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INTERNATIONALIZATION AND ENVIRONMENTAL DISCLOSURE: THE ROLE OF HOME AND HOST INSTITUTIONS

ANS KOLK & FABIENNE FORTANIER

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ABSTRACT

Purpose – The domestic institutional context has emerged as a key determinant of firms' environmental disclosure, but studies have hardly addressed the extent to which exposure to foreign institutional contexts plays a role in the occurrence and contents of non-financial disclosure, crucial aspects for understanding multinationals' accountability. This article therefore investigates the relationship between internationalization (both degree and spread) and environmental disclosure.

Design/methodology/approach – It is hypothesized that both home and host country institutional pressures affect the relationship between internationalization and environmental disclosure, and that effects are more prominent in environmentally-sensitive sectors. The proposed relationships are tested using data from the Fortune Global 250.

Findings – Results show a significantly negative relationship between the degree of internationalization and environmental disclosure, which is only partly mitigated by environmental governance and institutional quality in home and host countries. Only for firms in high-sensitivity sectors from high-standard countries is the relationship positive. Findings are particularly strong for the degree of internationalization; and non-significant for dispersion/spread.

Originality/value – This article moves beyond the predominant focus on country-of-origin effects by adding exposure to foreign institutional contexts, for which it develops a new indicator. It renews attention to non-financial disclosure, a topic underexposed in the IB literature. Viewed from a broader IB perspective, the article provides an empirical illustration of the effect of home and host institutions on firm strategy, and of the use of different metrics to assess internationalization with divergent results for degree versus spread, as well as for sales versus assets, pointing at areas for further research.

Keywords – Internationalization; environmental reporting; institutions; home/host country; country of origin; multinationality

Paper type - Research paper

INTERNATIONALIZATION AND ENVIRONMENTAL DISCLOSURE: THE ROLE OF HOME AND HOST INSTITUTIONS

INTRODUCTION

From the 1990s onwards, non-governmental organizations (NGOs) have increasingly expressed their concerns about the negative environmental and social implications of globalization in general, and multinational enterprises (MNEs) in particular. This resulted in growing pressure on MNEs to show their commitment and to report on the activities undertaken to prevent such 'externalities' of international trade and production. MNEs have indeed responded by disclosing information, increasingly in the form of special so-called environmental, sustainability or corporate social responsibility reports. The peculiarities of these non-financial disclosures, including trends, contents and determinants, have received considerable research attention (for overviews see Berthelot *et al.*, 2003; Kolk and Perego, 2012; Lee and Hutchison, 2005). Many studies highlighted the role of the domestic institutional context or the 'country-of-origin effect' (Sethi and Elango, 1999) as determinant of non-financial disclosure (e.g. Araya, 2006; Gray *et al.*, 1990; Hettige *et al.*, 1996; Kolk, 2005; Meek *et al.*, 1995; Van der Laan Smith *et al.*, 2005), often in a cross-national comparative perspective.

However, so far very few empirical studies have focused on the extent to which exposure to foreign institutional contexts plays a role in the occurrence and contents of disclosure, which seems to reflect limited attention to non-financial reporting in the international business literature more generally (exceptions include Fortanier *et al.*, 2011; Kolk, 2010a; Meek *et al.*, 1995). This is a research gap that deserves to be addressed, because if we want to appreciate voluntary non-financial disclosure, accountability and the legitimacy of MNEs in the context of globalization, we need to understand whether the degree and spread of internationalization of MNE activity leads to more, and more sophisticated, reporting or to less. In this article we aim to shed light on these issues by investigating the relationship between firms' internationalization (both degree and spread) and environmental reporting.

Theoretically, arguments can be made both for a negative and a positive relationship between these variables (as elaborated below). On the one hand, when firms internationalize, particularly from home countries with relatively strict standards and high public pressure to be environmentally sustainable, they may 'escape' the public eye and stop or diminish their non-financial disclosures. On the other hand, firms may also couple internationalization with (continued) detailed and externally verified reports on their environmental achievements, as this will generate benefits such as positive reputation effects, risk reduction, and a diminution of costs resulting from maintaining and coordinating diverse systems and standards.

This article argues that the relationship between internationalization and voluntary environmental disclosure is essentially a balancing act between pressures from home and host country (environmental) institutions. We hypothesize that both home and host country institutional pressures make the relationship between internationalization and disclosure stronger and more apparent. Exposure to high foreign institutional pressures increases the

risk of legitimacy crises, while high domestic institutional pressures make escaping the public eye much more difficult. In both cases, the potential for legitimacy spillovers increases. Finally, we argue that these effects are more prominent in environmentally sensitive sectors, where public scrutiny in general is much higher.

We test these proposed theoretical relationships using evidence from a sample consisting of the Fortune Global 250, for which we collected data on the degree and spread of internationalization, and a variety of non-financial disclosure measures. In addition, we develop an indicator of the amount of international institutional pressure to which an MNE is subject due to its foreign operations. In doing so, this article does not only provide more insight in the relationship between internationalization and non-financial disclosure. It also contributes to the IB literature more generally, by exploring the effect of home and host institutions on firm strategy, an area that has been identified as meriting more research (Dunning, 2006), and by providing a further illustration of measurement of multinationality (Rugman and Oh, 2011), as different metrics are used to assess both degree and spread of internationalization.

Before moving to the empirical analysis, we first discuss the existing literature on environmental disclosure as well as its relationship to internationalization, and develop hypotheses on internationalization and environmental disclosure, focusing on how this relationship may depend on the exposure to home and host country institutional pressures, and the environmental sensitivity of the sector in which a firm operates. The subsequent section explains the methodology, followed by a presentation of the results, and discussion and conclusions.

ENVIRONMENTAL DISCLOSURE AND INTERNATIONALIZATION: THEORY AND HYPOTHESES

Environmental disclosure research: Overview and research gaps

Environmental disclosure has traditionally received extensive scholarly interest, particularly in the accounting literature (early work includes Deegan and Gordon, 1996; Gray *et al.*, 1995, 1999, 2001; Matthews, 1997; Meek *et al.*, 1995; Neu *et al.*, 1998). Research on disclosure has sometimes included both environmental and social aspects, following the original approach from the field of environmental and social accounting (e.g. Gray *et al.*, 1995). In many cases, however, studies have focused on one of the two, most often the environment, as also reflected in reviews of the field (Berthelot *et al.*, 2003; Kolk and Perego, 2012; Lee and Hutchison, 2005). Originating from the accounting discipline, these publications have yielded an overview of aspects related to voluntary disclosure by firms, generally based on cross-sectional research. It should be noted, however, that several interrelated factors play a role, or as Deegan (2002, p. 291) put it, “expecting that one motivation might dominate all others would be unrealistic”. Hence, publications have likewise distinguished a range of possible drivers at the firm, sector and societal levels, using different theoretical lenses, including cost-benefit, legitimacy, stakeholder and institutional approaches (Berthelot *et al.*, 2003; Kolk and Perego, 2012; Lee and Hutchison, 2005).

The objective to keep and/or enhance legitimacy within society has been an important motivation for voluntary reporting, with disclosure being seen as a function of exposure to stakeholders and public pressure (Deegan, 2002; cf. Berthelot *et al.*, 2003). This can also be related to impression management, according to which firms provide information to manage their reputation and the perceptions of key stakeholders, including

government (for example, to pre-empt disclosure regulation). These externally-oriented approaches imply that the socio-political, institutional context, also including for example the occurrence of environmental incidents and targeted campaigns against particular firms, influences the extent of disclosure. The overviews of relevant factors in this regard show that size matters, with large firms more likely to report, presumably due to greater visibility and exposure to media and NGO attention – public pressure and government stimuli in firms' home countries have, more generally, helped to further disclosure (e.g. Adams *et al.*, 1998; Fortanier *et al.*, 2011; Kolk, 2005; Lee and Hutchison, 2005). This greater likelihood also applies to firms in more environmentally-sensitive (polluting) sectors. Sector membership can play a role as well if firms are supposed (via 'peer' pressure) to participate in, for example, collectively adopted codes that include reporting requirements.

