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MEASUREMENT OF CORPORATE ENVIRONMENTAL RESPONSES AND THEIR RELATIONSHIP WITH EXPORT CAPACITY. EVIDENCES FROM THE SPANISH CHEMICAL INDUSTRY



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1. Introduction

As it is widely known, the world population is alarmingly growing (up to 7bn according to United States Census Bureau). This fact directly affects to companies' production due to there are more people demanding for goods. Thus, while it is true that companies are producing faster and cheaper in order to fulfil population's requirements, there has been a noticeable increase in levels of pollution and utilization of resources. Also, as consequence, the number of environmental disasters, such as the destruction of the ozone layer, has soared.

All these negative factors have led to a great consciousness within society about the necessity of restraining the environmental problems and the uncontrolled consumption of the limited resources. Since decades ago, there have been more and more stakeholders that put further pressure on governments demanding for more stringent regulations in environment issues and "green products".

In effect, firms began to implement practices in order to diminish pollution even modifying their managerial systems to create companies more sustainable. As example of environmental practices implemented by companies, the first more important managerial system launched was ISO 14001 in 1996. This certificate assures companies which are committed with the environment. Nowadays this certificate is widely know and internationally recognized. In this context, environmental changes have been receiving attention by some researches. While some of them, as King and Lexon (2000) argued that companies would focus on financial issues not caring for environmental problems due to the globalization, or Vernon (1992) that determined that firms would seek for countries with lower levels of environmental regulations, others encountered in the implementation of environmental strategies a way to create competitive advantages (Porter and Van del Linde, 1995).

Moreover, there have been also more studies which have explored into this subject (e.g. Aragon-Correa, 1998; Berry, Dennis and Rondinelly, 1999; Sharma et al., 2007) to ascertain the way in which changes in managerial practices to accomplish with the environmental laws could affect to firms' financial performance. All of them affirmed that not only accomplishing but having a foot-in-the-door mentality in terms of environmental issues could enhance companies to be first movers increasing their capacity to compete within new more demanding markets. Even some of them have encountered negative financial effects for those companies which performed end-of-pipe practices (Martin – Tapia, 2008).

What is more, hard environmental laws also brought companies into contact with significant barriers in their process of adaptation when going overseas, what meant a radical change in companies' procedures at all levels (Aguilera – Caracuel, 2011). Even some countries and markets currently demand for environmental certificates such as

ISO 14001 or some evidences which certify their compromise with the environment if companies intend to sell their products in new arenas. All this leads to us to assume that the environmental regulations are generating a great impact within level of exports in companies.

Exports nowadays are becoming essential for the subsistence of companies. In fact some studies have revealed that the process of internationalization is currently one of the most successful trade procedures (Sapienza et al., 2006). Besides, according to the Bank World, exportations contribute with 30.4% in its GDP, 11% more since the world economic recession started in 2008. Therefore, it can be said that the hard economic crisis, which is still facing the world today, has fuelled companies to seek new products and markets, forcing them to adapt to new requirements in new arenas.

As a result, literature has been focusing on that issue to find out in which way environmental laws affected to the process of export and whether restructuring managerial systems would improve the export capacity. Some studies on this topic (e.g. Aguilera-Caracuel et al., 2012) encountered that the effect in both cases was positive. These researches also encountered that that firms noticed a clear improvement in their image and reputation and a faster adaptation when going overseas once companies had included environmental practices within their corporative system. Related with the same topic, other researches (Costantini and Mazzanti, 2011) reinforced that positive relation by stating that corporations with a notable expenditure in innovation and in the deployment of such managerial procedures also could intensify their level of exportations. Moreover, that paper revealed that those companies which strengthen and improve their intangible assets such as flexibility or managerial vision are able to develop unique capabilities. Those capabilities, at the same time, make them stand out from competitors and therefore, obtaining better results in exportation data (Constantini et al., 2011).

However, although papers have widely discussed whether deploying reactive or proactive approaches is beneficial for companies or whether firms which develop environmental strategies have noticed some effect their level of exportations, little is known about which concrete environmental capabilities and practices increase to a large extent the export capacity.

As the objective of this study is to find out which environmental practices could enhance further the export capacity I selected export intensity, number of brands exported and number of countries where companies address to export as proxy variables to define such capacity. If we realized the majority of studies analyzing export capacity only included export intensity. However it is important to consider more variables to measure it. Therefore, I added two variables more (number of countries and brands exported) in order to determine if there were some variation in the

influence that environmental practices had in any of those three variables. That is if there were practices or capabilities that enhance more one export variable or another.

Furthermore, after a revision of the literature, I found that Wall et al. (2011) already created a scale to measure the environmental proactivity of firms. It was based on gathering all the practices and capabilities more common carried out by companies when implementing managerial changes related to the environment. I thus modified this set of measurements and designed a similar table but adapted to the requirements of the industrial sector I was evaluating.

Hence, I centralized this research in the evaluation of the environmental behaviour of the chemical sector located in Spain and its performance in exports' issues. The decision was reached as a result of the great impact this industry generates upon the environment. Furthermore, the chemical sector is positioned the second in the ranking of industries with a great level of exportations (according to recent data from Feique, 2012). The sample, therefore, has resulted of crossing several secondary datasets: Amadeus database, ICEX, Cámara de Comercio and environmental, sustainability or annual reports. In addition, whereas the environmental information was collected for the year 2010, exports' data was obtained for the year 2011 in order to test how the implementation of environmental practices had affected to level of exportations. The final sample was finally composed by 77 Spanish chemical companies.

The results will show us how some practices seem to be significantly and positively related with the export capacity of companies. This information will be useful for those companies which want to enhance their export capacity being sustainable at the same time.

This report, thus, is organized as follows: first, I review the theoretical background by which this study has been written for; the next section describes the chemical sector pointing out its influence in environmental and exports issues; the third section is an explanation of how I proceeded for the selection of all the data and their consequent analysis; in the forth section, results are displayed in order to show all the correlations between variables, and finally, I discuss all the results obtained, highlighting main conclusions, limitations and implications.

2. Theoretical framework

2.1. The concept of sustainability

First time that the concept of sustainability appeared was in the *Sylvicultura Oeconomica treaty*. That report was written by the German accountant Hans Carl von Carlowitz in the 18th century when Europe was been deforested due to the first industrial revolution. He used the expression *nachhaltendeswirtschaften* which in English means *sustainable yield* (Carlowitz, 1732). However, the concept sustainability seriously appeared in a political level when society realized of some dramatic changes that the nature was suffering. For that reason, the first time that a proper definition of sustainability appeared was in the Brutland Commission report in 1987. According to this report, Sustainable development is “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*” (Brutland, 1987).

Thus, the concept of sustainability was described as the interjection of three important factors for firms which they will have to perform a balancing act to be sustainable. Those three factors are the economy, the society and the environment. Next figure shows a clear image about what was agreed in that summit for the concept of sustainability within companies.

Figure 1. Factors implicated in the concept of sustainability



Source: www.vanderbilt.edu

The figure is grounded in the fact that changes in social, economic and environmental aspects in companies have to meet the same point and converge to have a sustainable program (UNESCO, 1992). Despite the objective of all companies is to generate benefits, they cannot base their policies just on that. Companies use resources as

water and consume raw materials which come from our limited planet resources. For this reason firms have to pay a special attention and look for the conservation of such resources because otherwise, they will be over in few years. And it is not only an issue of the termination of resources. In recent years it have been encountered that companies are reaching dangerous levels of pollution which are affecting to the level of life of people. Thereby, when referring to social aspects it is understood that it has to exist a social equity among people. This concept is based on a social justice both, bearable and equitable between, the generations of your own culture and all the cultures of the world (UNESCO, 1992). Moreover theoretically all people would have to have the same opportunity to have a good level of live wherever they live and that would not have to be affected for the performance of companies. In essence, people are the soul of companies and to create a corporative policy based on sustainability all people who belong to the company have to believe and to take part of it from the shareholder until every employee or even for communities they are serving to.

2.1.1. The Environmental sustainability within companies

As it was mentioned before, companies began to implement environmental remedies to reduce the impact in the environment and to be long-lasting in time. It is well known that human activity is harmful for the environment not for the industrial and economic expansion. Besides, in 1992, sustainability was the main topic in the Rio de Janerio when it was held the first Earth's summit. There experts in environmental issues discussed about the destruction of the planet due to contamination and the alarming consumption of its resources. Also in that meeting they began to think how companies could solve such problems by implementing new methods more friendly with the environment but even with the growth of the population. Between other issues, it was determined that all companies should have a real concern about the importance of the environment basing on the fact that resources are limited and without such resources there would not be a life possible for anyone and nothing living in this planet and thus, it was created the first environmental protocol.

Since then, some literature has revealed that some multinational companies seek for a more relaxed environmental legislation when they try to go overseas (Vernon, 1992). However, the legislation is becoming hard in all countries and taxes very high. In fact some findings have discovered that in order to be competitive nowadays companies should foresee which practices, in this case in terms of environmental issues, would have to implement (Aragon- Correa, 2008).

Even by implementing such practices could help them in having a better image (Aguilera – Caracuel, 2011) and create value for them (Wall et all, 2005). In addition, some firms receive incentives for governments when companies go beyond of the legislation and aim for being ahead. With these kinds of initiative firms get a better

understating and supporting of their stakeholders providing them to have less ambiguity and unique resources (Bansal, 2005).

However, the implementation of such practices required time and effort forcing companies to develop some general capabilities, facing a hard learning process (Aragon- Correa, 2008). Having experience in different markets could benefit at any company (Erikson et al. 1997) for the deployment of a proper sustainable policy with a company. With experience companies enrich their knowledge about the market and help them to improve in an international framework.

To conclude, caring about environment, resources, and to be conscious about the damage companies can produce to the planet is an essential and actual issue that society have to be aware and to be worried about.

2.2. Types of environmental responses

To begin with, according to Bansal and Roth (2000), a corporate environmental strategy is a set of practices that reduce the damage that a firm can produce on the environment. For achieving such a strategy, they can create products sustainable with the environment and implement processes that reduce the consumption of water, waste and energy (Bansal et al., 2000).

However, when companies started to implement solution to fight against the pollution?

We would have to go back in time, concretely to the decade of 1960's for noticing the first appearances of regulations in accordance with the environment. Following the same topic, during the 80's the approaches that began to appear were the reactive or end – of – pipe policies. During this decade, companies, being concerned about the problems of pollution, began to implement some processes to reduce the pollution produced. Finally, during the decade of the 90's, firms started to deploy proactive programs anticipating to problems in which the pollution or waste were present.

As we can notice, there are some different types of environmental approaches. Thus, in the next lines are going to explained the differentiation between reactive and proactive environmental strategies.

Thus, according to Wall et al., (2011) research a reactive environmental approach address and solve environmental issues once the problem has appeared and as result of companies' activities. This activity is also called end-of-pipe solutions.

