

**FIRM AND COUNTRY DETERMINANTS OF ENVIRONMENTAL  
STANDARDIZATION STRATEGY IN MULTINATIONAL ENTERPRISES**

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# **Firm and country determinants of environmental standardization strategy in multinational enterprises**

## **Abstract**

This study updates the traditional country-specific advantages–firm-specific advantages configuration through the application of the concepts of environmental institutional distance between countries and headquarters’ availability of slack resources. We analyze the two main determinants that lead multinational enterprises (MNEs) to standardize their environmental practices. We find that a low environmental institutional distance between countries contributes to creating environmental standards within the company. Additionally, headquarters with high availability of slack resources are more willing to standardize their environmental practices. However, MNEs that have headquarters with high slack resources but that have units based in countries a long distance away are not active in creating environmental standards.

**Keywords:** MNE-host country relations; firm specific advantages; location specific advantages; environmental institutional distance between countries; environmental standardization strategy; slack resources

## **1. INTRODUCTION**

Globalization and information technology are contributing to reinforcing the expansion of multinational enterprises (MNEs) in the world (Dowell, Hart & Yeung, 2000). This development uses a complex internal structure of units (headquarters and subsidiaries) based in countries with different institutional profiles (Kostova & Roth, 2002). These differences generate managerial doubts about how MNEs deal with business issues. The MNEs' approach to the natural environment is one of the most controversial (Christmann, 2004).

MNEs can adopt different international environmental strategies depending on country-specific advantages (CSAs) and firm-specific advantages (FSAs) (Rugman & Verbeke, 1998b). In this paper we advance the traditional CSA concept by introducing the notion of environmental institutional distance between the home and the host country. This better explains the MNE's level of legitimacy and the decision about transferring environmental standards within its network. We also use the green FSAs concept to refer to the generation of valuable and innovative green resources and capabilities by the MNE (Rugman & Verbeke, 1998b). These green FSAs, obtained through the headquarters' slack resources, can be generated only in specific countries (location bound) or can be easily transferred at a low cost within the MNE's internal network (non-location bound) (Rugman & Verbeke, 2001).

An environmental standardization strategy implies that firms can self-regulate their environmental conduct by unifying their environmental practices (Christmann & Taylor, 2002). The effect that stakeholders' pressures have on the environmental standardization strategy implemented by MNEs has been widely studied (Christmann, 2004). Other works analyze international environmental certifiable standards and their effect on the adoption of a substantive or symbolic environmental standardization strategy (Christmann & Taylor, 2006).

However, little attention has been paid to the influence that both internal factors (green FSAs) and external factors (institutional distance) have on this strategy.

We use different sources to obtain environmental and financial data of a sample integrating 135 MNEs from three industries with headquarters and subsidiaries based in USA, Canada, Mexico, France and Spain. Using a hierarchical regression analysis we answer three research questions. First, we analyze whether the environmental institutional distance between the headquarters and subsidiaries' countries influences the environmental approaches within the MNE. Second, we study whether headquarters' slack financial resources positively contribute to adopting stringent environmental standards within the MNE. Third, we see whether this slack may contribute to converting location-bound into non-location-bound green FSAs and then reducing the institutional distance effect between headquarters and subsidiaries' countries.

Meanwhile previous literature has used external (institutional) and internal (resource) arguments to analyze the firms' sustainable development at a country level (Bansal, 2005) or the environmental regulations' influence (Rugman & Verbeke, 1998a). We use a new CSA–FSA configuration to explain the MNEs' environmental standardization strategy. This approach answers calls from literature for empirical works using an integrated approach of both arguments (Aragón-Correa & Sharma, 2003). Our findings contribute to helping the stakeholders to protect effectively the natural environment.

This paper proceeds with the second section covering a theoretical review. The third section explains the different international environmental strategies adopted by MNEs. In the fourth section we focus on explaining the MNEs' environmental standardization strategy and hypothesis development. The fifth section includes the methodology. The sixth section

describes the empirical results and, finally, the last section refers to the discussion, limitations and future research.

## **2. INSTITUTIONAL AND RESOURCE-BASED VIEWS**

MNEs are based in different countries with their own institutional profiles and need to gain legitimacy in all the contexts in which they operate (Kostova & Zaheer, 1999). Furthermore, these companies can generate a set of resources and capabilities that can be transferred within their internal network (Barlett & Ghoshal, 1989). Therefore, both the institutional and resource-based views contribute to explaining the MNEs' existence.

Institutional theorists are especially interested in how organizational structures and processes become institutionalized over time (Oliver, 1997). The basic premise of this theory is that firms' tendencies toward conformity with predominant norms and traditions in each social context lead to homogeneity among firms in their structures and activities, and that successful firms are those that gain support and legitimacy by conforming to social pressures (Meyer & Rowan, 1977; Oliver, 1997). MNEs need to develop their activities considering not only their own policies, but also the countries' institutional profile (Kostova, 1999). Since it is vital for the MNE to achieve legitimacy in all its environments, it will experience the pressure to adapt local practices to the local institutional context (Kostova & Roth, 2002). Nevertheless, due to the globalization process, MNEs also need to pursue an international institutional legitimacy, increase their transparency, and unify their conduct (Kostova, Roth & Dacin, 2008).

