentives to exert pressure on firms to undertake more innovation. Rugman and Verbeke (1998) note that, whilst many MNCs may diffuse environmental practices to their overseas subsidiaries, the subsidiaries must also respond to local pressures exerted by governments, consumers, and other stakeholders to develop local solutions.

The main thesis of this paper is to throw light on the sequential pathways through which these pressures stimulate green innovation within the MNC subsidiaries in a multilevel setting. We argue that foreign subsidiaries with proactive environmental approaches are more sensitive to stakeholder influences than foreign subsidiaries with reactive environmental approaches (Buysse & Verbeke, 2003). The adoption of advanced stakeholder issue identification techniques – such as regular monitoring, complaints screening, and dialogues with special interest groups – will lead to enhanced green innovation performance[2] (Driessen & Hillebrand, 2013). Hence, we hypothesize that the implementation of formal environmental management system (EMS)[3] will facilitate green innovation within MNC subsidiaries. EMS may be viewed as a standardized process of cross-functional transfer of knowledge about how to reduce environmental burdens (Florida & Davion, 2001) but also, independent of economic objectives, essential for getting ahead of changing environmental requirements (Morrow & Rondinelli, 2002) and obtaining greater social legitimacy (Berrone, Fosfuri, Gelabert, & Gomez-Mejia, 2013; Suchman, 1995). Such strategically-proactive firms that monitor stakeholder demands are more likely to devote their attention, capital, and time to formalizing and structuring their environmental practices, which will, in turn, create incentives for product and process innovations (Bocquet, Le Bas, Mothe, & Poussing, 2013). In short, we hypothesise that green innovation within MNC subsidiaries is stimulated by a range of local stakeholder pressures (regulatory, market and societal) but that these pressures are

mediated by the implementation of local EMS initiatives. Furthermore, we argue that the impacts of these stakeholder pressures on EMS implementation are amplified in national institutional contexts which support global environmental norms.

This paper makes several contributions to the literature. First and foremost, we contribute to prior studies testing how stakeholder pressures affect green innovation (Berrone et al., 2013; Dangelico & Pujari, 2010). We hypothesise that EMS implementation is a mechanism by which MNC subsidiaries' respond to stakeholder pressures, and which in turn prompts them to introduce green product and green process innovations. This is the first study to disentangle the complexities of the relationships between stakeholder influences and green innovation by suggesting EMS implementation as a key mediator in such relationships. Second, we focus on the MNC subsidiary as an entity which responds to local stakeholder pressures, and which does not just take directions from its parent company. Focusing on the MNC subsidiary as a unit of analysis leads us to distinguish how green innovative capabilities vary according to individual units within the MNC network. Furthermore, the MNC subsidiaries in our empirical analysis are located in twenty-three different host countries, and are thus subject to different national institutional contexts with regard to global pro-environmental pressures. Our multilevel framework highlights both global institutional arrangements and local stakeholder demands, and thus allows us to consider different configurations of stakeholder pressures and institutional influences (Lee, 2011; Martínez, Fernández, & Fernández, 2016). Our framework throws light on the complexities inherent in the development of green innovation initiatives and helps subsidiary managers to align their environmental strategies with both global and local stakeholder influences at the same time. Third, we consider green process innovation and green product innovation as separate constructs, whereas most of the extant literature treats green innovation as a unitary concept.[4]

The paper is structured as follows. In the next section, we review the empirical literatures on the determinants of green innovation and on corporate environmental initiatives in MNC subsidiaries. Drawing upon institutional theory and stakeholder theory, we then develop various hypotheses related to EMS implementation and green innovation in MNC subsidiaries. Our empirical analysis is based upon primary data obtained from a questionnaire survey of Japanese MNC subsidiaries, and the following section contains information about the administration of the survey, the measurement of key variables, and the estimation methodology. We then present and discuss the empirical results. The final section discusses the implications of our findings, and suggests avenues for future work.

2. Literature review and hypothesis development

There is a sizeable empirical literature on the determinants of green innovation, though much of it focuses on domestic firms in single-country settings – see Egri and Ralston (2008) and Holtbrügge and Dögl (2012) for excellent reviews. The empirical literature on the relationship between stakeholder pressures and green innovation shows mixed results. Berrone et al. (2013) found that institutional pressures from regulatory bodies and normative actors were a crucial determinant of green innovation in US firms. Similarly, Frondel et al. (2008) showed that regulatory stakeholder pressures bolstered green innovation and abatement activities. In contrast, Lin et al. (2014) observed that stakeholder pressures from customers had a negative impact on green process innovation. According to Lin et al. (2014), one plausible

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[2] Following Chen et al (2006: 333) we define green innovation performance as "the performance of hardware and software involved in the innovation that a company carries out in relations to green products or processes, including the innovation in technologies that are involved in energy saving, pollution-prevention, waste recycling, green product designs, or corporate environmental management."

[3] An EMS is composed of a bundle of internally-consistent environmental routines that enhance corporate environmental performance, including, for example, (1) environmental action plans with quantified target requirements, (2) written environmental documents, (3) full environmental cost accounting, (4) standardized environmental auditing and monitoring, and (5) environmental risk evaluations (Berry & Rondinelli, 1998; Sadorsky, 1996, 1999; ; Darnall et al., 2008, 2010).

[4] We distinguish between green product innovation and green process innovation for two reasons. First, the use of a unitary measure of green innovation might mask the differences in terms of the interplay of EMS implementation and the green product and process innovations. Second, green product and green process innovations are largely different in technical aspects and criteria, and types of practices (Abdullah, Zailani, Iranmanesh, & Jayaraman, 2016; Cuerva, Triguero-Cano, & Córcoles, 2014).

Table 1
Prior Conceptual and Empirical Studies on MNC Subsidiary Environmental Strategy.

Studies/year	Sample size	Method	Response rate	Core findings/arguments
Muller (2006)	7 European automotive MNC subsidiaries in Mexico	Qualitative (Interviews)	–	Autonomous subsidiaries are inclined to be more proactively committed to tackling environmental issues.
Peng and Lin (2008)	101 Taiwanese MNC subsidiaries in China	Quantitative (Survey)	18.0%	Subsidiary resources (+) & local responsiveness pressures (+) affect green production practices. MNC subsidiaries improve non-financial performance by seeking to implement green production management.
Yang and Rivers (2009)	MNC subsidiaries in emerging economies	Literature review; theoretical framework development	–	This study presents a conceptual framework for the antecedents of local corporate social and environmental actions in MNC subsidiaries by synthesizing stakeholder and institutional perspectives. It is conceptualized that MNC subsidiaries implement local CSR practices in quest for social legitimacy when institutional distance between a home country and a host country is great.
Aguilera-Caracuel et al. (2012)	128 MNCs & 1790 facilities in the USA, Canada, France & Spain	Qualitative (fsQCA)	–	Low environmental institutional distances between home & host countries facilitate environmental performance standardization within MNE networks.
Choi and Park (2014)	300 Korean MNC subsidiaries all over the world	Quantitative (Survey)	50.9%	Governments (+), NGOs (+) & media (+) are key factors that encourage MNC subsidiaries to pursue local environmental strategies. Pressures from customers & local communities do not significantly facilitate the adoption by subsidiaries of local EMPs.
Tatoglu et al. (2014)	193 MNC subsidiaries in Turkey	Quantitative (Survey)	19.3%	The adoption of voluntary EMPs is determined by stakeholder pressures (+), perceived polluting potential (+), customer focus (+) & competitive intensity (ns).

Notes: (1) EMPs = environmental management practices
(2) fsQCA = fuzzy-set qualitative comparative analysis

explanation for why market pressures are negatively related to green process innovation can simply involve firms' limited information accessibility from consumers – that is, since firms' commitment to green process innovation is less clear in the eyes of consumers as compared to green product innovation. They may thus be reluctant to engage in green process innovation projects whilst they experience increased expenditure on investment in green product innovation. Other studies were inconclusive. Jaffe and Palmer (1997) reported that regulatory stakeholder pressures had no bearing upon environmental innovation. Wagner (2007) reported that three separate groups of environmentally-concerned stakeholders had no discernible impact on green process and product innovations. And Wagner (2009) found no link between regulation and the creation of environmentally-beneficial product and process innovations.

There are, however, only several studies where MNC subsidiaries are the unit of analysis, and which focus on corporate environmental initiatives – see Table 1.[5] Peng and Lin (2008) highlighted the effects of local stakeholder pressures on green management adoption in the Chinese subsidiaries of Taiwanese firms. Muller (2006) observed that the Mexican subsidiaries of four European MNCs (Scania, Volvo, Mercedes, and Volkswagen) had the freedom to develop and execute proactive environmental strategies aligned with the local institutional contexts. Aguilera-Caracuel, Aragón-Correa, Hurtado-Torres, & Rugman, (2012) consider the drivers of environmental standardization within MNCs, and report that standardization is greater the lower the environmental institutional distance between the MNC home country and the host countries of the subsidiaries. Choi and Park (2014) look at the antecedents of environmentally responsible management in MNC subsidiaries, and report that local governments, NGOs and the media all exert influence along with the parent companies. Tatoglu et al. (2014) considered the adoption of voluntary environmental practices by MNC subsidiaries in Turkey, and confirmed the influence of local stakeholder pressures. In addition, Yang and Rivers (2009) advanced various propositions about the adoption of corporate social and environmental initiatives in overseas subsidiaries, but did not provide any empirical analysis. However, none of these extant studies considered mechanisms through stakeholder pressures influence green innovation and how the effect of stakeholder pressures on EMS implementation varies according to country-level institutional arrangements.