Overall, a basic consideration in environmental disclosure research has been that firms balance internal and external pressures from a variety of stakeholders, some more powerful than others, to whom corporate information can be useful in their decision-making and behavior vis-à-vis the firm. Firms and their managers thus seem to weigh perceived advantages and disadvantages (costs and benefits) of voluntary reporting (Martin and Hadley, 2008), but insights into firm-specific factors have been limited (cf. Berthelot *et al.*, 2003), which is where this article aims to make a contribution. We focus especially on the noteworthy phenomenon that, although voluntary environmental reporting has increased among large MNEs, the importance of internationalization – a key characteristic of MNEs – as an explanatory variable in emerging disclosure varieties has received rather scant attention.

A few studies on the determinants of voluntary disclosures have included internationalization in their models (including Araya, 2006; Chapple and Moon, 2005; Levy, 1995; Meek *et al.*, 1995), but generally as a control variable, and findings are mixed. The two older studies (Levy, 1995; Meek *et al.*, 1995) found a negative relationship; more recently, Araya (2006), for Latin America, and Chapple and Moon (2005), for Asia, found that firms with respectively an international sales orientation, or foreign ownership are more likely to report than firms that are not. Kolk and Van Tulder (2004), who focused on internationalization and environmental disclosure, only included some exploratory findings with a limited sample, which suggested that more international firms, mostly originating from smaller European countries, also had more proactive reporting strategies.

It should be noted that while the effect of internationalization on environmental *disclosure* have not really been studied, the relationship between internationalization and environmental *performance* received more attention (Brammer *et al.*, 2006; Buysse and Verbeke, 2003; Dowell *et al.*, 2000; Kennelly and Lewis, 2002; Strike *et al.*, 2006). But although disclosure is often approached as a component of good environmental practices (see e.g. Brammer, 2006; Buysse and Verbeke, 2003; Henriques and Sardorsky, 1999), there are clear differences between environmental performance and voluntary environmental disclosure that justify special theoretical attention for the relationship between disclosure and internationalization. Interestingly, evidence from studies on the relationship between environmental disclosure and environmental performance has pointed in different directions, or showed insignificant associations (Kolk and Perego, 2012).

Disclosure is in a sense a 'public opinion management device': negative exposure (due to bad performance) may increase disclosure (although it does not necessarily improve environmental practices) (Patten, 2002). Disclosures can be used to off-set potentially increased public policy pressure arising from poorer environmental performance (Cho *et al.*,

2006); such information can, however, also be used in litigation against firms, which provides a disincentive to report (extensively). Concurrently, good environmental performance has been accompanied by both more and less voluntary disclosure (Kolk and Perego, 2012). Moreover, while the debate on internationalization and environmental *performance* is dominated by a resource-based view perspective and a strong focus on the role of environmental regulation (see Porter and Van der Linde, 1995), the current debate on non-financial *disclosure* is grounded in legitimacy and institutional approaches (Deegan and Gordon, 1996; Kolk and Perego, 2012), paying considerable attention to non-regulatory stakeholders. Finally, environmental *disclosure* is in many ways a down-stream or consumer-end activity, whereas environmental *performance* is generally more dependent on creating efficiencies in upstream activities. Each involves different firm specific advantages or FSAs (Kolk, 2010b; Rugman and Verbeke, 2008) which may not necessarily be subject to the same theoretical antecedents.

The lack of attention to internationalization as an explanatory factor for environmental disclosure is an important gap in the literature: a firm's country of operation – usually the country of origin – has long been shown to contribute to the extent of environmental reporting by firms (Berthelot *et al.*, 2003; Fortanier *et al.*, 2011; Kolk, 2005; Lee and Hutchison, 2005; Van der Laan Smith *et al.*, 2005), since the institutional pressures from governments and other stakeholders in society are often very country-specific. A logical subsequent question is what happens to these pressures when firms operate in more than one country, i.e. when firms internationalize. Here, we define internationalization as both the degree of internationalization (the extent of foreign as opposed to domestic activities) and the spread of international activities (the extent to which the foreign activities are geographically dispersed), reflecting thus both the *intensity* of internationalization as well as the geographic *extensity* of internationalization (Ietto-Gillies, 2009). The process of internationalization extends a firm's legitimating environment to include all of its home and host country institutional contexts (Kostova and Zaheer, 1999), and increases the number and diversity of stakeholder pressures on the firm (Brammer *et al.*, 2006; Sharfman *et al.*, 2004), particularly if the geographic extensity is large. It is the composition and relative importance of home and the sum of the host country institutional pressures that affects firm behavior with respect to disclosure.

Internationalization and environmental disclosure

Commonly, internationalization is expected to force firms to adopt more stringent environmental strategies (Kennelly and Lewis, 2002; Strike *et al.*, 2006) and to disclose more information (Levy, 1995; Meek *et al.*, 1995), as multinationality may create many legitimacy problems (cf. Aguilera-Caracuel *et al.*, 2011). First of all, the more complex and diverse the institutional and stakeholder environment, the more difficult it will be to satisfy all individual stakeholders (Sharfman *et al.*, 2004; Watson and Weaver, 2003). Second, legitimacy problems in one location of activity of a multinational may spill over to other contexts, as multinationals are visible for a large and widely dispersed public (Kostova and Zaheer, 1999; Sharfman *et al.*, 2004). Third, foreign firms are often expected to do more in building reputation and goodwill due to the liability of foreignness that they face (Chapple and Moon, 2005; Holt *et al.*, 2004; King and Shaver, 2001). Finally, MNEs are easy targets for interest groups, since their wide presence can provide NGOs with the most publicity and visibility (Kostova and Zaheer, 1999).

Following these arguments, multinational firms appear to face stronger and more diverse (potential) attacks on their legitimacy, and are hence forced to voluntarily disclose more, and more detailed information, in order to manage and maintain legitimacy and prevent reputation damage (Brown and Deegan, 1998; Gurthie and Parker, 1989; King and Shaver, 2001; Neu *et al.*, 1998). The sheer diversity of internationally dispersed stakeholder pressures and stakeholder demands for information has been expected to increase the extent of voluntary disclosure (Meek *et al.*, 1995). The diversity in regulatory requirements (see Sharfman *et al.*, 2004), as well as the array of cultures and employee values and interests (Watson and Weaver, 2003) would lead firms to choose for the highest, rather than the lowest, common denominator (Sharfman *et al.*, 2004).

However, there are also important arguments for a possible negative effect of internationalization on environmental disclosure. First, several reasons can explain why a larger, more dispersed and more diverse set of stakeholders may not lead to higher societal pressure. For example, public scrutiny is both country-specific (Hibbitt and Collison, 2004; Kolk, 2005) and related to firm size (Neu *et al.*, 1998; Magness, 2006). A geographical break-up of firm activities may reduce the overall pressure on firms to report: while the firm as a whole is still large and important, it is relatively small in each of the individual countries in which it operates, reducing local stakeholder pressures. Moreover, when there is a large group of external stakeholders, the importance of each individual stakeholder decreases, as stakeholder power depends on the extent to which it controls the 'resources' on which a firm depends for survival (Kassinis and Vafeas, 2006). Furthermore, as Oliver (1991) noted, when the multiplicity of institutional contexts is high, strategies of what she calls 'resistance' (which includes non-reporting) are more likely than 'acquiescence' (which includes voluntary disclosure). Operating in many and institutionally different countries may also facilitate MNE managers to point to what is done elsewhere to avoid disclosure on each individual activity or country. Finally, a dispersed stakeholder set may reduce stakeholder field cohesion – which encompasses the proximity and interconnectedness of key stakeholders – and thus also public scrutiny targeted at the firm (Bansal and Roth, 2000).