The resource-based view requires analysis of the firm's internal resources and capabilities as sources of competitive advantage. It is the rational identification and use of resources that are valuable, difficult to copy, and non-substitutable that lead to enduring firm variation and supernormal profits (Barney, 1991), independent of the specific institutional context (Oliver,

1997). Thus, MNEs can be cost-effective in exploiting their resources and capabilities, and transferring them within their internal network (Barlett & Ghoshal, 1989).

However, we need to combine both views to have a complete image to justify the MNEs' functioning. Therefore, we use the traditional CSA–FSA configuration (Rugman, 1981). On the one hand, CSAs refer to location advantages specific to the country in which the unit of the MNE is located. On the other hand, FSAs refer to advantages specific to a firm regardless of location (Rugman & Verbeke, 1992). We distinguish between location and non-location FSAs. Location-bound FSAs are resources and capabilities that can only affect business performance in specific countries. In contrast, non-location-bound FSAs are resources and capabilities that can be easily transferable across borders as an intermediate product (Rugman & Verbeke, 2001). Thus, the existence of market imperfections associated with international transactions explains the existence of MNE activity and the need for internalization, which in turn may yield non-location-bound FSAs. However, pressures for national responsiveness exerted by stakeholders or governments may also stimulate MNEs to develop location-bound FSAs in specific countries (Kolk & Pinkse, 2008; Rugman & Verbeke, 1992, 2001).

### **3. MNEs AND INTERNATIONAL ENVIRONMENTAL STRATEGIES**

In order to determine the MNEs' international environmental strategies, we need to assess the importance that FSAs and CSAs have for these companies. Thus we consider both the MNEs' green resources and the countries' external influences (Rugman & Verbeke, 1998b).

In relation to the CSAs, literature has already analyzed the influence of home and host countries' environmental regulations on the adoption of an MNE's environmental strategies. Furthermore, the role of international environmental regulations has also been incorporated (Christmann, 2004; Rugman & Verbeke, 1998a, 1998b). However, institutional profile of each country is very complex and incorporates additional dimensions beyond the regulatory

one (Kostova, 1999). Therefore, instead of using the traditional CSA concept, we analyze the environmental institutional distance between countries and its effect on the adoption of international environmental strategies by MNEs. Institutional distance between the home and host countries shows the degree of institutional difference between countries (Kostova & Zaheer, 1999). This distance may have a direct and powerful impact on the MNE's level of legitimacy and the transfer of environmental standards within the MNE.

In the case of green FSAs, MNEs' managers must decide whether specific green FSAs can be developed and used within individual countries (location bound) or whether these resources and capabilities can be used globally (non-location bound) (Rugman & Verbeke, 2001). The implementation of environmental practices and policies requires a substantial investment by these companies (Christmann & Taylor, 2001). Slack refers to the stock of excess resources available to an organization during a given planning cycle (Nohria & Gulati, 1996). Consequently, MNEs' slack resources have considerable importance in the generation and transfer of environmental practices and policies within the MNE. We can see in Figure 1 a matrix in which we explain the different MNEs' international environmental strategies. On the horizontal axis we observe the green FSAs ranging from low to high. On the vertical axis we see the level of environmental institutional distance between countries.

Figure 1 goes about here

### **Quadrant 1: Pollution Haven Hypothesis**

We group those MNEs with units based in high-distance countries and that do not generate green FSAs. These MNEs can take advantage of the resulting cross-country differences in environmental regulations by moving production capacity to the country most willing to use lax environmental standards (Leonard, 1988; Stewart, 1993). Although this hypothesis has only considered the countries' environmental regulatory dimension, it can also be applied to

the rest of the dimensions since a high institutional distance between countries deters the legitimacy process in a host country (Kostova & Zaheer, 1999). Thus, this lack of legitimacy is exploited by these companies to undertake opportunistic environmental behaviour in certain locations. However, empirical support for this strategy is weak (Christmann & Taylor, 2001; Rugman & Verbeke, 1998a).

### **Quadrant 2: Environmental Compliance**

We distinguish MNEs with units based in low-distance countries and that do not generate green FSAs. It is shown that it will be easier for an MNE to understand and adjust to the legitimacy requirements of a country that is institutionally similar to its home country than of one that is institutionally distant (Kostova & Zaheer, 1999). Thus, they only comply with each country's environmental institutional requirements in order to gain national legitimacy (Kostova & Roth, 2002). Consequently, MNEs that interact in that country tend to adopt structures and processes that are approved by the relevant institutional context, becoming isomorphic with the other local firms (DiMaggio & Powell, 1983; Zucker, 1977).

### **Quadrant 3: Environmental Resources**

We refer to those MNEs with units based in high-distance countries and that generate a set of location-bound green FSAs. These green resources cannot be easily transferred within the MNE. Instead they are generated and implemented in specific countries. Although these MNEs are not environmentally opportunistic, they are not willing to transfer their environmental practices within countries that are institutionally very different since they may deter the internalization of the new environmental practices (Kostova & Roth, 2002).