This study thus fills a gap in the literature by focusing on the determinants of green innovation in MNC subsidiaries across a variety of host countries, and in highlighting the mediating role of EMS implementation. Our theoretical model of green innovation draws upon institutional theory and stakeholder theory. Institutional theory posits that firms' actions are influenced not just by their corporate objectives and competitive pressures, but also by their institutional/social environments – such environments embrace both formal rules and laws set by governments and other regulatory authorities (North, 1991) and informal constraints (norms of behavior, shared values, beliefs) supported by society at large (Di Maggio & Powell, 1983). Firms are obliged to conform to these rules and constraints in order to obtain acceptance from local society – failure to do may jeopardize the success of the firm (Scott, 1995). In particular, MNC subsidiaries need to understand and adapt to their foreign institutional environments in environmentally responsible ways if they are to achieve social acceptance and legitimacy (Suchman, 1995) and to overcome the liability of foreignness (Campbell, Eden, & Miller, 2012; Kostova & Zaheer, 1999; Kostova, Roth, & Dacin, 2008). Building on Suchman's (1995) view

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[5] In constructing Table 1, we performed an interdisciplinary literature review focusing on published articles in the selected areas of "international business", "management", "corporate social responsibility", and/or "innovation". More specifically, we searched and identified articles containing the key terms "MNC subsidiaries" or "foreign affiliates", and "proactive environmental practices" or "environmental initiatives" or "environmental sustainability" or "environmental protection" or "environmental performance" or "environmental innovation capabilities" or "green innovation".

on organizational legitimacy,[6] environmentally-responsible strategic choices are crucial for MNC subsidiaries in developing their social legitimacy in the eyes of local stakeholders. If MNC subsidiaries fail to conform to local socially-accepted norms regarding environmental protection, they will find it difficult to achieve stability because of limited access to scarce resources and/or negative CSR reputations (Child & Tsai, 2005; Suchman, 1995). Thus, in the context of this paper, MNC subsidiaries need to recognize the importance of meeting local stakeholders' expectations (Zhao, Park, & Zhou, 2014) in order to achieve financial success.

Stakeholder theory asserts that maintaining trust-based cooperation with a broad set of stakeholders is an inevitable part of organizational decision-making with respect to corporate strategy, corporate governance, and social and environmental management (Freeman, 1984; Hart, 1995). A stakeholder refers to "any group or individual who can affect or is affected by the achievement of the organization's objectives" (Freeman, 1984, p. 46). Following Delmas and Toffel (2004), Sadorsky, (2008, 2010); identify the various stakeholder groups who are most likely to exert pressure on firms and thus influence their environmental practices, notably regulatory, market, and social actors. Darnall et al. (2008: 366-7) suggest that regulatory pressures involve legal mandates for firms to attend to environmental issues and to implement proactive environmental policies. Market pressures arise as industrial customers, household consumers and suppliers become increasingly aware of the natural environment, and exercise their power to encourage firms to adopt environmentally-friendly practices and/or eschew polluting activities. Social actors include environmental organizations, community groups, trade associations, and labor unions. These actors are able to mobilize public opinion, and thus instigate societal pressures on firms to reduce the adverse impact of their activities upon the natural environment. In practice, MNC managers may need to balance heterogeneous and conflicting stakeholder interests.

2.1. Regulatory stakeholder pressures & EMS implementation

The stakeholder management literature proposes that regulatory authorities (such as governments, politicians and legislatures) enforce laws and rules that minimize the effect of negative externalities resulting from environmental pollution on the co-evolution of business organizations, markets, and society (Henriques & Sadorsky, 1996). Stakeholder pressures from regulatory authorities are considered to enhance environmental performance (Campbell, 2006; Eiadat, Kelly, Roche, & Eyadat, 2008) and self-regulation of environmental compliance (Christmann & Taylor, 2006) as environmental regulations appear as a crucial factor for developing proprietary pollution prevention capabilities. Furthermore, Berrone et al. (2013) and Menguc, Auh, and Ozanne, (2010) note that firms formulate and implement environmental management policies to improve their social legitimacy and acceptance in the eyes of public authorities.

There are several reasons to expect a positive association between regulatory stakeholder pressure and the incentive of MNC subsidiaries to implement EMS. First and foremost, regulatory stakeholders may have the power to impose sanctions, legal penalties, taxation, and litigation costs on firms violating regulatory requirements regarding environmental protection (Darnall et al., 2008, 2010). Second, Sharma, Aragón-Correa and Rueda-Manzanares (2007) note that changing regulatory demands associated with environmental sustainability increase both the complexity and the uncertainty of firms' business environments and thus prompt managers to constantly cultivate new resources and innovative strategies in a timelier fashion. Berry and Rondinelli

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(1998) argue that the cost of devising, developing, and executing proactive environmental strategies that meet environmental protection expectations in a self-fulfilling manner is considerably lower than with the cost involved in overcoming the complexity of regulatory demands by public authorities. Third, McWilliams and Siegel (2001) argue that various regulatory bodies have the ability to reward firms with proven environmental awareness by stimulating demand through consumption of environmentally-friendly products. Fourth, Porter and Van der Linde (1995) suggest that strict environmental regulations may improve firms' resource productivity by prompting them to engage in the continuous development of new green competencies. Furthermore, firms with specific green technologies will tend to lobby for higher regulatory standards to raise the costs and block the entry of rivals who do not possess similar resources and capabilities (Puller, 2006). We thus put forward the following hypothesis:

Hypothesis 1. *Regulatory stakeholder pressures are positively associated with EMS implementation in MNC subsidiaries*

2.2. Market stakeholder pressures & EMS implementation

The growth of market stakeholders who are environmentally conscientious stems from the enhanced availability of environmental information (Darnall et al., 2008). Further, with increased environmental awareness, customers have been exerting increasing pressure on companies to undertake a series of environmentally responsible actions (Buysse & Verbeke, 2003; Christmann, 2004). It is widely recognized that such customer requirements act as forces coercing firms to adopt appropriate environmental behavior (Delmas & Toffel, 2004). Furthermore, industrial clients and commercial buyers are key agents in terms of the diffusion of environmental management practices (Delmas & Toffel, 2004) and close cooperation with these market actors further facilitates organizational imitation on environmental issues.

There are four main reasons to expect a positive association between market stakeholder pressures and EMS implementation. First, the environmental management literature highlights that customers are very likely to reward firms' environmental proactivity by renewing their selling agreements and "buy-cotting" green products and services (Darnall et al., 2010). In contrast, when firms use polluting technologies and fail to reduce physical waste, they may be subjected to high levels of public boycotts directly resulting in decreased sales volume and competitiveness (Henriques & Sadorsky, 1999). Second, customers may even go further and punish polluting firms through initiating legal actions (Menguc et al., 2010: 9). Third, industrial customers often exploit their resource interdependencies to exert direct influence over firms' resource allocation decisions (Frooman, 1999). Fourth, corporate reputations are important intangible resources, and so firms must ensure that they meet the expectations and claims of market stakeholders (Branco & Rodrigues, 2006) to increase moral capital (Kane, 2001). We thus put forward the following hypothesis:

Hypothesis 2. *Market stakeholder pressures are positively associated with EMS implementation in MNC subsidiaries*

2.3. Societal stakeholder pressures & EMS implementation

Social actors such as environmental organizations, community groups, trade associations and labour unions play important roles in monitoring the ways in which firms implement and promote environmental policies. Henriques and Sadorsky (1999) stress the rising coercive power of such social actors as a major source of pressure on the environmental conduct of firms, whilst Delmas and Toffel (2004) point out that the need to promote good corporate citizenship and dedicated community relations fosters firms' decisions to implement environmental sustainable practices.

There are several reasons to expect a positive association between

societal stakeholder pressures and EMS implementation. First, environmental-concerned NGOs act as catalysts for shaping and introducing codes of conduct and international environmental standards (Doh & Guay, 2004). Second, such NGOs affect the public awareness of environmental issues through the dissemination of green information (Hoffman, 2000) and the establishment of stakeholder forums that inspire participants to notice the importance of environmental sustainability (Sharma et al., 2007). Third, NGOs may also directly punish firms with polluting activities by filing lawsuits (Henriques & Sadorsky, 1996) or by mobilizing people to participate in protest campaigns (Darnall et al., 2008). Fourth, social groups may directly influence patterns of resource flows toward firms, particularly when firms' environmental actions are detrimental to public welfare (Kassinis & Vafeas, 2006). In short, firms are obliged to implement environmental management policies to improve their social legitimacy (Berrone et al., 2013; Suchman, 1995) and minimize their liabilities of foreignness (Campbell et al., 2012).

These societal pressures will be all the stronger for MNC subsidiaries. MNC subsidiaries must meet higher environmental management standards than their local counterparts as their visibility frequently tends to capture the attention of the media and social groups (Peng & Lin, 2008; Tatoglu et al., 2014). Furthermore, corporate involvement in environmental protection at the subsidiary level may affect not only the subsidiary involved but the entire MNC; an MNC's environmental negligence in one country may be detrimental to the reputation and image of the MNC as a whole as well as of subsidiaries in other countries (Christmann, 2004). We thus put forward the following hypothesis:

Hypothesis 3. *Societal stakeholder pressures are positively associated with EMS implementation in MNC subsidiaries*

2.4. Institutional influences, stakeholder pressures & EMS implementation

How does the intensity of these stakeholder pressures vary according to host countries' participation in global environmental frameworks? We theorize that global institutional pressure positively moderates the impact of stakeholder pressures on MNC subsidiaries to adopt EMS. Institutional theory is traditionally of significant relevance for the international business, stakeholder, and environmental management literatures. An institutional perspective posits that both individuals and organizations are exposed to accommodate a variety of coercive, normative, and cognitive pressures from institutional environments in order to gain local legitimacy (Scott, 1995; Suchman, 1995).

