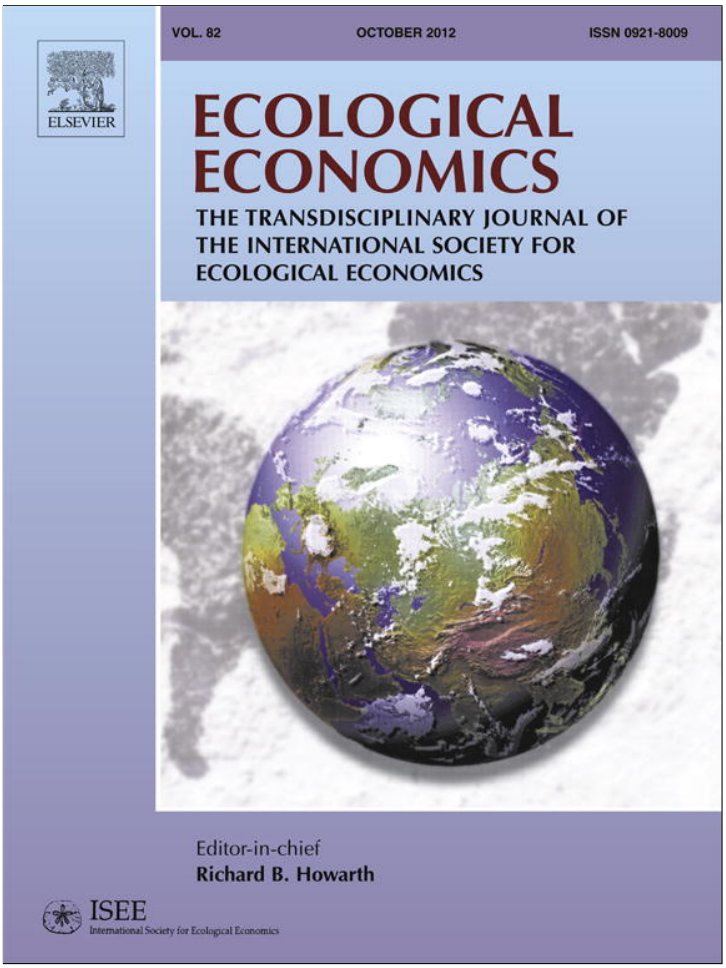

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Analysis

Opportunism and environmental management systems: Certification as a smokescreen for stakeholders

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ABSTRACT

This paper sets out to explain how the implementation of an environmental management systems (EMS) conditions the way firms respond to environmental pressures exerted by their stakeholders. While the most common approaches to be found in the literature consider the certification of such systems to be an indicator of proactivity and cooperation with stakeholders, this article posits that it is also a mechanism firms use to discriminate between stakeholders, allowing firms to react to the pressure of certain stakeholders only. Specifically, the analyses conducted on a sample of 3748 plants reveal that the implementation of an EMS responds to pressure from stakeholders, but once this system has been certified a firm's environmental actions basically respond to the pressure from internal primary stakeholders, ignoring pressures from external primary and secondary stakeholders and regulators. The key element in the theoretical line of reasoning regarding these results is the opportunistic behavior associated with certification, given that the certification by itself represents incomplete information. Thus, an EMS can serve as a valuable shield against a majority of stakeholders, since only the pressure of those stakeholders who can verify the effects of such pressure will have an influence on the environmental behavior of firms with a certified EMS.

1. Introduction

Widespread awareness in recent decades of the impact economic activity has on the environment has led to a toughening of the regulatory framework, as well as to greater surveillance over corporate operations by different stakeholders (Johnstone et al., 2007). Some managers have looked upon this increasingly greater pressure as a market opportunity, thereby triggering far-reaching changes in business management and strategy (Potoski and Prakash, 2009). Stakeholder theory (Freeman, 1984) considers the alignment of a firm's goals with those of its stakeholders. Its application within the environmental field leads to one of the issues that have aroused the greatest attention in recent years, namely, to identify those stakeholders that can influence a firm's environmental performance (Buysse and Verbeke, 2003; Henriques and Sadorsky, 1999; Murillo-Luna et al., 2008).

Environmental management encompasses several parts of a firm and may be more or less developed, possibly constituting no more than a subsidiary concern based solely on the minimal application of certain corrective actions or, by contrast, becoming an integral part of the organizational structure through the implementation of an environmental management system (EMS) that may be certified by third parties (Murillo-Luna et al., 2011). An EMS is understood to be the necessary platform for launching proactive environmental strategies, so numerous papers have focused on analyzing the effect its implementation and certification has on a firm's environmental outcomes (Boiral and Henri, 2012; Comoglio and Botta, 2012). Nevertheless, the findings have hardly been conclusive (Darnall and Sides, 2008), perhaps because standards such as ISO 14001 (2004) or EMAS regulations, which are the basis for a large number of these management systems, are not results-based standards, and therefore do not guarantee the certified firm has achieved a specific environmental performance. Certification simply ratifies that the organization in question has implemented a certain number of processes to help it manage its environmental impacts, without guaranteeing that these processes have led to an enhanced environmental performance. Nonetheless, markets do tend to interpret this certification as a sign that the organization has made an effort in environmental matters (Christmann and Taylor, 2006; Prakash and Potoski, 2007).

It is precisely this signaling capacity of EMS certification that leads us to understand that the interest in adopting this initiative may not just lie in improving the firm's environmental performance, but also in responding to stakeholder pressure. Thus, the system's implementation and certification constitute a strategy to alleviate the pressure from some of these groups. In other words, instead of considering EMS certification to be a proactive initiative, and therefore studying its role as a precursor or trigger of a firm's environmental endeavors, it is also possible to understand the implementation of an EMS as a reactive initiative that responds to the pressure of the various stakeholders and one that allows discriminating between them. The main focus of this paper is to analyze the validity of this latter approach.