Moreover, it says that such strategies are designed exclusively to accomplish with environmental regulation imposed by governments being just corrective and

emphasizing the minimisation of risks, liabilities and costs (Roome, 1992). On the other hand, proactive environmental practices are focused on prevention and gather a unique combination for resources where companies can develop competitive capabilities (Wall et al. 2011). Some of the companies found in the implementation of such policies a competitive advantage for companies (Sharma, 1988; Hart, 1995). In fact, it was proved by Sharma and Vredenburg (1998) that environmental strategies created a unique resourced – based view of the firm in accordance with their organizational capabilities.

What is more, some of the multinational firms foresaw on proactive practices the way to continue being competitive. It was also demonstrated that that prevention in pollution was less expensive than pay for the high fines imposed for the government or adjust the company to the continuously change in the regulation in terms of pollution (WTO, 2010). Furthermore to continue being competitive was not only a matter of complying with laws but an issue of ethical approaches, betting for the safety of the employees, satisfying stakeholders and seeking for new business opportunities creating their own reputation (Berry and Rondinelly, 1999).

What is more, according to a survey made in 2002 proactive companies had been around for 83 years on average which is 24% longer than reactive companies and are more prepared to face crisis' adversities (Mitroff et al. 2003). Being found also in the same article that proactive companies are more prepared to face problems when some crisis erupts recovering of it faster.

Therefore, focusing on environmental proactive approaches, there were a lot of researches (Hart, 1995; Aragon-Correa, 1998; Sharma, 1998) who studied how to deploy and the advantages a proactive approach in a company. Even some of them made a classification for it. For example, Roome (1992) was one of the firsts in proposing a classification after evaluating companies' programs. Thus, he proposed that there were there levels: "non compliance", "compliance" and "compliance plus" going from the lower level of environmental policies until the higher. Moreover, it was also discovered by Aragon-Correa (1998) that applying for a proactive business strategies implied to have more advanced environmental approaches. This implication means that the future for companies is going to be a joint between new business strategies where the environment was always present.

Nowadays the tendency for companies is to implement approaches which are between middle or upper environmental level, over all in most developed countries. This is due to pollution restrictions and fines are higher and this is considered by companies a risky strategy (Wall et al. 2011). Therefore, having a decent program of sustainability sometimes is essential even for the survival of a company.

2.3. The relationship between environmental proactivity and export

With this globalised world, exportations nowadays are becoming essential for firms in order to find new market and improve their financial performance. For that reason firms have to learn how to quickly adapt to new countries. In terms of environmental issues, literature has studied relation that the most advanced practices seem to enhance the export capacity (e.g. Aguilera-Caracuel, 2012; Martin-Tapia, 2008; Aragón-Correa, 2008; Bansal, 2005; Porter & Van del Linde, 1995). Therefore, in the next section is described some environmental aspects that have been found in literature to be beneficial for companies to export. Aspects such innovation for reducing pollution or implementation of new managerial systems where the respect for the environment is present is creating new worthwhile values for companies.

As it has been previously described environmental legislation is becoming more stringent. In this context, traditional researches (e.g. Vernon, 1992) already stated that due to these regulations, multinational firms could look for countries with more relaxed environmental laws damaging the domestic economies. On the other hand, early studies have demonstrated that other companies have encountered in such regulations valuable characteristics to be competitive and having in a long term more benefits and productivity (Aguilera – Caracuel, 2011). What is more, with the current crisis, it has been found that, more than a barrier, these approaches could be an opportunity to open new markets and success (Aguilera-Caracuel, 2011).

However, to reach that point firms have to change their way to operate, e.g. recycling, making symbiosis with industries, reducing pollution, implementing new management systems, etc. (Costantini and Mazzanti, 2011; Wall et al., 2008). All of these improvements carry a constantly process of innovation. Moreover, due to the frenetic pace of the trade within the different markets and the stringent regulations in terms of pollution, companies have to innovate faster in process for the decontamination and for reducing waste. These processes require spending money that not all the companies are able to afford. However, some articles based on the relation between exports and proactive strategies (e.g. Cosentini and Mazzanti, 2011) determined that innovation and the implementation of environmental regulations have a positive relation with exportation. This finding proved that in a medium run, those changes could enhance their economic performance and find new opportunities in markets for ecological or friendly with environment products (Costantini and Mazzanti, 2011).

Another aspect which has been found to enhance the level of exportation is the deployment of environmental managerial systems. In this context, Costantini and Mazzanti (2011), points out that the implementation of an Environmental Management System (EMS) can help to export performance although it is not yet a determinant point. However, this system can reinforce the value of the products that

companies want to export jointly with other innovative proposals. Moreover, although the diffusion of this program is having a great acceptance, the real implementation is not currently very high. To demonstrate this, Germany, being the leader of the environmental products (Horbach, 2008) and in the implementation on EMS program. But even being the leader, it is only the 10% of the total of companies that have adopted such a program (Costantini and Mazzanti, 2011).

Reviewing in the literature, it has been also found that having international diversification makes that companies can adapt faster to new environments and thus, intensify their level of exportation (Aguilera-Caracuel et al., 2011). To have an international diversification means that companies facing different situations in different markets within different countries confer to them unique capabilities such as being more competitive and dynamic. Furthermore, the knowledge obtained makes them to move and foresee quickly and to learn easily about the necessities of the market. Besides, it could be said that firms acquire a complex knowledge becoming less influential and creating for them competitive advantages such as legitimacy and reputation (Aguilera-Caracuel et al., 2011).

Related to the aim of companies to gain reputation, it was also discovered that the implementation of some certificates such as ISO 14001 by companies is with the aim to demonstrate that they care (or they are starting to care) about environmental issues. It has to be mentioned that the requirement of this certificate is something that companies do in a volunteering way and which companies spend large amounts of money and time for. Some researchers also have shown that the integration of voluntary environmental standards such as ISO 14001 of managerial policies based on environmental issues such as EMS can reinforce firm's transparency, reputation and legitimacy of any company (Bansal, 2005; J. Aguilera-Caracuel, 2011;) and make their stakeholders feel a strong identification with the company (Darnall, Henriques and Sadowsky, 2008; J. Aguilera-Caracuel, 2011).

As we can see, there are some practices which improve the external image of the companies. The theoretical logic, thus, states that companies which have a well – recognized image meet more condition to have success in international arenas.

For that reason, some researches focused their lines of study on the intangible assets (Aguilera-Caracuel, 2011). This study determined that all this intangible assets are becoming to take very serious for companies with sights to the future and known to be first movers. Even care with “who” are participating and the degree of collaboration. (Aguilera - Caracuel, 2011).

In this same context Sharma and Vredenburg (1998) predicted than the stakeholder integration, organizational capabilities in accordance with environment (as mentioned

before), and a continuous innovation was essential to successfully deploy an environmental proactive approach. In fact, related to the same topic, other studies (Sharma S., 2007; Darnall, 2009; Buysse, 2003) found a positive relation between stakeholder engagements and the deployment of a proactive environmental approach. When referring to stakeholders, it includes customers, employees, distributors, providers, and even local communities, non-governmental organizations, or environmental groups being defined by Freeman (1984 p.46) as “any group or individual who can affect or is affected by the achievement of the organization’s objectives. These proactive companies also would include their concerned stakeholder in dialogue groups and engaged them in the decision – making, from the new developments until new recycling processes.

As an example of how a stakeholder can affect within the process of the implementation of proactive strategies, I am going to describe what it can be provided for five of them: customers, employees and shareholders, NGOs, and governments.

First, by implicating customer’s opinions they can create loyalty and a good image for the company. Then those companies could fulfil a new niche of green consumer demanding for green products. Second, employees not only can be rewarded for achieving financial goals or reduce the time of production, but for recycling more, receiving less complaints, or accepting to receive feedbacks. Third, related to shareholders, the company can look for people who, apart from benefiting economically from the company also share the same values and agree with the mission and vision of the firm. However, there are more practices as we will see below, in terms of practices for stakeholders as the implementation of special programs for suppliers among others. Next, following with the same subject, other studies also consider that belonging to NGOs and environmental associations also could help to create a new environmental mentality and therefore, in the implementation of environmental proactive approaches (Buysse, 2003). Some literature (Hyatt et al., 2011) even highlights that to collaborate with NGOs can enhance the legitimacy of a company in accordance with the deployment of proactive strategies. And last group, governments. Also to enhance such practices some articles call for governments to help by giving incentives to those companies which treat to implement more proactive action into their policies (e.g. Aguilera – Caracuel, 2011). These policies would reinforce the competitive advantage of the company by creating more value and at the same time governments would help society to live in a sustainable world respecting its limited resources (Bansal, 2005).

To conclude, as I have been describing through this section, proactive environmental strategies can help to companies to export more. More concretely, by implementing those strategies, companies could easily face environmental legislation barriers, having

access to a greater number of markets. Also I describe how the internal performance of firms can improve by means of innovation, being that capacity an enhancer of the level of exportations. Furthermore, that kind of strategy also improves legitimacy, image and reputation of companies. On this way, those companies fulfil with the expectation of the green consumer demanding for green products and, in addition, they would gain the confidence of NGOs.

Therefore, in the following sections I will focus on the study of a determinate industrial sector and discover which concrete environmental proactive practices may generate a direct positive effect in the export capacity.

3. The Spanish chemical industry

To meet the objectives of this research, I selected the Spanish companies from chemical industry for several reasons. First, this sector has significant impact upon the environment. It is widely known that the Chemical industry is one of the sectors which produce more damage to the natural environment and, therefore, one of the most hardly regularized. For that reason, this sector has its own institutions such as EPA (Environmental Protection Agency) and some own voluntary standards as Responsible Care as I will explain below. Second, it has been encountered its exportation are an essential source of its total incomes. In fact, this procedure has meant for some chemical companies their way out of the Spanish crisis.

This section proceeds as following: I describe the chemical industry and analyse how it affects to the Spanish economy; second part explains the influence has this sector upon the environment; last, I aim to establish whether environmental regulations and how companies face to them can affect to the level of exportations.