Scholars argue that global discourses and internationally institutionalized culture directly influence the complex relationship between local stakeholders and MNC subsidiary environmental strategies (Doh & Guay, 2006; Frank, Hironaka, & Schofer, 2000; Hartmann & Uhlenbruck, 2015; Rugman & Verbeke, 1998). The establishment of global CSR agendas and charters not only facilitates the global diffusion of norms to enhance environmental standards but also encourages local actors at all levels of civil society to comply with global environmental values (Lim & Tsutsui, 2012). The penetration of strongly 'taken-for-granted' models of global pro-environmentalism effectively legitimates local consumers and NGOs to exert pressure on governments' green policy-making through social movements (Campbell, 2006; Frank et al., 2000; Schofer & Hironaka, 2005). Scholars argue that binding environmental treaties in particular provide the catalyst for promoting corporate greening (Schofer & Hironaka, 2005) and play a critical role in coordinating and harmonizing national environmental laws and regulations (Hartmann & Uhlenbruck, 2015). Moreover, government ratifications of international environmental treaties help empower NGOs to develop international environmental standards and thus act as a primary source of global institutional pressure.

However, there is a serious lack of research on the complementary

effect of global institutional pressure on the relationship between diverse stakeholder pressures and EMS implementation at the MNC subsidiary level. Whilst the configuration of international institutional arrangements and stakeholder power is anecdotally said to drive companies' environmental decision-making, no researchers have empirically tested such cross-level interactions to our best knowledge. In the environmental management literature, existing studies have regarded institutions and stakeholders as separate external pressures that transform the stance of corporations toward responsible environmental behaviour (Lee, 2011). However, Martínez et al. (2016) suggest that institutional and stakeholder pressures would act as complementary constraints to force firms to operate in environmentally-responsible ways.

Institutional pressures from global civil society potentially affects not only the legitimacy and relevance of stakeholders and but also MNC managers' perceptions of environmental values (Hartmann & Uhlenbruck, 2015). The reactive or proactive nature of corporate involvement in social and environmental initiatives depends significantly on the extent to which stakeholders are influenced by global institutions. Specifically, global institutional pressure also serves as an incentive for corporate management to initiate or participate in institutionalized dialogues with a variety of local stakeholders in a cooperative manner. Given the rising power of global civil society, the effective stakeholder communication that promotes environmental governance and accountability hence prevents corporations from adopting unethical and environmentally irresponsible practices (Child & Tsai, 2005). Lee (2011: 285) notes that "institutional support and legitimacy enables even traditionally marginal and resource-deficient stakeholders to exert significant influence on powerful organizations by shaping the conditions under which interactions between firms and stakeholders take place". Although we acknowledge that our hypotheses remain exploratory in nature, this study is the first study to empirically investigate the moderation effect of global institutional pressure on the positive relationship between stakeholder demands and MNC subsidiaries' proactive attitude toward environmental management. By integrating the micro- and macro-level perspectives, we would expect that global institutional pressure will amplify the impact of stakeholder pressures on the MNC subsidiaries' environmental initiatives, hence we hypothesize:

Hypothesis 4a. *Global institutional pressures moderate the relationship between regulatory stakeholder pressures and EMS implementation.*

Hypothesis 4b. *Global institutional pressures moderate the relationship between market stakeholder pressures and EMS implementation.*

Hypothesis 4c. *Global institutional pressures moderate the relationship between societal stakeholder pressures and EMS implementation.*

2.5. EMS implementation & green innovation

In this section, we develop two hypotheses linking EMS implementation by MNC subsidiaries directly to green product and green process innovation. Many scholars have argued that EMS implementation fosters a firm's organizational capabilities such as continuous innovation, stakeholder integration and high-order learning (Demirel & Kesidou, 2011; Kesidou & Demirel, 2012). When firms design and develop corporate environmental policies, they are more likely to strive to get ahead of minimum requirements through proactively improving technological innovations with high environmental benefits such as end-of-pipeline pollution control technologies and integrated cleaner production technologies (Demirel & Kesidou, 2011). Furthermore, the systemic nature of EMS implementation is likely to assist organizations in consistently instructing employees to run operations in line with environmental requirements (Vidal-Salazar, Cordón-Pozo, & Ferrón-Vilchez, 2012). Florida and Davison (2001) suggest that firms with high EMS adoption are innovative as they implement advanced quality
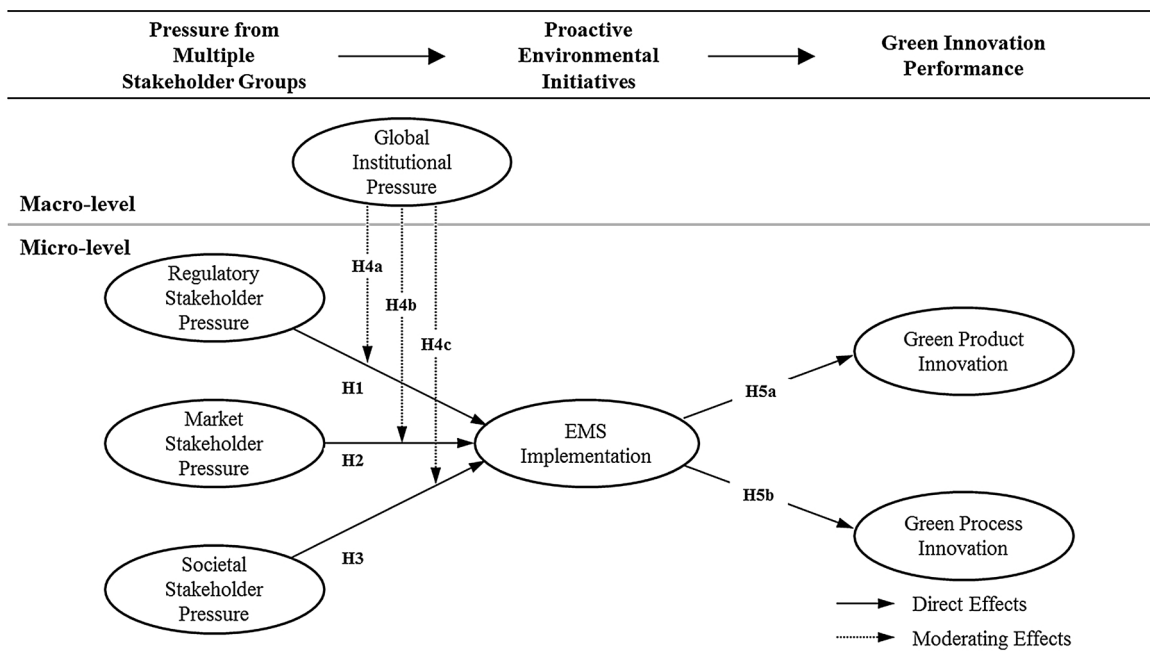
Fig. 1. The Proposed Theoretical Model.
Note: EMS = Environmental management systems

management programs, foster environmental information sharing, and attach importance to reducing community environmental risk. Moreover, proactivity in environmental management leads firms to identify potential sources of pollutant emissions and chemical spills, and, in turn, respond to negative environmental effects more innovatively. Considered together, we thus propose the following hypotheses:

Hypothesis 5a. *EMS implementation is positively associated with green product innovation in MNC subsidiaries*

Hypothesis 5b. *EMS implementation is positively associated with green process innovation in MNC subsidiaries*

Our theoretical model is as shown in Fig. 1.

3. Data and methodology

The dataset used for the empirical analyses was constructed from the responses obtained from 123 North American and European subsidiaries of Japanese manufacturing MNCs. We focus on manufacturing subsidiaries as manufacturing activities typically generate more contaminants than other (e.g., service) activities (Stites & Michael, 2011), and hence such subsidiaries should be more sensitive to stakeholder pressures. We have also limited the sample to MNCs from one home country (Japan) to avoid potential country-of-origin effects, and effects due to variations in cultural/institutional distances between home and host countries, that might impact upon subsidiary decision-making. The choice of Japanese MNCs was motivated in part by data availability, but also because Japanese MNCs are noted for their greater attention to environmentally-benign manufacturing, energy conservation and post-industrial recycling than their US and European counterparts (Gutowski et al., 2005).

In this section, we first detail how the questionnaire survey was administered. We then explain how the constructed variables and the control variables were measured, and also outline the measures taken to avoid common method bias. The estimation methodology is then briefly

discussed, and the section concludes with some descriptive and diagnostic statistics.

3.1. Administration of the questionnaire survey

The questionnaire was designed following a careful review of the extant literature in international business and environmental management. English and Japanese versions of the questionnaire were prepared by the first author. The English-based survey was translated by a professional translation company into Japanese. Two native speakers with fluency in both Japanese and English then proof-read the Japanese version of the questionnaire and back-translated it into English (Dawson & Dickinson, 1988). No significant differences were observed in terms of the accuracy of the back-translated sentences. Before mailing the survey to the respondents, three Japanese subsidiary managers were contacted in April 2013 and requested to verify the validity and clarity of a draft version.