Second, being foreign could not only increase pressures (due to liability of foreignness) but also buffer a firm from local institutional pressure since a foreign subsidiary may not always be expected to fully comply with local standards, especially if it is relatively powerful or may threaten to relocate (Kostova and Roth, 2002). Foreignness may thus be a liberty instead of a liability. Furthermore, stakeholders in other countries – for example, some developing countries – may have lower expectations and looser standards in terms of legitimacy (Aguilera-Caracuel *et al.*, 2011; De Villers and Van Staden, 2006). Third, managerial decisions to respond to stakeholder pressure depends on their interpretation of such pressures (Cormier *et al.*, 2004; Henriques and Zardosky, 1999; Mitchell *et al.*, 1997; Sharma, 2000). It may be that the claim of faraway stakeholders is not perceived as salient as those from stakeholders in the home country (Newson and Deegan, 2002), as the larger distance impedes knowledge flows (headquarter managers will not know about stakeholder pressures), and increases interpretation mistakes (headquarter managers may not correctly perceive stakeholder power) (Dow and Karunaratna, 2006).

Hence, from a theoretical perspective, both a positive and a negative relationship between the degree and spread internationalization and disclosure may be expected, depending on how the costs and benefits of disclosure add up for the firm in an international context. As the effect of internationalization is thus theoretically undetermined, we argue that the characteristics of the complex institutional context, in both home and host

countries, to which an MNE is exposed, influence whether either the costs or the benefits of disclosure prevail a particular firm. We thus examine how the relationship between internationalization and disclosure may be influenced by the composition and relative importance of home-country pressure and the sum of the host-country pressures.

The role of home institutions

Research has consistently shown that the higher the institutional and stakeholder pressure within the home country, the more likely firms are to report about their environmental and other non-financial activities (Araya 2006; Gray *et al.*, 1990; Hettige *et al.*, 1996; Van der Laan Smith *et al.*, 2005). Voluntary disclosures tend to be more closely aligned to the expectations of the home country rather than to those outside it (Newson and Deegan, 2002) due to the greater salience of domestic stakeholders in the eyes of corporate managers (Cormier *et al.*, 2004). However, it is important to note that the effect of domestic institutions on disclosure is not only merely direct; they also affect how the degree of internationalization influences disclosure.

For firms from countries with high institutional pressures, many of the arguments that suggest that internationalization is coupled with lower disclosure do not hold. A resistance strategy (non-disclosure) will not be accepted in a home country in which firms are expected to attain a high level of legitimacy (Oliver, 1991); geographical dispersion does not reduce but rather increases a firm's visibility in the home country as it is exposed to much larger set of potential legitimacy problems for which the risk of legitimacy spillovers (Kostova and Zaheer, 1999; Sharfman *et al.*, 2004) is high. High institutional pressures will not only make a firm an interesting target for (international) NGOs (Kostova and Zaheer, 1999) but will also likely translate to managers that are more perceptive of the urgency, power, and legitimacy of the claims of foreign stakeholders (De Villiers and Van Staden, 2006; Newson and Deegan, 2002).

By contrast, for firms from countries characterized by low institutional pressures, many of the arguments that suggest a positive effect of internationalization on disclosure do not hold. The risk of legitimacy spillovers is much lower as the home-country public is not very concerned about such issues. Moreover, the benefits in terms of legitimacy are much smaller and thus the use of a resistance strategy instead of one of acquiescence (and disclosure) is much more likely (Oliver, 1991). Finally, managers used to a context with limited attention to environmental issues will also be less perceptive in assessing the salience of foreign stakeholders with respect to such topics.

Therefore we hypothesize:

- H1a.* Home-country institutional pressure positively affects the relationship between the degree of internationalization and disclosure.
- H1b.* Home-country institutional pressure positively affects the relationship between the spread of internationalization and disclosure.

The role of host institutions

Not only the home country institutional context is important in analyzing the effect of internationalization on reporting; the institutional context in the host countries in which a firm is active is also a key determinant of firm disclosure (Kostova and Roth, 2002). By

locating in a particular country or by selling to a particular foreign market, a firm creates additional stakeholders towards which it needs to establish legitimacy. Rugman and Verbeke (1998) argue that the extent to which operations of a firm are located in the home or host country influences managerial decision making with respect to what standards to follow: if a large share of a firm's activities is outside the home country, a firm will abide by the host, rather than home, country regulations and institutional pressures. Generalizing this argument, it implies that the larger a firm's presence in a host country, the more important this foreign institutional context becomes for a firm's legitimacy, as this is positively related to both firm visibility and to firm dependence on the resources controlled by stakeholders in that particular country. This may even translate into host countries becoming adverse to allowing inward FDI from firms with a poor environmental record.

We expect that the effect of internationalization on disclosure is stronger if the international activities are located in countries where institutional pressure is high. If a firm internationalizes to such high-pressure countries, the cost of non-disclosure will become higher (damage to reputation, risk of reputation spillovers), whereas the benefits of disclosure will also become higher (legitimacy in the eyes of stakeholders). Empirically, several studies have tried to capture this aspect by for example including regional dummy variables indicating if a firm was active in a particular region or not (Kennelly and Lewis 2002), or by the extent of exporting to developed versus developing countries (Christmann and Taylor, 2001). But it is important to note that this effect of foreign institutional pressure is not a direct effect – it depends on the extent of foreign activities. Firms with only a very small share of their activities abroad will be less subject to foreign institutional pressures than those with a larger share abroad.

Therefore we hypothesize:

- H2a.* Host-country institutional pressure positively affects the relationship between the degree of internationalization and disclosure.
- H2b.* Host-country institutional pressure positively affects the relationship between the spread of internationalization and disclosure.

Country and sector effects

The relationship between internationalization and environmental disclosure may not only be dependent on the country of origin of the firm and the direction of internationalization, but also on other factors. One of the most important factors that has been brought forward in the literature on both internationalization and on the environment is the effect of sector dynamics. Sector peculiarities are not just relevant for 'benchmarking' reports, but also explain frequencies of reporting (cf. Kolk, 2010a). Firms from more polluting and visible sectors are more active on environmental issues and also publish more reports (e.g. Adams *et al.*, 1998; Araya, 2006; Halme and Huse, 1997; Kolk, 2005, 2010a; Magnass, 2006). Firms in such sectors are also the first to experience pressure from stakeholders, as these firms are often seen as the main contributors to environmental problems. In addition, environmental legislation or guidelines for reporting are not always relevant to all sectors (for example, different rules may apply to industries with a high environmental impact) – the greatest impact is on firms with activities that are considered to be environmentally sensitive (Cho *et al.*, 2006).

Building on arguments similar as those mentioned above, Patten (1991, 2002)

considers that in addition to size, the sector of activity is a useful proxy for the amount of public pressure. This also affects the relationship between internationalization and disclosure, and the role of domestic and foreign institutional pressures in that relationship. For firms in high environmental impact industries, many of the arguments that suggest that internationalization is coupled with lower disclosure do not hold. Firms in high impact industries are an interesting target for (international) NGOs (Kostova and Zaheer, 1999) necessitating managers to be more perceptive of the claims of domestic and foreign stakeholders (De Villiers and Van Staden, 2006; Newson and Deegan, 2002). A resistance strategy (non-disclosure) will be less feasible. Also the argument that geographical dispersion does not reduce but rather increases a firm's visibility as it is exposed to much larger set of potential legitimacy problems for which the risk of legitimacy spillovers (Kostova and Zaheer 1999; Sharfman *et al.* 2004) is much more applicable to high-impact sectors than low-impact ones. For firms in low-impact sectors, the risk of legitimacy spillovers is much smaller given the limited risk of environmental problems. The use of a resistance strategy instead of one of acquiescence (and disclosure) is hence much more likely (Oliver 1991).