### **Quadrant 4: Environmental Standardization**

These MNEs have their different units based in low-distance countries and generate non-location-bound green FSAs. Therefore they can easily transfer green resources and

capabilities, independent of the headquarters' or subsidiary's country. This is a cost-reducing strategy which implies that, once the environmental practices are created, they can be transferred to all of the units at a very low cost (Barlett & Ghoshal, 1989; Porter, 1990). Next, we focus on the analysis of the environmental standardization strategy due to its increasing importance and repercussions nowadays.

#### **4. ENVIRONMENTAL STANDARDIZATION STRATEGY WITHIN MNEs**

The decision whether to standardize operations in international business is very relevant because it influences the firm's fundamental approach to business and how it competes (Ang & Massingham, 2007). Corporate environmental practices each have their own set of peculiarities. In fact, these policies and practices have a strong influence on the international reputation of the company (Dowell et al., 2000), are highly regulated (Rugman & Verbeke, 1998a), and are not necessarily visible to consumers (Christmann, 2004). Moreover, the environmental standardization decision within MNEs is initially costly since it requires a considerable investment in environmental technologies and processes in order to apply them in the different countries (Christmann & Taylor, 2001).

Environmental standardization strategy implies that the MNEs self-regulate their environmental conduct, which means that there is a firm's commitment to control its own conduct beyond what is required by the law (Christmann & Taylor, 2006) through voluntary environmental initiatives (Christmann & Taylor, 2002). Initially, Porter and van der Linde (1995) argue that MNEs benefit from higher environmental standards in their home market because such standards induce them to develop superior environmental management capabilities, which improve an MNE's international competitiveness once environmental regulations are raised in other countries. However, this situation only happens when the home government has sufficient foresight to anticipate the environmental regulations of all other

countries and the home country is a very large, triad-based economy whose influence on the world economy is immense (Rugman & Verbeke, 1998a).

Globalization proponents state that lower barriers to trade encourage firms to transfer environmental technologies from countries with stricter environmental standards to developing countries, which lack access to environmental technologies and capabilities (Drezner, 2000). Other works show that firms operating in a developing country that sell a large proportion of their output to multinational customers within the country, or that export large proportions of their output to developed countries, are more likely to adopt international certifiable management standards (Christmann & Taylor, 2001). Finally, Christmann (2004) shows that perceived government pressures about the international harmonization of environmental regulations contribute to adoption of stringent global environmental standards; perceived customer pressures contribute to standardization of environmental communication; and perceived industry pressures positively relate to standardization of operational environmental policies. Hence, adopting environmental standards is consistent with pursuit of global competitive strategies (Christmann, 1998).

In order to undertake a standardized approach to environmental issues, we state that both high non-location-bound green FSAs and low environmental institutional distance between countries are required (quadrant 4, Figure 1). Next, we are going to determine the real effect that both factors have on this strategy.

### **Environmental Institutional Distance and Environmental Standardization Strategy**

Due to most environmental regulations being designed at the level of nation states (Rugman & Verbeke, 1998b), the influence that the headquarters' or subsidiaries' environmental regulatory dimension may have on the environmental standardization strategy within the MNE has been widely studied (Christmann, 2004). Results have not been definitive. While

some works have suggested that MNEs have competitive incentives to develop a standard approach in the whole network using the headquarters' regulation which is usually more stringent (Porter & van der Linde, 1995; Rappaport & Flaherty, 1992), others have suggested that MNEs find more advantages by locating dirty operations through subsidiaries in countries with lax environmental regulations (Stewart, 1993). Furthermore, the home and host countries' environmental regulations by themselves are not the only factor that affects the environmental standardization strategy within MNEs. Evidence suggests that even if formal environmental regulations are identical across countries, de facto regulations may differ as a result of differences in countries' capacities to implement, monitor, and enforce regulations (Dasgupta & Hettige, 2000). Finally, there are differences in countries' capacities to tolerate, dilute, absorb or ignore pollution, as well as differences in economic and environmental priorities (Christmann & Taylor, 2001). Consequently, we propose that the institutional distance in terms of environmental issues, and not the specific institutions and environmental regulations in each country, will be more relevant in deciding whether environmental standardization strategy is finally implemented.

The literature distinguishes two different considerations regarding the relation between institutional distance between countries and the MNE's standardization strategy. On the one hand, it is shown that standardization of managerial practices is easier between countries with similar institutional structures. Ang and Massingham (2007) show that when the pressures for economies of scope are high and pressures for cultural responsiveness are low, the standardization decision is the most appropriate. In addition, a low institutional distance contributes to adjusting the legitimacy requirements of a country that is institutionally similar to its home country (Kostova & Zaheer, 1999). On the other hand, another view suggests that countries' differences might drive creation of international standards within MNEs in order to unify their management rules (Christmann & Taylor, 2006). Thus, the MNE would tend to

create its own internal institutional structure through homogeneous management models that justify the MNE's conduct worldwide (Kostova et al., 2008).

Therefore, considering the scarce attention that has been paid to the influence of countries' environmental institutional profile beyond the cross-country analysis of environmental regulations, we expect that MNEs take advantage of the small environmental institutional distance effect between countries to gain easily a good level of legitimacy (Kostova & Zaheer, 1999) and to standardize their environmental practices at a low cost.