A random sample of 1000 Japanese MNC subsidiaries in North America and Europe was identified from the 2013 version of *The Tôyô Keizai Kaigai Shinshutsu Kigyô Sôran* (Toyo Keizai, 2013), and the same publication was also used as the source for the names of subsidiary directors. Our self-report survey is suitable for environmental management at the subsidiary level, even if there remains potential for social desirability distortion that may inflate relationships. The primary reason is that subsidiary directors are usually familiar with subsidiary-level environmental performance measures since they have to make strategic environmental decisions in response to environmentally concerned stakeholders across varying institutional environments on a daily basis (Tatoglu et al., 2014). Furthermore, the lack of subsidiary-level data sources on environmental management also validates the reason to use self-reported variables. Questionnaires were mailed to these 1000 directors in mid-May 2013, but 20 were undeliverable. Non-respondents were reminded by e-mail or telephone one month after the mailing. 123 questionnaires were received, equivalent to an effective

response rate of 12.6%. This response rate was similar to those obtained in comparable studies (e.g., Ben Brik et al., 2011: 13%; De Giovanni & Esposito Vinzi, 2012: 10%), and in line with typical response rates (6%–16%) in international mail surveys (Harzing, 1997). Bansal and Roth (2000) have also commented on the difficulties of obtaining data from Japanese firms regarding managerial perceptions of corporate environmental responsiveness.[7]

Comparisons of early and late respondents with regard to subsidiary size and subsidiary age were made to check for non-response bias (Armstrong & Overton, 1977), but *t*-tests revealed no statistically significant differences. Non-response bias was thus not deemed a serious issue. Some questions were unanswered on nine of the 123 questionnaires owing to very sensitive topics or a lack of time (Schafer & Olsen, 1998). As the sample size was not large, we decided not to delete these cases but instead to use expectation maximization (EM) algorithm to impute missing values (Roth, 1994).,[8] Compared to other alternative methods such as pairwise deletion, mean substitution, and non-stochastic imputation (Schaffer & Graham, 2002), the expectation maximization (EM) technique is more appropriate in handling the issue of missing values (Fichman & Cummings, 2003; Little & Rubin, 1987; Schaffer & Graham, 2002). It yields unbiased, efficient, and consistent parameter estimates if the data are random (Fichman & Cummings, 2003). As highlighted by statistics scholars, the EM method helps mitigate inaccurate standard errors, thus attaining a greater predictive power (Hair, Anderson, Tatham, & Black, 1998). Additionally, the strength of this statistical procedure is to compute the optimal parameter estimates by performing an expectation step and a maximization step iteratively until convergence occurs in the estimates of the missing values (Meyers, Gamst, Guarino, 2016; Roth, 1994). The percentage of missing scores in this study was approximately 1% of the complete dataset. We used the EM algorithm in IBM SPSS Statistics 23.

3.2. The constructed variables

Three groups of questions related to stakeholder pressures were included in the questionnaire – see the Appendix. *Regulatory stakeholder pressures* were assessed by asking the respondents to answer the question used by Darnall et al. (2010) regarding the importance of local governments on the process of designing, developing, and executing subsidiary environmental policies. A 3-point Likert scale, ranging from 1 ("not important") to 3 ("very important") was used for measurement. The average was 2.53 (s.d. = 0.56). *Market stakeholder pressures* were measured by asking the respondents to answer the question used in the study of Darnall et al. (2010) regarding the importance of (1) household consumers, (2) commercial buyers, and (3) suppliers of goods and services on the process of designing, developing, and executing subsidiary environmental policies. A 3-point Likert scale (1 = "not important" and 3 = "very important") was used for measurement. The average was 2.41 (s.d. = 0.48). *Societal stakeholder pressures* were measured by asking the respondents to answer the questions used by Darnall et al. (2010) regarding the importance of (1) environmental groups, (2) community organizations, (3) labour unions, and (4) trade or industry associations on the process of designing, developing, and executing subsidiary environmental policies. A 3-point Likert scale (1 = "not important" and 3 = "very important") was used for measurement. The average was 1.99 (s.d. = 0.45).

Subsidiary-level data on the implementation of environment management systems are not publicly available (Delmas & Toffel, 2004), hence this outcome was assessed in the survey by a set of six statements – see the Appendix – based on Du et al. (2012). A 5-point Likert scale, ranging from 1 ("completely disagree") to 5 ("completely agree") was used for measurement. The average was 3.40 (s.d. = 0.80).

Finally, there were two groups of questions related to green innovation – see the Appendix. Past research has relied largely on the use of a single indicator to assess the level of green innovation strategies (e.g., Dangelico & Pujari, 2010; Eiadat et al., 2008), but here we distinguish between green product innovation and green process innovation. Drawing on the survey by Chen et al. (2006), *green product innovation* was measured by asking the respondents to assess their perceptions of an environmental strategy using a five-point Likert scale ranging from 1 ("completely disagree") to 5 ("completely agree"). The average score was 3.70 (s.d. = 0.82). Also based upon Chen et al. (2006), *green process innovation* was measured by asking the respondents to assess the extent to which they agreed with four statements, based on a five-point Likert-type scale ranging from 1 ("completely disagree") to 5 ("completely agree"). The average was 3.75 (s.d. = 0.72).

3.3. Common method variance

The questionnaire items were based upon perceptual evaluations, so it is necessary to consider common method variance. We minimized *ex ante* the possibility of common method bias in several ways. First, we guaranteed the confidentiality and anonymity of all data in a personalized cover letter to each respondent so as to reduce social desirability bias (Chang et al., 2010). Second, as proposed by Chang et al. (2010), the order of the questions was randomized so that the respondents could not perceive the detailed content of each construct. Third, following Podsakoff, MacKenzie, Lee, and Podsakoff, (2003), we carefully trimmed our questionnaire items to promote clarity and increase respondents' comprehension. In addition, we adopted the marker variable technique as a *post hoc* statistical remedy (Lindell & Whitney, 2001). We included employee performance as a theoretically-unrelated marker variable in our model: none of the statistically significant partial correlations between the constructs lost significance after the adjustment, hence common method bias was not a serious issue. We also checked *ex post* for common method bias by Harman's (1967) single factor test (Podsakoff et al., 2003). All the items underpinning the independent and dependent variables were loaded on a one-factor model: the proportion of the variance explained by the first factor did not exceed 50% indicating again that common method variance was not a major issue.

3.4. The moderating variable

Similar to the previous scholarship (Hartmann & Uhlrenbruck, 2015), we proxied the strength of global institutional pressure by using information on the depth of a country's active participation, contribution to, and compliance with international environmental agreements by the Yale Center for Environmental Law and Policy (Esty, Levy, Strebotnjak, & Sherbinin, 2005). The score ranges between 0 (no participation) and 1 (full participation). The average was 0.85 (s.d. = 0.13).

3.5. The control variables

Three additional control variables were included in the model. First, we included the size of the MNC subsidiary, measured by the natural logarithm of the total number of local employees. From the resource-based perspective, subsidiary size can be taken as a proxy for resource availability and indicates the extent to which subsidiaries have the ability to implement comprehensive environmental policies (Aragón-

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[7] One of the difficulties of obtaining data on environmental practices from Japanese MNCs is that they are often sensitive about data protection. This sensitivity is enhanced if the request for data comes from non-Japanese scholars, especially as the vast majority of subsidiary managers are Japanese nationals in line with the traditional ethnocentric staffing policies of Japanese MNCs. As one of the co-authors was Japanese, we were able to reduce this sensitivity by being able to conduct (personal and telephone) interviews in Japanese and to prepare the survey instruments in Japanese.

[8] The use of the EM method is widely used by IB scholars (Harzing & Noorderhaven, 2006; Noorderhaven & Harzing, 2009).

Correa, 1998). Our second control variable is the age of the MNC subsidiary, and we expect older subsidiaries to be more responsive to local environmental pressures than more recently-established subsidiaries. The third control variable is the subsidiary's innovation capabilities. Existing research provides evidence that innovation capabilities are related positively to proactive environmental strategy (Sharma et al., 2007) and eco-innovations (Berrone et al., 2013). We used Wang and Bansal's (2012) four-item 5-point Likert scale – see the Appendix – to measure innovation capabilities ($\alpha = 0.84$). We also included three parent company attributes (parent size, parent age, and parent CSR performance) as control variables. Both MNC parent size and MNC parent age were measured by the natural logarithm transformation of the number of employees and the years since the company was founded respectively. MNC parent CSR performance was measured by a dichotomous variable that takes a value of 1 if a given parent company was ranked in the Tôyô Keizai's CSR Ranking Top 100 (2013) and a value of 0 otherwise.

3.6. Estimation methodology

The hypotheses were tested using partial least squares (PLS) regression[9] a variance-based approach more suitable for structural measurement models than covariance-based structural equation modelling (SEM) methods (Hair, Sarstedt, Ringle, & Mena, 2011). The use of PLS regression is advantageous for three reasons: First, PLS regression does not require the application of restrictive assumptions in terms of sample size and multivariate normality distribution (Wold, 1982). Second, PLS regression yields more accurate and rigorous parameter estimates, particularly when models are complex because of the inclusion of many measurement items per variable (Hair et al., 2011; Hair, Sarstedt, Pieper, & Ringle, 2012). Third, PLS regression enables simultaneous assessment of statistical significance when multiple dependent variables exist in the model. All the PLS regression analyses were performed using SmartPLS 3.0 software (Hair, Hult, Ringle, & Sarstedt, 2016).