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With a view to pursuing this goal, this article will show that, firstly, firms try to please their stakeholders by implementing and certifying an EMS, because those firms deciding to implement and certify an EMS are those that detect greater environmental pressure from their stakeholders. And, secondly, it will show that the effect of stakeholder pressure change when a firm implements its EMS and has it certified. Accordingly, we contend that once a firm has had its EMS certified, the influence of certain stakeholders diminishes. From then on, efforts to reduce the environmental impact are conditioned largely by those stakeholders classified in the literature as primary and internal.

This will enable us to further explore the relationships between stakeholders and a firm's environmental behavior. On the one hand, it allows us to contribute to the debate on the opportunistic use of EMSs and the role they really do play in environmental management. On the other hand, the findings of this research will be of use to regulatory bodies when defining and appraising the ever more frequent public policies designed to foster the implementation of EMSs by firms. Finally, our findings may also help professionals to identify other ramifications of their EMSs that go beyond the direct effect on the environmental impact.

In order to answer the questions posed above, the paper is arranged into five further sections. This first section serves as an introduction to the research question. The second section analyzes the literature on stakeholders, environmental management systems and opportunism amongst certified firms, and two hypotheses are formulated that provide a response to the questions posed. The third section describes the empirical methodology used for testing these two hypotheses. The fourth section describes the results obtained. The fifth initiates a discussion on the implications of the results obtained and, finally, the sixth section presents the paper's main conclusions.

2. Literature Review

2.1. Stakeholders' Environmental Expectations

Stakeholders are individuals or groups that affect a firm's performance or are affected by its operations (Freeman, 1984). One of the aspects addressed by stakeholder theory is to try to identify precisely who is and who is not a stakeholder (Phillips and Reichart, 1998). Environmentally speaking, several groups have been identified whose pressure is in some way perceived by a firm (Buysse and Verbeke, 2003; Clarkson, 1995; Henriques and Sadorsky, 1999). Returning to the classification made by Buysse and Verbeke (2003), we can distinguish between those stakeholders who impose legislation and determine rules of mandatory compliance (e.g., public authorities or industrial associations); those with the greatest influence on a firm's operations, who are referred to as primary because they are in some way involved in the value chain (Freeman, 1984), either from within (e.g., shareholders or labor unions) or from without (e.g., customers or suppliers); and finally, those with a smaller impact on a firm's operations, referred to as secondary (e.g., environmental or neighborhood/community associations).

Prior studies have shown that firms use different strategies to respond to stakeholders (Jawahar and MacLauglin, 2001; Mitchell et al., 1997). In terms of corporate social responsibility, stakeholders expect firms to manifest integrity, respect, regulatory compliance, transparency and due accounting process (Morsing and Schultz, 2008; Waddock et al., 2002). In environmental terms, firms respond to their stakeholders' requirements by adapting their environmental practices (Murillo-Luna et al., 2008; Rueda-Manzanares et al., 2008; Sarkis et al., 2010), which ultimately leads to better environmental management (Turk, 2009).

Each stakeholder may have a particular standpoint on what a firm should do and their subsequent particular risk perception (Benn et al., 2009). Although some research contends that firms respond in a similar way to each and every one of the pressures exerted by stakeholders (Murillo-Luna et al., 2008), the literature has sought to single out a specific corporate performance for each stakeholder pressure (Buysse and Verbeke, 2003; Henriques and Sadorsky, 1999). This approach to the problem helps to gain a more accurate view of a firm's environmental performance with regard to its stakeholders. In short, the literature assumes that a poor environmental performance may damage the relationship between a firm and its stakeholders, and it may therefore be compromised (Buysse and Verbeke, 2003).

2.2. The Role of Stakeholders in the Implementation and Certification of an EMS

The literature has managed to reveal strategic profiles in environmental matters using different variables: market awareness and the risk of a firm's operations (Steger, 1990), the arrangement of its environmental actions (Del Brio and Junquera, 2001), or environmental pro-activity; with this last one depending on legislative compliance, the incorporation of technology or other innovations, or strategic focus (e.g., Azzone et al., 1997; Roome, 1992; Van Wassenhove and Corbett, 1991).

Since then, *environmental proactivity* has taken root as an ongoing variable that allows differentiating between one organization and another according to a firm's adroitness for advanced environmental management involving a voluntary prediction of its environmental impacts (Sharma and Vredenburg, 1998). Such proactivity in the environmental field has been extensively reused in the literature to explain corporate performance and, from the resources based view of the firm, it has been defined as one of a firm's dynamic capacity (Aragón-Correa and Sharma, 2003).

Nonetheless, pollution control measures are an expense for firms, but they are also a source of value creation if such schemes are appreciated by its stakeholders (Heras-Saizarbitoria et al., 2011; Nishitani, et al., 2011). For those firms operating within a strict regulatory framework, as in the industrialized nations, the application of different measures of an environmental nature is in most cases forced (Murillo-Luna et al., 2011). The interest for these firms lies in coordinating such activities in the best possible manner so they can be perceived by their stakeholders as value creation in their environmental management. According to Del Brio and Junquera (2001), this can be achieved through the formal implementation of their environmental actions (e.g., through management systems).

Stakeholder theory argues that maintaining poor relationships with stakeholders is damaging to a firm. One of the reasons for the downturn in these relationships is the recording of a poor environmental performance (Buysse and Verbeke, 2003). It is therefore reasonable to expect firms to react to stakeholder pressure and improve their environmental management (Delmas, 2001; Henriques and Sadorsky, 1999). The most common way of improving this management is by integrating environmental practices into an EMS. The ISO 14001 (2004) standard is the most popular one, and the number of firms with an EMS based on this standard continues to grow in spite of the prevailing economic climate (ISO, 2009). Furthermore, this standard allows certifying the system by means of a verification process involving a third party, thereby reducing the information asymmetry between the firm implementing the system and its stakeholders. We may contend that firms' differing environmental strategies are embodied in three profiles according to the degree of institutionalization of the environmental actions undertaken: those that have not implemented an EMS, those that have implemented an EMS and those that in addition have had their EMS certified according to a recognized standard. When implementing an EMS, a firm embraces certain rules of behavior. Subsequently, upon certification, it confirms that such rules are set in stone, thereby converting them into a "credible commitment" to its stakeholders (North and Weingast, 1989). The standard's level of exigency acts as a proxy for the signal and affects the brand benefits that members can expect of their stakeholders (Prakash and Potoski, 2007; Qi et al., 2011).