*Hypothesis 1. The lower the environmental institutional distance between the headquarters and subsidiaries' countries, the greater the environmental standardization within the MNE.*

### **Slack Financial Resources in MNEs and Environmental Standardization Strategy**

MNEs that decide to implement environmental standards within their internal network also need to develop a set of non-location-bound green FSAs that go beyond the compliance with national or international environmental regulations (Rugman & Verbeke, 1998a). Moreover, this strategy initially requires a substantial investment in order to create and transfer environmental practices within the firm (Christmann & Taylor, 2001). Therefore, MNEs' slack resources play an important role in the creation of environmental standards within MNEs. Slack can accrue as a result of organizational performance in prior periods, as a planned buffer, or as a result of poor planning (Voss, Sirdeshmukh & Giraud Voss, 2008). Considering the different types of slack, the financial slack is of great importance. This type of slack refers to the level of liquid assets that is available to an organization (Kraatz & Zajac, 2001). Perfectly divisible for allocation to multiple activities, it is the least absorbed form of slack and the easiest to redeploy (Greve, 2003). It is argued that there should be less motivation to conserve and a greater willingness to deploy financial slack to risky exploration

that can strengthen an organization's long-term position (Levinthal & March, 1993). Nevertheless, other relevant findings show that companies equipped with too much financial slack may become complacent and overly optimistic, and feel less compelled to make investments in R&D activities (George, 2005).

Studies have shown a positive relationship between corporate environmental and financial performance (Hart, 1995; Russo & Fouts, 1997; Smith, 2003). Slack resources theory states that prior corporate financial performance may provide the slack resources necessary to engage in corporate social responsibility. Since corporate social performance represents an area of high managerial discretion, the initiation of voluntary environmental policies may, to a large extent, depend on the availability of excess funds. Indeed, if managers have more discretionary financial slack at their disposal, they can better view environmental issues as opportunities rather than as threats (Bansal, 2005; Sharma, 2000). In contrast, when financial slack is low, other issues dominate the mindset of management, relegating environmental issues to lower priority (Henriques & Sadosky, 1996).

Considering environmental practices as risky exploration activities (Voss et al., 2008), and the little attention that has been paid to the influence that the existence of slack financial resources in MNEs may have on the creation of non-location-bound green FSAs, it is relevant to determine whether financial slack effectively contributes to generating this type of green FSA. Hence, assuming the great importance that headquarters have in the design of a sustainable advantage through an MNE's network (Kuemmerle, 1999), we propose the following hypothesis:

*Hypothesis 2. The headquarters' slack financial resources have a positive influence on the environmental standardization decision within the MNE.*

MNEs from quadrant 3 of Figure 1 are those companies with units based in high-distance countries and that generate a set of location-bound green FSAs in specific countries, which are not transferred within their internal network. Then they would not adopt an environmental standardization strategy. However, standardization strategy has strong positive effects as well. Therefore these MNEs need to decide whether they should destine efforts to adopt an environmental standardization strategy within very different countries.

On the one hand, since each country's institutional profile is very complex the implementation of standardized environmental practices worldwide may be difficult (Kostova & Roth, 2002). Other works show that companies that decide to introduce their operations in foreign countries encounter more environmental difficulties than local firms (King & Shaver, 2001). Additionally, these firms may obtain great benefits from generating and applying location-bound green FSAs in specific countries.

On the other hand, the standardization strategy is a cost-reducing strategy since the knowledge can be transferred easily within the company (Barlett & Ghoshal, 1989). It is also argued that by specifying a single and a stringent environmental standard within the MNE, performance monitoring and evaluation costs would be reduced. This reason would be supported by the fact that a single set of values, specifications and procedures can be deployed throughout the world, without the need to consider local deviations from the norm (Dowell et al., 2000). Adopting an internal corporate environmental standard ahead of legal requirements contributes to reducing special interest group pressures, and may result in positive reputation effects for the MNE (Christmann, 2004), an improvement in its transparency (Dowell et al., 2000), and international institutional legitimacy (Kostova et al., 2008). Indeed, this latter type of legitimacy goes beyond the one obtained at the national level (MNEs from quadrant 2).

Under these circumstances, we state that MNEs from quadrant 3 are willing to convert location-bound into non-location-bound green FSAs in order to take advantage of all the benefits derived from an environmental standardization strategy. Therefore these companies would reduce the negative impact that a high environmental institutional distance between countries has on the adoption of an environmental standardization strategy. Definitely MNEs from quadrant 3 would move to quadrant 4. Considering the great importance that headquarters have in the design of a sustainable advantage in the MNE (Kuemmerle, 1999), we propose:

*Hypothesis 3. The greater headquarters' slack financial resources are, the lower will be the negative effect that the environmental institutional distance between the countries has on the environmental standardization within the MNE.*

## **5. METHODOLOGY**

### **Sample**

We focus on MNEs from three industries: chemical (SIC Code 28), energy and petroleum (SIC Code 29), and industrial machinery (SIC Code 37). We chose these industries because they are greatly affected by environmental issues (King & Shaver, 2001). Countries that have been considered are USA, Canada, Mexico, France and Spain. We have chosen these five countries because they offer a good balance between environmental institutional differences, economic connections, and availability of data. Their national environmental registries include detailed information about their facilities' releases and their belonging to a company's corporate tree.