In all, this implies that public scrutiny by home and host institutions will be higher for firms in environmentally sensitive sectors, meaning that all the relations that we hypothesized in H1 and H2, will be much more pronounced for sectors that are considered to have a high environmental impact and are hence more sensitive to public and regulatory pressures, and less important (or even absent) for firms from sectors that have only limited environmental consequence.

Hence we expect:

- H3a.* The interaction effect between the degree of internationalization and domestic institutional pressure (H2a), is stronger for sectors with high environmental sensitivity.
- H3b.* The interaction effect between the spread of internationalization and domestic institutional pressure (H2b), is stronger for sectors with high environmental sensitivity.
- H4a.* The interaction effect between the degree of internationalization and foreign institutional pressure (H3a), is stronger for sectors with high environmental sensitivity.
- H4b.* The interaction effect between the spread of internationalization and foreign institutional pressure (H3b), is stronger for sectors with high environmental sensitivity.

METHODOLOGY

In order to test the hypotheses, data has been collected for 250 large international firms, using the first half of the 2001 Fortune Global 500 list. For these firms, information was collected on a range of variables, including various measures of environmental disclosure and internationalization, as well as measures of institutional quality with respect to environmental issues, and control variables. For a total of 246 firms, it was possible to gather complete data. We will below explain the measurement of the variables, and the estimation.

Environmental disclosure

To measure environmental disclosure by firms, we collected data on three separate but

related dimensions of disclosure, since previous studies showed that the antecedents of disclosure may not be the same across different kinds of information (see e.g. Meek *et al.*, 1995). These three binary measures represent various levels of extent and sophistication of environmental information, in order to explore differences in the effect of internationalization and institutions on relatively shallow reporting versus more extensive reporting, which includes more far-reaching and detailed information, or may even be externally verified (GRI, 2002; Kolk, 2005).

The first of the three variables is REPORT, which measures if firms in our sample disclosed information on their environmental activities at all. Those firms that had either a separate environmental (or CSR, or other non-financial) report or a separate section on environment in the annual financial report were scored positive on this variable. The second variable is DATA, which measures if the firms in our sample disclosed extensive quantitative data on their environmental performance. We scored firms as positive on this variable if they either reported data that was set against quantitative targets, or that compared environmental performance over time, or that included indicators that linked environmental performance to product/service value (Verfaillie and Bidwell, 2000). The third and final variable is VERIFY, which measures if the firms in our sample also had their environmental disclosures verified externally by an independent auditor.

Degree of Internationalization

The Degree of Internationalization of the firms is calculated both as the ratio of foreign to total assets (FA/TA), and foreign to total sales (FS/TS). While these measures are highly correlated (a value of 0.81, see table 1 below) – even to such an extent that other studies (Strike *et al.*, 2006; Kennelly and Lewis, 2002) combine them into a single factor internationalization – we recognize that each captures a different dimension of internationalization. An internationalization ratio based on assets directly relates to the spread of (possibly) polluting activities. Environmental problems (and their solutions) relate in the first place to firms' production strategies, exemplified by the international distribution of assets and production sites. Being physically present in a particular location also exposes a firm directly to the local institutional context. In contrast, the internationalization of sales and hence markets could also be important in regulating a firm's environmental activities and disclosures, as it represents the spread of consumers – a major stakeholder for any firm. An exploration of the gradual differences in importance of market versus production internationalization for disclosure may in the discussion shed further light on why firms disclose.

The figures for the FA/TA and FS/TS ratios were derived from companies' annual reports or SEC filings. The data was collected for the fiscal year 2001 (for some companies that did not have fiscal year ends that match with calendar year ends, the 2000/2001 fiscal year was used), from individual firms' annual reports. FA/TA data were available for 209 of the 250 firms. For an additional nine firms, the DOI was calculated on the basis of investment data in the list of consolidated subsidiaries that the firms published in their annual reports. For another 30 firms, the FA/TA ratio was estimated based on other information in the annual reports, which include internationalization ratios of sales, earnings, or employees, or descriptive statements. For 11 of these 30 firms, the FA/TA ratio was estimated to be 0, based on statements in the annual report.¹ For two companies, estimation proved impossible due to complete lack of data or additional information. FS/TS data are generally much better available than assets data (see also Sullivan, 1996) and we

were able to collect these data for the entire sample except four. For these firms, we estimated the FS/TS ratio in the same way as for those firms missing the FA/TA ratio.²

Spread of internationalization

As letto Gillies (2009) indicates, ‘abroad’ may be a single country, or a multitude of them. Since each country may have different environmental institutional settings, the number of countries in which a firm has activities matters with respect to assessing the total (and diversity) of external institutional pressures firms are exposed to. Hence, when analyzing the effects of internationalization on disclosure, not only the degree (or the intensity, letto-Gillies, 2009) but also the spread (or geographic extensity) should be considered. We measure the spread of international activities of firms by using letto-Gillies’s (1998) Network Spread Index (NSI). This index is calculated as the ratio of the number of countries in which a company has affiliates to the total number of countries in which companies are active. The data on the number of countries in which a company has affiliates were taken from Dun and Bradstreet’s Who owns Whom Database (year 2001). The total number of countries included in this database was taken as the denominator of the NSI.

Domestic environmental governance

The variable Domestic Environmental Governance (DomGov) represents the extent of home country institutional pressure towards reporting experienced by firms. While the extent of institutional pressure on firms is sometimes measured by media exposure and coverage (e.g. Brown and Deegan, 1998), it is difficult to use this measure in cross-country comparisons. We therefore used another measure: the Environmental Governance indicator that is calculated as part of the annual Environmental Sustainability Index (ESI), developed by researchers at Columbia University, Yale University and the World Economic Forum. The Environmental Governance indicator is a composite index that measures the institutions, rules, and practices that shape responses to environmental challenges, and combines eight variables that include for example the number of sectoral environmental impact assessment guidelines in a country, the environmental governance indicator from the Global Competitiveness Report, and the World Bank measure of corruption. The index ranges between 0 and 1.

Foreign environmental governance

To measure the amount of institutional pressure that a firm experiences via its international activities, our indicator of Foreign environmental governance is calculated as a weighted average of all levels of environmental governance in the countries in which a firm has activities, where the weights are based on the number of subsidiaries of a firm in a particular country:

$$ForGov_i = \sum \frac{EG_j * N_{ij}}{N_i}$$

Where the ForGov for firm i is measured by multiplying the Environmental Governance (EG) for country j with the number of affiliates of firm i in country j , divided by the total number of foreign affiliates of firm i

Sector

To assess differences across sectors, we included a binary variable (SECTOR) that distinguishes firms active in sectors with *high* environmental sensitivity from those active in

a sector with *low* environmental sensitivity, as is common in the environmental accounting literature (see e.g., Patten 2002, or studies such as *Cho et al.* (2006) or Deegan and Gordon (1996) who focus on the most sensitive sectors only). We used the sector classification proposed by EIRIS (2005), which is more comprehensive – though not different – from classifications in other studies (cf. Araya, 2006; Deegan and Gordon, 1996; Patten, 2002). Original sector classifications were taken from the Fortune 2001 list.

Control variables

Finally, three control variables were included in the models that could also influence the internationalization-disclosure relationship. First of all, we included a binary variable that indicates if publishing (publicly available) environmental information is obligatory in a particular country. By 2002, of the countries in our sample this applied to Belgium, The Netherlands, Canada, Norway and Sweden (Kolk, 2005). Second, since studies on environmental disclosure have shown that the size of firms is important for environmental accountability, we included a variable SIZE measured as the logarithm of a firm's total sales. The logic underpinning this inclusion is that with increasing size, firms become more visible and so do their environmental impacts, thus exposing them to increased public pressure to increase their disclosure. Thirdly, we included a measure of home country size (log GDP) to control for the fact that firms from small countries are on average more international, and tend to experience higher pressures to disclose environmental information.