Accordingly, a natural way for firms to respond to stakeholder pressure is, as a first step, to draw up an EMS for their plants and, as a second step, submit to the certification process for said EMS in order to publically reveal the endeavor the firm is making in environmental matters. In the light of the above arguments, the following hypothesis has been formulated:

H1. Firms that have implemented an EMS and had it certified are the ones perceiving the greatest stakeholder pressure, followed by those firms that have simply implemented one and, finally, by those firms that do not have one.

2.3. The Opportunistic Nature of EMS Certification

Environmental management in general and certifications in particular have been an ideal field for studying opportunistic behaviors. On the one hand, this is due to the public nature of environmental assets (in different degrees of purity), that is, assets characterized by non-exclusion and non-rivalry in their consumption, yet which pose problems regarding who should bear the cost of negatively impacting upon assets of this kind and how non-renewable resources should be administered (Coase, 1960; Hotelling, 1931; Mishan, 1967; Pigou, 1920). On the other hand, certifying an EMS legitimizes the environmental actions of firms by sending out a signal of environmental commitment. In this case, there is a problem with those firms that manage to maintain their certification but in one way or another fail to address the environmental issues affecting them. This is what has been referred to as the symbolic implementation of management systems (Christmann and Taylor, 2006).

The term opportunism applied to a corporate economy is understood to be an explicit violation of a contract (Williamson, 1975). This definition is what has come to be understood as a strong or blatant form (Masten, 1988). This strict form of opportunism may arise at the start of a relationship (arrangement stage–ex-ante opportunism) or during the contractual relationship (ex-post opportunism). Numerous contributions have been made to this debate, extending the concept of opportunism and defining different types that are not covered by this strong or blatant understanding of opportunism. Thus, whenever there is a behavior that explicitly or implicitly contradicts a contract's content (including relational contracts) causing economic loss (or impairment) to the other contracting party, we are dealing with a case of opportunism.

Such opportunism need not necessarily involve the falsification of documents or providing misleading answers to an auditor's questions (Ammenberg et al., 2001). It may be based on what has been referred to as passive opportunism, where a firm may withhold unrequested data, put back the dates for implementing certain measures deemed to be of importance, or reduce its efforts for managing environmental aspects in the manner the firm has committed to. It may even be due to the fact that forgoing certification may be costly, as part of the investment made in specific assets for environmental management (infrastructure, technology and training) has no other use of any value. All these are grouped together as the type of opportunism called moral risk (Hölmstrom, 1979; Williamson, 1975), and imply that certification is in itself incomplete information.

Those certified firms that pursue opportunistic behavior are, firstly, harming the certification agency they are misleading in the audit system in order to pass the inspections. Secondly, they are harming other firms that have already been certified, as the signal diminishes in value. When certified firms record a poor environmental performance over the long term the signal's credibility will disappear along with the certification system itself. Along these lines, an empirical study by King et al. (2005) involving different groups of firms evidences that those with the poorest environmental performance are the ones that most resort to certification. Thirdly, they affect the stakeholders who perceive the certification signal and attribute it some kind of value. In this case, these groups are valuing something that does not exist, or at least does not exist to the extent to which they perceive it.

Certifications create a uniform image of those firms implementing these management systems and provide *smoke screens* that conceal any distinction between one company and another (King and Lenox, 2000). The harder it is to verify the performance of certified firms, the greater the incentives for potentially opportunistic behavior (King et al., 2005). Hence, the certification process and subsequent audits are the mainstays of the standard's credibility and uphold the reputation of certified firms. Nevertheless, there are firms that cease to pursue the goal of reducing their environmental impact and focus on maintaining their EMS (Christmann and Taylor, 2006). Above all, it should be noted that the results of audits are not made public (Potoski and Prakash, 2005) and that it is rare for an organization to have its certificate withdrawn (Barrow, 2005), or when this happens it is not publically disclosed (Darnall and Sides, 2008).

An EMS certified according to the ISO 14001 (2004) standard or the EMAS regulation has been seen (and the regulations themselves place considerable emphasis on this) as a tool for engaging stakeholders and involving them in a firm's environmental strategy. For example, ISO 14001 (2004) requires environmental policy to be disclosed by a firm and understood by its internal and external "interested parties". In addition, it describes one of its goals to be: "provide a framework for demonstrating conformity via suppliers' declarations of conformity, assessment of conformity by an external stakeholder – such as a business client – and for certification of conformity by an independent certification body". The EMAS regulation is even more stringent on this matter.

Nevertheless, most stakeholders do not have enough data to verify the information the firm submits to them (if indeed it does so). As of that moment, the system's certification has the opposite effect, as it provides a guarantee of something those groups cannot verify. According to Delmas (2001), external stakeholders should be involved in the implementation of a certified EMS in order to properly assess its effectiveness. This applies to all the other stakeholders who are not suitably positioned to reliably confirm a firm's proactivity. Therefore, the greater the information asymmetry there is between a firm and its stakeholders, the smaller the former's reaction will be to the latter's pressure.

External primary and secondary stakeholders and regulators are the ones with the least information due to their weaker access to reliable sources of information (Aschehoug et al., 2012; Hill and Jones, 1992). So a firm may pursue more opportunistic behavior with them than with the internal primary stakeholders that can directly monitor what is going on at the plant or facility. The opportunism of firms will modify the way they react to the pressure brought to bear by the different stakeholders and, using the EMS and its certification as a shield, they will steadily reduce their reaction in response to the fewer opportunities stakeholders have to verify the firm's effective performance in environmental matters. We therefore propose that a firm will react differently to stakeholder pressure if it has had its EMS certified.

