



Environmental strategy and exports in medium, small and micro-enterprises[☆]

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ABSTRACT

Growing corporate internationalization and the emergence of environmental concerns are two of the main trends in the business world. This paper analyzes whether strategies for environmental protection can help small and medium enterprises (SMEs) as they internationalize their activities through exports. Personal interviews were conducted with 123 general managers of exporting SMEs from the Spanish food industry. The results show a relationship between advanced environmental strategies and export intensity for the sampled firms. However, the size of firm plays a role in this relationship, as the relationship between advanced environmental strategies and exports is stronger with an increase in the size of the SMEs. Authors discuss implications of these results for practitioners and future research.

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1. Introduction

Companies are under increasing pressure to internationalize their activities as a vehicle to grow revenues and profits. Exports are the most common way to gain entry to foreign markets, especially for small-to-medium-sized enterprises³ (SMEs) (Leonidou & Katsikeas, 1996). The value of global export trade has climbed from approximately \$40 billion in 1945 to more than 27 trillion in 2008 (World Bank, 2009). By way of illustration, SMEs account for 27.2% of total USA exports and 97% of total USA exporters in 2006 (United States Department of Commerce, 2008). In this context, it comes as no surprise that SMEs are major contributors to environmental degradation (Biondi, Iraldo, & Meredith, 2002; Hillary, 2000).

The growth of international trade, together with economic globalization, has reinforced imbalances in the natural cycles, encouraging, for example, the uncontrolled exploitation of local resources (UNEP, 2004). The relationship between corporate environmental strategies and corporate internationalization can be contentious (Christmann & Taylor, 2001). While some argue that globalization promotes careless behaviour toward the natural

environment (e.g., King & Lenox, 2000), others propose that increased environmental effort offers competitive advantage (e.g., Porter & Van der Linde, 1995). The role played by the size of firms generates additional doubts in this debate because SMEs differ in many aspects from the large ones (Hillary, 2000; Schiffer & Weder, 2001).

Research based upon a strategic perspective has shown the positive implications of environmental strategies for international movements of multinationals (e.g., Christmann, 2004; Dowell, Hart, & Yeung, 2000), interactions between international environmental regulation and multinational corporate strategy (e.g., Nehrt, 1998; Rugman & Verbeke, 1998), or the effects of globalization increasing environmental self-regulation (Christmann & Taylor, 2001). We do not know of any studies at this point about how environmental strategies affect the internationalization progress of SMEs, nor of the role of the size of firms size in this relationship. Close attention should be paid to these aspects for two reasons.

First, the lack of attention paid to SMEs is surprising given the fact that SMEs produce 70% of pollution caused by world industry (Smith & Kemp, 1998) and 60% of carbon emissions (Marshall, 1998). The sum total of the environmental impacts of SMEs outweighs the combined environmental impact of large firms (Hillary, 2000). Additionally, exports by SMEs are increasing (e.g., Crick, 1995; Gumedé, 2004; Lim, Sharkey, & Kim 1991; Moon & Lee, 1990; Yang, Chen, & Chuang, 2004). In this context, the literature has not provided solid evidence to aid SME managers in finding the balance between environmental and international advances.

Second, although the literature initially proposes advanced environmental strategies as generators of organizational capabilities for all firms (Aragón-Correa & Sharma, 2003; Hart, 1995; Sharma, Aragón-Correa, & Rueda-Manzanares, 2007), however in the case of SMEs it also generally exhibits poor environmental

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³ "Enterprises which employ fewer than 250 persons and which have an annual turnover not exceeding 50 million euro, and/or an annual balance sheet total not exceeding 43 million euro." Extract of Article 2 of the Annex of European Union Recommendation 2003/361/EC.

commitment (Rutherford, Blackburn, & Spence, 2000; Schaper, 2002; Williamson & Lynch-Wood, 2001) and suggests that SMEs might not obtain any specific advantage from their environmental efforts (Greening & Gray, 1994; Russo & Fouts, 1997; Sharma & Vredenburg, 1998). It is important to analyze whether, the natural resource-based view (Hart, 1995) is also useful for SMEs and whether SMEs' fewer resources might prevent them from making environmental advances and/or obtaining competitive advantages from this behaviour.

While firm size has often shown a statistically significant effect as a control variable in studies on corporate environmental strategies (e.g., Aragón-Correa, 1998; Buysse & Verbeke, 2003; Russo & Fouts, 1997; Sharma, 2000), all these works have employed mainly large companies in their samples. They often focus on the largest firms in each industry. Although recent research has begun to show differences in the environmental approaches of micro-enterprises and the rest of SMEs (e.g., McKeiver & Gadenne, 2005; Mir & Feitelson, 2007), studies to date have only analyzed—partially of SMEs' environmental strategies. One of the main topics involves the role of regulation as drivers or factors that might lead SMEs to adopt an environmental strategy or approach (e.g., Majumdar & Marcus, 2001; Patton & Worthington, 2003; Petts, 2000; Sharma, 2001). From a theoretical point of view, the debate entails whether SMEs' capabilities enable them to achieve competitive advantages through the development of proactive environmental strategies or whether SMEs' restrictions of resources prevent solid advantages from being established. Implications of this debate refer to whether SMEs can be environmentally proactive or whether they should simply react to environmental regulations or customer interests. We propose that SMEs' capabilities allow the development of a proactive environmental strategy through which they can obtain competitive advantages. These advantages may differ with the firm's size. This study focuses on two questions. The first refers to the relationship between corporate environmental strategy and internationalization: can innovative environmental strategy positively contribute to a SMEs' export? The second one involves the potential influence of the firm's size in this relationship: Is the relationship between advanced environmental strategy and export intensity the same for medium, small and micro-enterprises?