3.1. Description, history and its economical influence in Spain

Description

The chemical industry is in charge of transforming raw materials by using chemical reactions to produce new substances. This industry is subdivided at the same time in three subsectors: first one is basic chemistry; second, chemistry for human health and biological products, and the third one, industry chemistry and chemicals for final consumer (CEFIC - Council and EEA- Environmental European Agency). First one is the basic chemistry. This subsector addresses the industry that produces organic and inorganic, industrial gases, plastics, synthetic rubber, fertilizers, dyes and pigments. The second subsector is in charge to produce pharmaceuticals, raw materials and animal specialties. Finally, the third one is industrial chemistry. It includes paints, inks, varnishes, adhesives, oils, explosives, soaps, detergents, perfumes and cosmetics. In

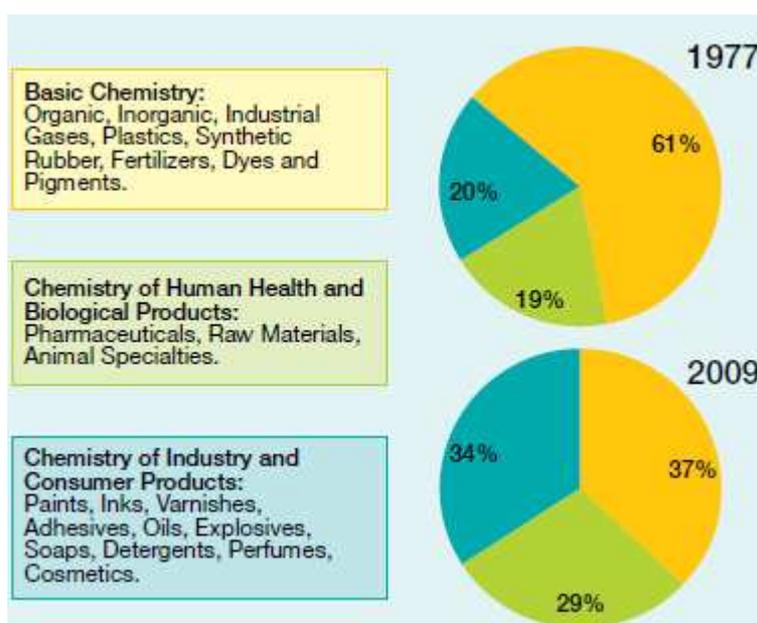
addition, that classification is selected in accordance to NACE code (Statistical Classification of Economic Activities in the European Community) where Chemical industry belongs to the groups 20 and 21.

History

In Spain the Chemical industry, as in the rest of occidental Europe, coalesced about 1880's with the Industrial Revolution. However, at the end of that century Spanish chemical industry showed signals of being less developed than the rest of economies of Europe, due to the lack of governments' support in investments for new technologies. However, Spanish industry began to seriously grow and develop by the time of the second industrial revolution when Europe demanded more and cheaper quantities of chemical substances.

Nowadays, Spain represents the fifth larger producer of chemical products within Europe and it is improving its exports from 65% in 2000 to 80% ten years after (Aduanas- Chamber of Commerce). Besides, there has been a notable change in the production. While in the 70's decade basic chemical substances were predominant within the market, this value decreased to 37% for the year 2009. On the other hand, for the other two sectors has occurred just the opposite. As we can see in the next figure (Figure 2) there has been a noticeable change in the percentage for the production of chemicals related to health human, biological products and substances for industry and consumer products. This derives from a clear change in society's necessities and the variation within the chemical market being the biochemical specialties the most produced ones with a 20.9% of total amount (Soley J., 2012).

Figure 2. Variation in the production of chemical substances since 1977 to 2009

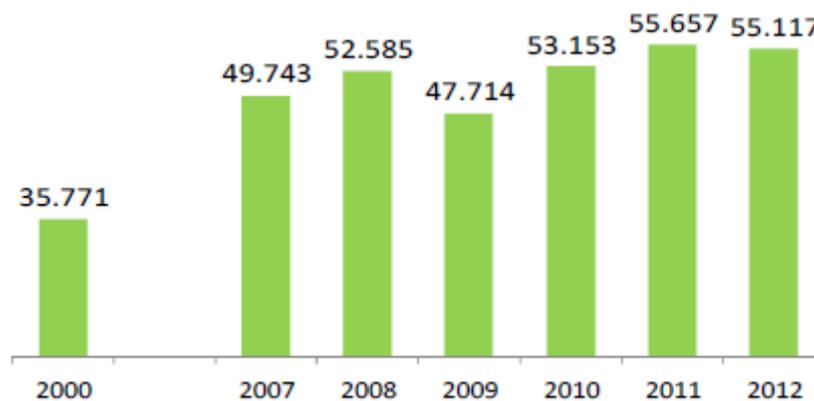


Source: Soley J. 2012

The influence of chemical industries in the Spanish economy

The Spanish chemical sector can be considered as one of the fundamental pillars of the Spanish economy. Nowadays, it is constituted by 3,300 companies with an annual income of more than 55,000 million Euros and a contribution to the gross economic product (GDP) of 11%. Moreover, it also plays an essential role in employment, as it creates 500,000 jobs (Feique, Federación de la Industria Química Española). To verify the previous data, the following figure shows the revenues from the Chemical sector from 2000 to 2012 collected from the Spanish Chamber of Commerce.

Figure 3. Spanish Chemical Companies' revenue (Million €)



Source: Aduanas

As it can be observed the revenues of the Spanish chemical companies have been growing up until reaching a 54% of improvement (Aduanas- Chamber of Commerce).

3.2. The chemical industry and its impact upon the environment

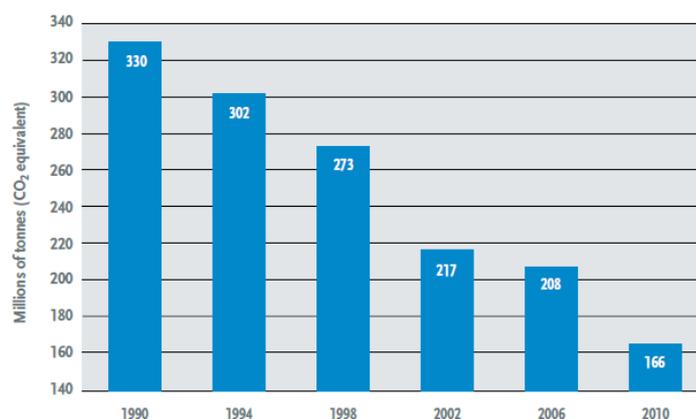
What follows is a description between the relation of the chemical sector and their influence upon the environment. Unfortunately, chemical industry has been always linked with the most harmful disasters for the environmental occurred in history as the hole in the ozone layer due to the emission of the CFC's or Bhopal (India) disaster where 22,000 people dead due to a of a very toxic gas leak. Those disasters warned society about the necessity of stringent regulations for the chemical sector. Specifically for the problem of the ozone layer, governments were called for the Montreal protocol where CFCs (Chlorofluorocarbons) were prohibited. As well as Bhopal disaster produced by Union Carbide (now called Dow Jones) was caused for a problem with the clean and the maintenance of the plant. Now, the same company have indeed created and sustainable index program spread internationally.

These disasters make us an idea of how dangerous chemical companies can be. In fact the majority of substances that this industry uses and produces have a high grade of contamination. Even in the production process, it needs disproportioned KW of energy, and consumes great quantities of water and organics to purify final products. Moreover, Chemical sector is known to be the second industry that produces more pollution, being the first one is metal industry (Aduanas – Spanish Chamber of Commerce). What is more, organics produce a dangerous damage for the planet being difficult to eliminate when they are poured in effluents or when they are emitted as greenhouse gases (GHG). Also, the huge consumption of water could cause a big problem if we take into account that it is a limited resource. Thus, chemical companies have been singled out in public opinion polls as a threat for the environment (Hoffman, 1999).

For that reason, just from the very beginning, chemical companies made great efforts in innovation and optimization of their processes. Specifically, in the 19th century some clean-up laws were imposed, for example, for the LeBlanc soda process (MartynPoliakoff et al., 2002) considered very dangerous for the pollution produced. However, it has been during the three last decades when chemical companies have started to implement more measurements. Already in the decade of 90s, the chemical industries invest a 10% invested in measurements against pollution in comparison to the rest of industries which invest just the 2% (Aduanas). In addition, they also tried to reuse substances such organics for purifying as many times as possible or reduce the consumption of water for the changing of the heat (for example) by implementing deuration facilities. But this was not enough it we realize that the regulations in determinate countries were nonexistent. In fact both disasters mentioned before occurred in such decade.

Therefore, more recent regulations have been imposed globally in order to regularize, over all, the security and pollution problems. For example, in Montreal summit participants approved the total prohibition of some products as CFCs (Chlorofluorocarbons) or in the Kyoto Protocol where the most pollutant countries reached to the agreement to reduce into minimum levels the emissions of greenhouse gases, such as CO₂. According to this, if we look at figure 4 reveals that the decrease in the number of tonnes of CO₂ is extraordinary low in comparison with one decade ago.

As we can observe there have been a reduction of the 50% in tonnes of CO₂ that were emitted to the atmosphere. Thus, it would represent a high effort made for the chemical and its concern to reduce pollution (Data extracted from Cefic- Council and EEA- Environmental European Agency).

Figure 4. Total greenhouse gas emissions in EU chemical industry

Source: Environment Agency (EEA) and CeficChemdata International

Specifically for Spanish chemical industries, Feique's report (Federación de la Industria Química) provides some recent data that underpin the efforts in term of environmental issues the Spanish Industry is accomplishing. That report says that the expenditure for the protection of the environment of the Spanish chemical industry has increased to 50% since 2000. Other data to consider is that 80% of the companies which belong to this sector have certifications which warranty the respect for the environment such as ISO 14001. It can also be discerned from such a report that the reduction in the consumption of water has gone down below to 47% and firms have reduced the energy expenditure below 7% since 1999 until 2010. Moreover, there has been a noticeable reduction in the pollutants such as NO_x, SO_x, VOCs, particles as well as waste such as COD, P, N and heavy metals of below to 50% for each ton produced. Specifically, GHG has been lowered by 33%; SO_x, 89%; NO_x, 49%; VOC below to 60%; particles, 77%; COD, 48%; P, 86%; N, 63%; Heavy metals, 75%; and waste below to 12% since 1999 until 2010 (Feique, 2011).

Currently, next step for Spanish chemical industry is to fulfil the plan called 20-20-20 imposed by the Spanish government in 2010. This plan tries to bring in line Spanish chemical companies with European ones by reducing a 20% in primary energy use. Moreover this plan aims chemical industry to reduce in 20% greenhouse gases emissions (GHG) and an increase of the 20% in the use of renewable energy. All these objectives are supposed to put into practice from the year 2010 to 2020 (Feique, 2011).