Estimation

To test our hypotheses, we used logistic regression analysis (in view of our binary dependent variable) in order to estimate the equations as presented below. Model 1 includes the main effects of internationalization on the probability of firms to disclose information on their environmental activities (either REPORT, DATA or VERIFY). DOI is measured either as FA/TA or FS/TS; the interaction effect between the degree and spread of internationalization is explored following Ietto-Gillies (1998). Subsequently, the two-way interaction effects with domestic environmental governance are estimated following as specified in model 2 in order to test Hypotheses H1a and H1b, and the interactions with foreign environmental governance (H2a and H2b) in model 3. In these and subsequent models, INT as in the interaction effect can be either FA/TA, FS/TS, or NSI. Models 4 and 5 represent the three-way interaction effects that are required to test for Hypotheses H3a and H3b, and H4a and H4b. The results of these regressions are presented in the next section, reporting heteroskedasticity corrected standard errors. In order to test for the significance of the interaction effects, the results of Chi-square tests for the change in the explanatory value of the model are reported.

$$\log\left(\frac{\text{prop}(\text{Disclose})}{\text{prop}(\text{not_Disclose})}\right) = \alpha + \beta_1 \text{Sales} + \beta_2 \text{HomeCountrySize} + \beta_3 \text{Sector} + \beta_4 \text{HomeRegulation} + \beta_5 \text{DomGov} + \beta_6 \text{DOI} + \beta_7 \text{NSI} + \beta_8 \text{DOI} \times \text{NSI} + \varepsilon \quad [1]$$

$$\log\left(\frac{\text{prop}(\text{Disclose})}{\text{prop}(\text{not_Disclose})}\right) = \alpha + \beta_1 \text{Sales} + \beta_2 \text{HomeCountrySize} + \beta_3 \text{Sector} + \beta_4 \text{HomeRegulation} + \beta_5 \text{DomGov} + \beta_6 \text{DOI} + \beta_7 \text{NSI} + \beta_9 \text{ForGov} + \beta_{10} \text{INT} \times \text{ForGov} + \varepsilon \quad [2]$$

$$\log\left(\frac{\text{prop}(\text{Disclose})}{\text{prop}(\text{not_Disclose})}\right) = \alpha + \beta_1 \text{Sales} + \beta_2 \text{HomeCountrySize} + \beta_3 \text{Sector} + \beta_4 \text{HomeRegulation} + \beta_5 \text{DomGov} + \beta_6 \text{DOI} + \beta_7 \text{NSI} + \beta_{11} \text{INT} \times \text{DomGov} + \varepsilon \quad [3]$$

$$\log\left(\frac{\text{prop}(\text{Disclose})}{\text{prop}(\text{not_Disclose})}\right) = \alpha + \beta_1 \text{Sales} + \beta_2 \text{HomeCountrySize} + \beta_3 \text{Sector} + \beta_4 \text{HomeRegulation} + \beta_5 \text{DomGov} + \beta_6 \text{DOI} + \beta_7 \text{NSI} + \beta_{12} \text{ForGov} + \beta_{13} \text{ForGov} \times \text{Sector} + \beta_{14} \text{INT} \times \text{Sector} + \beta_{15} \text{ForGov} \times \text{INT} + \beta_{16} \text{ForGov} \times \text{INT} \times \text{Sector} + \varepsilon \quad [4]$$

$$\log\left(\frac{\text{prop}(\text{Disclose})}{\text{prop}(\text{not_Disclose})}\right) = \alpha + \beta_1 \text{Sales} + \beta_2 \text{HomeCountrySize} + \beta_3 \text{Sector} + \beta_4 \text{HomeRegulation} + \beta_5 \text{DomGov} + \beta_6 \text{DOI} + \beta_7 \text{NSI} + \beta_{17} \text{DomGov} \times \text{Sector} + \beta_{18} \text{INT} \times \text{Sector} + \beta_{19} \text{DomGov} \times \text{INT} + \beta_{20} \text{DomGov} \times \text{INT} \times \text{Sector} + \varepsilon \quad [5]$$

RESULTS

The descriptive statistics of the continuous variables and their correlation coefficients are displayed in table 1. Table 1 shows that all explanatory variables that will be put in the model, are significantly correlated with the dependent variables REPORT, DATA and VERIFY, with the exception of the measures for domestic and foreign governance. In particular, the sensitivity of the sector (SECTOR) for environmental pressures, the sales (SIZE) of the firm, and the degree and spread of internationalization (FATA, FSTS, and NSI) are positively related to environmental disclosure. Although the independent variables are often related to each other as well, the correlation coefficients are not very high, indicating that multicollinearity among the variables is not likely to be an important problem. This was further confirmed by VIF statistics (all below 2) and the condition indices (all below 3), that are all well below the values above which multicollinearity may pose a problem. In the models including the interaction effects multicollinearity was often unavoidable, hence we used Chi-Square tests to test marginal change in explanatory power of the model.

[Insert Table 1 here]

The results of the first regressions that assess the main effect of internationalization on environmental reporting are presented in table 2. For each of the three dependent variables, the results for the model without any measure of internationalization is reported (model 1), as well as for those that include degree and spread of internationalization (models 2 and 3). Table 2 shows that the degree of internationalization – either measured as FATA or FSTS – has a negative effect on environmental disclosure, particularly with respect to reporting in

general (REPORT), and reporting more extensive data (DATA). There is no relationship however between internationalization and verification of the report. The spread of international activity has no consequences for the extent to which firms disclose environmental information, nor is the interaction effect between degree and spread of information (not reported). Only the degree of internationalization has an effect on environmental reporting, not the spread of activities.

[insert table 2 here]

As for our control variables, most confirm our expectations: firm size is positively associated with environmental disclosure, while home-country size is negatively associated with disclosure. Firms in highly sensitive sectors are more likely to disclose information about their environmental activities, and home-country institutional pressure (i.e., domestic environmental governance) also has a positive effect. Only the variable home regulation – that measures if reporting is legally required in a particular country – has a negative effect.

One of the key contributions of this paper is to study not only the extent of internationalization, but also the direction: does internationalization that is directed to high-standard countries lead to more disclosure than internationalization to low standard countries? Table 3 gives preliminary evidence that this is indeed the case, again for reporting in general and reporting extensive data, but not for verification. Both the significance of the beta coefficients as well as the Chi-square test indicate that the interaction effects contribute significantly to explaining differences in environmental disclosure likelihood. This interaction effect between the extent and the direction of internationalization can only be found for assets, not for sales or for the spread of international activities.

[insert Table 3 here]

The threshold of foreign environmental governance above which internationalization starts to have a positively effect on disclosure is however very high, at 1.033, which is even outside the range of this variable (which is between 0 and 1). This means that although the location of assets in countries with high institutional pressures stimulates firms to report on their environmental practices, this does not fully mitigate the overall negative relationship between internationalization and disclosure.

This finding may imply that it is in particular the domestic institutional context that (positively) influences reporting. This potential explanation is explored in the second panel of table 3, which gives the results of the interaction effects between domestic environmental governance and internationalization. Whereas the findings so far indicated significant results for primarily REPORT, followed by DATA, the domestic environmental context has important consequences for the more sophisticated dimensions of environmental reporting: DATA, and in particular, VERIFY. Also in contrast with the previous models is the finding that the interaction with domestic environmental governance is significant for the internationalization of sales, and not of assets. This means that while the domestic institutional context has no effect on the relationship between the internationalization of assets and disclosure (which remains negative), the negative relationship between the internationalization of sales is less strong among firms from countries with a high level of domestic pressures. As with the interaction effects with foreign environmental governance, we also find very high thresholds: even at very high levels of

domestic pressure, internationalization has still a negative effect on performance. For DATA, the threshold is at 0.94, which is above the maximum value for domestic environmental governance (which is 0.92), and although for VERIFY the threshold of domestic institutional pressure above which we find a positive effect is lower (0.89); only Switzerland and the UK score higher than this value. Still, there is no strong support of firms evading domestic regulation: in that case we would find a negative interaction effect.