Our analysis uses data from face-to-face interviews with managers of 123 SMEs operating in the Spanish export food industry. Our results contribute to current knowledge in at least three ways. First, from a general perspective, the results contribute to the resource-based view (RBV) literature showing the relevance of this approach with regard to understanding developments in SMEs based upon environmental strategy. Previous research provided doubts regarding the validity of the RBV in relation to analyzing this issue in SMEs (Rangone, 1999). Second, our analysis is a pioneer study aimed at helping to understand the potential of proactive environmental strategy for SMEs with an international orientation. Finally, the present paper specifically shows how size can moderate this relationship.

The paper is divided into six sections. Following the introduction, we review the literature analyzing environmental strategies, paying special attention to SMEs. We then establish our hypotheses, after which we explain the research methodology. The last two sections present the results and discuss the main implications of our study, along with its limitations.

2. Corporate environmental strategies and SMEs

2.1. A resource-based view of corporate environmental strategies

Many researchers have developed classifications of corporate approaches to the natural environment (e.g., Buysse & Verbeke, 2003; Hart, 1995; Roome, 1992; Winn & Angell, 2000). Despite the

differences among these classifications, they all place firms' environmental strategies along a continuum ranging from mere compliance with legal requirements to proactive initiatives. Proactive environmental strategies are designed to voluntarily avoid environmental impacts by dealing with their sources (Aragón-Correa, 1998; Buysse & Verbeke, 2003; Sharma, 2000; Sharma & Vredenburg, 1998). Several studies (e.g., Christmann, 2000; Hart, 1995; Judge & Douglas, 1998) have identified proactive environmental strategies as a firm capability (Amit & Schoemaker, 1993; Grant, 1991) because they permit them to coordinate heterogeneous resources (for instance, human resources, technology and raw materials) in order to reduce environmental impacts and simultaneously maintain or increase company competitiveness (e.g., Galdeano-Gomez & Cespedes-Lorente, 2004).

Proactive environmental practices could simultaneously affect an entire firm and require a systematic effort aimed at implementation (Marcus & Geffen, 1998; Russo & Fouts, 1997). These proactive practices promote interest in intangible assets and capabilities as positive outputs (Russo & Fouts, 1997), which involve one of the main conditions for sustained success in today's world economy (Luo, 2000).

The most proactive environmental strategies have been characterized as dynamic capabilities that rely on a systematic pattern of capabilities (Aragón-Correa & Sharma, 2003; Marcus & Anderson, 2006). A dynamic capability consists of a set of complex but identifiable processes allowing a firm to generate new and creative strategies to adapt to changes in the business environment. These offer opportunities to achieve new organizational capabilities and competitive advantages (Eisenhardt & Martin, 2000).

2.2. Specific aspects for SMEs' environmental strategies

In studies of large firms, the very largest have been observed as having the most proactive environmental strategies (Aragón-Correa, 1998; Russo & Fouts, 1997; Sharma, 2000). Scholars have consequently argued that because proactive environmental strategies require accumulation and interaction among, slack resources (Sharma, 2000). These resources afford high visibility for the public (Scott, 1990), or managers' understanding (Russo & Fouts, 1997; Sharma & Vredenburg, 1998). The more limited resources of SMEs might prevent them from making environmental advances (e.g., Greening & Gray, 1994; Russo & Fouts, 1997; Sharma & Vredenburg, 1998).

Descriptive studies on SMEs have often highlighted their poor rate of environmental commitment, describing them as usually only interested in complying with environmental regulations (e.g., Rutherford et al., 2000; Schaper, 2002; Williamson & Lynch-Wood, 2001; Worthington & Patton, 2005). They often point out that many of their owners have poor knowledge of the natural environment and a lack of expertise in environmental management (e.g., Taylor, Barker, & Simpson, 2003; Tilley, 2000). Perhaps for these reasons, systematic research focused on SMEs' environmental strategies has been absent from previous literature until recently.

Some authors have begun to describe multiple cases of SMEs around the world successfully implementing proactive environmental strategies (e.g., Bianchi & Noci, 1998; Carlson-Skalak, 2000). These studies have mainly dealt with the determinate factors for following a proactive environmental approach. Although some of the works indicate that SMEs experience little external pressure from customers or suppliers (e.g., Hillary, 2000) and that they lack the necessary financial resources and visibility to show concern for the natural environment (e.g., Bowen, 2002), others found that business performance (e.g., Gerrans & Hutchinson, 2000; Williamson, Lynch-Wood, & Ramsay, 2006), customer

preferences (e.g., McKeiver & Gadenne, 2005), employee concerns (Petts, Herd, & O'Heocha, 1998), and community satisfaction (e.g., Gerrans & Hutchinson, 2000) among others, are important drivers of environmental strategies.