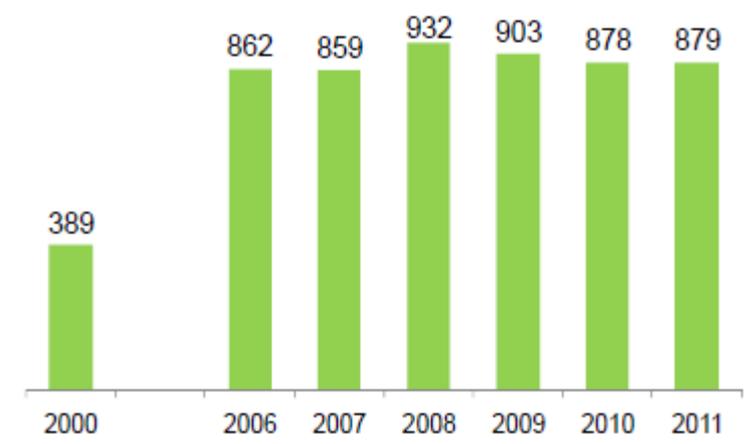
In addition to the new plan, there are some voluntary systems which have been created specifically from the Chemical industry. This program involves at the same time the management of Security, Human Health and Environmental issues to deploy a proper sustainable system in chemical companies. This voluntary and global program is called Responsible Care. This initiative is present in 53 countries, being introduced into Spain in 1993 and managed by FEIQUE (Feique's inform, 2011). However such a

voluntary plan is not still widely implemented in the Spanish industry in general. Even in Germany, considered to be the first in the ranking for the implementation of green policies, just a 15% have acquired such a certificate.

Moreover, there are more certificates to prove that companies are environmentally friendly. The Spanish chemical sector holds the fifth position in the ranking of number of companies that have implemented ISO 14001 and EMAS (European Eco-Management and Audit Scheme). Moreover, there are more environmental concern certificates for the chemical industry at European level. Those certificates are REACH, which allow the free circulation of chemical substances in EU guaranteeing a high level of protection for the Human health and environment; and CLP which obligates the industry to describe to detail all possible hazards within a process making it safer.

Other data that describes the implication of the Spanish Chemical industry with the environment and innovation is the money that companies invest for R&D projects. Figure 5 shows the evolution in million of € that Spanish Chemical companies has devoted for innovative processes.

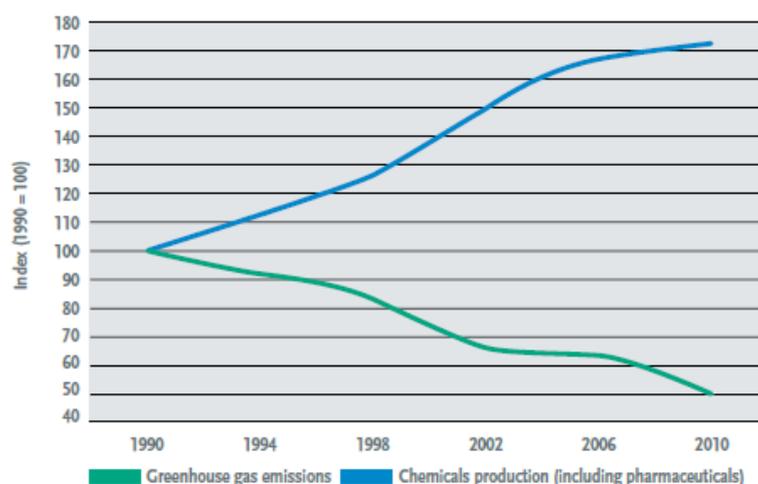
Figure 5. Million € invested in R&D



Source: Environment Agency (EEA) and CeficChemdata International

As it can encounter in the Spanish Chamber of Commerce (Aduanas), this is the industry that invest more money to R&D and to environmental issues (up to 850 Million €) covering the 25% of the total amount of money destined to R&D for all sectors in Spain. Also, it is the fourth one in applying for innovative activities (58.8%).

However, despite of the stringent regulations with the environment and all the money invested in certifications and environmental practices, chemical industries' production have not been affected. In fact, as we can appreciate in the next figure, the production of chemicals has boosted during the former decade up to 70%. (CEFIC)

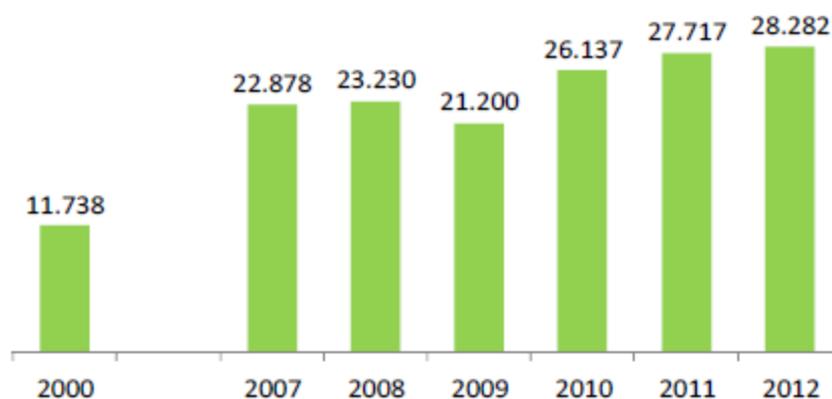
Figure 6. Relation between production of the chemical industry and GHG emissions

Source:Cefic

3.3. The importance of exportations within the chemical sector

As it is explaining in depth in the following subsection, the chemistry sector is a rich and suitable empirical setting as it has an important weight in the total Spanish exportations and its negative impacts on the natural environment place it in the public spotlight.

Hence, referring to exports, chemical companies take the second place among the entire Spanish manufacture sector in having the major quota of exportations (Aduanas). Besides, it has been also found that this sector has been growing up gradually since they started. Next figure shows the evolution chemical industry has suffered from 2000 to 2012.

Figure 6. Evolution of exportations (Million €)

Source: Aduanas

The result is that chemical companies have been increasing their exportations in a 141% since 2000, slightly affected by the crisis during the years 2008 and 2009. Since

then the sector experimented a rapid increase due to the fact that companies foresaw in international markets a key to overcome those difficult times.

Besides, it has also been found (Ministerio de Industria, Energía y Turismo) that 45.7% of the total production of the chemical companies is allocated to international markets and the EU is considered the greatest destiny of its exports (62.6% of the total exports).

Next, table 1 will show us a ranking of countries where Spanish companies export with more intensity. To add up, according to Myro et al. the Spanish Chemical Industry (not only the large companies 80% but the small and medium ones, up to 30%, too) is one of the sectors in which dedicates more efforts to export.

Table 1. Ranking of countries where Spanish industries export

Ranking	Countries	2007	2008	2009	2010
1	France	2.953.050*	2.953.050	2.710.845	2.710.845
2	Germany	2.558.018	2.558.018	2.327.288	2.327.288
3	Italy	2.814.240	2.814.240	1.907.051	1.907.051
4	Portugal	1.545.283	1.545.283	1.542.881	1.542.881
5	UK	1.338.734	1.338.734	1.124.131	1.124.131
6	Switzerland	1.011.239	1.011.239	1.081.444	1.081.444
7	The Netherlands	1.161.668	1.161.668	932.688	932.688
8	United States	1.178.359	1.178.359	893.149	893.149
9	Belgium	746.849	746.849	646.232	646.232
10	Turkey	514.307	514.307	425.297	425.297

*Million € Source: Aduanas

As we can see, nine out of the first ten countries belong to EU. Hence, this table tests the importance of addressing to those countries trying to adapt as much as possible to their regulations. Moreover, as it was explained before, EU holds the more developed and stringent regulations in terms of environmental issues.

According to statements coming from the Feique's president, Luis Serrano, recent studies says that the forecast for incomes for the Spanish chemical industry would be up to 60,000 million € for the present year, 2013. Another data to take into account from such statements is that despite incomes are higher every year, there have been a slower growing in production due to Spanish domestic crisis. However, exportations are going up, reaching the former year values up to 5% forecasting a 10% for the present year, 2013. For that reason, Feique's president emphasizes the necessity to explore new markets and gaining new important international brands in order to improve value for the Spanish sector. Furthermore he claims to governments a stable legal framework, quicker administrative procedures, better and easier infrastructures to export and lower taxes to accelerate the process to go to international arenas. This statement supports what was demonstrated by Darnall (2002) and Byusse (2003).

Their papers suggested that companies would improve their performance if they found further helps from governments.

Finally, we can extract some conclusions and implications from all this section. Firstly, numerous enterprises have foreseen in exportation a good option to face it due to the strong domestic Spanish crisis. This strategy has stood out in the chemical sector where exportation plays an essential role in the total incomes this industry generates. Specifically, the benefits for the Spanish chemical sector are up to 28,000 Million € for the previous year, 2012 (Feique, Aduanas). Secondly, as it has been previously described the main destiny of Spanish chemical industries is EU countries what implicates the Spanish companies have to put all their efforts to adapt to this demanding market. This last observation carries us to the next conclusion. Thus, as it was mentioned before, activities of this sector can provoke a dangerous impact upon the environment and it could seriously affect the human health. Also the pressure that NGOs provoke in governments is increasing with time in order to minimize the risk chemical companies' practices. Moreover, it is important to highlight that nowadays stakeholders are more demanding in terms of the implementation of green policies that respect our environment and its limited resources. As consequence, environmental regulations and laws in all countries are becoming more stringent with time. What is more, some countries already ask for special certifications to companies with which countries warranty that companies accomplish with a real commitment with the environment and the respect of its limited resources. Last, I would like to mention that there is a bigger niche of "green consumers", more extended in north Europe, willing to pay more for "green products". Therefore, all conclusions implicate the necessity of the continuous adaptation of the Spanish chemical sector to accomplish with the requirements of countries if they want to grow further in exports for the following years.

4. Methodology

4.1. Sample

As it was explained in the previous part I selected the Chemical Sector due to the importance that exportations and the natural environment play on it. It produces a strong impact upon the environment emitting high quantities of greenhouses gases as well as pouring dangerous effluents and consuming high quantities of energy and water. Also, chemical industry is considered to be an influential sector within the Spanish economy. According to recent data, this sector generated up to 55,000M € of incomes for the year 2012, 28,000 M€ of whom came from exports. These figures raise

the chemistry industry as a rich context to test the effect of several environmental practices on export outcomes.

Data collection was conducted in three phases. First, with the purpose of identifying the chemical companies operating in the Spanish chemistry industry I used Amadeus Database. Amadeus Database is a comprehensive dataset that covers all the companies operating in industry, in total, 19 million of companies across Europe. It includes financial information, age, industry, sector, size, among other significant data (Castellucci&Ertug, 2010). Besides, I considered the code NACE to select those companies that belong to the chemical sector. Therefore, for this sector the numbers to take into account are 20 and 21. Then, when applying this filter I obtained a final amount of 589 companies.

Second, Amadeus database was combined with the export registers of ICEX (Instituto de Comercio Exterior) and Aduanas (Cámara Española de Comercio Exterior) to find information regarding exports. On one hand, ICEX is a Spanish public entity which encourages, helps, and informs to Spanish companies how to go and to face international arenas. On the other, Aduanas, which belongs to Spanish Chamber of Commerce, comes from a private entity formed by Spanish companies. In addition, this is the second more important organization that provides data of exporter companies and international trade just lagging behind the public entity. In fact, it collaborates with the Spanish administration (Agencia Estatal de Administración Tributaria) to run such a database. Both export registers were selected due to they contain different information regarding organizational export activities. I only settled on those companies present in both registers and with information available for all the variables regarding different outcomes of exportations. The rest of the companies were discarded for not having available data for the variables required. At that point, the sample was reduced to 110 firms.