In order to select our sample we used Standard & Poor's database (Capital IQ). We began by selecting 309 MNEs working in one of the three selected industries and with headquarters based in USA, Canada, Mexico, France or Spain. Each MNE included in our sample was

required to have at least one subsidiary based in one of the five countries, but different from the headquarters' country. We only considered those subsidiaries that belonged to the same headquarters' industry. Once we selected the 309 MNEs, the next step consisted of searching facilities' environmental information in the national environmental registries.<sup>1</sup> We excluded local sales and distribution centres facilities. Our final sample consists of 210 cases (headquarters–subsidiary), 135 MNEs and 1872 facilities. The majority of headquarters are based in USA and France (96 from USA, 31 from France, five from Canada and three from Mexico). In contrast, subsidiaries are more scattered (18 from USA, 73 from Canada, 66 from France, 17 from Spain, and 36 from Mexico). In relation to the industries' distribution, there are 97 cases from the chemical industry, 39 cases from the energy and petroleum industry, and 74 cases from the industrial machinery industry.

## Measures

*Environmental Standardization within the MNE.* We analyse the air releases in 2005 for each facility in our sample. We considered the 50 most polluting substances included in the list of pollutants to be reported and whether the threshold value is exceeded and published in the European Pollutant Emission Register (EPER). Since each pollutant has a different impact on the natural environment, we weighted each pollutant by its degree of toxicity (King & Shaver, 2001). To do this we turned to the Reportable Quantities (RQ) measure from the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) statute. Once we calculated the air releases in kilograms at the facility level, we aggregated this data to obtain the headquarters' and subsidiaries' air releases.

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<sup>1</sup> USA: Toxic Release Inventory (TRI).

Canada: National Pollution Release Inventory (NPRI).

France and Spain: European Pollution Environmental Registry (EPER).

Mexico: Registro de Emisiones y Transmisiones Contaminantes (RETC).

Finally, with the purpose of obtaining a value that shows the environmental impact that each unit has on the natural environment, we calculated a ratio that expresses the coefficient between the air releases of each unit and its total revenues in 2005 (Capital IQ). In order to calculate the degree of environmental standardization between headquarters and subsidiaries we subtracted the headquarters' environmental ratio from the subsidiary's environmental ratio. A high value shows that headquarters' and subsidiaries' environmental conduct are different. A low value indicates that both the headquarters and the subsidiaries standardize their environmental practices. We normalized this variable in order to avoid detrimental effects of dispersed values (Hair, Anderson, Tatham & Black, 2008).

*Environmental institutional distance between countries.* We measured the countries' environmental institutional profile through the Environmental Sustainability Index (ESI) in 2005, published by the Yale Center for Environmental Law and Policy and the Center for International Earth Science Information Network. ESI benchmarks the ability of nations to protect the natural environment. It does so by integrating 76 data sets – tracking natural resource endowments, past and present pollution levels, environmental management efforts, and a society's capacity to improve its environmental performance – into 21 indicators and five different dimensions of environmental sustainability. The environmental institutional distance between countries was calculated considering the differences between the global ESI value of the headquarters' and subsidiary's countries. This variable was normalized to avoid problems related to the dispersion of the information (Hair et al., 2008). Values that are close to zero show that environmental issues have similar importance in headquarters' and subsidiaries' countries. On the other hand, high values reveal that countries protect the natural environment differently.

*Headquarters' slack financial resources.* Financial slack is used to recognize extra liquidity that could be invested in sustainable development activities. Headquarters' current assets over current liabilities in 2005 were used in our analysis (Bansal, 2005).

*Control Variables.* These include headquarters' and subsidiary size, industry, headquarters' and subsidiaries' countries' institutions and environmental regulations, and headquarters' financial performance.

Headquarters and subsidiary size: Firm size is an important determinant of environmental conduct (Aragón-Correa, 1998) as well as of MNE strategy standardization (Yip, Johansson & Roos, 1997). Headquarters' and subsidiaries' sizes were measured as the natural logarithm of their number of employees in 2005 (King & Shaver, 2001).

Industry: We controlled for type of industry (Christmann & Taylor, 2006) by the inclusion of two dummy variables (chemical industry, and energy and petroleum industry) in order to consider the effects of our three different industries (chemical industry, energy and petroleum industry, and industrial machinery industry).

Headquarters' and subsidiaries' countries' institutions and environmental regulations: We considered the institutional profile and environmental regulations that each headquarters' and subsidiary's country has. We used the environmental dimension "Social and Institutional Capacity", contained in ESI 2005. We assessed the different institutions and the level of stringency, innovation and consistency that the different environmental regulations have in each country. We normalized this variable to avoid detrimental effects of dispersed values (Hair et al., 2008).

Headquarters' financial performance: Environmental management and corporate social responsibility are related to financial performance (Smith, 2003). Headquarters' return on equity in 2005 was used as a proxy of financial performance (Bansal, 2005).