Analyzing these cases, we were able to identify some SMEs that show features similar to the most advanced practices of large firms. Many of these SMEs are implementing programs to reduce the environmental impacts of activities or processes while simultaneously obtaining cost reductions. Although there are a wide range of firms included under the SMEs label, their differences in terms of size have been underanalysed. Recently some research has begun to analyze this topic, suggesting differences between micro-enterprises and the remainder of the SMEs (e.g., Mir, 2008; Mir & Feitelson, 2007).

3. Hypotheses

3.1. The relationships between proactive environmental strategy and export intensity in SMEs

A firm's profitability usually is significantly correlated with its export intensity (Greenway & Yu, 2004; Pangarkar, 2008; Salomon & Shaver, 2005). While export success depends on many factors, we will focus on analyzing the influence of environmental strategy in SMEs export intensity.

Despite the growing importance of SMEs in internationalization, as well as their impact on the natural environment, studies of advances in internationalization achieved as result of proactive environmental strategy have paid little attention to the specific characteristics of SMEs. Analyses have almost exclusively used multinationals and have focused on aspects such as the appropriate level of exigency in environmental regulation (e.g., Porter & Van der Linde, 1995), or the influence exerted on the environmental strategy by different types of environmental legislation (e.g., Rugman & Verbeke, 1998) or by market demand (e.g., Christmann, 2004).

Business literature has generally shown a positive relationship between proactive environmental strategy and the internationalization activities of large firms. On one hand, proactive firms acquire vast knowledge of different regulations and approaches which they can develop their own strategy to cover all requirements (Bansal, 2005; Bansal & Roth, 2000). Knowledge intensity in SMEs is an important issue with regard to improving export performance (Haahti, Madupu, Yavas, & Babakus, 2005). On the other hand, firms that gain an internationally acknowledged environmental certification, such as the ISO 14001, acquire a better reputation. This certification can constitute an important variable in the purchase decisions of importing firms (Bellesi, Lehrer, & Tal, 2005) and influence the organization's ability to do business internationally (Raines, 2002).

Previous results, mostly relating to large firms, suggest that SMEs have difficulty in obtaining competitive advantages through environmental proactivity (e.g., Russo & Fouts, 1997; Sharma & Vredenburg, 1998). However, we propose that corporate environmental strategy can generate a set of capabilities that facilitate export processes for SMEs. Following a proactive environmental strategy can facilitate the development of certain capabilities that favour export processes. First, environmentally advanced approaches favour the capacity to innovate and assume risks (Hart, 1995; Sharma & Vredenburg, 1998), factors which are essential to compete successfully on international markets. An innovative approach is particularly useful for SMEs (Baldwin & Gellatly, 2003) in order to compete in international markets (Bell, Crick, & Young, 2004) against highly resourced large firms.

Second, the implementation of a proactive environmental strategy requires and develops flexibility in the firm. It is important

for a firm to be able to make changes without restrictions and inertias (Noori & Chen, 2003) in order to develop this kind of strategy. An increasing number of studies agree that flexibility can constitute a distinctive competence that permits SMEs to obtain a competitive advantage in the international arena (e.g., Davenport & Bibby, 1999; Gupta & Cawthon, 1996; Lee, Beamish, Lee, & Park, 2009; Narula, 2004).

Third, assuming a proactive environmental approach can help SMEs to fully exploit their unique strengths, such as "no bureaucracy, efficiency – informality – communication systems and flexibility and adaptability through nearness markets" (Freel, 2000, pp. 60–61). These strengths are also especially useful in international competition, helping SMEs to overcome particular barriers⁴ to export. The importance of identical capabilities for progresses in corporate environmental approaches and international progresses is an initial step toward facilitating the positive interaction between both of them.

Environmentally proactive approaches favour the general capacity to innovate and assume risks (Hart, 1995; Sharma & Vredenburg, 1998). These factors are essential to compete successfully in international markets. An innovative approach is particularly useful for small firms (Baldwin & Gellatly, 2003) to compete on international markets (Bell et al., 2004) against highly resourced large firms.

Fourth, proactive environmental management aids a better understanding of stakeholders' interests (Céspedes-Lorente, Burgos-Jiménez, & Álvarez-Gil, 2003; Sharma & Henriques, 2005). Some of the weaknesses of SMEs involve a lack of knowledge and consideration concerning their markets (Smith, 1997) and external stakeholders (Del Brio & Junquera, 2003). This is therefore a valuable capability for SMEs, especially when stakeholders (and their interests) on the domestic market may differ from those on the international market. SMEs can therefore break into foreign markets with relative ease when involved in socio-economic linkages (Gumede, 2004) or when the firm maintains joint problem solving (McEvily & Marcus, 2005). Both capabilities facilitate information flows and ease the international marketing burden.