Then, I aim to collect information regarding environmental practices and initiatives. This environmental data came from sustainability reports, annual reports or environmental pages from corporate web sites (Wall et al., 2011). First, I proceeded for the searching of sustainable reports. That document provides the most complete environmental information in terms of environmental activities executed by companies (Morhardt, 2001). This report is launched each year and is public for everyone. In their absence, corporate environmental reports and annual reports were selected. As those documents offers wider information about firms, I addressed to the environmental or sustainability section to find the information required (Ardnt and Bigelow, 2000). However, since not all companies publish their report annually, or information provided in those reports was insufficient, I sourced additional data in corporate web sites (Wall et al., 2011). Moreover, I targeted all these responds for the year 2010, following a one year-lag structure for the empirical analyses. Finally, as the

environmental information for the 110 companies was not available, the final sample for this research consisted in 77 Spanish chemical firms.

4.2 Measures

4.2.1. Dependent variables: export intensity, countries and brands.

In order to test the relationship between environmental responsiveness with export capacity, I selected three different types of export outcomes.

In first place, I considered export intensity. It was measured according to Martin-Tapia et al. (2008) and Verwaal&Donkers (2000) studies in which the definition provided for export intensity was *“the value of exports as a proportion of total sales of the firm”*. Although there are different ways of measuring export intensity (see Katsikeas et al., 2000), this one has been the most commonly accepted in the literature. Specifically, export intensity was determined by dividing the volume of exportations by total assets. For this study, data regarding volume of exports was collected from ICEX, whereas total assets amount was obtained from Amadeus Database. Both of them correspond to the year 2011.

The second measure included in these empirical analyses is the number of countries where companies export. This information was provided in ICEX. Finally, the third measure for export outcomes is the number of brands that each company exports. In this case, this data was collected from Aduanas.

4.2.2. Independent variables: environmental proactivity approaches

Some empirical researches with studies similar to this subject have measured environmental responsiveness according managerial perceptions (e.g. Byusse and Verbeke; Christmann, 2000, 2004) or used other methods (Aragon – Correa, 2008; Aguilera - Caracuel, 2012). However, for this study I adapted a set of environmental capabilities creating a scale according to Wall et al. (2011) work. That report bestowed a reliable measure for environmental strategies exposed to be used for future studies. Therefore, the scale I created is composed by 16 different environmental proactive practices and parameters in order to evaluate the previously collected environmental information of each of the 77 companies. Moreover, such 16 items were separated into three major categories (Wall et al. 2005) composed by Managerial vision, Stakeholders and Endowments, respectively.

Managerial vision. According to Westley and Mintzberg (1989) *“Visioning is the process of projecting a desired future organizational state that, when effectively communicated, empowers followers to enact the vision”* (see Wall et al., 2011, pg 90). Therefore a visionary leadership tends to implicate cohesion among all stakeholders (Waldman et al, 2006), interrelationship with organizations (Dierickx and Cool, 1989)

and a clear improvement in firm's performance (Groves, 2006). Furthermore this characteristic makes companies create a unique capability (Baney, 1991). Regarding to environmental capabilities, a managerial vision is essential due to this characteristic requires a truly long-term commitment and a great investment (Hart, 1995). Our scale of environmental items indicates that this category can be measured by identifying an environmental commitment in the vision and mission statements and if those statements are considered globally for the entire company or just specifically in some facilities.

In addition I included in this category the historical orientation of a firm towards environment. It has been found in literature (Wall et al. 2011), that firms which have been implementing environmental strategies for a long period are more likely to localize future environmental impacts, trying to avoid them for the design in new processes and products. That research also states that those companies with a long history in developing environmental capabilities contribute more to spread their environmental values and create a strong relationship with their customer, suppliers, and peers through time (Wall et al. 2011). On this analysis, historical orientation was coded on basis of year since a company implemented an environmental program (Wall et al. 2011).

Stakeholders. A proper definition for stakeholder can be "any group or individual who can affect or is affected by the attainment of the organization's objectives" (Freeman, 1984, p.46). In this set of environmental parameters we can separate the category of stakeholders into two different groups: Suppliers and customers (or buyers) on one hand and NGOs, governments, and shareholders on the other.

The first group has a direct impact upon products and production processes. Obviously, by implicating suppliers and customers in environmental issues, companies can design products or optimize processes in accordance to the market's requirements (Cerin and Kerlson, 2002). The other can interfere in a social-pressure level (Delmas and Toffel, 2008). Moreover, this second group confers to firms intangible assets such as trust, credibility, and reputation (Sharma and Vredenburg, 1998; Russo and Fouts, 1997) when underpinning environmental strategies.

For the evaluation of this part, Stakeholders can be measured by the grade of engagement that each subgroup has got concerning different environmental strategies implemented by companies (Wall et al. 2011).

Endowments. This category consists in a set of environmental certificates, managerial programs or practices which help companies to warranty their real commitment with the environment. Some literature (Wall et al. 2011) has also found that firms can achieve strategic goals faster than their competitors by implementing some of these practices.

For this category I decided to include five different subitems. First I evaluated the implementation of environmental systems such as Responsible Care or EMAS. Programs such as Responsible Care were created specifically for the chemical sector. This program is a global, voluntary and active initiative which aims to chemical companies to improve their strategies in terms of security, human health and environment issues. In Spain this program is managed by FEIQUE. This organization also has created a special guide for facilitating the incorporation of environmental approaches to Spanish chemical firms. Second, I checked if companies deployed the EAMS (Environmental Audit and Managerial Scheme) which is managed by the EU. It is a voluntary environmental management which aims to improve the environmental performance of organizations by having them both evaluating and reducing their environmental impact (ec.europa.eu). Moreover, in this set of subcategories I also included the ISO 14001 certificate. This widely spread certificate is well – recognized for proving commitment with environment internationally. Finally, I tested if companies published sustainability report, have obtained some national or international award according to their environmental performance or have implemented the European certificate Ecolabel for products.

In this case, I conducted this evaluation in basis of the grade of implementation of such practices, programs, certificates or number of awards obtained.

Last, for the purpose to analyze the companies' environmental proactivity, the evaluation of the data obtained was accomplished in four phases. This method is based on the same method used by Wall et al. (2011). First stage consisted in developing a coding scheme to code text, data or cites well from the reports well from the web sites as mentioned before. Second, I followed an iterative process for each company, going back and forth between words, sentences and cites. Then, each topic was measured either in a sliding scale (from zero to two) if the code referred to amounts or coded as binary. Finally, I added up the result obtained from the evaluation of each environmental item. The total score is the environmental rate or the proactive response rate.

Table 2. Coding scheme adapted from Wall et al. (2011)with sample cites.

Category	Topic	Examples	Measurement scale
1. Environmental strategy and managerial vision			
	Mission and values	“...we conduct our business responsibly and with respect for individuals, communities and the environment, wherever...” “Gracias a nuestra gran adaptabilidad ante los cambios hemos dado respuesta a los retos medioambientales que se nos plantean”	Scale from 0-3 0=no mentioned 1=remotely mentioned 2=essential pillar for the company
	History of implementing environmental program	“desde 2001 se introdujo un distintivo ecológico a una gran parte de su extensa gama de productos” “Nuestro departamento de I + D en los últimos 20 años se ha dirigido básicamente a la promoción de tecnologías limpias.”	Scale from 0-3 0 = no mentioned 1 = 1 – 10 years 2 = >10 years
	Level of environmental strategy	“se alcanzó la Certificación del sistema de gestión de la calidad en todas nuestras empresas operativas en España y Francia” “Para cumplir estos propósitos, se implementan prácticas de protección del medio ambiente, de la seguridad de la salud en todos los lugares de trabajo de la Compañía teniendo como prioridad la prevención.”	Scale from 0-3 0 = Local 1 = National 2 = Global

Table 2. (Continued)

Category	Topic	Examples	Measurement scale
2. Stakeholders			
a. Supply chain	Suppliers	<p>“...is working with suppliers and customers to ensure full compliance with legislative requirements within REACH.”</p> <p>“con esta Política de Medio Ambiente promovemos en los suministradores y contratistas los mismos principios que marcamos para nosotros”</p>	<p>Scale from 0-3</p> <p>0 = no mentioned</p> <p>1 = mentioned</p> <p>2 = specific program</p>
	Costumers	<p>“Customers are closely linked with our business and we seek their input to drive the direction of our sustainability program.”</p>	<p>Scale from 0-3</p> <p>0 = no mentioned</p> <p>1 = mentioned (Satisfied costumers)</p> <p>2 = active role</p>
b. Others			
	Government	<p>“Government proposals to regulate the health care system may directly affect the Company's business and incentives for pharmaceutical innovation.”</p> <p>“Additionally, the Company pays contributions to national and foreign governmental and private pension insurance organizations based on legal regulations”</p>	<p>Scale from 0-3</p> <p>0 = no mentioned</p> <p>1 = mentioned (Satisfied costumers)</p> <p>2 = active role</p>

Table 2. (Continued)

Category	Topic	Examples	Measurement scale
	NGO	<p>“...in India reported compliance issues that predated our involvement, we conducted an internal investigation that resulted in organizational improvements to safeguard against illegal or improper activity.”</p> <p>“Our team repeatedly helped victims of natural environmental disasters in 2010 ...worldwide donated €785,000 for the flood victims in Pakistan.”</p>	Same scale
	Industry associations	<p>“es miembro fundador de UNITIS y participa en sus grupos de trabajo... Actualmente se está desarrollando un cuestionario que permitirá autoevaluar a las empresas su nivel de sostenibilidad para mejorar su gestión medioambiental”</p> <p>“Con motivo de nuestro 50 aniversario colaboramos con WWF España para la conservación de nuestros bosques”</p>	Same scale
	Shareholders	“...shareholders...closely linked with our business and we seek their input to drive the direction of our sustainability program.”	Same scale
3. Endowments			
	ISO certification	<p>“now also has a certified environmental management system according to ISO 14001”</p> <p>“...is based on the European Model for Comprehensive Quality Management which ...ISO 14001.”</p>	<p>Scale from 0-3</p> <p>0 = no incorporated</p> <p>1 = 50% of the total facilities</p> <p>2 = in all facilities</p>

Table 2. (Continued)