3.7. Descriptive & diagnostic statistics

The 123 subsidiaries in the sample operated in 23 host countries: the most popular countries were the United States (21), the Czech Republic (18), the United Kingdom (17), Germany (10), Hungary (7) and Poland (7) – see Table 2. The means and partial correlation coefficients are shown in Table 3. The subsidiaries were generally large firms (673.7 employees on average) with long histories of business operations in their host economies (21.64 years on average). The subsidiaries have been active in green innovation, with mean values of 3.70 and 3.75 for product and process innovation respectively. The scores for global institutional pressure in the 23 host countries are also shown in Table 2. These scores show considerable national variations, ranging from 0.35 for Montenegro to 1.0 for the United Kingdom. By way of comparison, the score for Japan was 0.85. The variance inflation factor (VIF) values for the explanatory variables were all lower than ten, confirming that multicollinearity was not likely to be a problem (Myers, 1990).

The Cronbach alpha values for the six constructed variables all exceeded the minimum 0.60 criterion (Morrison, 1976; Nunnally, 1978), and were deemed acceptable. The composite reliability values of all the constructs were higher than the threshold of 0.70, confirming internal reliability. As shown in Table 4, the average variance extracted (AVE) values were all well-above the cut-off value of 0.50 (Fornell & Larcker, 1981), so the convergent validity of each of the six constructs was satisfactory. The standardized factor loadings from the PLS analysis were all above the 0.50 threshold (Falk & Miller, 1992), also suggesting convergent validity for all constructs.

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[9] See Ciabuschi et al. (2014) and Fey et al. (2009) for other examples of the use of PLS regression in IB research.

Table 2
The Host Countries of the Japanese MNC Subsidiaries.

Host countries	Frequency	Global institutional pressure
United States	21	0.71
Czech Republic	18	0.77
United Kingdom	17	1.00
Germany	10	1.00
Hungary	7	0.75
Poland	7	0.82
France	6	1.00
Netherlands	6	0.95
Canada	4	0.93
Belgium	3	0.88
Portugal	3	0.89
Spain	3	0.85
Turkey	3	0.76
Italy	2	0.94
Mexico	2	0.85
Romania	2	0.65
Russia	2	0.75
Sweden	2	1.00
Denmark	1	0.95
Ireland	1	0.94
Montenegro	1	0.35
Slovakia	1	0.71
Switzerland	1	1.00
Total	**123**	0.85 (mean value)

Note: The global institutional pressure data come from 2005 Environmental Sustainability Index.

4. Empirical results

We first conducted confirmatory factor analyses using LISREL 9.1 to assess the overall model fit (Jöreskog & Sörbom, 2012). The maximum likelihood ratio chi-square for the model was statistically significant ($\chi2 = 287.973$, p-value < 0.01). Other goodness-of-fit statistics also met the acceptable values suggested by MacCallum et al. (1996) and Hu and Bentler (1999): the comparative fit index [CFI] = 0.958; the incremental fit index [IFI] = 0.959; the root mean square error of approximation [RMSEA] = 0.0628; and the non-normed fit index [NNFI] = 0.950. These indices confirm that the model is consistent with the data. For the standardized root mean square residual (SRMR) as a model fit measure in PLS, the value in our study (0.077) was below a value of 0.08 indicating an appropriate level of fit (Hu & Bentler, 1998). R^2 values are also calculated to assess the goodness-of-fit of the three sets of relationships within the model (Hulland, 1999) – see Table 4. The value of R^2 for the link between stakeholder pressures and EMS implementation was 0.149; the value of R^2 for the link between EMS implementation and green product innovation was 0.433; and the value of R^2 for the link between EMS implementation and green process innovation was 0.484. The average R^2 was 0.355, suggesting that our path model was acceptable (Chin, 1998), and that the explanatory variables account for a large percentage of the variance in the dependent variables.

Fig. 2 shows the path coefficients estimated from the PLS regression model using a bootstrapping method. All path coefficients can be interpreted in the same way as β-statistics from Ordinary Least Squares (OLS) regression. All the standardized coefficients have the expected positive signs although, probably because the sample size (n = 123) is fairly small, not all are statistically significant. Thus, market stakeholder pressures have a significant (β = 0.183, p < 0.05) effect on EMS implementation, whereas the effects of both regulatory stakeholder pressures (β = 0.075, n.s.) and societal stakeholder pressures (β = 0.093, n.s.) are insignificant albeit positive. Hypothesis H2 is thus supported, whilst H1 and H3 do not receive empirical support. As expected, these positive influences are all amplified by pressure from global environmental regime, but the effect is only significant in the case of market stakeholder pressures (β = 0.127, p < 0.05).

Table 3
The Correlation Matrix.

	Variables	Mean	SD	Min	Max	1	2	3	4	5	6	7	8	9	10	11	12	13
1	Regulatory stakeholder pressure	2.53	0.56	1.00	3.00	1.00												
2	Market stakeholder pressure	2.41	0.48	1.00	3.00	0.25	**0.74**											
3	Societal stakeholder pressure	1.99	0.45	1.00	3.00	0.52	0.32	**0.68**										
4	EMS implementation	3.40	0.80	1.17	5.00	0.19	0.23	0.22	**0.78**									
5	Green product innovation	3.70	0.82	1.25	5.00	0.16	0.20	0.15	0.52	**0.81**								
6	Green process innovation	3.75	0.72	2.00	5.00	0.10	0.16	0.05	0.64	0.67	**0.74**							
7	Subsidiary size (log)	2.39	0.57	1.08	4.11	0.06	0.03	0.21	0.23	0.26	0.21	1.00						
8	Subsidiary age (years)	21.64	17.29	1.00	107.00	−0.05	−0.12	−0.16	0.04	−0.14	−0.02	0.04	1.00					
9	Subsidiary innovation capabilities	2.98	0.75	1.00	4.75	−0.08	0.16	−0.02	0.28	0.34	0.28	0.06	0.07	1.00				
10	MNC parent size (log)	3.64	0.58	2.04	4.83	−0.08	−0.02	0.12	0.19	0.07	0.19	0.43	−0.05	0.04	1.00			
11	MNC parent age (years)	70.87	20.73	4.00	120.00	−0.23	−0.10	−0.10	−0.06	−0.10	−0.05	0.06	−0.14	−0.05	0.25	1.00		
12	MNC parent CSR performance	0.34	0.48	0.00	1.00	−0.01	0.11	0.07	0.26	0.21	0.27	0.24	−0.08	0.07	0.57	0.18	1.00	
13	Global institutional pressure	0.85	0.13	0.35	1.00	−0.11	0.17	0.12	0.08	−0.12	0.06	−0.19	0.26	0.21	−0.07	−0.04	0.00	1.00

Notes: (1) Sample size N = 123
(2) The figures in bold type indicate the square root of the average value extracted (AVE)

Table 4
The Constructed Variables.

Scale	Number of Items	Range of Loadings	AVE	Composite Reliability	Cronbachs Alpha	R-square
Regulatory stakeholder pressure	1	–	–	–	–	–
Market stakeholder pressure	3	0.683–0.816	0.574	0.801	0.642	–
Societal stakeholder pressure	4	0.601–0.799	0.466	0.775	0.646	–
EMS implementation	6	0.612–0.871	0.602	0.899	0.863	0.149
Green product innovation	4	0.759–0.899	0.666	0.888	0.831	0.433
Green process innovation	4	0.671–0.814	0.551	0.830	0.727	0.484
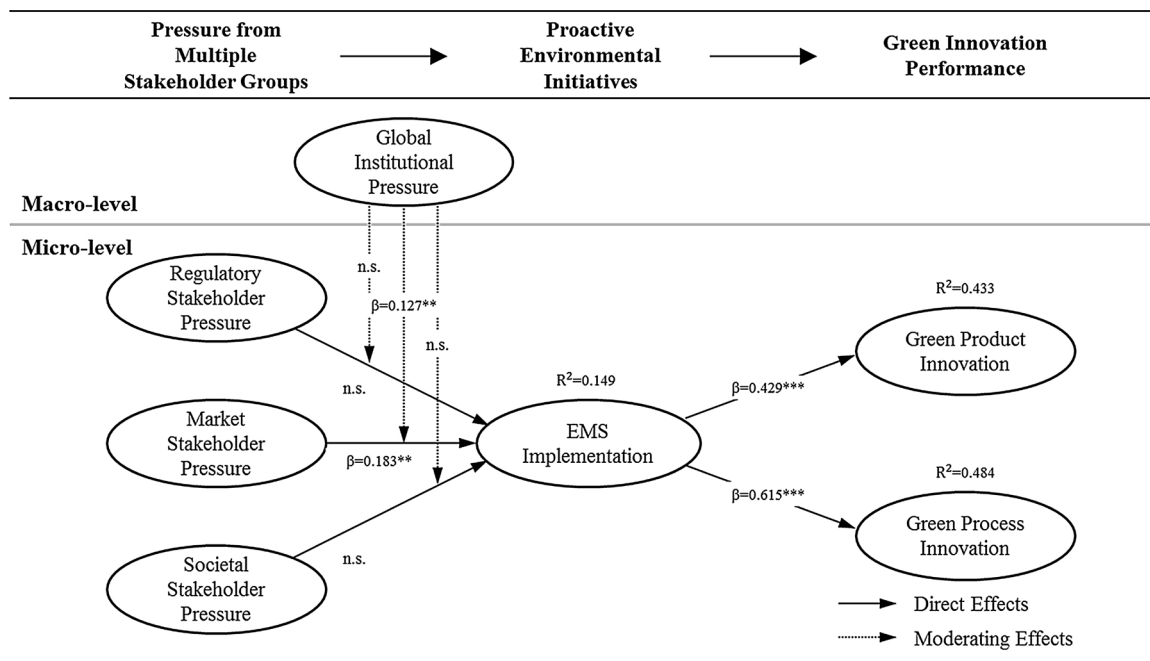
Fig. 2. PLS Analysis.
Notes: (1) Sample size n = 123; (2) EMS = environmental management system; (3) Levels of significance: * = 10%; ** = 5%; *** = 1%; (4) n.s. = not significant