Finally, proactive environmental management can provide SMEs with a competitive advantage through differentiation of their products (if the company products are ecological) and by increasing the firm's reputation as a good corporate citizen. Ecological products may be considered unique and different by the consumers (Porter & Van der Linde, 1995) and therefore one of the most promising predictors of export performance in SMEs (Baldauf, Cravens, & Wagner 2000). In high-income countries, demand for ecological products has shown a sharp increase and it seems that this tendency will continue to growth (Cairncross, 1992; Lohr, 2001). These are the kinds of countries which constitute the main international export markets. Thus, offering green products can permit SMEs to differentiate their product, avoiding competing on cost, where often times large companies enjoy economies of scale. Obtaining a good reputation (particularly among large suppliers) is important for SMEs that are trying to access international markets, especially in developed countries. Access may be facilitated by a behaviour pattern and an image in which respect for the environment prevails (Christmann & Taylor, 2001). Good reputation may therefore remove some of the need for intensive marketing efforts.

In view of these arguments, the following hypothesis is advanced:

Hypothesis 1. The proactive environmental strategies of SMEs are positively related to their export intensity.

⁴ See Suárez-Ortega (2003) for more details about barriers to export.

4. The size role in the relationship between proactive environmental strategy and export intensity in SMEs

Certain organizational factors act as facilitators or inhibitors in the development of exports.⁵ There is consensus in the literature that firm size is positively related to the firm's propensity to export (e.g., Bonacorsi, 1992; Wagner, 2001), and some results have shown the importance of firm size for export intensity (e.g., Verwaal & Donkers, 2002).

Our interest in this paper does not lie in the relationship between firm size and export intensity, but rather in the potential change in the relationship between proactive environmental strategy and export intensity depending on firm size. We propose that the consideration of size is very relevant with regard to clarifying previous literature on this topic and to understanding the contentious relationship between proactive environmental strategy and export, such as internationalization progresses, in SMEs.

Although proactive environmental strategies generate some intangible capabilities which may be particularly useful for SMEs when attempting to internationalize (as discussed in previous section and Hypothesis 1), we also believe that different levels of firm size may influence this relationship. We now discuss this moderation effect.

The best practices and innovations associated with proactive environmental strategy may require significant changes in the organization (Russo & Fouts, 1997). Although SMEs have the flexibility to use an innovative capability to compete with firms with larger resources, their smaller size makes it difficult for managers to make investments, introduce deep changes or assume important commitments (Del Brio & Junquera, 2003). According to Mir and Feitelson (2007: 386), "micro-enterprises may be reluctant to invest in environmentally friendly technologies without anticipating direct unambiguous benefits". Therefore, micro-enterprises may be less likely to make a considerable commitment to undertaking proactive environmental strategy to obtain higher levels of export intensity.

When a firm is very small, rather than balancing and integrating external influences, in order to generate stakeholders' capacity for management, it tends to be more easily influenced by its more powerful stakeholders. Its degree of environmental proactivity will then be more related to the specific requirements of its main stakeholder (usually a big customer) than to its intentions of using environmental proactivity in order to generate a better understanding of stakeholders and to stimulate more exports. For instance, Mir and Feitelson (2007) found that micro-enterprises subcontracted by larger ones are more environmentally proactive if their large client demands this. Opting to act proactively on the concerns of one group while ignoring the concerns of others could make it difficult to obtain synergies emerging from stakeholder management. Consequently, the potential influence of the environmental strategy may not materialize into the development and deployment of stakeholder capabilities for micro-enterprises.

Very small firms do not avail themselves to enough information and may fail to recognize business benefits and opportunities (Mir & Feitelson, 2007; Oviatt & McDougall, 1994) in current or new export markets. In the case of the natural environment, micro-enterprises could fail to interpret new tendencies on markets in developed countries, such as increased environmental consciousness (Williams, 2007).

Finally, SMEs may want to capitalize on good reputation (e.g., obtaining an ISO 14001 certification) when seeking more export opportunities. Reputation or image, however, may not be a

relevant factor for very small firms. Micro-enterprises have been widely advised to avoid strategic leadership and instead to engage in guerrilla attacks (Glen & Hambrick, 1995). They may not find it relevant to establish a sustainable reputation for their internationalization efforts, as this reduces their interest in using a proactive environmental strategy. Such highly opportunistic behaviour may be more linked to micro-enterprises than to small and medium firms.

We therefore establish the following hypothesis:

Hypothesis 2. Firm size moderates the relationship between corporate environmental strategies and export intensity of SMEs, making this relationship stronger when the size of the enterprise increases, then the relationship between corporate environmental strategies and export intensity is the strongest in medium size enterprise, and is least strong in micro-enterprises.