Category	Topic	Examples	Measurement scale
	EMAS	<p>“...holds the certificates of Environmental Management Systems and Occupational Health and Safety based on ISO 14001 and OHSAS 18001.”</p> <p>“EMS regards the continual improvement of our processes and products to ensure the highest levels of environmental”</p>	<p>Binary</p> <p>0 = No 1 = Yes</p>
	Responsible care	<p>“...is committed to maintaining defined environmental and safety standards. These are based primarily on the principles of the chemical industry's Responsible Care initiative.”</p> <p>“...está plenamente concienciado en el Programa Responsible Care, en la comunicación con entidades externas”</p>	Binary
	Other product certification (such as Ecolabel)	<p>“...será el primero en España en lucir la etiqueta ecológica europea 'Ecolabel'”</p> <p>“ecológico es una pintura plástica mate, con certificado ecológico Ecolabel”</p>	<p>Scale from 0-3</p> <p>0 = in any product 1 = in one product 2 = in more than one product</p>
	Reports	<p>“... of our compliance with GRI indicators and have concluded that the report ...”</p> <p>“To read the online version of Merck's Corporate Responsibility Report as well as a 20 pages summary, please click on”</p>	<p>Scale from 0-3</p> <p>0 = any report 1 = annual report / sustainable section within web site 2 = sustainable report</p>

Table 2. (Continued)			
Category	Topic	Examples	Measurement scale
	Awards	<p>“For the third year in a row, ...has placed on the Dow Jones Sustainability North America Index, which is based on a thorough analysis of corporate economic, environmental and social performance”</p> <p>“PVC-free sealing compound systems of ALTANA's division... have been awarded with the annual ALTANA”</p>	<p>Scale from 0-3</p> <p>0 = no</p> <p>1 = one / national award</p> <p>2 = >1 / international</p>

Source: adapted from Wall et al. (2011) and self – elaboration

4.2.3. Control variables

For controlling of alternative explanations, I added several control variables. First, I included the size of the company as a strong relation between size of companies and export intensity has been previously found (e.g. Verwaal and Donkers 2002). Even some studies have already used such data as a control variable (Martin – Tapia, 2008; Javalgi, White and Lee, 2000). In our case, and following Martin – Tapia paper (2008), the size of companies was measured by extracting the number of employees. This could be considered as a proxy variable for firm size due to collecting the number of people working in a company is an easy data to collect and represents quite good company's magnitude. In fact, many scales and private database determine firms' size by grounding number of employees. This data was also extracted from Amadeus database for the year 2010. However, I also determined the size by measuring the sales of companies. Following the logic, we can elucidate that the higher are the sales, the more is the probability that companies look for new markets and exports.

Another control variable is the age of companies. Other studies as Javalgi et al. (2000) and Martin – Tapia (2008) addressed to this proxy variable due to it can be related with the experience. The theoretical logic states that the most experience companies have in international arenas the better is their performance and success. To calculate the age of companies, I sought for the year in which each company was founded. Finally, third control variable imposed was if companies were multinational. This is a dummy variable taken the value 1 if the company is multinational and 0 otherwise.

4.3. Statistical analysis

As explained above, this study includes several measures for export capacity: export intensity, number of countries and exported brands. As it can be observed not all the dependent variables are measured in the same way. Export intensity is measured with a ratio, while number of countries and exported brands are counting variables. It implies that different types of regression are required to analyse the relationship between environmental capacities with the different dependent variables.

For export intensity I used a lineal regression, whereas in the case of the study of the number of countries and exported brands I chose a negative binomial regression as they are count variables. Nonetheless, the most appropriate model to study count variables is Poisson regression although it requires a very restrictive assumption: overdispersion. I checked for this condition and it was found in both cases that problem was present. For both cases the variance of these variables was bigger than their mean when it should be the same. In the case of brands, mean is 5.07 and variance 29.89, up to five times what it should. The same problem was encountered in the counting variable of countries, in this case mean is 34.56 and variance is 558.59, up to 16 times over the result needed. Therefore, negative binomial regression was finally run to correct for overdispersion, being for modelling count variables, usually for overdispersed count outcome variables. Table 3 shows the mean and the variance obtained for brands and countries.

Table 3. Mean and Variance for Brands and Countries

	Mean	Variance
Brands	5.07	29.89
Countries	30.56	558.59

Source: self-elaboration

5. Results

This section is presented in three parts. Firstly, I analyze a table in which is displayed the mean, standard deviation, and values minimum and maximum for each variable that participate in the analysis. Next, correlations among all variables are exposed in order to assess the influence between them. Finally, I describe all models employed for the regression analysis and their respective goodness.

5.1. Descriptive analysis

Table 4 reports a summary of descriptive statistics for all variables implicated in the analysis. That table makes us a clearer idea about the medium profile of the chemical companies evaluated.

To begin with, size of companies was measured through the number of employees (Martin – Tapia 2008) where firms with less than 250 employees were considered as SMEs, condition defined by EU (2003). Thereby, results determine that the average size for companies in this study is 155 employees being 59 in 77 medium or small firms. Other variable used to measure the size was sales. For the sampled companies as average they generate euro 50,000. Furthermore, I discover that the 38% consisted in multinational corporations; they were, as mean, 52.51 years old; and export to 50 different countries. However, this last data is not the regular basis due to, in the case of this study, some companies export just one to country whereas others to 101. Something similar happens for the number of brands. Although the midpoint for this variable is set in 5 brands per company, there is a wide range which goes from one brand until a maximum of 25. Finally, with regards to export intensity, which was measured as *“the value of exports as a proportion of total sales of the firm”*, results determine that the final ratio for export intensity is 543.54.

Next, regarding to the evaluation of the companies' environmental responsiveness, I obtained a final proactivity rate of 13.4 out of 34. Specifically for each group, results show that the 54.75% of firms fulfil the requirements of having a managerial vision. In this category a 57% of firms recognised environmental statements in their values, 60% have an historical long term in implementing practices against pollution, 65% considered the environmental issues globally important, and just a 32% have a senior manager and department concerning to environmental issues.

For the next category, a 25.75% of firms implicate stakeholders in the implementation of environmental practices. Within stakeholders, a 14.5 % of firms actively participate with NGOs and it is the same percentage for companies which have shareholders environmentally concerned. Moreover, just a 10% of firms are engaged with governments for environmental purposes. However, percentages are higher when firms address to green costumers (50%) or implement some environmental program for suppliers (29%). Also the percentage rises up (37.5%) for companies that belong to industries associations in order to develop and improve some environmental practices altogether.

Last set of environmental capabilities category I evaluated was endowments. Results show that 28.38% of companies take into consideration some of these practices with the aim of improving in their environmental performance. For this section, 25.5% of

firms have obtained some environmental award, 16% launch an annually sustainability report, and 16% have included the Ecolabel certificate for their product. Also, it is the same percentage for the incorporation of environmental standards within their managerial strategies such as EMAS. However, despite an 84% of companies have implemented the ISO 14001, just a 7.5% have shown to hold the Responsible Care certificate.

Table 4. Mean, standard deviation, minimum and maximum

Variable	Mean	Std. Dev	Min	Max
Export intensity	543.54	4,222.47	12.16	1,694.01
Countries	34.56	23.63	1	101
Brands	5.07	5.47	1	25
Environmental proactivity	13.39	7.65	1	34
Total managerial vision	4.38	2.09	0	8
Total stakeholders	3.09	2.92	0	12
Total endowments	3.43	3.02	0	12
Values	1.14	0.77	0	2
History	1.21	0.72	0	2
Level of env	1.30	0.67	0	2
Senior	0.75	0.60	0	2
Suppliers	0.58	0.69	0	2
Customers	1.00	0.59	0	2
Government	0.20	0.58	0	2
NGOs	0.29	0.69	0	2
Industry associations	0.75	0.87	0	2
Shareholders	0.28	0.59	0	2
ISO	1.68	0.72	0	2
EMS	0.32	0.72	0	2
Responsible Care	0.15	0.43	0	1
Ecolabel	0.32	0.72	0	2
Reports	0.32	0.65	0	2
Awards	0.51	0.78	0	2
Nº Employees (size)	154.93	210.81	28	1,336
Year in operation (age)	52.51	26.31	14	116
Multinational	0.38	0.49	0	1
Sales	50,526.32	90,982.14	4,599.24	623,114

Source: self-elaborated

5.2. Correlations among variables

Table 5. Matrix of correlations among variables

Variable	1	2	3	4	5	6	7
1. Export_intensity	1	1					
2. Countries	0.3043	1.0000 [†]					
3.Brands	0.0555	-0.0161	1				
4.Values	0.0972	0.0342	0.0044	1			
5. History	0.1253	0.1579	-0.0031	0.5286	1		
6. Level Env		-0.0995	-0.1584	0.4813	0.3567 [*]	1	
7. Senior		-0.3483	0.0456	0.4245 ^{***}	0.2157 [†]	0.3329 ^{**}	1
8. Suppliers	0.0179	-0.0106	0.1475	0.6087	0.3484 [*]	0.3732 [*]	0.5206
9. Customers	0.0429	-0.2164 [†]	0.0407	0.3526 ^{**}	0.2743 [*]	0.2214 [†]	0.3278 ^{**}
10. Government	-0.1615	0.0297	0.0230	0.3906 ^{***}	0.2498 [*]	0.3282 ^{**}	0.5193
11.NGO		-0.202	0.1859	0.4179 ^{***}	0.1752	0.3157 ^{**}	0.4573 ^{***}
12.Industry		-0.1129	-0.0148	0.5772	0.3689 [*]	0.4093 ^{***}	0.4726
13. Shareholders		-0.1844	0.1348	0.3623 [*]	0.2457 [*]	0.2305 [†]	0.4398 ^{***}
14. ISO		-0.1775	0.0997	0.2174 [†]	0.2119 [†]	0.1435	0.2233 [†]
15. EMS	0.1918	-0.0267	0.0165	0.4463 ^{***}	0.2706 ^{**}	0.3760 ^{**}	0.3876 ^{**}
16.R. Care	0.1907	-0.0579	-0.1445	0.3885 ^{**}	0.3299 ^{**}	0.3535 ^{**}	0.3691 ^{**}
17. Ecolabel	0.1729	-0.0859	0.0390	0.3667 ^{**}	0.3277 ^{**}	0.2843 ^{**}	0.3197 ^{**}
18. Reports	0.0805	-0.0091	0.1294	0.3737 ^{**}	0.266 [*]	0.3795 ^{**}	0.5750
19. Awards	0.0377	-0.1539	0.0206	0.5607	0.3357 ^{**}	0.4296 ^{***}	0.5259
20. Employees	0.1030	0.2442 [*]	0.3783 ^{**}	0.1791	0.0572	-0.0970	0.0722
21. Age		-0.2706	0.0164	-0.1303	-0.2923 [†]	-0.1979	-0.0528
22. Multinational		-0.2953	-0.071	0.3992 ^{***}	0.1536	0.2733 [†]	0.4192 ^{***}
23. Sales	0.1811	0.3139 [*]	0.3042 [*]	0.1556	0.0929	-0.0808	0.0408
Variables	8	9	10	11	12	13	14
8. Suppliers		1					
9. Customers	0.4989	1.0000					
10. Government	0.5399	0.2121 [†]	1				
11.NGO	0.4739	0.2878 [†]	0.5105	1			
12.Industry	0.4927	0.2006	0.5109	0.4458 ^{***}	1		
13. Shareholders	0.4650 ^{***}	0.2931 [†]	0.6455	0.56	0.3389 ^{**}	1	
14. ISO	0.317 ^{**}	0.3106 ^{**}	0.1568	-0.0484	0.1307	0.1407	1
15. EMS	0.5976	0.3451 ^{**}	0.6161	0.4059 ^{***}	0.4397 ^{***}	0.4835	0.2005 [†]
16. R. Care	0.4025 ^{***}	0.3460 ^{**}	0.5841	0.2522 [*]	0.3503 [†]	0.3022 [†]	0.1548
17. Ecolabel	0.2729 [*]	0.2761 [*]	0.335 ^{**}	0.227 [†]	0.4635 ^{***}	0.3795 ^{**}	0.2005 [†]
18. Reports	0.4944	0.2275 [†]	0.8312	0.5768	0.5323	0.6455	0.1575
19. Awards	0.6144	0.3188 ^{**}	0.5456	0.5156	0.4725 ^{***}	0.5423	0.1937
20. Employees	0.2493 [†]	0.1791	0.1191	0.2423 [*]	0.0504	0.2908 [*]	0.1172
21. Age	-0.0038	0.0094	-0.0364	-0.0504	-0.1319	-0.0529	-0.1595
22. Multinational	0.4739	0.3550 ^{**}	0.4504 ^{***}	0.4143 ^{***}	0.609	0.3995 ^{***}	0.1802
23. Sales	0.2441 [†]	0.1868	0.1186	0.1312	0.0512	0.1724	0.1372
Variables	15	16	17	18	19	20	21
15. EMS		1					
16.R. Care	0.7062	1.0000					
17. Ecolabel	0.5998	0.5513 ^{***}	1				
18. Reports	0.5334	0.4607 ^{***}	0.4078	1			
19. Awards	0.4410 ^{***}	0.4397 ^{***}	0.441 ^{***}	0.6199	1		
20. Employees	0.0580	0.0393	-0.0976	0.271 [†]	0.1418	1	
21. Age		-0.1168	-0.074	-0.0594	-0.1064	-0.0156	1
22. Multinational	0.4078 ^{***}	0.4493 ^{***}	0.2818	0.4019	0.4918	0.1615	-0.1109
23. Sales	0.1730	0.1730	0.0132	0.2398 [*]	0.1024	0.9003	-0.0259
Variables	22	23					
22. Multinational		1					
23. Sales	0.1581	1.0000					