The results have so far indicated that institutions – home and host - play a major role in stimulating firms to report (or not). These public pressures tend to be stronger for those firms that have the largest (potential) environmental impact: oil firms, car manufacturers, utilities. Hence we would expect the home and host institutional effects to be stronger for firms in those sectors, and maybe even absent for those firms that are not, such as financial services or trading firms. Table 4 gives an overview of the three-way interaction effects between internationalization, foreign institutional pressures, and sector. While the results confirm the bivariate interaction between internationalization of assets and foreign institutional pressure, we find no difference between sectors with high or low environmental sensitivity. Foreign institutional pressure minimizes the negative effect of internationalization on reporting for both types of sectors equally.

[insert table 4 here]

As the table shows, this is not the case for the domestic institutional context. The effects that we found in table 3 appear to be strongest for sectors with high environmental sensitivity. For less sensitive sectors, there is just a plain linear negative relationship between internationalization and disclosure. This relationship is not stronger or weaker for countries with more stringent legislation. For the high sensitivity sectors, we find that the internationalization of assets and sales is negatively related to environmental disclosure for firms from countries with low levels of environmental governance, and positive for firms from countries with high levels of environmental governance. The threshold of environmental governance for high impact sectors is at 0.86, which is equal to the mean of this variable. This means that for a substantial number of firms – those in high sensitivity sectors from high standard countries – internationalization is positively related to disclosure.

In contrast with the previous tables, the (three-way) interaction effects with the spread of internationalization (NSI) are also significant, as can be observed from the Chi-square statistics. The signs of the coefficients are similar to those for the degrees of internationalization, and indicate that for high sensitivity firms from high standard countries, widespread internationalization is positively related to disclosure.

DISCUSSION

The growth of globalization has been paired with a similar increase in public concern about its effects. In particular the potential negative environmental and social consequences of the international activities of MNE have been scrutinized. In response to these institutional pressures, MNEs have started to voluntarily disclose non-financial information in order to increase transparency and ensure legitimacy. But in order to truly appreciate MNE accountability and legitimacy in the context of globalization, we need to understand more about the relationship between the internationalization of MNE activity and the occurrence and detail of non-financial disclosures. Our literature review showed that existing research

has barely touched upon this topic. With this article, we aimed to address this gap in the literature by theoretically developing and empirically testing a set of hypotheses on the relationship between degree and spread of internationalization and environmental disclosure, while giving special attention to the role of home and host environmental institutional pressures and sector peculiarities.

We suggested that whether or not internationalization would lead to increased disclosure is dependent on the environmental institutional pressures in the home country, and in the host countries. We hypothesized that both home and host country institutional pressures affect the relationship between internationalization and disclosure. Exposure to high foreign institutional pressures increases the risk of legitimacy crises, while high domestic institutional pressures make escaping the public eye much more difficult. In both cases, the potential for legitimacy spillovers increases. Finally, we argued that these relationships between internationalization, home and host institutional pressure and disclosure are more prominent in environmentally sensitive sectors, where public scrutiny in general is much higher. The empirical results partly confirmed, but also partly rejected our hypotheses. Table 5 below summarizes our findings with respect to the hypotheses, for each of the three dependent variables in our analysis.

[insert Table 5 here]

Our results indicated that the main effect of the degree of internationalization on disclosure is negative, for both sales and assets. However, the *spread* of international activities does not affect disclosure (nor did the interaction effect between spread and degree of internationalization). These results primarily support the argument that a reduced exposure to home country stakeholders is translated into lower disclosure, regardless of the exact location and spread of foreign activities. This would suggest that primarily home-country pressures influence disclosure. However, H1a and b, which addressed the role of home country pressure, are only partly supported by empirical evidence: only for the more advanced forms of disclosure (detailed data and external verification), we find that high environmental institutional pressures positively affect the impact of the internationalization of sales on disclosure. This implies that the more advanced types of disclosure are still strongly influenced by home-country pressures, in particular those from home-country customers.

Our second hypothesis addressed the role of the destination of foreign activities. The stronger the pressures in the host locations, the more likely firms are to report more rather than less. Therefore, we expected an interaction effect in that internationalization towards host countries with high pressure has a more positive effect (or less negative) on disclosure than internationalization towards host countries with low pressures. This hypothesis was supported for the degree of internationalization of assets, for the variables Report and Data. Hence, while the occurrence of more advanced forms of reporting is driven by home customer pressures, the less advanced forms of reporting are more sensitive to foreign pressures that are related to asset internationalization.

Our final hypotheses (H3a and b, and H4a and b) assessed differences in how internationalization affects disclosure between sectors with high versus low environmental sensitivity. Results confirmed our hypotheses: the effect of home and host country pressures on the impact of internationalization on disclosure is stronger in high sensitivity sectors. This effect is so strong that for firms from high-standard countries and high-sensitivity sectors,

the main negative effect of internationalization on disclosure is reversed into a positive relationship: more internationalization leads to more disclosure.

CONCLUSIONS AND IMPLICATIONS

We can conclude that internationalization reduces the likelihood of firms disclosing environmental information. Environmental governance and institutional quality in both home and host countries do mitigate these effects, but not fully. Even from a high-pressure domestic environment, international firms are less likely to report than non-international firms. And even if firms internationalize towards high-standard countries, they will report less than those firms that stay at home, even though they are less likely to escape public scrutiny than firms that internationalize towards low-pressure countries. The only exception to this conclusion is for high-impact firms from high-standard countries. This is the only subset of firms for which we find that 'out of sight' (i.e., abroad) is not 'out of mind' (of the (domestic) public). The latter seems however to be the case for most of the other firms – from less environmentally sensitive sectors or from countries without high standards. Hence, only for firms where pressure is already very high because of their home country and sector of operation, the positive effect of internationalization on disclosure due to the increased number and variety of stakeholders is confirmed. Instead, for most other firms, it appears that the arguments for a reduced visibility as a result of internationalization better match the empirical results.

This conclusion deviates from most studies that addressed the relationship between internationalization and environmental practices/performance, and that established a positive association. A potential explanation for this discrepancy between the positive relationship between internationalization and practices/performance on the one hand, and negative internationalization and disclosure on the other hand, could be related to the differences between the so-called upstream and downstream (or front-end and back-end) activities of a firm (and its related firm-specific advantages, cf. Rugman and Verbeke 2008; Kolk 2010b). There could be important cost advantages of integrating and harmonizing production methods (upstream, back-end) and management systems across borders, while on the other hand, the legitimacy gaining effort (disclosure) is still very much a down-stream or front-end activity where being locally responsive yields more value. In that case, if host-country publics do not perceive disclosure as improving legitimacy, it may be more beneficial to not disclose, or to disclose as little as possible. Our findings could thus be interpreted as a further confirmation of the 'think globally – act locally' adage, or as an illustration of how in the field of environmental management and reporting, firms try – in a very transnational way – to be locally responsive and globally integrated at the same time.