5. Research methods

5.1. Sample

We selected the food industry for our analysis because of its important contribution to gross domestic product throughout the world. It accounts for 14.07% of Spain's manufacturing production, 13.6% of EU-15 manufacturing and 12.6% of US manufacturing.⁶ In Spain, the food products which have experienced the largest gains in terms of growth in recent years are non-alcoholic drinks, dairy products, juices and processed seafood (INE, 2006⁷). Total sales generate 14.0% of total sales in manufacturing in Spain. Export of food goods accounts for 14.1% of all manufacture goods exported by Spanish firms. It is also one of the largest manufacturing sectors in both the EU and the US, and has an important impact on the natural environment. The food industry's factory processes generate significant environmental impacts, such as noise, odours and effluents, as well as consume high levels of energy and water. Transportation is intensive as it relies on trucks, delivery vans and customers' cars. Disposal after consumption also generates an increasingly amount of waste and pollutants, such as plastics, papers, aluminium or organics by consumers. Firms in the food processing industry transform raw commodity inputs into various types of food products, such as canned or frozen foods, dairy products like cheeses, fats and oils, beverages, chocolates, spices and prepared or cured meats.

In order to meet the objectives of this study, we chose a single geographically defined sector in Spain. This removed any possible distortion arising from peculiarities of different sectors or the biases that various regulations or national aid and subsidy policies might introduce. Our sample comprises food companies located in Spain and involved in exports and was drawn from the Dun & Bradstreet (D&B) database. This population includes 1556 firms, mostly SMEs. The sample, made up of 156 organizations (10% of the target population), was obtained using the random sampling method. Ten firms were substituted from the original sample because they were beyond SME limits. We finally availed of complete data on 123 SMEs, larger than the sample size recommended by Murphy and Myers (1998), in order to have a power of .80, with $\alpha = .05$. The sampled firms had an average size of 54.66 employees. We did not find significant differences between the descriptive characteristics of firms finally included in the study (location, activities and size when available) and the original population.

⁵ See Chetty and Hamilton (1993) for a meta-analysis of firm-level determinants of export performance.

⁶ See Bureau of Economic Analysis (2005), Partos (2005) and Spanish Food and Beverages Manufacturing Association (2007).

⁷ INE, Instituto Nacional de Estadística, Spain National Statistic Institute.

The sampled firms export mostly to Western Europe (EU-15 plus Norway) (68.56% of total exports), but also to Latin-America (11.66%), the United States and Canada (6.92%), Africa (4.55%), Eastern Europe (4.32%), Japan, Australia and New Zealand (1.40%), and the remainder to Asia (2.58%).

5.2. Questionnaire

Multiple instruments were used to obtain the data for our research. First, we obtained objective data on firm size and export intensity from the Dun & Bradstreet database. Second, because data on SME environmental practices and performance are not available from published sources, we used a questionnaire to evaluate environmental strategies. We included questions on size and export intensity to ensure consistency in the answers compared with external information.

In order to construct and refine the questionnaire, we conducted interviews with a panel of experts in the food industry (including two academics, two consultants and two general managers) and pre-tests with managers of six different firms belonging to the food sector (these executives were not included in the final sampling). Having incorporated the suggested improvements, we generated the final questionnaire.

The questionnaire was completed by the CEO during a personal interview conducted by the survey company. The questionnaire was answered by 146 managers of different firms of which we availed of 123 firms with complete data.⁸ Typical in strategic and environmental research (e.g., Christmann, 2000; Cordano & Frieze, 2000; Flannery & May, 2000; Sharma, 2000), data were collected from the general managers because they are the most knowledgeable in relation to their organizations. Our questionnaire contains items referring to a wide range of firm areas and a company's CEO is the most knowledgeable person when it comes to answering questions about different aspects of the firm (Tomaskovic-Devey, Leiter, & Thompson, 1994). Additionally, in the case of small organizations, the views of the general manager may better capture a firm's approach than the views of several other respondents (Chandler & Hanks, 1993; Lyon, Lumpkin, & Dess 2000).

For data accuracy, we decided that the structured questionnaire should be completed via a personal interview with each informant to ensure the appropriate identity of those interviewed and their understanding of the questions. Analyses based on data gathered from SMEs by other means tend to be inconclusive because of very low response rates (Meritt, 1998) or difficulty interpreting answers to questions (Smith & Kemp, 1998). To reduce possible social desirability bias, we guaranteed that our analyses would be conducted at an aggregated level that would prevent identification of any one organization. The high and significant correlation between external information from the D&B database, and the self-evaluation of different variables suggest confidence and accuracy for the whole questionnaire.

5.3. Variable measurement

The questionnaire was constructed with previously validated scales obtained from the review of the literature, which were slightly adapted to the geographical context and to the activity of the sector. This adaptation was considered essential in all the pre-tests to ensure that the answers were as truthful as possible.

Proactive natural environmental strategy. We adopted the items used by Aragón-Correa (1998) to measure environmental proactivity. We added some new items that our panel of experts thought

Table 1

Means, standard deviations, and correlations.

	Mean	S.D.	(1)	(2)	(3)	(4)
(1) Age ^a	3.31	.69	1.00			
(2) Size ^a	3.18	1.24	.387***	1.00		
(3) Proactive environmental strategy	3.60	1.35	.044	.276***	1.00	
(4) Export intensity	34.88	29.01	-.158†	-.041	.213**	1.00

^a Ln.

† $P < .1$.