Hypothesis 4b is thus supported. As regards the control variables, green product innovation is positively and significantly related to subsidiary size ($\beta = 0.161$, $p < 0.1$), subsidiary age ($\beta = -0.133$, $p < 0.1$.), subsidiary innovation capabilities ($\beta = 0.238$, $p < 0.01$), MNC parent size ($\beta = -0.178$, $p < 0.1$), and MNC parent CSR performance ($\beta = 0.145$, $p < 0.1$). In short, it appears that market pressures exerted by customers and suppliers are the most important influence upon MNC subsidiaries' implementation of proactive environmental policies, and
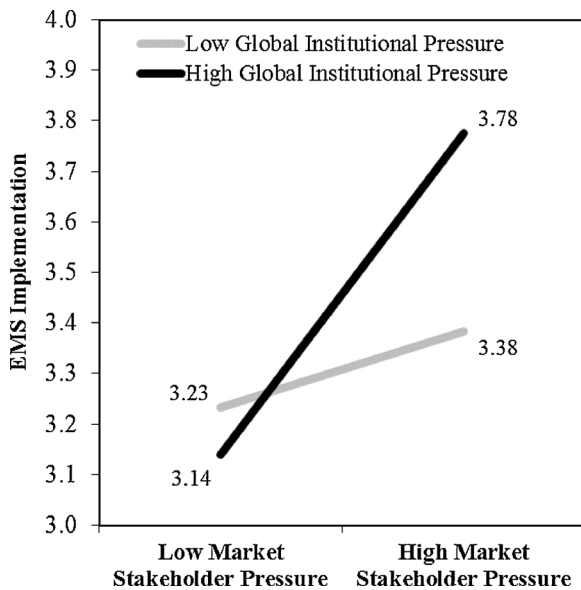
Fig. 3. The Moderating Effect of Global Institutional Pressures on the Relationship between Market Stakeholder Pressures and EMS Implementation.

that this influence is amplified in host countries with high global institutional pressures. Furthermore, EMS implementation is more likely to be embraced by larger subsidiaries with more innovation capabilities. Following Aiken and West (1991), we plotted the relationship between market stakeholder pressures and EMS implementation for different levels of participation in global environmental frameworks–see Fig. 3. In countries with weak (one standard deviation below the average) penetration of global pro-environmentalism, market stakeholder pressures exert a positive but relatively weak effect upon EMS implementation. In contrast, the effect of market stakeholder pressures on EMS implementation is much more pronounced in countries with strong (one standard deviation above the average) penetration of global pro-environmentalism. This finding lends support to the claim by Lee (2011) that it is necessary to consider the combination of national institutional pressures and local stakeholder pressures.

EMS implementation is in turn positively associated with both green product innovation ($\beta = 0.429$, $p < 0.01$) and green process innovation ($\beta = 0.615$, $p < 0.01$). Hypotheses 5a and 5b are thus strongly supported. Using Hayes' (2013) PROCESS macro, we performed bootstrap analyses (Bootstrap sample size = 5000) to verify whether our mediated model provides better explanatory power than an alternative model that envisages the stakeholder pressures having direct impacts on both environmental product and process innovations within MNC subsidiaries. The results of these analyses confirm that the indirect effects of local market stakeholder pressures on green product innovation (indirect effect = 0.195, Boot SE = 0.090, 95% confidence interval = [0.049, 0.402], not including zero) and green process innovation (indirect effect = 0.218, Boot SE = 0.098, 95% confidence interval = [0.051, 0.430], not including zero) are statistically significant.

5. Discussion and conclusions

The results from this study regarding the environmental management of Japanese MNC subsidiaries in North America and Europe revealed the complex mechanism through which subsidiaries "go green". Our empirical results have provided robust support for a series of proposed hypotheses. From both theoretical and managerial perspectives, the current study offers strategic implications for MNCs aiming to best leverage their organizational capabilities and re-engineer the process of creating value across borders in an efficient manner (Kolk &

van Tulder, 2010). The main contribution of this paper is to focus on the mechanisms underlying green innovation in MNC subsidiaries, and to explore how the two types of green innovation are influenced by the configuration of global institutional pressures (the level of participation in the global environmental regime) in host countries and local stakeholder pressures. Put it differently, this study conceptualized and empirically investigated a multilevel model of both green process and product innovations of MNC subsidiaries. There is plenty of anecdotal evidence that the overseas subsidiaries of Japanese MNCs do have considerable autonomy with regard to their environmental policies and initiatives to prevent the trade-off between economic efficiency and ecological responsibility. For example, Daikin Europe (DENV) is famous for taking the lead in the development of eco-friendly heat pump systems (Daikin, 2015). DENV now functions as a centre of excellence and leverage its knowledge pertaining to renewable energy is transferred to other subsidiary units in North America and Asia (Watanabe, 2015). Denso Manufacturing Hungary (DMHU) becomes a green pioneer in cutting the amount of its waste sent to landfill to zero within Denso Corporation's global network and received the 2004 Management Award for Sustainable Development (European Commission, 2004). Yazaki Saltano de Ovar Productos Eléctricos Lda (YSP) autonomously implemented operations to collect and recycle organic solvent, with the result that their waste disposal costs were reduced to zero (Yazaki Group, 2004). And Toyota Motor Manufacturing (UK) installed in 2010 Britain's largest solar photovoltaic panels to enhance energy performance (Toyota Motor Corporation, 2012).

This study builds on this anecdotal evidence, and provides a more formal analysis of the green innovation initiatives of MNC subsidiaries across a range of host countries with quite different attitudes to the global environmental regime, and hence provides a contribution to both the international business and the environmental management literatures. The findings from our empirical analysis suggest that market stakeholder pressures have a significant effect upon both green product and process innovations by local subsidiaries of MNCs via the implementation of EMS initiatives by the MNC subsidiaries and that EMS implementation positively affects not only green product innovation performance but also green process innovation performance. Furthermore, our multilevel analyses show that the effects of market stakeholder pressures on EMS implementation are amplified in host countries which embrace good global environmental stewardship, thus lending support to the conceptual model of Lee (2011) regarding CSR strategies.

5.1. Theoretical implications

Despite the increased attention placed on the environmental management initiatives undertaken by MNC subsidiaries, the empirical research pertaining to this issue has still been relatively scarce (Egri & Ralston, 2008; Holtbrügge & Dögl, 2012; Kolk & van Tulder, 2010). The findings of this study contribute to advancing the concept of environmental responsiveness in the international context in three unique ways. First, our study departs from the traditional dominance of single-country studies (Egri & Ralston, 2008; Holtbrügge & Dögl, 2012) and considers the implementation of proactive environmental strategies by MNC subsidiaries in different host nations. Second, consistent with Driessen et al. (2013), our study finds that EMS implementation provides a formal and informal coordination mechanism that ensures access to relevant information on stakeholder issues in the quest for new opportunities to enhance green innovation performance. Lastly, this study provides insights about whether, why, and how the joint effects of stakeholder pressures and global institutional conditions encourage MNC subsidiaries to engage in green innovation. Although market stakeholders in host countries directly influence the degree of EMS adoption, industrial consumer pressures alone might not be enough for improving environmental responsiveness in MNC subsidiaries. Our multi-level study clearly indicates that it is necessary to develop an integrative model that focuses on the complementary logic of

1. Local government.

Market stakeholder pressures (3 items; 3-point Likert scale: 1 = not important, 2 = moderately important, 3 = very important)

How important do you consider each of the following influences on your subsidiary's environmental practices?

1. Household consumers
2. Commercial buyers
3. Suppliers of goods and services

Societal stakeholder pressures (4 items; 3-point Likert scale: 1 = not important, 2 = moderately important, 3 = very important)

How important do you consider each of the following influences on your subsidiary's environmental practices?

1. Environmental groups
2. Community organizations
3. Labor unions
4. Industry or trade associations

EMS implementation (6 items; 5-point Likert scale: 1 = strongly disagree, 5 = strongly agree)

Our subsidiary systematically attempts to…

1. Voluntarily exceed government-imposed environmental regulations.
2. Incorporate environmental concerns in our business decisions.
3. Incorporates environmental performance objectives in our organizational plans.
4. Financially support environmental initiatives.
5. Measure our environmental performance
6. Minimize the environmental impact of all our business activities.

Subsidiary innovation capabilities (4 items; 5-point Likert scale; 1 = strongly disagree, 5 = strongly agree)

Compared with our major competitors:

1. Our subsidiary introduced much more new lines of products/services in the past three years.

2. The products/services our subsidiary introduced were much newer.

3. Our subsidiary introduced more new processes/operating technologies in the past three years.

4. The processes/operating technologies our subsidiary introduced were much newer.

References

Abdullah, M., Zailani, S., Iranmanesh, M., & Jayaraman, K. (2016). Barriers to green innovation initiatives among manufacturers: The Malaysian case. *Review of Managerial Science, 10*(4), 683–709.

Aguilera-Caracuel, J., Aragón-Correa, J. A., Hurtado-Torres, N. E., & Rugman, A. M. (2012). The effects of institutional distance and headquarters' financial performance on the generation of environmental standards in multinational companies. *Journal of Business Ethics, 105*(4), 461–474.