H2. Once a firm has had its EMS certified, there is a drop in the attention paid to external and secondary stakeholders and to regulators; in other words, the firm's environmental proactivity basically responds thereafter to pressure from internal primary stakeholders.

3. Methodology

3.1. Data

The data used in this research were gathered by the OECD in the project "Environmental Policy and Corporate Behavior", whose aim, among other matters, is to analyze the effects of governments' environmental policies on corporate performance. The initial population

involved manufacturing plants with more than fifty employees from OECD countries (United States, Canada, France, Norway, Hungary, Germany and Japan). The sample was stratified according to four plant sizes (by headcount) and by industrial sector (as per national codes).

The data were collated using an adaptation of the Dillman method (1978). Before the questionnaire was sent out, a pre-test was conducted at one hundred plants in three countries (Japan, Germany and Canada) and it was sent to the OECD's Business and Industry Advisory Committee (BIAC) for its review. The survey was launched in early 2003 and addressed to plant managers and environmental officers (identified by name whenever possible). Each one of them received a physical envelope that contained an introductory letter, the twelve-page questionnaire and a pre-paid return envelope. The participants in the survey could either respond by returning the questionnaire in the envelope (75%) or complete the questionnaire online (25%) using an individual password. Those managers that did not submit the questionnaire were contacted on two occasions with a gap of three weeks between each contact (normally by postcard and sometimes by phone). The response rate was 24.7%, which is satisfactory for a large postal survey. This process gave a sample of 4186 plants, of which 3748 provided all the information regarding the variables considered in this research and are used accordingly. Different authors participating in the data collection process (e.g., Arimura et al., 2008; Darnall et al., 2008; Darnall et al., 2010; Johnstone et al., 2007) have reported the results of different tests, mainly based on archival analysis and wave analysis (Rogelberg and Stanton, 2007), which reduce the risk of non-response bias to a minimum. Their analyses also suggest that common method bias (Podsakoff and Organ, 1986) is a minor problem. Further details on the sample's characteristics and, in general, on the project undertaken by the OECD are available in Johnstone et al. (2007).

3.2. Metrics

3.2.1. Dependent Variable

3.2.1.1. Environmental Proactivity. The questionnaire used asked the plants to rate as 'not negative', 'moderately negative' or 'very negative' the potential environmental impact of their products and processes as regards each one of the environmental aspects included in Table 1. In addition, the survey asks for information on whether or not specific actions have been undertaken to reduce the environmental impact in each one of these aspects. Based on these two parameters, an environmental proactivity index was created that we shall call environmental imbalance, according to the Eq. (1), where n_1 represents the number of aspects in which the potential impact is moderately negative and the plant has not undertaken specific actions to reduce it, and n_2 represents the number of aspects in which the potential impact is very negative and in this case, too, the plant has not undertaken any specific actions accordingly. In other words, the imbalance is deemed to be greater when nothing is done in potentially very serious situations than when nothing is done in moderately serious situations.

$$\textit{Environmental imbalance} = 1 * n_1 + 2 * n_2. \quad (1)$$

The questionnaire provides each plant with the option to insert specific environmental aspects, increasing the tool's usefulness for capturing the imbalance between the actions that should be undertaken and those that are actually implemented.

It is important to note that this approach to the metrics on environmental proactivity responds to the notion that there is a need to interpret a firm's environmental performance in terms of the potential hazards it represents (González-Benito et al., 2011). A large part of the prior literature has empirically defined proactivity as the degree of implementation of a series of practices (Aragón-Correa, 1998; Christmann, 2000; Darnall et al., 2010; González-Benito and González-Benito, 2005; Henriques and Sadorsky, 1999; Testa et al., 2011), implicitly assuming that they are all equally necessary regardless of the firm's internal and external context. In order to correct this limitation, the concept of environmental imbalance assumes that the same environmental performance does not reflect the same proactivity in different firms. In other words, the same practice that can be considered acceptable in one organization may not be at all sufficient in another firm pursuing operations that are far more contaminating.

Table 1
Environmental aspects and stakeholders.

Environmental aspects	Stakeholders
• Use of natural resources (energy, water) • Solid waste generation • Wastewater effluent • Local or regional air pollution • Global pollutants (greenhouse gasses) • Esthetic effects (noise, smell, and landscape) • Soil contamination • Risk of severe accidents • Other impact (please specify)	• Public authorities (government, state, and municipal) • Industry or trade associations • Corporate headquarters • Shareholders and investment funds • Management employees • Non-management employees • Labor unions • Household consumers • Commercial buyers • Suppliers of goods and services • Banks and other lenders • Environmental groups or organizations • Neighborhood/community groups and organizations

3.2.2. Independent Variables

3.2.2.1. Stakeholder Pressure. The survey asks plants to rate as 'not applicable', 'not important', 'moderately important' or 'very important' the influence on their environmental performance of each one of the stakeholders listed in Table 1. The first two categories were codified as 0, the third as 1 and the latter as 2, thus interpreting the scale as ordinal.

3.2.2.2. EMS Implementation. The survey asks each production plant or facility to indicate whether it has implemented an EMS, and if so to specify whether it has been certified according to ISO 14001 (2004) or EMAS. The answers to this question were used to construct a variable for classifying firms into three groups: without an EMS, with an EMS and with a certified EMS.

3.2.3. Control Variables

3.2.3.1. Polluting Rank. As can be seen in the construction of the environmental imbalance index (Eq. (1)), this depends on the number of environmental aspects in which the potential impact of the plant's products and processes is moderately negative or very negative. A facility that does not roll out any schemes to reduce its environmental impact, but which has no potential impacts in any one of the environmental aspects considered, will have a zero imbalance. By contrast, its environmental imbalance may record a value of 18 if it has very negative environmental impacts in all 9 aspects. The environmental imbalance therefore depends on the plant's contaminating potential and, consequently, this effect should be removed before studying other variables that explain it. To do so, a control variable was constructed according to Eq. (2), where k_1 represents the number of environmental aspects in which the environmental impact is moderately negative and k_2 represents the number of aspects in which the environmental impact is very negative.

$$\textit{Polluting rank} = 1 * k_1 + 2 * k_2. \quad (2)$$

3.2.3.2. Facility Size. In order to control for the possible effect of economies of scale or the greater availability of resources that larger

plants may enjoy, a variable was constructed to reflect size by considering the facility's headcount (in hundreds). Several studies have already considered this variable and have detected significant links with the environmental performance of organizations (e.g., Alvarez Gil et al., 2001; Arora and Cason, 1996; Min and Galle, 2001).