Note: β standardized coefficients displayed resulting from lineal regression.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [†] $p < 0.10$. Source: Self – elaboration

What follows is a description of correlations encountered among variables nonetheless Table 5 shows that there is not a high relation between them. This is due to the majority of variables with higher grades of significance holds a correlation coefficient around 0.45, well below of 0.70 (Cohen et al., 2003). The only exception is the correlation coefficient between the number of employees and the sales of a company that overcomes the 0.70 threshold. However, it is justified in the sense that both items are proxies of the size and therefore, they are closely related.

5.3. Regression analysis

Tables 6, 7 and 8 display the results obtained from the estimation of the models predicting export capacity represented by export intensity, number of countries and brands exported, respectively. As it can be noticed below, I run a hierarchical regression analysis in which variables are introduced in different steps. Therefore, four models were run in each case. Model 1 provides a baseline that includes only control variables; Model 2 incorporate the overall measure for environmental proactivity; Model 3 is composed by the three dimensions studies of environmental proactivity: managerial vision, stakeholders and endowments, and finally, Model 4 embraces all the items representing these three dimensions.

5.3.1. Corporate environmental responses and export intensity

Firstly, table 6 shows how the effect of different environmental practices on export intensity.

Model 1 reveals that among all the control variables only the size, both employees and sales, are positively and significantly related to export intensity. Findings in model 2 show that environmental proactivity has a positive and significant effect on export intensity. Breaking up environmental proactivity in managerial vision, stakeholders' networks and endowments, model 3, it is observable that environmental practices related to managerial vision do not seem to increase export intensity; whereas environmental endowments, and especially, stakeholders with green networks to promote the environment, have a positive impact. Finally, model 4 shows which individual environmental practices if more related to export intensity. I find that the variable which interferes further is the deployment of the Responsible Care system followed by the implementation of EMAS, belonging to NGOs, having shareholders environmentally concerned and collaborating with government in environmental issues. Finally, I encounter that those practices with a slightly significance are having the certificate Ecolabel for products and having a senior manager in charge of environmental problems within the company.

Table 6: Relationship between environmental responsiveness and export intensity

Variable	Model 1	Model 2	Model 3	Model 4
Employees	0.495 [†]	0.499 [†]	0.934**	0.873**
Age	0.011	0.010	0.030	0.050
Multinational	0.013	0.014	0.060	0.030
Sales	1.416**	1.417**	1.336**	0.746 [†]
Environmental proactivity		0.177*		
Managerial vision			0.00	
Stakeholders networks			0.449**	
Endowments			0.256*	
Values&Mission				0.030
History				0.030
levelMA				0.070
Senior				0.141 [†]
Suppliers				0.010
Customers				0.030
Government				0.318*
NGOs				0.283*
Industry associations				0.000
Shareholders				0.202*
ISO				0.010
EMS				0.140*
RCARE				0.256**
Ecolabel				0.169 [†]
Reports				0.030
Awards				0.030
R ²	0.802	0.823	0.856	0.97
N	77	77	77	77

*Note: 6 standardized coefficients displayed resulting from lineal regression. ***p<0.001, **p<0.01, *p<0.05, †p<0.10. Source: Self – elaboration*

5.3.2. Corporate environmental responses and number of countries.

The following table (table 7) indicates which environmental practices help companies to export to a wider number of countries.

According to Model 1, I find that the fact of being a multinational company can help companies to export to more countries. However, it is observable that size in this case for neither of the two variables seems to enhance the number of countries. Furthermore, findings support in Model 2 what was stated for the Model 1 as well in terms of being multinational. Also this model reveals that environmental proactivity is

significantly well related with the enhancement in the number of countries. Regarding to Model 3, it shows that once again Stakeholders networks is the category which affect more, although as it can be observed just to some extent. For the other categories, this model does not show to have any significant relation. Finally in the

Table 7: Relationship between environmental responsiveness and countries

Variable	Model 1	Model 2	Model 3	Model 4
Employees	0.000	0.000	0.001	0.004*
Age	0.000	0.000	0.000	0.000
Multinational	0.304 [†]	0.356 [†]	0.363	0.318
Sales	0.001	0.000	0.000	0.001 [†]
Environmental proactivity		0.006*		
Managerial vision			0.026	
Stakeholders networks			0.009 [†]	
Endowments			0.005	
Values&Mission				0.549
History				0.820*
levelMA				0.232
Senior				0.022
Suppliers				0.133*
Customers				0.080
Government				0.329*
NGOs				0.180
Industry associations				0.249
Shareholders				0.171*
ISO				0.800 [†]
EMS				0.489
RCARE				0.227
Ecolabel				0.154
Reports				0.080 [†]
Awards				0.252*
Pseudo R	0.013	0.014	0.016	0.088
Log Likelihood	-285.623	-285.554	-284.9244	-249.515
N	70	70	70	70

Note: β standardized coefficients displayed resulting from negative binomial regression.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [†] $p < 0.10$. Source: Self – elaboration

Model 4, those concretely practices which seem to have a positive effect on enhancing the number of countries are having a long historical orientation in the implementation of environmental measurements, having special programs for suppliers, collaborating with governments, having shareholders environmentally concerned and having obtained some environmental award. Other practices, although in this case less significant for the improvement of this variable, are the implementation of

environmental systems such as ISO 14001 and launching an annual report of sustainability.

5.3.3. Corporate environmental response and number of brands

Table 8: Relationship between environmental responsiveness and brands

Variable	Model 1	Model 2	Model 3	Model 4
Employees	0.004*	0.004**	0.003*	0.004*
Age	0	0	0	0
Multinational	0.318	0.575	0.734*	0.318
Sales	0.001 [†]	0.001	0.001	.001 [†]
Environmental proactivity		0.025 [†]		
Managerial vision			0.062	
Stakeholders networks			0.142*	
Endowments			0.025	
Values&Mission				0.109
History				0.109
levelMA				0.001
Senior				0.281
Suppliers				1.035**
Customers				0.029*
Government				1.364 [†]
NGOs				1.513 [†]
Industry associations				0.107
Shareholders				1.079*
ISO				0.601
EMS				0.507
RCARE				0.153
Ecolabel				1.152 [†]
Reports				0.904
Awards				0.141
Pseudo R	0.030	0.035	0.055	0.178
Log Likelihood	-178.706	-177.726	-174.174	-143.058
N	77	77	77	77

Note: β standardized coefficients displayed resulting from negative binomial regression.

*** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$, [†] $p < 0.10$. Source: Self – elaboration

For the study of number of brands, findings in Model 1 reveal also in this case that the size, represented by employees and sales, affects positively and significantly to this variable. Also Model 2 indicates that environmental proactivity has a positive and significant effect on the number of brands exported. Besides I find in Model 3 that, among all environmental categories, again Stakeholders with green networks seem to be notably related with number of brands exported. Last, breaking up environmental

proactivity in all the environmental practices I selected for the evaluation, model 4 distinguishes which ones are more shows to have a further significance. For this case, the practices more significant are having special programs for suppliers, implicated green customers, and shareholders concerned with environmental issues. However, those practices with a remotely significance for the increase of number of brands exported are collaborating with governments, belonging to NGOs and owning green certificates such as Ecolabel

All those practices that I did not mentioned, even though being well above zero, do not seem to have any significance to improve the export capacity.

6. Conclusions

6.1. Results discussion

Many researchers have already studied the relation between companies performing a proactive environmental approach and the effect that such practices provoke when exporting (e.g. Martin – Tapia, 2008; Aguilera – Caracuel, 2012). In this section, I describe all findings encountered in the tables shown in the previous section of results. In such tables, the dependent variables, (export intensity, brands and countries) were crossed by running a hierarchical regression using four different models with the independent variables: an environmental scale divided into three different categories (managerial vision, stakeholders, and endowments) adapted from Wall et al. (2011) to measure the environmental proactivity. Therefore, I show the main conclusions and implications for those pairs of variables which have resulted from having a positive relation. Finally, I describe the limitations derived of the segmentation carried out.

To begin with, the results reveal that the implementation of proactive environmental strategies affects positively intensify the export capacity. This implication is supported by the model 2 in all the export variables studied (export intensity, number of countries and number of brands). What is more, this finding reinforces previous literature (Martin – Tapia, 2008; Christmann and Taylor, 2001; Bellesi et al., 2005) which already determined the positive relation between those two variables whichever the size of companies.