** $P < .01$.

*** $P < .001$.

could help to measure firm environmental strategy within the food manufacturing sector. We eventually constructed an 18-item scale to evaluate firm environmental proactivity (Appendix A shows the items). A seven-point Likert scale was used. The interviewees were asked to assess the degree of development of their firms in relation to the environmental activities mentioned, and compared with their competitors. The final value of proactive environmental strategy of a firm was calculated using the mean of these 18 items. Cronbach's alpha for this scale was .915.

Export intensity. Katsikeas, Leonidou and Morgan (2000) reviewed the literature dedicated to the different ways of measuring export performance and found that the most commonly used ways refer to an export sales ratio. We chose this ratio because we were interested in checking the real importance of export activity for the firm, rather than managers' satisfaction with exports. Specifically, we used export intensity, defined as the value of exports as a fraction of total sales (Verwaal & Donkers, 2002). This data was drawn from the D&B database.

Firm size. This variable can be assessed according to diverse criteria or parameters. We decided to use the number of full-time employees as a proxy variable for firm size because it represents the firms' direct activity, as opposed to pure intermediation activity. This data was drawn from the D&B database and then transformed through calculation of its logarithm in order to fulfil the condition of normality required by our methodology.

Control variables. Some research suggests that age could affect the export process (e.g., Becchetti & Santoro, 2001; Javalgi, White, & Lee, 2000). Indeed, there have recently been different views regarding whether the export process is a gradual development and whether it is affected by the firm's age (see Moen & Servais, 2002). For these reasons, we considered it important to control this variable because it could influence the export intensity for our sampled firms. To measure the age of a firm, we counted the number of years since it was set up.

6. Analysis and results

We used moderated hierarchical regression analysis, introducing moderator effects as two-way interaction terms in the final step. We computed moderator effect of firm size in the influence of proactive environmental strategy on export intensity by multiplying each firm's size with its proactive environmental strategy (see Cohen & Cohen, 1984). To avoid collinearity, we mean-centred both independent and moderator variables (Venkatraman, 1989) prior to creating the interaction terms. The variance inflation factors (VIFs) associated with each regression coefficient were well below the recommended cut off of 10 and VIF values were not considerably larger than 1 suggesting no collinearity problems (Neter, Wasserman, & Kutner, 1990, pp. 409–410).⁹ Table 1 reports

⁸ Firms without missing data, including the data obtained from the D&B database.

⁹ The VIF values for last step range from 1.212 to 1.031, and the mean VIF was 1.128.

Table 2Results of the moderated multiple regression analysis^a.

Variable	Model 1		Model 2		Model 3		Model 4	
Intercept	56.605***	(4.484)	56.097***	(4.370)	40.996**	(2.949)	35.969**	(2.560)
Age	−6.571†	(−1.759)	−6.962†	(−1.711)	−6.242	(−1.565)	−4.697	(−1.161)
Size			.566	(.248)	−1.090	(−.469)	−1.329	(−.576)
Proactive environmental strategy					4.999**	(2.555)	4.858**	(2.481)
Size x Proactive environmental strategy							2.566†	(1.804)
F	3.093†		1.565		3.226*		3.279**	
R ²	.025		.025		.075		.100	
Change in R ²	.025†		.000		.050**		.025*	

^a Export intensity is the dependent variable. The values correspond to the non-standardized regression coefficients, with the *t*-values in brackets.† *P* < .1.* *P* < .05.** *P* < .01.*** *P* < .001.

the means, standard deviations and correlations between the variables analyzed.

In step 1, we regress export intensity on the control variable. In step 2 and 3, we introduce firm size and the proactive environmental strategy. The statistically significant increment in the variance explained ($\Delta R^2 = .050$) and the significant coefficient for the proactive environmental strategy show the strong influence of proactive environmental strategy on export intensity. Finally, in step 4, we add the interaction term. The R^2 is .10 for our final model, although this shows that the dependent variable is not completely explained by our independent variables, our aim using an hierarchical regression is to detect whether the independent variables are explained (significantly or not) to the dependent variable and the additional power explanation of each, as each one is introduced in each step or model. The difference between the R^2 s for models 4 and 3 is statistically significant, reflecting the existence of a significant moderation effect. The Significant coefficient of the interaction variable also reinforces the existence of moderation effects (Cohen & Cohen, 1984; Jaccard, Turrisi, & Wan, 1990). Table 2 shows the results of the regression analysis.

Following a proactive environmental strategy showed a positive and significant effect on export intensity at the average of the other variables. These results completely support our Hypothesis 1. Table 2 also shows the lack of direct influence of firm size on export intensity at the average level of the other variables for our sampled firms. This direct effect was not analyzed by our hypotheses because it was beyond our scope in this paper and is widely discussed in the previous literature. The

control variable does not have a significant effect on our sampled firms.

As we previously noted, the moderation effect is significant. Firm size plays a moderating role in the relationship between innovative environmental strategy and export intensity. We undertook additional analysis to illustrate the nature of this moderation. We evaluated the effects of proactive environmental strategy on export intensity at medium (less than 250 employees), small (less than 50 employees) and micro-firms (less than 10 employees). We first plotted all the interactions using procedures outlined in Cohen, Cohen, West, and Aiken (2003) to visually check the nature of the moderation (see Fig. 1). This graphic representation indicates that the positive influence of proactive environmental strategy on export intensity gets stronger as firm size increases, and it is weaker for micro-firms. This confirms our Hypothesis 2.