3.2.3.3. Environmental Manager. An indicator of the resources available to a plant for developing and implementing environmental policies is the existence of organizational structures linked to environmental management. In order to control for this aspect, which reflects the differences between one facility and another when investing in or committing to environmental matters, a dichotomous variable was considered that takes a value of 1 if there is someone explicitly responsible for environmental issues at the facility and 0 if not.

3.2.3.4. Market Scope. The survey asks plants to specify the scope of their market by classifying it as local, national, regional (neighboring countries) or global. At the level of both expectations and variety, this scope may condition the explicit or tacit environmental requirements the facility has to face. In fact, several authors have provided evidence of the importance internationalization has on organizations' environmental performance (e.g., Christmann and Taylor, 2001, 2002; Kennelly and Lewis, 2002). A variable was therefore constructed, interpreted as an ordinal, which takes values of 1 to 4, from local to global, to identify the four levels of market scope the survey caters for.

3.2.3.5. Business Performance. Several studies have addressed the relationship between firms' environmental performance and their results (e.g. Christmann, 2000; González-Benito and González-Benito, 2005; Klassen and Whybark, 1999; Molina-Azorín et al., 2009; Russo and Fouts, 1997; Sharma and Vredenburg, 1998). The majority have understood environmental practices to be independent variables that can explain part of the variance in an organization's performance. Nevertheless, some authors (e.g., González-Benito and González-Benito, 2005; Nishitani, 2009) argue in their conclusions that the causal relationship could be the other way round: firms recording the best results may allocate part of their earnings to the development of environmental policies, which is not the case among less successful firms. In order to control for this possible effect, a variable was constructed, interpreted as an ordinal, which takes values of 1 to 5 according to the following levels: (1) revenue has been so low as to produce large losses, (2) revenue has been insufficient to cover costs, (3) revenue has allowed us to break even, (4) revenue has been sufficient to make a small profit, and (5) revenue has been well in excess of costs. The survey asks each production plant to rate its overall performance over the preceding three years according to this scale.

3.3. Analysis

With a view to verifying our hypotheses, we have identified three subgroups of firms according to the state of implementation of their EMS: firms without an EMS (n = 2287), firms with an uncertified EMS (n = 419) and firms with a certified EMS (n = 1042). We have then pursued different strategies. Regarding the first hypothesis, we have applied a variance analysis (ANOVA), which has enabled us to compare the levels of pressure exerted by each stakeholder in each one of these three subgroups. The results are shown in Table 2. As for the second hypothesis, we have estimated several multiple regression models in each subgroup considering environmental imbalance to be a dependent variable and the pressure of the various stakeholders to be independent variables. This allows us to ascertain in which subgroup a smaller environmental imbalance (i.e., greater environmental proactivity) responds to a greater or lesser extent to a specific stakeholder. Given that in several cases the correlations between the pressures of the various stakeholders are high (Table 3), we have studied each stakeholder separately. We have first estimated the null model (only control variables), then we have introduced each stakeholder pressure separately (models 2 to 14) and, finally, we have inserted all the independent variables in a stepwise regression with the model retaining solely those with greater explanatory power (model 15). The results for each subgroup are shown in Tables 4, 5 and 6.

Our methods require the construction of the environmental imbalance index (Eq. (1)) and pollution rank (Eq. (2)), which imply the selection of certain weights. We therefore assessed the sensitivity of our results to changes in those weights. For environmental imbalance (Eq. (1)) for example, we chose weight 1 for n_1 and weight 2 for n_2. In this case, a firm that does nothing related to the aspects for which the potential impact is very negative generates an environmental imbalance twice the value it would have if it did nothing related to aspects for which the potential impact is moderately negative. In other words, the weight of n_2 is 100% higher than the weight of n_1. We also replicated these analyses with differences of 50% (weights of 1 and 1.5) and 300% (weights of 1 and 3); the results remained consistent. Likewise, the results did not change for pollution rank (Eq. (2)). Thus, our results are robust for the specific mathematical modeling used for the variables.

4. Results

The significance with a confidence level of more than 99% of the F estimators contained in Table 2 reveals that the intensity of stakeholder pressure depends on the state of development of the EMS. In all cases (except for household consumers), the greater pressure is exerted on firms that have had their EMS certified, followed by those firms that despite having implemented such a system have not had it certified and, finally, by those firms without an EMS. This confirms hypothesis 1 that predicted a relationship between stakeholder pressure and the decision first to implement an EMS and then to have said system certified.

In order to delve further into the identification of differences between pairs of subgroups, Table 2 also presents the corresponding Tukey tests. These reveal that the distances between group 1 and group 3 (without an EMS–with a certified EMS) are always significant. The distances between group 1 and group 2 (without an EMS–with an EMS) are significant for primary stakeholders, but not for regulators and only for one of the two secondary ones. Finally, the distances between groups 2 and 3 (with an EMS–with a certified EMS) were significant for regulators and for half the primary and secondary ones. As can be seen in Fig. 1, the intensity of the pressure perceived by a firm is high in the case of public authorities, corporate headquarters, buyers and employees.