Albino, Vito, Azzurra, Balice, & Rosa, Maria Dangelico (2009). Environmental strategies and green product development: an overview on sustainability-driven companies. *Business Strategy and the Environment, 18*(2), 83–96.

Aragón-Correa, J. A. (1998). Strategic proactivity and firm approach to the natural environment. *Academy of Management Journal, 48*(5), 556–567.

Armstrong, J. S., & Overton, T. S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research, 14*(3), 396–402.

Bansal, P., & Roth, K. (2000). Why companies go green: A model of ecological responsiveness. *Academy of Management Journal, 43*(4), 717–736.

Ben Brik, A., Rettab, B., & Mellahi, K. (2011). Market orientation, corporate social responsibility, and business performance. *Journal of Business Ethics, 99*(3), 307–324.

Berrone, P., Fosfuri, A., Gelabert, L., & Gomez-Mejia, L. R. (2013). Necessity as the mother of 'Green' inventions: Institutional pressures and environmental innovation. *Strategic Management Journal, 34*(8), 891–909.

Berry, M. A., & Rondinelli, D. A. (1998). Proactive corporate environmental management:

A new industrial revolution. *Academy of Management Executive, 12*(2), 38–50.

Bocquet, R., Le Bas, C., Mothe, C., & Poussing, N. (2013). Are firms with different CSR profiles equally innovative? Empirical analysis with survey data. *European Management Journal, 31*(6), 642–654.

Branco, M. C., & Rodrigues, L. L. (2006). Corporate social responsibility and resource-based perspectives. *Journal of Business Ethics, 69*(2), 111–132.

Buysse, K., & Verbeke, A. (2003). Proactive environmental strategies: A stakeholder perspective. *Strategic Management Journal, 24*(5), 453–470.

Campbell, J. T., Eden, L., & Miller, S. R. (2012). Multinationals and corporate social responsibility in host countries: Does distance matter? *Journal of International Business Studies, 43*(1), 84–106.

Campbell, J. L. (2006). Institutional analysis and the paradox of corporate social responsibility. *American Behavioral Scientist, 49*(7), 925–938.

Chang, S. J., Van Witteloostuijn, A., & Eden, L. (2010). From the editors: Common method variance in international business research. *Journal of International Business Studies, 41*(2), 178–184.

Chang, C. H. (2011). The influence of corporate environmental ethics on competitive advantage: The mediation role of green innovation. *Journal of Business Ethics, 104*(3), 361–370.

Chen, Y. S., Lai, S. B., & Wen, C. T. (2006). The influence of green innovation performance on corporate advantage in Taiwan. *Journal of Business Ethics, 67*(4), 331–339.

Child, J., & Tsai, T. (2005). The dynamic between firms' environmental strategies and institutional constraints in emerging economies: Evidence from China and Taiwan. *Journal of Management Studies, 42*(1), 95–125.

Chin, W. W. (1998). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.). *Modern methods for business research* (pp. 295–358). Mahwah, NJ: Lawrence Erlbaum Associates.

Choi, J., & Park, B. I. (2014). Environmentally responsible management of MNE subsidiaries: Stakeholder perspective. *Multinational Business Review, 22*(1), 59–77.

Christmann, P., & Taylor, G. (2002). Globalization and the environment: Strategies for international voluntary environmental initiatives. *Academy of Management Executive, 16*(3), 121–135.

Christmann, P., & Taylor, G. (2006). Firm self-Regulation through international certifiable standards: Determinants of symbolic versus substantive implementation. *Journal of International Business Studies, 37*(6), 863–878.

Christmann, P. (2000). Effects of best practices of environmental management on cost advantage: The role of complementary assets. *Academy of Management Journal, 43*(4), 663–680.

Christmann, P. (2004). Multinational companies and the natural environment: Determinants of global environmental policy standardization. *Academy of Management Journal, 47*(5), 747–760.

Ciabuschi, F., Holm, U., & Martin, O. (2014). Dual embeddedness, influence and performance of innovating subsidiaries in the multinational corporation. *International Business Review, 23*(5), 897–909.

Cuerva, M. C., Triguero-Cano, Á., & Córcoles, D. (2014). Drivers of green and non-green innovation: empirical evidence in low-tech SMEs. *Journal of Cleaner Production, 68*, 104–113.

Daikin (2015). *Environmental report : take action with the future of the earth in mind* Available at http://eu.daikineurope.com/binaries/ECPEN15-604A_LR_tcm507-390316.pdf?quoteId=tcm:507-225983-64 (Accessed; 16 November 2015).

Dangelico, R. M., & Pujari, D. (2010). Mainstreaming green product innovation: Why and how companies integrate environmental sustainability. *Journal of Business Ethics, 95*(3), 471–486.

Darnall, N., Henriques, I., & Sadorsky, P. (2008). Do environmental management systems improve business performance in an international setting? *Journal of International Management, 14*(4), 364–376.

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.

Dawson, S., & Dickinson, D. (1988). Conducting international mail surveys: The effect of incentives on response rates with an industry population. *Journal of International Business Studies, 19*(3), 491–496.

De Giovanni, P., & Esposito Vinzi, V. (2012). Covariance versus component-based estimations of performance in green supply chain management. *International Journal of Production Economics, 135*(2), 907–916.

Delmas, M., & Toffel, M. W. (2004). Stakeholders and environment management practices: An institutional framework. *Business Strategy and the Environment, 13*(4), 209–222.

Demirel, P., & Kesidou, E. (2011). Stimulating different types of eco-innovation in the UK: Government policies and firm motivations. *Ecological Economics, 70*(8), 1546–1557.

Di Maggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review, 47*(2), 147–160.

Doh, J. P., & Guay, T. R. (2004). Globalization and corporate social responsibility: How non-governmental organizations influence labor and environmental codes of conduct. *Management and International Review, 2*, 7–29.

Driessen, Paul H., & Hillebrand, Bas (2013). Integrating multiple stakeholder issues in new product development: An exploration. *Journal of Product Innovation Management, 30*(2), 364–379.

Egri, C. P., & Ralston, D. A. (2008). Corporate responsibility: A review of international management research from 1998 to 2007. *Journal of International Management, 14*(4), 319–339.

Eiadat, Y., Kelly, A., Roche, F., & Eyadat, H. (2008). Green and competitive? An empirical test of the mediating role of environmental innovation strategy. *Journal of World Business, 43*(2), 131–145.

Esty, D., Levy, M., Strebotnjak, T., & Sherbinin, A. (2005). *Environmental sustainability*

index: Benchmarking national environmental stewardship. New Haven, CT: Yale Center for Environmental Law & Policy.

European Commission (2004). *European business awards for the environment: 12 pioneers in green innovation.* Available at http://ec.europa.eu/environment/awards/material/brochures/2004.pdf (Accessed 13 December 2014).

Falk, R. F., & Miller, N. B. (1992). *A primer for soft modeling.* Akron: University of Akron Press.

Fey, C., Morgulis-Yakushev, S., Park, H., & Björkman, I. (2009). Opening the black box of the relationship between HRM practices and firm performance: A comparison of MNE subsidiaries in the USA, Finland, and Russia. *Journal of International Business Studies, 40*(4), 690–712.

Fichman, M., & Cummings, J. N. (2003). Multiple imputation for missing data: Making the most of what you know. *Organizational Research Methods, 6*(3), 282–308.

Florida, R., & Davison, D. (2001). Gaining from green management: Environmental management systems inside and outside the factory. *California Management Review, 43*(3), 64–84.

Ford Sustainability Report 2016/17 (2016). *Ford sustainability report 2016/17* Available under: https://corporate.ford.com/microsites/sustainability-report-2016-17/doc/sr16.pdf (Accessed 6 January 2018).

Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement errors. *Journal of Marketing Research, 18*(1), 39–50.

Frank, D. J., Hironaka, A., & Schofer, E. (2000). Environmental protection as a global institution. *American Sociological Review, 65*(Feb), 122–127.

Freeman, R. E. (1984). *Strategic management: A stakeholder approach.* Boston, MA: Pitman.

Freudenburg, W., & Gramling, R. (2011). *Blowout in the gulf: The BP oil spill disaster and the future of energy in america.* Cambridge: MIT Press.

Frondel, M., Horbach, J., & Rennings, K. (2008). What triggers environmental management and innovation? Empirical evidence from Germany. *Ecological Economics, 66*(1), 153–160.

Frooman, J. (1999). Stakeholder influence strategies. *Academy of Management Review, 24*(2), 191–205.

Gutowski, T., Murphy, C., Allen, D., Bauer, D., Bras, B., Piwonka, T., et al. (2005). Environmentally benign manufacturing: Observations from Japan, Europe and the United States. *Journal of Cleaner Production, 13*(1), 1–17.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998). *Multivariate data analysis.* Prentice Hall Upper Saddle River.

Hair, J. F., Sarstedt, M., Ringle, C., & Mena, J. (2011). An assessment of the use of partial least squares structural equation modeling in marketing research. *Journal of the Academy of Marketing Science, 40*(3), 414–433.

Hair, J. F., Sarstedt, M., Pieper, T. M., & Ringle, C. M. (2012). The use of partial least squares structural equation modeling in strategic management research: A review of past practices and recommendations for future applications. *Long Range Planning, 45*(5–6), 320–340.

Hair, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM).* Sage Publications.

Harman, H. (1967). *Modern factor analysis.* Chicago: University of Chicago Press.

Hart, S. L. (1995). A natural-resource-based view of the firm. *Academy of Management Review, 20*(4), 986–1014.