7. Discussion, conclusions and future research

Our results show an unexplored view of SMEs as organizations with the potential to develop proactive environmental strategies, thus reinforcing their competitive performance. We found that proactive environmental strategies of SMEs positively influenced their export intensity, but that firm size moderates this positive influence. Specifically, there is an increased positive relationship between environmental proactivity and export intensity. This effect is stronger for medium enterprises than for smaller ones, but stronger for small enterprises than for micro-enterprises. This result shows that SMEs present similar behaviour to that of large firms, in the sense that proactive environmental strategy helps export performance, but this effect depends on size, and is more intense with an increase in size.

Our research contributes to the natural resource-based view (Hart, 1995) supporting the importance of environmental proactivity in generating positive implications in SMEs. The results empirically support the idea that the dynamic capability of proactive environmental strategies (Aragón-Correa & Sharma, 2003) may positively and significantly influence the export intensity of SMEs. These results suggest that possessing resources is a relevant but not a deterministic condition for developing a competitive strategy based on environmental proactivity. Hence, our results complement the traditional assumption that SMEs lack proactive environmental strategies due to scarcity of slack resources and highlight the importance of analyzing specific characteristics of different firms included under the label of SMEs.

Furthermore, our results show that the positive interactions between proactive environmental strategy and the internationalization process for the sampled SMEs coincide with those found for large companies in previous research (e.g., Christmann & Taylor, 2001). Although some researchers concerned with

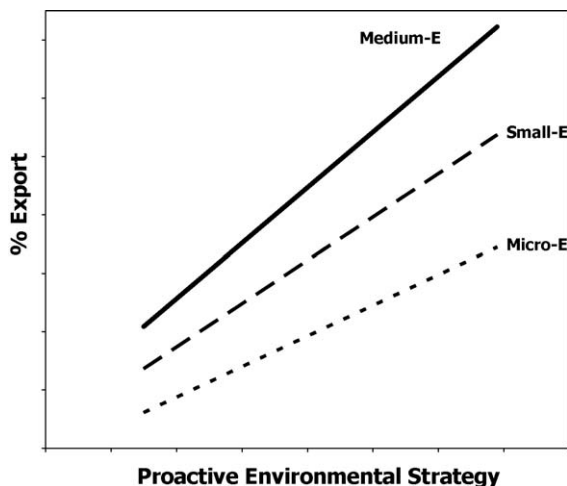


Fig. 1. The moderating effect of the firms' size on the relationship between proactive environmental strategy and export intensity.

organizational size have stated that what applies to large firms may not apply to small ones, recent research (e.g., Flannery & May, 2000), along with our own results show the opposite. We think believe that traditional arguments may be refitted here from the perspective of capabilities: large and SMEs obtain benefits from proactive environmental strategies; however, large firms and SMEs might avail of different opportunities to obtain those advanced environmental strategies.

Our results support the potential of using the resource-based view for analyzing SMEs: specifically, the results are coherent with those showing the potential of SMEs for using organizational capabilities in the process of improving their exports (e.g., Gumedé, 2004; Haahti et al., 2005). Additionally, our results do not show any significant relationship between a firm's size and its export intensity. This offers more evidence on the lack of relationship between these two variables than previous research has suggested (e.g., Bonacorsi, 1992; Moen, 1999; Westhead, Wright, & Ucbasaran 2004; Wolf & Pett, 2000), adding more controversy to what already exists (see Verwaal & Donkers, 2002, for detailed review).

On one hand, our research does show the previously unexplored role played by firm size as a moderator of the relationship between proactive environmental strategy and export intensity. Firm size increases the likelihood of a positive relationship between proactive environmental strategy and export intensity. Medium enterprises may obtain more advantages than small ones from adopting a proactive environmental strategy in the internationalization processes of exporting, and small-enterprises more than micro-enterprise. In the other hand and despite these differences, our study illustrates how small firms can also obtain a competitive advantage from an environmental proactive position.

Micro-enterprises can take competitive advantage in the international area from proactive environmental strategy (Mir, 2008; Mir & Feitelson, 2007), but our results show that this effect is less accentuated for micro-enterprises than for larger SMEs. Micro-firms may have less chance to generate organizational capabilities from proactive environmental strategies, as their success in exporting—and in general business performance (Smith, 1999) – may depend more on other variables such as personal manager contacts (Andersen, 2006), manager characteristics (Westhead, Wright, & Ucbasaran, 2001) or use of co-operative strategies (Haahti et al., 2005).

7.1. Managerial relevance

Our results have implications for practitioners and governments. From a managerial viewpoint, this research demonstrates the key importance of environmental issues on a company's export development. Appropriate guidance, training and support might be necessary to effectively develop proactive environmental strategies in the export processes of SMEs.