Model 1 in Tables 4, 5 and 6 caters for the effect of the control variables on the environmental imbalance in each subgroup of firms considered. The three cases show a strong relationship between polluting rank and environmental imbalance. This result is to be expected, as if a firm has no contaminating potential it simply cannot have an environmental imbalance. We consider it necessary to discount this effect in order to properly assess the explanatory power of all the other variables. Elsewhere, plant size is negatively correlated to environmental imbalance in the three subgroups, which might point to the effect of economies of scale in environmental matters. The presence of an environmental officer is negatively correlated to environmental imbalance in the models of firms without an EMS. This effect is neutralized in those that have implemented an EMS (whether certified or not), which is explained by the fact that such a system requires appointing someone to be in charge who also doubles up as an environmental officer. We therefore understand this result to constitute external proof of the validity of the data used.

Economic performance has a negative coefficient for models of firms without an EMS and with an EMS (uncertified). This result is consistent with other prior studies that link greater proactivity to a better economic performance (Heras-Saizarbitoria et al., 2011), although it sheds no light on the causal direction. Finally, market scope is not

Table 2
Stakeholders pressure and environmental strategy (ANOVA).

Stakeholders		Mean			ANOVA	Tukey test by pairs		
		1. Firms without EMS	2. Firms with EMS	3. Firms with certified EMS	F	1–2	1–3	2–3
Regulatory	Public authorities	1.24	1.26	1.36	10,964**	−.019	−.122**	−.103*
	Industry or trade associations	.42	.48	.58	24,727**	−.063	−.162**	−.099*
Internal primary	Corporate headquarters	.91	1.03	1.28	72,497**	−.120*	−.364**	−.248**
	Shareholders and investment funds	.36	.56	.60	49,322**	−.198**	−.241**	−.043
	Management employees	.88	1.02	1.30	122,647**	−.143**	−.426**	−.273**
	Non-management employees	.71	.88	1.09	114,514**	−.168**	−.374**	−.206**
	Labor unions	.25	.38	.41	33,059**	−.131**	−.156**	−.025
External primary	Household consumers	.41	.55	.51	14,253**	−.144**	−.102**	.043
	Commercial buyers	.84	1.17	1.24	124,418**	−.338**	−.405**	−.067
	Suppliers of goods and services	.55	.67	.78	46,884**	−.125**	−.231**	−.106*
	Banks and other lenders	.33	.47	.49	27,586**	−140**	−.159**	−.019
Secondary	Environmental groups or organizations	.54	.54	.60	2,800**	−.003	−.059	−0.56
	Neighborhood/community groups and organizations	.66	.83	.91	47,600**	−.167**	−.252**	−.085

Note: Multivariate regression. N = 2287 for group 1; N = 419 for group 2 and N = 1042 for group 3.
** $p<0.01$.
* $p<0.05$.

significantly correlated to the dependent variable for any group of firms. This would suggest that the marketing of products in other countries does not imply any reduction in the environmental imbalance, which is an expected finding insofar as the plants used in this research are located in countries with strict environmental legislation (North America, Europe and Japan).

Models 2 to 14 in Table 4 (firms without an EMS) reveal that all the coefficients for stakeholder pressures were significant except for commercial buyers. In all cases, the coefficients were negative; that is, the greater the pressure, the lower the environmental imbalance. Model 15 in that same table shows that stakeholders with a greater explanatory power on environmental imbalance were corporate headquarters, non-management employees and neighborhood/community associations. If we focus on firms that have implemented an EMS but have not had it certified (Table 5), we likewise see that all the coefficients for stakeholder pressures were significant except for labor unions and commercial buyers and community groups. Furthermore, the significant coefficients were negative in all cases. Model 15 shows that non-management employees and household consumers are the stakeholders with the greatest explanatory power. In the case of firms with a certified EMS (Table 6), the only significant ones are the coefficients of five variables: shareholders, management employees, non-management employees, labor unions and neighborhood/community associations. Model 15 in that same table shows that the stakeholders with the greatest explanatory power over environmental imbalance were non-management employees and labor unions.

With a view to facilitating a comparison between the different subgroups of firms, we have summarized the results in Table 7, where we can appreciate how in those firms with a certified EMS, pressures by external and secondary stakeholders or regulators have hardly any effect on environmental imbalance. This behavior is very different to that of firms without an EMS or with an uncertified EMS in which most of the pressures have an influence on the environmental imbalance. This corroborates the prediction made in hypothesis 2.

5. Discussion

The previous section has shown how the findings of the empirical analyses have confirmed the hypotheses considered here. The relationship a firm has with its stakeholders is essential and, on both a strategic and operational level, it reveals major differences between firms (Frooman, 1999). The literature has hitherto posited that the more proactive firms are more sensitive to stakeholder pressure (Henriques and Sadorsky, 1999). Buysse and Verbeke (2003) contend both that greater proactivity will lead to greater sensitivity toward stakeholder pressure and that greater sensitivity toward stakeholder pressure may in turn lead to environmentally more proactive strategies. More proactive firms will have a stronger relationship with their primary and secondary stakeholders, while the more reactive ones will feel greater pressure from regulatory authorities.

This research adopts a different stance, as we argue that certified firms differentiate between their stakeholders and that, therefore, they are not all associated with greater proactivity. It would not be logical for those firms that are more sensitive to stakeholders to ignore them as regards reducing their environmental imbalance. Nevertheless, if the implementation of an EMS is a reaction to stakeholder pressure

Table 3
Correlations among variables.

			1	2	3	4	5	6	7	8	9	10	11	12	13
Regul.	1	Public authorities	1	.278	.298	.313	.328	.265	.206	.205	.194	.218	.301	.349	.369
	2	Industry or trade associations		1	.255	.327	.368	.359	.413	.204	.217	.288	.367	.513	.340
Internal primary	3	Corporate headquarters			1	.318	.402	.343	.200	.119	.173	.191	.259	.237	.163
	4	Shareholders and investment funds				1	.388	.327	.316	.205	.209	.240	.532	.319	.304
	5	Management employees					1	.723	.312	.172	.251	.313	.377	.308	.307
	6	Non-management employees						1	.371	.186	.257	.349	.333	.294	.334
	7	Labor unions							1	.162	.139	.215	.298	.371	.316
External primary	8	Household consumers								1	.380	.344	.235	.251	.321
	9	Commercial buyers									1	.459	.241	.188	.287
	10	Suppliers of goods and services										1	.294	.298	.264
	11	Banks and other lenders											1	.363	.311
Secondary	12	Environmental groups or organizations												1	.445
	13	Neighborhood/community groups and organizations													1

Note: Pearson tests; All correlations are significant at $p<0.01$; N = 3748.