Hartmann, J., & Uhlenbruck, K. (2015). National institutional antecedents to corporate environmental performance. *Journal of World Business, 50*(4), 729–741.

Harzing, A. W., & Noorderhaven, N. (2006). Knowledge flows in MNCs: An empirical test and extension of Gupta and Govindarajan's typology of subsidiary roles. *International Business Review, 15*(3), 195–214.

Harzing, A.-W. (1997). Response rates in international mail surveys: Results of a 22 country study. *International Business Review, 6*(6), 641–665.

Hayes, A. F. (2013). *An introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* New York: Guilford Press.

Henriques, I., & Sadorsky, P. (1996). The determinants of an environmentally responsive firm: An empirical approach. *Journal of Environmental Economics and Management, 30*(3), 381–395.

Henriques, I., & Sadorsky, P. (1999). The relationship between environmental commitment and managerial perceptions of stakeholder importance. *Academy of Management Journal, 42*(2), 87–99.

Hoffman, A. J. (2000). *Competitive environmental strategy: A guide to the changing business landscape.* Washington DC: Island Press.

Holtbrügge, D., & Dögl, C. (2012). How international is corporate environmental responsibility? A literature review. *Journal of International Management, 18*(2), 180–195.

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1–55.

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal, 20*(2), 195–204.

Jöreskog, K. G., & Sörbom, D. (2012). *LISREL 9.1. skokie: Scientific software international, inc.* Retrieved from http://www.ssicentral.com/lisrel/ (Accessed 24 November 2015).

Kane, J. (2001). *The politics of moral control.* Cambridge: Cambridge University Press.

Kassinis, G., & Vafeas, N. (2006). Stakeholder pressures and environmental performance. *Academy of Management Journal, 49*(1), 145–159.

Kesidou, E., & Demirel, P. (2012). On the drivers of eco-Innovations: Empirical evidence from the UK. *Research Policy, 41*(5), 862–870.

Kolk, A., & Pinkse, J. (2008). A perspective on multinational enterprises and climate change: Learning from inconvenient truth? *Journal of International Business Studies, 39*(8), 1359–1378.

Kostova, T., & Zaheer, S. (1999). Organizational legitimacy under conditions of complexity: The case of the multinational enterprise. *Academy of Management Review, 24*(1), 64–81.

Kostova, T., Roth, K., & Dacin, M. T. (2008). Institutional theory in the study of multinational corporations: A critique and new directions. *Academy of Management Review, 33*(4), 994–1006.

Lee, M. D. P. (2011). Configuration of external influences: The combined effects of institutions and stakeholders on corporate social responsibility strategies. *Journal of Business Ethics, 102*(2), 281–298.

Li, Q., Xue, Q., Truong, Y., & Xiong, J. (2017). MNCs' industrial linkages and environmental spillovers in emerging economies: The case of China. *International Journal of Production Economics, 196*, 346–355.

Lim, A., & Tsutsui, K. (2012). Globalization and commitment in corporate social responsibility: Cross-national analyses of institutional and political-economy effects. *American Sociological Review, 77*(1), 69–98.

Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research design. *Journal of Applied Psychology, 86*, 114–121.

Lin, H., Zeng, S. X., Ma, H. Y., Qi, G. Y., & Tam, V. W. (2014). Can political capital drive corporate green innovation? lessons from China. *Journal of Cleaner Production, 64*, 63–72.

Little, R. J. A., & Rubin, D. B. (1987). *Statistical analysis with missing data.* New York: John Wiley & Sons.

MacCallum, R. C., Browne, M. W., & Sugawara, H. M. (1996). Power analysis and determination of sample size for covariance structure modeling. *Psychological Methods, 1*(2), 130–149.

Martínez, J. B., Fernández, M. L., & Fernández, P. M. R. (2016). Corporate social responsibility: Evolution through institutional and stakeholder perspectives. *European Journal of Management and Business Economics, 25*(1), 8–14.

McWilliams, A., & Siegel, D. S. (2001). Corporate social responsibility: A theory of the firm perspective. *Academy of Management Review, 26*(1), 117–127.

Menguc, B., Auh, S., & Ozanne, L. (2010). The interactive effect of internal and external factors on a proactive environmental strategy and its influence on a firm's performance. *Journal of Business Ethics, 94*(2), 279–298.

Meyers, L. S., Gamst, G., & Guarino, A. J. (2016). *Applied multivariate research: Design and inretation.* Sage publications.

Morrison, D. F. (1976). *Multivariate statistical methods.* New York: McGraw-Hill.

Morrow, D., & Rondinelli, D. (2002). Adopting corporate environmental management systems: Motivations and results of ISO 14001 and EMAS certification. *European Management Journal, 20*(2), 159–171.

Muller, A. (2006). Global versus local CSR strategies. *European Management Journal, 24*(2–3), 189–198.

Myers, R. (1990). *Classical and modern regression with applications.* Boston, MA: Duxbury Press.

Noailly, J., & Ryfisch, D. (2015). Multinational firms and the internationalization of green R&D: A review of the evidence and policy implications. *Energy Policy, 83*, 218–228.

Noorderhaven, N., & Harzing, A. W. (2009). Knowledge-sharing and social interaction within MNEs. *Journal of International Business Studies, 40*(5), 719–741.

North, D. (1991). *Institutions, institutional change and economic performance.* Cambridge: Cambridge University Press.

Nunnally, J. C., & Bernstein, I. H. (1978). *Psychometric theory.*

Park, Y. R., Song, S., Choe, S., & Baik, Y. (2015). Corporate social responsibility in international business: Illustrations from korean and japanese electronics MNEs in Indonesia. *Journal of Business Ethics, 129*(3), 747–761.

Peng, Y., & Lin, S. (2008). Local responsiveness pressure, subsidiary resources, green management adoption and subsidiary's performance: Evidence from Taiwanese manufacturers. *Journal of Business Ethics, 79*(1–2), 199–212.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903.

Porter, M. E., & Van der Linde, C. (1995). Green and competitive: Ending the stalemate. *Harvard Business Review, 73*(5), 120–134.

Puller, S. L. (2006). The strategic use of innovation to influence regulatory standards. *Journal of Environmental Economics and Management, 52*, 690–706.

Roth, P. L. (1994). Missing data: A conceptual review for applied psychologists. *Personnel Psychology, 47*(3), 537–570.

Rugman, A., & Verbeke, A. (1998). Corporate strategies and environmental regulations: An organizing framework. *Strategic Management Journal, 19*(4), 363–375.

Schafer, J. L., & Olsen, M. K. (1998). Multiple imputation for multivariate missing-data problems: A data analyst's perspective. *Multivariate Behavioral Research, 33*(4), 545–571.

Schofer, E., & Hironaka, A. (2005). The effects of world society on environmental protection outcomes. *Social Forces, 84*(1), 25–47.

Scott, W. R. (1995). *Institutions and organizations.* Thousand Oaks CA: Sage.

Sharma, S., Aragón-Correa, J. A., & Rueda-Manzanares, A. (2007). The contingent influence of organizational capabilities on proactive environmental strategy in the service sector: An analysis of north American and European ski resorts. *Canadian Journal of Administrative Sciences, 24*, 268–283.

Stites, J. P., & Michael, J. H. (2011). Organizational commitment in manufacturing employees: Relationships with corporate social performance. *Business & Society, 50*(1), 50–70.

Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review, 20*(3), 571–611.

Tatoglu, E., Demirbag, M., Bayraktar, E., Sunil, S., & Glaister, K. (2014). Determinants of voluntary environmental management practices by MNE subsidiaries. *Journal of World Business, 49*(4), 536–548.

Toyota Motor Corporation (2012). *Sustainability report 2012* [Accessed 3 June 2013].

Vidal-Salazar, M. D., Cordón-Pozo, E., & Ferrón-Vilchez, V. (2012). Human resource

management and developing proactive environmental strategies: The influence of environmental training and organizational learning. *Human Resource Management, 51*(6), 905–934.

Wagner, M. (2007). On the relationship between environmental management, environmental innovation and patenting: Evidence from german manufacturing firms. *Research Policy, 36*(10), 1587–1602.

Wagner, M. (2009). National culture, regulation and country interaction effects on the association of environmental management systems with environmentally beneficial innovation. *Business Strategy and the Environment, 18*(2), 122–136.

Walley, N., & Whitehead, B. (1994). It's not easy being green. *Harvard Business Review, 72*(3), 46–52.

Wang, T., & Bansal, P. (2012). Social responsibility in new ventures: Profiting from a long-term orientation. *Strategic Management Journal, 33*, 1135–1153.

Watanabe, M. (2015). *Kaigai Kogaisha no Kigyokatsudo: Kaigai Kogaisha Manager niyoru Seitosei no Kiki no Kokufuku wo Shoten toshit.* Kokusai Business Kenkyu.

Wold, H. (1982). Soft modeling: The basic design and some extensions. In K. G. Jöreskog, & H. Wold (Eds.). *Systems under indirect observation: Causality, structure, prediction.* Amsterdam: North Holland Publishing.

Yang, X., & Rivers, C. (2009). Antecedents of CSR practices in MNCs' subsidiaries: A stakeholder and institutional perspective. *Journal of Business Ethics, 86*(2), 155–169.

Zhao, M., Park, S. H., & Zhou, N. (2014). MNC strategy and social adaptation in emerging markets. *Journal of International Business Studies, 45*(7), 842–861.

Zyglidopoulos, S. C. (2002). The social and environmental responsibilities of multinationals: Evidence from the brent spar case. *Journal of Business Ethics, 36*(1–2), 141–151.