## **6. RESULTS**

Due to the nature of our variables and taking into account that all of them comply with the prerequisites of the ordinary least squares (OLS) regression, we used the hierarchical regression analysis. Before testing our hypothesis, we assessed the likely extent of common method variance, the conformity of our data's distribution to the assumptions to our analytic tools, and the extent of multicollinearity among the independent variables. Analysis using the Kolmogorov–Smirnov test indicated that the distributions of the variables generally conformed to the normality assumption of regression analysis. Analysis of condition indices and variance inflation factors show that multicollinearity was not a problem (Hair et al., 2008). Table 1 shows the descriptive statistics and correlations. No high correlation between our independent variables was observed.

Table 1 goes about here

Table 2 shows the results of the regression analyses testing the hypotheses. In model 1 we included the control variables: headquarters' and subsidiaries' size, industry, headquarters' and subsidiaries' countries' institutions and environmental regulations, and headquarters' financial performance. In model 2 we added the variable of environmental institutional distance between countries. In model 3 we incorporated the variable of headquarters' slack financial resources. Finally, in model 4 we included a moderating variable that considers the interaction between headquarters' slack financial resources and environmental institutional distance between countries. We wanted to improve the original model introducing key significant variables.

Table 2 goes about here

Firstly, we see that the variable chemical industry has a negative and significant effect on the MNEs' environmental standardization strategy ( $\beta = 0.44, p < 0.10$ ). In contrast, the variable headquarters' financial performance has a positive and significant influence on the MNEs' environmental standardization strategy ( $\beta = -1.05, p < 0.001$ ). The other control variables are not significant.

Secondly, the environmental institutional distance between countries has a negative and significant impact on the standardization of environmental practices ( $\beta = 0.25, p < 0.055$ ). The higher the environmental institutional distance, the less will be the degree of environmental standardization within the MNE. This evidence reinforces the fact that the institutional distance between countries better explains the MNE's environmental standardization strategy than the analysis of the headquarters' or subsidiaries' countries' institutions and environmental regulations. Hence hypothesis 1 is supported.

Thirdly, we observe that headquarters' slack financial resources have a positive and significant effect on the standardization of those practices ( $\beta = -0.55, p < 0.001$ ). This implies that the greater headquarters' slack financial resources are, the greater the environmental standardization within the MNE will be. Thus hypothesis 2 is also supported.

Finally, the headquarters' slack financial resources have a positive but non-significant interacting effect on the negative relationship between the environmental institutional distance between headquarters' and subsidiaries' countries and the environmental standardization within the MNE ( $\beta = -0.03$ ). We plotted this interaction effect using procedures outlined in Aiken and West (1993). As we see in Figure 2, the fact that headquarters have a high

availability of slack financial resources does not lead to reducing the negative effect that a high environmental institutional distance between countries has on this strategy.

Figure 2 goes about here

The level of standardization is greater in headquarters with high availability of slack financial resources (lower line) than in headquarters with low availability of slack financial resources (upper line). Nevertheless, we can see in both cases that the higher institutional distance, the lower will the environmental standardization within the MNE be. Thus hypothesis 3 is not supported.

## **7. DISCUSSION, LIMITATIONS AND FUTURE RESEARCH**

There is a general thought relating to the MNEs' code of conduct that ensures that their activities have a more negative impact on the natural environment than that of other firms (Korten, 1995). In contrast, it has been suggested that MNEs increasingly self-regulate their environmental conduct (Christmann & Taylor, 2001). Therefore companies would not take advantage of the different levels of permissiveness that countries' environmental regulations have (Christmann, 2004). The purpose of this paper is to explain the different international environmental strategies adopted by MNEs and the drivers that lead MNEs to standardize their environmental practices. We distinguish four different contributions.

First, we advance on the CSA–FSA traditional configuration to show the environmental strategies that MNEs can use (Rugman & Verbeke, 1998b). In relation to the CSAs, we consider the environmental institutional distance between countries. In relation to the green FSAs, we apply the slack financial resources concept to analyze the level of green FSAs that MNEs can generate and transfer. As a result, we distinguish four different international environmental strategies: pollution haven hypothesis (MNEs that undertake an opportunistic

environmental conduct, locating the more polluting activities in countries with lax environmental regulations), environmental compliance (MNEs that do not generate green FSAs and only gain national legitimacy in countries with similar institutional profiles), environmental resources (MNEs with units based in high-distance countries and that generate location-bound green FSAs in specific countries, which are not transferred to the rest of the units), and environmental standardization (MNEs with units based in low-distance countries and that generate non-location-bound green FSAs).

Second, we test whether the two requisites of the environmental standardization strategy proposed are effectively supported. On the one hand, we find that companies with similar environmental institutional profile contribute to generating environmental standards within the MNE. On the other hand, we show that MNEs with headquarters with a greater availability of slack financial resources are more willing to generate high non-location-bound green FSAs.

Third, we analyze whether MNEs that generate location-bound green FSAs and with units based in high-distance countries have incentives to undertake a standardized approach to environmental issues. We find that headquarters with a high availability of slack financial resources do not contribute to reducing the negative effect that a high institutional distance has on the adoption of environmental standards. Therefore those MNEs are not interested in converting their location-bound into non-location-bound green FSAs.