Table 4
Firms without EMS: explanatory power of stakeholder pressure on environmental imbalance.

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
	Polluting rank	.597**	.616**	.603**	.611**	.605**	.613**	.611**	.605**	.602**	.600**	.599**	.606**	.606**	.620**	.632**
	Environmental manager	−.117**	−.104**	−.110**	−.102**	−.107**	−.098**	−.100**	−.106**	−.117**	−.116**	−.115**	−.107**	−.110**	−.110**	−.089**
	Market scope	−.024	−.020	−.022	−.004	−.021	−.015	−.015	−.022	−.028	−.023	−.023	−.020	−.024	−.031	−.008
	Facility size	−.080**	−.075**	−.078**	−.071**	−.072**	−.078**	−.080**	−.074**	−.078**	−.079**	−.079**	−.075**	−.080**	−.077**	−.070**
	Business performance	−.044*	−.041*	−.042*	−.036*	−.038*	−.035*	−.038*	−.045*	−.044*	−.043*	−.042*	−.043*	−.041*	−.044*	−.034*
Regul.	Public authorities		−.073**													
	Industry or trade associations			−.044*												
Internal primary	Corporate headquarters				−.100**											−.077**
	Shareholders and investment funds					−.066**										
	Management employees						−.093**									
	Non-management employees							−.100**								−.063**
	Labor unions								−.072**							
External primary	Household consumers									−.038*						
	Commercial buyers										−.022					
	Suppliers of goods and services											−.037*				
	Banks and other lenders												−.067**			
Secondary	Environmental groups or organizations													−.046**		
	Neighborhood/community groups and organizations														−.089**	−.063**
Adjusted R^2		.335	.339	.336	.343	.339	.342	.344	.340	.336	.335	.336	.339	.337	.342	.352
	F	231.298**	196.556**	194.193**	200.178**	196.068**	199.230**	200.661**	196.882**	193.855**	193.066**	193.797**	196.317**	194.350**	198.947**	155.894**
ΔF (model 1)			15.497**	6.088*	29.917**	13.552**	26.143**	31.840**	16.795**	4.743*	1.599	4.511*	14.544**	6.713**	25.016**	20.390**

Note: Multivariate regression. Standardized coefficients; dependent variable: environmental imbalance.
* $p<0.05$.
** $p<0.01$.

Table 5
Firms with EMS without certification: explanatory power of stakeholder pressure on environmental imbalance.

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
	Polluting rank	.460**	.485**	.481**	.474**	.478**	.486**	.496**	.468**	.479**	.459**	.463**	.479**	.478**	.485**	.506**
	Environmental manager	−.089+	−.074	−.084	−.074	−.077	−.063	−.063	−.082	−.095*	−.089	−.088	−.079	−.081	−.084	−.070
	Market scope	.050	.052	.047	.060	.066	.055	.058	.050	.038	.051	.043	.067	.054	.048	.048
	Facility size	−.159**	−.145**	−.151**	−.148**	−.146**	−.143**	−.142**	−.149**	−.155**	−.158**	−.154**	−.152**	−.150**	−.158**	−.141**
	Business performance	−.103*	−.100*	−.101*	−.096*	−.103*	−.087*	−.087*	−.103*	−.103*	−.102*	−.109*	−.100*	−.098*	−.104*	−.088*
Regul.	Public authorities		−.115*													
	Industry or trade associations			−.107*												
Internal primary	Corporate headquarters				−.096*											
	Shareholders and investment funds					−.126**										
	Management employees						−.158**									
	Non-management employees							−.175**								−.155**
	Labor unions								−.071							
External primary	Household consumers									−.123**						−.093*
	Commercial buyers										.008					
	Suppliers of goods and services											−.091*				
	Banks and other lenders												−.128**			
Secondary	Environmental groups or organizations													−.093*		
	Neighborhood/community groups and organizations														−.088	
Adjusted R^2		.212	.222	.221	.218	.224	.232	.237	.215	.225	.210	.218	.225	.218	.217	.243
	F	23.448**	20.840**	20.719**	20.431**	21.156**	22.091**	22.669**	20.028**	21.194**	19.500**	20.427**	21.236**	20.403**	20.304**	29.216**
ΔF (model 1)			6.299*	5.732*	4.385*	7.772**	12.143**	14.846**	2.502	7.949*	.035	4.366*	8.146**	4.253*	3.792	9.674**

Note: Multivariate regression. Standardized coefficients; dependent variable: environmental imbalance.
* $p<0.05$.
** $p<0.01$.

Table 6
Firms with EMS with certification: explanatory power of stakeholder pressure on environmental imbalance.

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15
	Polluting rank	.378**	.386**	.383**	.381**	.393**	.385**	.389**	.391**	.383**	.379**	.380**	.385**	.389**	.392**	.397**
	Environmental manager	−.003	−.003	−.002	−.003	.000	−.002	.003	.002	−.002	−.002	−.002	−.004	−.003	.002	.006
	Market scope	−.025	−.023	−.022	−.020	−.012	−.017	−.016	−.018	−.029	−.025	−.023	−.020	−.017	−.028	−.012
	Facility size	−.094**	−.091**	−.090**	−.093**	−.089**	−.093**	−.086**	−.088**	−.090**	−.093**	−.089**	−.090**	−.089**	−.090**	−.083**
	Business performance	−.031	−.029	−.030	−.029	−.022	−.024	−.028	−.036	−.032	−.031	−.031	−.028	−.029	−.030	−.032
Regul.	Public authorities		−.034													
	Industry or trade associations			−.044												
Internal primary	Corporate headquarters				−.023											
	Shareholders and investment funds					−.082**										
	Management employees						−.071*									
	Non-management employees							−.121**								−.101**
	Labor unions								−.102**							−.076*
External primary	Household consumers									−.040						
	Commercial buyers										−.015					
	Suppliers of goods and services											−.050				
	Banks and other lenders												−.054			
Secondary	Environmental groups or organizations													−.057		
	Neighborhood/community groups and organizations														−.062*	
Adjusted R^2		.140	.140	.141	.140	.146	.144	.154	.149	.141	.140	.142	.142	.142	.143	.158
	F	34.943**	29.336**	29.540**	29.203**	30.562**	30.230**	32.506**	31.484**	29.458**	29.140**	29.664**	29.755**	29.812**	29.946**	28.917**
ΔF (model 1)			1.258	2.308	.578	7.552**	5.851*	17.534**	12.286**	1.886	.254	2.942	3.410	3.703	4.390*	11.998**