Future research seems necessary to further assess the importance of the arguments in favor and against a positive relationship between internationalization and environmental disclosure. We suggested that for the majority of firms, internationalization leads to a decrease in disclosure for a variety of reasons, including a reduction in size of the firm in each individual country due to the geographical break-up of activities, the reduced importance of individual stakeholders and field cohesion among stakeholders, the potential 'liberty' (instead of liability) of foreignness, problems related to the interpretation of stakeholder salience across distances and thus the (perceived) costs of disclosure. Firm-level questionnaires and interviews that contain more specific questions with respect to these arguments might be helpful to assess whether they are indeed valid. Such studies could

consider whether managers perceive more distant stakeholders as less salient, whether managers from more international firms perceive their stakeholder field as less cohesive, or whether managers from foreign firms feel less pressure to abide by local standards than those from local firms.

Our study suggests policy implications for both home and host country governments. We have seen that firms from countries where mandatory reporting regulation is in place are less likely to report or have their reports verified. This could partly be explained the fact that such regulations usually target the site level, not the corporate level (on which we focused here). It may also be that firms are less inclined to publish their own reports when they already have to report to governments, as they may think that they have done enough. Instead, we have seen that overall institutional pressure, embodied in a good environmental governance system where clear and reliable environmental rules and regulations are in place generally across the board, is more important in increasing transparency about firms' environmental activities. This is the case for both domestic firms and international firms, both at home and abroad. Our results suggest that governments willing to increase the extent of reporting by firms should invest in building and maintaining such institutions that promote voluntary disclosure, and not (only) focus on legal requirements. This also applies in the international context as recent research shows that firms that adhere to global standards increase the extent of their reporting, compared to those that have not (Fortanier *et al.*, 2011). More detailed investigations into the dynamics and relationships, considering managerial perceptions and recent developments in the field, would be useful.

At a more general level, the extent to which a firm's degree and spread of internationalization results in a changing exposure to foreign and domestic institutions, and hence business strategy, is an area where further research is required (Dunning, 2006). Our paper analyzed these questions in detail for firm strategies with respect to environmental disclosure. However, there are other institutions to which a firm is exposed in different issue areas, for example labor relations, that future studies can address in a very similar manner as we have done here, in order to see if our results hold in other settings as well. The weighted measure of exposure to foreign institutional pressure that we used here might be helpful for developing other (macro) measures of institutional pressure as well. Such future studies may also address other points which were not possible in the framework and empirical setting of this paper. For example, while we were able to investigate both degree and spread of internationalization, illustrating the need to consider the differences between scale and scope measures (cf. Rugman and Oh, 2011), a further breakdown of foreign activities, not only by subsidiaries and countries, but also by sales and assets per host country could not be made, and would add value. In this way, upstream and downstream patterns of internationalization could be studied in more detail, as this seems highly relevant for environmental issues.

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¹ Two typical examples of such statements include: 'Company X has no significant assets outside the home country', or (for an American firm): 'The total number of subsidiaries of Company Y is dispersed across US states in the following way...'

² We also ran our regression models for the dataset that excluded the estimated FA/TA and FS/TS firms. For both variables, differences in the coefficients were minimal (only significance was a bit lower, likely due to fewer observations), and none of our substantial conclusions were changed. In the analysis with the entire dataset, we also compared the predicted classification (0-1) with the observed value for the three dependent variables, and compared the % correctly classified cases for the total dataset and for the observations with estimated values. These changes were also marginal. Hence, including or excluding the estimates did not change our findings.

TABLES

Table 1 Descriptive statistics and Correlation Coefficients

	m	sd	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Report	0.42	0.49	1.00										
(2) Data	0.38	0.49	0.93 ***	1.00									
(3) Verify	0.13	0.33	0.45 ***	0.49 ***	1.00								
(4) Sales (log)	4.56	0.22	0.28 ***	0.25 ***	0.11 *	1.00							
(5) Home Country Size	6.52	0.51	-0.15 **	-0.14 **	-0.29 ***	0.02	1.00						
(6) Sector (high-low)	0.40	0.49	0.11 *	0.15 **	0.03	0.03	0.06	1.00					
(7) Home Regulation	0.46	0.50	-0.19 ***	-0.18 ***	-0.16 **	-0.06	0.64 ***	-0.05	1.00				
(8) Domestic Governance	0.83	0.11	0.12 *	0.10	0.05	0.06	0.41 ***	0.09	0.35 ***	1.00			
(9) Foreign Governance	0.68	0.24	0.11 *	0.11 *	0.11 *	0.17 ***	-0.14 **	0.06	-0.13 **	0.10	1.00		
(10) FA/TA	0.29	0.25	0.20 ***	0.21 ***	0.16 **	0.23 ***	-0.44 ***	0.08	-0.27 ***	0.19 ***	0.32 ***	1.00	
(11) FS/TS	0.32	0.26	0.27 ***	0.27 ***	0.18 ***	0.21 ***	-0.45 ***	0.02	-0.27 ***	0.17 ***	0.35 ***	0.81 ***	1.00
(12) NSI	0.13	0.11	0.32 ***	0.33 ***	0.18 ***	0.31 ***	-0.26 ***	0.07	-0.20 ***	0.25 ***	0.31 ***	0.62 ***	0.68 ***

*** p< 0.01; ** p< 0.05; * p< 0.10

Table 2 Linear effects of internationalization

	REPORT			DATA			VERIFY		
	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)
Constant	-15.65 ***	-14.26 ***	-14.43 ***	-14.35 ***	-12.69 ***	-12.58 ***	-0.82	-1.15	0.10
	-3.96	-3.66	-3.56	-3.61	-3.21	-3.13	-0.19	-0.27	0.02
Sales (log)	3.01 ***	3.44 ***	3.21 ***	2.70 ***	2.88 ***	2.75 ***	1.44 *	2.02 **	1.78 **
	4.17	4.27	3.91	3.87	3.83	3.58	1.72	2.18	2.00
Home Country Size	-0.83 **	-1.57 ***	-1.34 ***	-0.77 *	-1.27 **	-1.23 **	-1.90 ***	-2.44 ***	-2.40 ***
	-2.03	-3.09	-2.72	-1.72	-2.24	-2.33	-3.96	-3.91	-3.91
Sector (high-low)	2.31 ***	2.63 ***	2.62 ***	2.38 ***	2.56 ***	2.64 ***	0.67	0.92 **	0.99 **
	6.54	6.41	6.38	6.65	6.14	6.36	1.61	2.17	2.16
Home Regulation	-1.02 **	-1.01 **	-1.02 **	-0.94 **	-0.90 **	-0.91 **	-0.31	-0.37	-0.38
	-2.43	-2.50	-2.54	-2.18	-2.15	-2.19	-0.62	-0.73	-0.76
Domestic Governance	7.63 ***	10.04 ***	9.44 ***	6.95 ***	8.30 ***	8.36 ***	4.99 **	7.08 ***	6.49 **
	4.60	4.75	4.29	4.24	3.94	3.80	2.18	2.68	2.33
FA/TA		-2.74 ***			-2.22 **			-1.79	
		-2.76			-2.13			-1.54	
FS/TS			-2.14 **			-2.26 **			-1.52
			-2.15			-2.22			-1.29
NSI		1.39	1.90		2.15	3.17		-0.72	-0.51
		0.71	0.94		1.11	1.49		-0.29	-0.19
Wald Chi ²	59.16 ***	56.87 ***	54.41 ***	55.11 ***	52.58 ***	52.15 ***	25.04 ***	23.63 ***	23.28 ***
Log pseudolikelihood	-123.09	-117.65	-118.83	-121.45	-117.53	-116.93	-79.51	-77.57	-77.64
Pseudo R ²	0.276	0.299	0.286	0.271	0.286	0.283	0.169	0.184	0.181