Fourth, using the CSA–FSA configuration we combine both the institutional and the resource–based view in order to understand the environmental management of MNEs. In fact, not only do these organizations give importance to the green resources that can be generated, but also justify their existence through their direct contact with agents from the countries where they operate (Rugman & Verbeke, 2001).

We can conclude that not all the MNEs are interested in adopting an environmental standardization strategy. Although previous findings suggest that MNEs are increasingly standardizing their environmental practices due to different stakeholders' pressures (Christmann, 2004; Rappaport & Flaherty, 1992), we can only apply this generalization to those MNEs with units based in low-distance countries and that generate valuable non-location-bound green FSAs. A low institutional distance encourages MNEs to gain legitimacy in those countries since they do not find difficulties in assimilating their institutional requirements. Additionally, since these MNEs can easily transfer their practices in these countries, they prefer to generate, through their great availability of slack financial resources, non-location-bound green FSAs to reduce their costs, increase their reputation and transparency, and gain international legitimacy. Consequently, additional critics of the Porter hypothesis of home-based environmental regulations beyond the home country size and the difficulties in anticipating the environmental regulations of all countries (Rugman & Verbeke, 1998a) are necessary. We show that institutional distance between countries is the external factor that explains this strategy, and not the headquarters' or subsidiaries' countries' institutions and environmental regulations.

MNEs with a high availability of slack financial resources but with units based in high-distance countries are not interested in adopting an environmental standardization strategy. Although some studies argue that companies, through the creation of international standards, can reinforce their internal institutional profile and gain coherence in their internal organizational structure (Christmann & Taylor, 2006), these results cannot be applied in this case. These firms generate location-bound green FSAs in specific countries and do not need to make investments in order to convert location-bound into non-location-bound green FSAs. As they obtain a high volume of slack resources, they do not want to change their orientation.

Moreover, high-distance countries may deter the implementation and internalization of environmental standards (Kostova & Roth, 2002). Finally, since countries are institutionally very different, they may be forced to apply green FSAs only in specific contexts.

### **Limitations**

Although through our secondary data we overcome analysis based only on the managers' and stakeholders' environmental expectations we find some limitations in this study. The main one is that we have assessed the headquarters' and subsidiaries' environmental performance through their air releases. This indicator is incomplete since there are other environmental measures of performance (water and earth releases, waste recovery and processing) (Etzion, 2007). There are also limitations related to the ESI effectiveness. Indeed, its methodology does not consider the possible interdependencies between variables in the different dimensions of the index. Furthermore, the ESI is a relative index in which countries are scored relative to all other countries, which makes it difficult to measure progress towards sustainability for individual countries or the world as a whole (Niemejer, 2002). Finally, although large governments apply pressure, national environmental registries are still incomplete and there is lack of uniformity between them.

### **Future Research**

For future research it would be interesting to include environmental information of subsidiaries based in countries from Asia and Africa to enrich the transnational analysis and give more robustness to our results. Moreover, it would be really important to study how the different industries self-regulate themselves and contribute to generating environmental standards within their MNEs. Finally, it would be relevant to analyze the strategic importance that subsidiaries may have on the MNEs' environmental management. In fact, subsidiaries

can establish diverse relationships with stakeholders (Rugman & Verbeke, 2001). These relationships can contribute to generating non-location-bound green FSAs.

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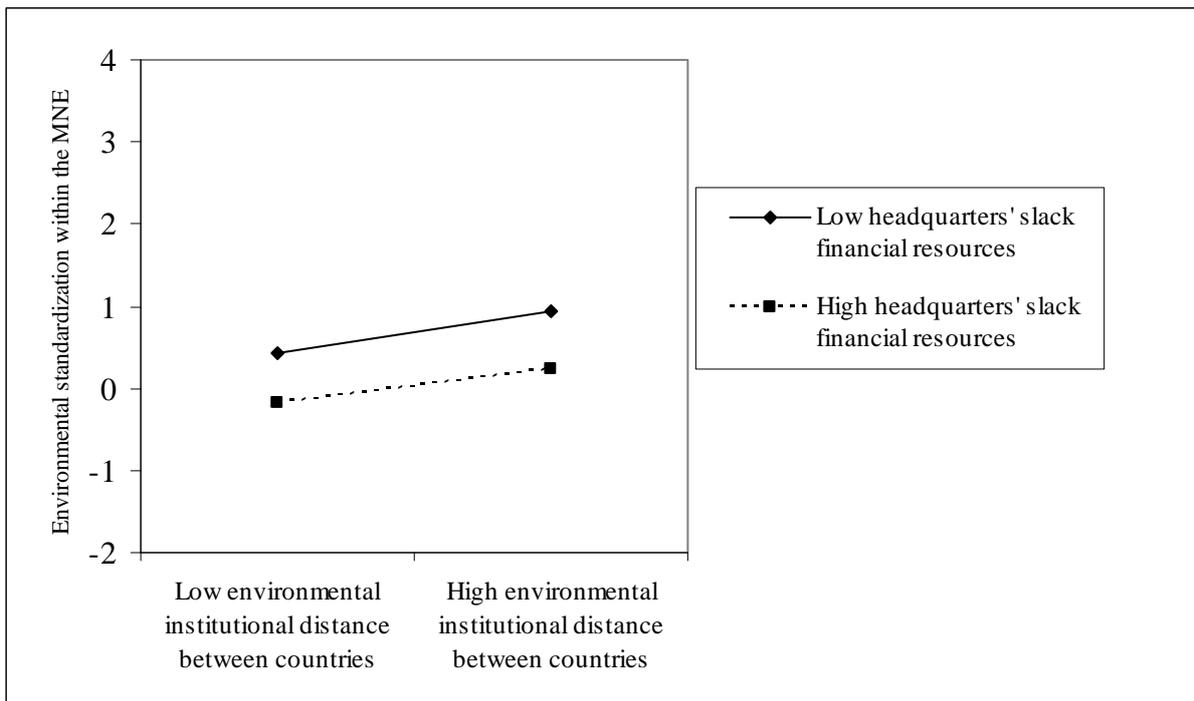
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**Figure 1. MNEs' international environmental strategies.**