Note: Multivariate regression. Standardized coefficients; dependent variable: environmental imbalance.
* $p<0.05$.
** $p<0.01$.

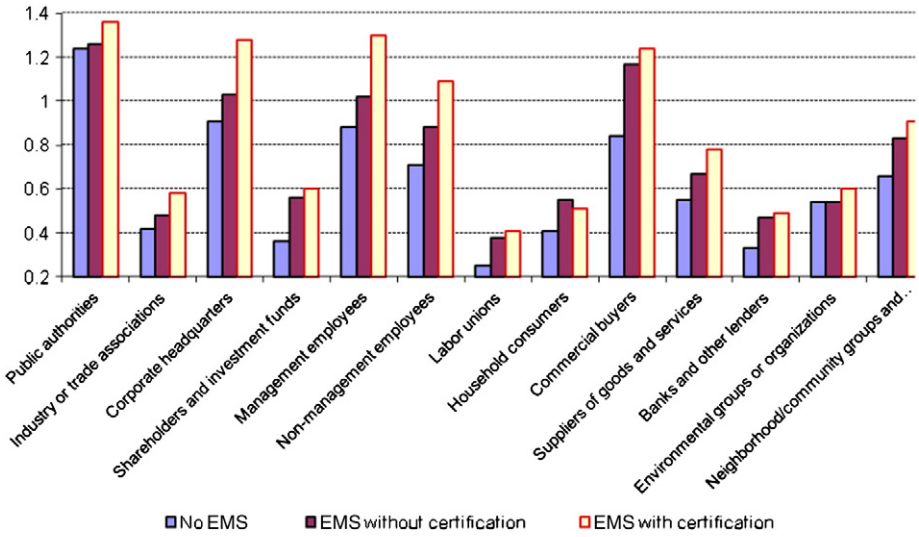

Fig. 1. Intensity of the pressure perceived by a firm (by categories).

it stands to reason that a firm will use certification to distinguish between stakeholders and, to a certain extent, protect itself against the pressure exerted by some of them.

This finding does not contradict prior results indicating that the presence of an EMS entails a response to the aggregated pressure from all the stakeholders with a greater firm's commitment to environmental management (González-Benito et al., 2011), but instead it indicates that firms focus on different stakeholders depending on whether they have implemented an EMS or had it certified.

According to the classic notion propounded by Harrison and St. John (1996), stakeholders can be managed in two ways: buffering or bridging. The traditional approach is to seek to buffer stakeholder plans in the firm by going some way to meeting their needs or expectations. This traditional modus operandi includes actions such as market surveys, public relations and planning. On the other hand, a new way of managing stakeholders is to set out to build bridges with them, seeking common goals and removing traditional organizational barriers. The ultimate aim is to engage these stakeholders by forming some kind of alliance with them.

As we have seen, firms with a certified EMS do not relate their environmental proactivity to the pressure exerted by their external or secondary stakeholders and regulators. This suggests that certifying an EMS is more closely related to a buffering strategy regarding certain stakeholders than with the literature's traditional notion of proactivity and engagement (bridging) of stakeholders in environmental management.

6. Conclusions and Implications

This paper has considered the impact stakeholder pressure has on the implementation or not of an EMS and its certification by a firm, and its subsequent relationship with environmental proactivity.

There is a relationship between the pressure exerted by regulators and industrial associations and a smaller environmental imbalance in firms without an EMS or with an uncertified EMS. The findings of this research indicate that this effect is nullified when a firm has its EMS certified. These conclusions should lead to a reconsideration of the role the pressure of public agencies has on firms in environmental matters.

The same occurs with external and secondary stakeholders, except in the case of neighborhood/community associations. Only the pressure of those who can actually verify the effects of such pressure on a firm (primary stakeholders) appears to have an influence on the environmental imbalance in firms with a certified EMS.

Managers should bear in mind that certification is a valuable shield against most stakeholders, although they should establish points of convergence with their shareholders, employees and local organizations, as they continue to be vulnerable to their pressures. Likewise, public

Table 7
Summary of stakeholders influencing environmental imbalance (only significant variables).

Stakeholders	Group 1 (N = 2287): Firms without EMS	Group 2 (N = 419): Firms with EMS without certification	Group 3 (N = 1042): Firms with EMS with certification
Public authorities	×	×	
Industry or trade associations	×	×	
Corporate headquarters	✖	✖	
Shareholders and investment funds	×	×	×
Management employees	×	×	×
Non-management employees	✖	✖	✖
Labor unions	×		✖
Household consumers	×		
Commercial buyers		×	
Suppliers of goods and services	×	×	
Banks and other lenders	×	×	
Environmental groups or organizations	×	×	
Neighborhood/community groups and organizations	✖		×

Note: × = significant in the partial model; ✖ = significant in the complete model.

administrations should reconsider their policies for fomenting EMSs or the manner in which they address organizations with a certified EMS.

These conclusions do not detract from the validity of the overall performance of an EMS in a firm, as we only have focused on a specific aspect by studying the impact of stakeholder pressure. Instead, they highlight the importance of rigorous auditing and control systems for certifications to protect and reinforce the efforts organizations make in environmental matters.

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