Although proactive environmental strategies were traditionally more linked to the large corporations, our results show that SMEs may also obtain clear benefits in their internationalization progress. It was not analyzed by our paper, but SMEs might find more difficulties in making environmental progress due to lack of resources comparing with larger firms. However SMEs' managers might want to make an effort in order to implement sustainable strategies, because that effort may help to compensate the difficulties of the SMEs in obtaining competitive advantages in the international arena. Environmental progresses open international markets that might be more difficult for SMEs. Finally, it is important to keep in mind that managers should develop some practices that make more transparent the environmental practices developed by SMEs, such as the inclusion of information about the environmental practices of the firms in the product label.

From a governmental perspective, the results imply that government assistance should be tailored to meet the differing requirements of small and medium enterprises (attempting to implant proactive environmental strategies) and micro-firms (complying with environmental regulations). Both situations may suggest information to SMEs' managers in order to increase their understanding of the positive implications in proactive environmental strategies. For medium and small enterprise, for example, it might be a useful toolkit to resolve the main questions about environmental practices, strategies, and benefits, among others. For micro-enterprises, a check list to accomplish the environmental regulation would assist many of them that are not informed about this kind of regulation.

In any case, our results show that larger SMEs may obtain more emerging advantages from proactive environmental strategies. Promoting some kind of collaborative approach for micro-enterprises might be especially useful to balance the disadvantages of size.

7.2. Limitations and future recommendations

This study is not without limitations. This research only examines the relationships between environmental strategy dimensions and exports for a single industry and a single country. For these reasons, we caution against generalizing our results too widely, considering the business- and geography-related peculiarities of our sample. We must also highlight that our cross-sectional analysis cannot guarantee a specific direction of causality for the analyzed relationship between proactive environmental strategies and export intensity. Future longitudinal analyses should empirically reinforce the theoretical logic of our hypotheses.

In addition, while our R^2 is significant, 90% of variance is unexplained. This is due to the lack of consideration of other variables that explain exports, as cooperative strategy, knowledge intensity (e.g., Haahti et al., 2005), innovation (e.g., Ito & Pucik, 1993; Pla-Barber & Alegre, 2007), flexible capabilities (e.g. Lee et al., 2009), entrepreneurial orientation (e.g., Kuivalainen, Sundqvist, & Servais, 2007), managers' personal contacts (e.g., Andersen, 2006), business experience (e.g., Majocchi, Bacchiocchi, & Mayrhofer, 2005), etc. The reason why we did not include all these variables was mainly because our aim was not to explain completely the export intensity but to check the relationship between proactive environmental strategies and export intensity and the moderation effect of size in this relationship.

Despite these limitations, this study makes important contributions to the understanding of the relationship between proactive environmental strategies and export performance in SMEs. The finding that size plays a role even when only SMEs are highlights the importance to provide incentives for firms' environmental responsibility for the small and micro-enterprise in particular.

As proactive environmental strategy appears to be effective with regard to providing SMEs with competitive advantage (at least to intensifying their exports), greater attention should be paid to the environmental approaches of SMEs in the future. Although previous research has shown that large firms are often environmentally more proactive than smaller ones, paradoxically, many of the capabilities needed to develop proactive environmental approaches may be fostered by certain features of SMEs. Future work is needed in order to confirm the hypothesis that SMEs are at a resource disadvantage but not at a capability disadvantage in relation to environmental advances. With our study, we hope to contribute to clarifying this apparent contradiction and its important consequences for policy makers and practitioners.

Appendix A. Proactive environmental strategy

Please specify the degree of development of the following activities related to the environment in your firm on a scale from 1 to 7.

1: This issue is not developed here and we have not planned to do so in the near future, or even if we wished to do so, we have no plans to further respect the natural environment; 2: we have plans to do so in the long term; 3: we have short-term plans to do so; 4: we have started developing this issue; 5: we have made some progress in this area; 6: we are at quite an advanced stage of development of these practices; 7: we have fully developed this issue and are current leaders in the application of environmental practices).

1. Internal organization

1.1. Natural environmental aspects in administrative work (paper, toner recycling, etc.).

1.2. Periodic natural environmental audits.

1.3. Recycling of remain and waste produced by the organization.

1.4. Purchasing manual with ecological guidelines.

1.5. Natural environmental seminars for executives.

1.6. Natural environmental training for the firm's employees.

1.7. Total quality program including natural environmental aspects.

1.8. Prevention systems to cover possible environmental accidents and emergencies caused by the organization.

1.9. Natural environmental management manual for internal use.

2. Customers/suppliers

2.1. Sponsorship of natural environmental events.

2.2. Use of natural environmental arguments in marketing.

2.3. Natural environmental information and training programs for our distributors and customers.

3. Manufacturing

3.1. Filters and controls for emissions and discharges.

3.2. Systematic control of energy consumption so as to reduce the organization's demand.

3.3. Recycling of the water used by the organization with the purpose of re-using it in other processes and/or before evacuation down the drain.

3.4. Use of ecological ingredients in the manufacturing of our products.

4. Design

4.1. Natural environmental analysis of the product life-cycle (LCA).

4.2. Design of products and services according to ecological criteria (eco-design).

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