*** p< 0.01; ** p< 0.05; * p< 0.10

Robust z-values below coefficients

Table 3 Interaction effects: Foreign[†] and Domestic[‡] Institutional Pressure

	Foreign institutional pressure			Domestic institutional pressure					
	REPORT	DATA	VERIFY	REPORT		DATA		VERIFY	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-13.50***	-11.50***	-0.16	-14.51***	-17.73***	-1.64	-1.65	-0.12	0.19
	-3.44	-2.92	-0.04	-3.59	-4.16	-1.14	-1.31	-0.03	0.04
Sales (log)	3.30***	2.69***	1.73*	3.45***	3.23***	2.88***	2.78***	1.94**	1.83**
	4.02	3.43	1.81	4.27	3.88	3.81	3.55	2.08	2.04
Home Country Size	-1.56***	-1.29**	-2.47***	-1.58***	-1.19**	-1.27**	-1.04**	-2.38***	-2.20***
	-3.18	-2.44	-4.20	-3.10	-2.44	-2.21	-1.97	-3.80	-3.52
Sector (high-low)	2.70***	2.65***	0.99**	2.64***	2.66***	2.56***	2.66***	0.89**	0.97**
	6.43	6.26	2.25	6.42	6.36	6.12	6.30	2.05	2.11
Home Regulation	-0.96**	-0.82**	-0.30	-1.01**	-1.20***	-0.91**	-1.08**	-0.35	-0.50
	-2.38	-1.98	-0.59	-2.49	-2.93	-2.15	-2.54	-0.68	-0.96
Domestic Gov.	9.77***	7.95***	6.59**	10.36***	12.04***	8.22***	9.23***	5.82*	4.49*
	4.69	3.82	2.47	4.15	3.89	3.38	3.62	1.75	1.95
FA/TA	-10.04**	-12.27**	-8.52	-1.10		-2.61		-7.30	
	-2.33	-2.31	-1.22	-0.21		-0.50		-0.59	
FS/TS					-6.56		-11.76**		-16.97**
					-1.34		-2.37		-2.05
NSI	1.65	2.72	-0.08	1.39	2.00	2.15	3.22	-0.72	-0.60
	0.81	1.30	-0.03	0.71	0.96	1.11	1.48	-0.29	-0.22
Foreign Gov.	-0.03	-0.08	1.22						
	-0.05	-0.11	0.62						
FA/TA × For.Gov.	9.52*	13.05*	8.37						
	1.72	1.92	0.95						
FA/TA × Dom.Gov.				-1.95		0.46		6.48	
				-0.32		0.07		0.46	
FS/TS × Dom.Gov.					10.11*		14.57*		18.66**
					1.72		1.82		2.28
Wald Chi ²	56.84***	54.18***	29.72***	57.16***	54.01***	53.27***	52.40***	25.39***	23.31***
Log pseudolikelihood	-116.30	-115.34	-76.38	-117.62	-116.25	-117.53	-114.75	-77.38	-75.96
Pseudo R ²	0.307	0.299	0.197	0.299	0.293	0.286	0.288	0.186	0.179
χ ² for interaction (1df)	3.01*	3.26*	1.08	0.42	3.03*	0.89	3.23*	0.36	4.89**

*** p< 0.01; ** p< 0.05; * p< 0.10

Robust z-values below coefficients

† models with FS/TS and NSI not reported (interaction effects not significant)

‡ models with NSI not reported (interaction effects not significant)

Table 4 Three-way interactions: sector and foreign institutional pressure[†], and sector and domestic institutional pressure[‡]

DV	Foreign institutional pressure			Domestic institutional pressure					
	REPORT	DATA	VERIFY	REPORT		DATA		VERIFY	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Constant	-13.63*** -3.30	-12.18*** -2.87	2.35 0.50	-11.87*** -3.04	-15.19*** -3.79	-10.28** -2.58	-12.28*** -3.27	1.18 0.25	0.96 0.21
Sales (log)	3.45*** 4.07	2.79*** 3.51	1.76* 1.75	3.49*** 4.30	3.20*** 3.82	2.87*** 3.83	2.70*** 3.48	1.87* 1.95	1.66* 1.81
Home Country Size	-1.63*** -3.22	-1.30** -2.43	-2.62*** -4.13	-1.54*** -2.92	-1.14** -2.20	-1.22** -2.09	-0.95* -1.75	-2.40*** -3.86	-2.08*** -3.32
Sector (high-low)	2.56*** 2.70	3.31*** 2.87	-10.23 -1.64	-0.35 -0.68	-0.57 -1.02	-0.10 -0.19	-0.35 -0.64	0.68 1.07	0.58 0.90
Home Regulation	-1.01** -2.43	-0.83* -1.96	-0.31 -0.54	-0.98** -2.37	-1.21*** -2.82	-0.88** -2.08	-1.04** -2.45	-0.24 -0.44	-0.41 -0.74
Domestic Gov.	9.79*** 4.51	7.91*** 3.71	6.32** 2.54	7.02*** 3.06	9.23*** 3.01	5.26** 2.37	6.14** 2.46	4.96* 1.80	3.46* 1.73
FA/TA	-21.81** -2.32	-19.94** -2.07	-8.97 -1.11	-18.88* -1.84		-16.01* -1.70		-27.49* -1.67	
FS/TS					-9.72 -0.96		-11.97 -1.25		-26.58* -1.71
NSI	1.68 0.80	2.72 1.29	0.01 0.00	1.12 0.52	1.76 0.82	2.21 1.05	3.23 1.44	0.16 0.06	0.68 0.24
Foreign Gov.	0.17 0.17	0.69 0.54	-0.43 -0.27	0.82 0.12	0.12 0.18	0.21 0.29	0.43 0.53	1.05 0.69	1.05 0.67
For.Gov × Sector	-0.56 -0.39	-1.52 -0.92	13.81* 1.77						
FA/TA × Sector	14.44 1.42	8.98 0.78	15.65 0.95	-20.18* -1.86		-15.97 -1.58		-25.12 -1.42	
FA/TA × For.Gov.	23.37** 1.97	21.99* 1.82	7.93 0.80						
For.Gov. × FA/TA × Sector	-16.35 -1.22	-9.88 -0.66	-18.16 -0.87						
Dom.Gov × Sector				-21.93* -1.75	-22.60* -1.89	-17.93 -1.55	-20.88* -1.80	-25.95 -1.30	-26.13 -1.41
FA/TA × Dom.Gov.				17.92 1.54		15.61 1.45		27.97 1.49	
Dom.Gov. × FA/TA × Sector				2.86*** 3.85		2.83** 3.35		-0.60 -0.58	
FS/TS × Sector					20.12* 1.92		17.17* 1.68		23.45 1.40
FS/TS × Dom.Gov.					8.14 0.71		11.76 1.09		28.53* 1.67
Dom.Gov. × FS/TS × Sector					3.31** 3.47		3.69*** 3.85		0.32* 0.29
Wald Chi ²	57.19***	57.43***	29.24***	63.98***	57.98***	60.25***	60.15***	31.68***	30.11***
Log pseudolikelihood	-115.01	-114.42	-73.82	-116.90	-115.05	-117.51	-113.89	-75.38	-74.84
Pseudo R ²	0.315	0.305	0.224	0.304	0.301	0.286	0.293	0.207	0.191
χ^2 for interaction	7.13	8.22*	3.24	9.16**	9.02*	10.59**	13.57***	6.42	15.24***

*** p< 0.01; ** p< 0.05; * p< 0.10

Robust z-values below coefficients

† models with FS/TS and NSI not reported (effects not significant)

‡ models with NSI not reported (effects not significant)

Table 5. Summary of the research findings by hypothesis, dependent variable and measure of internationalization

	REPORT			DATA			VERIFY		
	Sales	Assets	NSI	Sales	Assets	NSI	Sales	Assets	NSI
H1. Main effect	-	-		-	-				
H2. Home interaction				+			+		
H3. Host interaction		+			+				
H4. Home/sector interaction	+	+	+	+	+		+		
H5. Host/sector interaction		+			+				

The '+' and '-' signs imply significant positive or negative effects. No sign implies a non-significant effect.