		GREEN FIRM SPECIFIC ADVANTAGES	
		LOW	HIGH
ENVIRONMENTAL INSTITUTIONAL DISTANCE BETWEEN COUNTRIES	HIGH	1 POLLUTION HAVEN HYPOTHESIS	3 ENVIRONMENTAL RESOURCES
	LOW	2 ENVIRONMENTAL COMPLIANCE	4 ENVIRONMENTAL STANDARDIZATION

**Figure 2. Interaction effect between headquarters' slack financial resources and environmental institutional distance between countries.**



**Table 1. Descriptive statistics and correlations**

	Mean	Standard deviation	Environmental standardization within the MNE	Headquarters' size	Subsidiary size	Chemical industry	Energy and petroleum industry	Headquarters' country's institutions and environmental regulations	Subsidiary's country's institutions and environmental regulations	Headquarters' financial performance	Environmental institutional distance
Environmental standardization within the MNE	0.46	1.48									
Headquarters' size	10.48	1.19	-0.13*								
Subsidiary size	6.25	1.56	-0.15*	0.37***							
Chemical industry	0.46	0.50	0.15*	-0.46***	-0.25***						
Energy and petroleum industry	0.19	0.39	-0.08	0.15*	0.13*	-0.44***					
Headquarters' country's institutions and environmental regulations	-0.01	1.03	0.02	0.05	-0.11†	-0.01	-0.03				
Subsidiary's country's institutions and environmental regulations	0.13	0.90	0.12*	-0.12*	0.05	0.01	-0.01	-0.07			
Headquarters' financial performance	0.06	0.51	-0.40***	0.18**	0.15*	0.04	0.05	-0.01	-0.12*		
Environmental institutional distance	-0.08	0.90	0.11†	-0.12*	0.17**	-0.01	0.12*	-0.36***	-0.07	0.01	
Headquarters' slack financial resources	-0.03	0.59	-0.27***	-0.12*	-0.01	-0.02	-0.01	-0.18**	0.02	0.12*	0.01

†  $p < 0.10$

\*  $p < 0.055$

\*\*  $p < 0.01$

\*\*\*  $p < 0.001$

**Table 2. Results of the hierarchical regression analysis<sup>a</sup>**

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
<b>Intercept</b>	-0.02 (1.03)	-0.26 (1.02)	0.38 (1.01)	0.36 (1.02)
<b>Headquarters' size</b>	0.07 (0.09)	0.11 (0.09)	0.05 (0.09)	0.056 (0.10)
<b>Subsidiary size</b>	-0.07 (0.06)	-0.10 (0.07)	-0.10 (0.06)	-0.10 (0.06)
<b>Chemical industry</b>	0.53 (0.24)	0.53* (0.23)	0.43† (0.23)	0.44† (0.23)
<b>Energy and petroleum industry</b>	0.09 (0.27)	0.02 (0.26)	-0.02 (0.26)	-0.02 (0.26)
<b>Headquarters' country's institutions and environmental regulations</b>	0.02 (0.09)	0.10 (0.01)	0.04 (0.09)	0.03 (0.09)
<b>Subsidiary's country's institutions and environmental regulations</b>	0.13 (0.10)	0.16 (0.10)	0.16 (0.10)	0.16 (0.10)
<b>Headquarters' financial performance</b>	-1.16 (0.19)***	-1.16*** (0.19)	-1.05*** (0.18)	-1.05*** (0.18)
<b>Environmental institutional distance</b>		0.29* (0.11)	0.25* (0.11)	0.25* (0.12)
<b>Headquarters' slack financial resources</b>			-0.55** (0.16)	-0.55*** (0.16)
<b>Headquarters' slack financial resources X Environmental institutional distance</b>				-0.03 (0.19)
<b><i>R</i><sup>2</sup></b>	0.20	0.22	0.27	0.27
<b><i>Adjust R</i><sup>2</sup></b>	0.17	0.19	0.24	0.23
<b><i>Change in F</i></b>	7.24***	6.23**	12.07**	0.03

Dependent variable: environmental standardization within the MNE

<sup>a</sup> Standard errors are in parenthesis

N = 210

†  $p < 0.10$

\*  $p < 0.055$

\*\*  $p < 0.01$

\*\*\*  $p < 0.001$