Focusing further on the results obtained from the evaluation of companies' environmental proactivity, it have resulted that Stakeholders environmentally concerned are the set of capabilities which can enhance most the relation between environmental proactive activities and export capacity. That influence is reflected in the fact that this category holds the majority of subitems with a great significance,

above all, for the export intensity and number of brands exported as we will see below. Moreover, this is a logical result if we consider that variables which show external capabilities can heighten intangible company assets such as reputation or image facilitating the export process.

What follows is an analysis of which capability or practice I have encountered to have a high level of significance to intensify the export capacity and, more concretely, each one of the variables selected to measure it: export intensity, number of countries, and number of brands.

First, with regards to export intensity, results suggest that the implementation of managerial systems such as Responsible Care may boost the export intensity. However, only 7.5% of the companies own this certificate. As was mentioned in previous parts, Responsible Care is a quite complete environmental program that still needs to be disseminated to chemical companies. This poor deployment could result in the fact that currently, only large firms can afford the implementation of such system. This data also underpins what was stated when arguing that even in Germany the Responsible Care certificate was implemented by only 15% of chemical companies. This is a poor percentage if we consider that Germany is the country with the most developed practices. Moreover, this low percentage is markedly in contrast with the percentage obtained for the ISO 14001 certificate (84%). ISO 14001 is an international widely known certificate which helps countries and markets to quickly identify that companies comply with the established requirements to operate in accordance with the environment. Therefore, I can determine that there could be a lack of information and a necessity facilitate the implementation of complete environmental programs such as Responsible Care in order to reach the importance of the already well-known ISO 14001 and thus, promoting companies to export further.

Another system which may have a positive relation in export intensity is the EMAS managed by the EU. This result supports previous literature (Constantini and Mazzanti, 2011) which highlighted that the deployment of concrete management strategies could help companies to go overseas.

However, and as it was mentioned before, it is in the group of stakeholders where I encountered the majority of significant practices. Specifically the variables which are shown to be more relevant are the collaboration with NGOs, governments and shareholders. This finding involves what other studies already affirmed (e.g. Aragon – Correa, 2009) where it was considered that stakeholders along with innovation, flexibility and a managerial vision could intensify the exportations. Although the previous study was elaborated only for SMEs, it can supplement these results due to the fact that 76% of the size of the sample selected is considered medium or small.

Finally, companies that have a special department and a senior manager concerned with environmental issues have shown to have a slightly more significant relation with

the export intensity. The other variables, despite being positive, do not seem to be relevant for the improvement of the export intensity.

Second, in the light of the results obtained for the number of countries, it can be noticed that a subitem of managerial vision positively affects companies export to a greater number of countries. Therefore, we can elucidate that, in this case, internal capabilities affects companies when exporting. Concretely, the fact that companies have a historical orientation towards environmental issues seems to enhance them to go further into international arenas. Findings also suggest that the 60% of the sampled companies recognize having a long historical orientation towards solutions against pollution. Moreover, having a long term goal in the implementation of environmental solutions can also be related to the companies' experience in these issues. Based on logical thinking, it could be thought that the more experience firms have to adapt to different environmental regulations the more success in the integration of companies in different countries. Nonetheless, this finding contrast with some researchers who have concluded that experience does not interfere in the process of exportations but on the quality of the process and their establishment within the market (Martin – Tapia 2008).

For increasing the number of countries, findings as well support that having obtained a national or international award can benefit the ability to export more. I would like to point out that around a 25% of the companies have already obtained recognition for being sustainable with the planet. The obtaining of an award is not an easy path to go and it has to be recognized. Moreover, this finding complements what I mentioned previously about how variables that improve the external image of companies can benefit them when addressing new scenarios. What is more, once again the category of stakeholders owns the majority of variables that have positive influence. However, the significant practices within this category slightly change. Precisely for this case, results support that deploying special programs for suppliers, which can help companies to design green products; having shareholders interested in environmental issues and participating in programs promoted by governments induce companies to export to a large extent.

Last but not least the variable I analyse is the number of brands exported which is related to the number of different products that companies aim to export. For this variable findings suggest a positive relation, although with a remote significance, with the implementation of the European certificate Ecolabel. Ecolabel is a European initiative for certificating those products considered green or having been obtained in a process designed to respect the environment. In this case, Ecolabel appears to show, as mentioned before, Spanish companies export to European countries with a greater intensity. Hence, the correlation between those variable is clear: this certificates seems

to facilitate the entrance of Spanish companies when addressing the EU to sell their products. However, just 16% of our sampled companies have already implemented it. Furthermore, although results also show a positive relation between stakeholders for this independent variable (number of brands exported), the implication is slightly divergent from the other variables. Findings reveal that the implementation of special programs for suppliers and bestowing the opinion of costumers play an essential role on the spread of brands, and therefore, products overseas. In this case, 50% of the evaluated companies take into consideration costumers' opinion and around 30% of them have already special environmental programs for suppliers. This result also complements what other studies have demonstrated for costumers (Aguilera – Caracuel, 2011) which consider that costumers concerned with the environment can encourage firms to develop “green practices”. Finally, and as happened for previous variables' analysis, governments, NGOs and shareholders variables seem to stimulate, in this case to some extent, companies to export a greater number of brands.

Some of the control variables have also shown to have significance with the export capacity. I encountered that size plays a relevant role on export intensity and numbers of brands exported, not being that large but also significant for the other dependent variable (number of countries). What is more, this significance has been found for both measurement of size: number of employees and sales. This result confronts previous researches in which size has been considered not to be relevant for the process of exports (Martin - Tapia 2008; Wakelin, 1998). This last positive relationship may result from the logic that large companies have the capacity to produce and, therefore, export more types of products and brands obtaining greater benefits from it. However, other studies have encountered that for the manufacturing sector it has positive or negative influence depending on the size of the company (See Verwaals and Donkers, 2001, pg 11).

Finally, following with control variables, age and to be a multinational corporation have not shown to strengthen in any case the export intensity, neither exporting to a greater number of countries nor incrementing the number of brands exported.

6.2. Practical implications

What follows is mentioning some practical implications of the results obtained. It has been already demonstrated incorporation of sustainable practices and capabilities such as proactive environmental strategies within companies is essential to withstand the level of life of the current society performing, at the same time, a balancing act with this planet and its limited resources. This paper also reinforces such statements. In these pages it is demonstrated that the implementation of environmental practices capabilities help companies to increase the level of exportation. What is more, the more advanced is the proactive strategy greater is the export capacity measured in this

case by the export intensity, number of countries and number of brands. However, this study goes beyond. Until now, no one had studied which concrete environmental practice could intensify more widely the export capacity.

To begin with, when companies deploy a proactive strategy, changes in the way of proceeding happen in an internal (improving products and processes) or external (image and reputation) level. Referring to the environmental proactive scale used in order to measure the environmental responsiveness of the sampled firms, the category of “Managerial vision” enhances the internal changes, whereas “Stakeholders” and “Endowments” contribute to send external signals of managerial transformations within companies. The results of this study have revealed that “Stakeholders” is the category which intensify to a larger extent the export capability followed by “endowments” and “managerial vision” respectively. Hence, this implicates that those companies which implement practices to improve their external image and reputation gather more probabilities for success when going overseas.

Nonetheless, the concrete practices this study have found to enhance the export capacity are exposed below.

Firstly, for those companies which want to boost their export capacity, these findings have suggested that they should have focused on environmental managerial systems such as EMAS or Responsible Care. Also, the fact of belonging to NGOs, collaborate with governments or having shareholders environmentally concerned helps to the export intensity. Finally for this variable, practices such as implementing the Ecolabel certificate or having a special manager in charge of environmental issues have seemed to have a slightly significance.

Secondly, for those companies which aim to increase the number of countries where exporting, the main environmental practices which could introduce are special programs for suppliers, collaborating with governments or having shareholders environmentally concerned. Also the fact of having a long historical orientation towards environmental issues in the implementation of environmental activities has resulted to help companies to export to a great number of countries.

And last, for those companies interested in amplifying the number of brands in exports it is desirable taking into consideration customer’s opinions, having specific environmental programs for suppliers and implementing green certificates for products such as Ecolabel. In this case, also having shareholders worried about the environment, participating in proposal offered by governments and collaborating with NGOs have been demonstrated to be useful to increase the number of brands.

To conclude, through the entire discussion of this study I encountered that those environmental practices which might send external signals seems to help companies to

increase their export capacity. This is based on the logic that countries and markets perceive earlier those practices which improve the external image of a company than the internal changes. Specifically, the most repeated ones have been the practices related to “Shareholders”, “NGOs” and “Government”. As it is can be found for this sample these are not the most common practices carried out by companies. Thus, firms would need to consider a change in their strategies in order to continue growing further in their level of exportations.

Nonetheless, we have to consider that each company is unique, and therefore, they thus have the last word to decide which practices would be the most appropriate for them in order to success in new scenarios being, at the same time sustainable with this planet.

6.3. Limitations

In any case, I caution against generalizing the results obtained. This study was carried out for considering only one sector: the chemical industry located in Spain. Furthermore, I selected this sector due to it entails particular characteristics: it is one of the most pollutant industries and, at the same time, one among the rest of sectors that generate more benefits coming from exports. Therefore, general implications for others industries may implicate erroneous interpretations.

7. References

Articles

- Aguilera-Caracuel, J., Hurtado-Torres, N. E., and Aragon-Correa, J. (2011). Does international experience help firms to be green? A knowledge-based view of how international experience and organisational learning influence proactive environmental strategies. *International business review* 21 (2012) 847 – 861.
- Aragon-Correa J.A., Rubio Lopez, E., (2007). Proactive Corporate Environmental Strategies: Myths and Misunderstandings. *Long Range Planning* 40 (2007) n357-381 Elsevier.
- Aragon-Correa, J.A., (1998). Strategic proactivity and firm approach to the natural environment. *Academy of Management Journal* 41 (5): 556 – 559
- Aragon-Correa, J.A., Matias-Reche, F., and Senise-Barrio, M.E. (2002). Managerial discretion and corporate commitment to the natural environment. *Journal of Business Research* 57 (2004) 964– 975.
- Aragon-Correa, J.A., Hurtado-Torres, N., Sharma, S., and Garcia-Morales, V.J. (2008). Environmental strategy and performance in small firms: A resource-based perspective. *Journal of Environmental Management* 86 (2008) 88–103.
- Ardnt, M. and Bigelow, B. (2000). Presenting structural innovation in an institutional environment, hospitals' use of impression management. *Administrative Science Quarterly*, 45, 494 – 522.
- Bansal P., (2005). Evolving sustainability: A longitudinal study of corporate sustainable development. *Strategic management Journal*, 26 (3), 197-218.
- Bansal, P. and Roth, K. (2000). Why companies go green. A model of ecological responsiveness. *Academy of Management Journal*, 43, 717 – 736.
- Barkema, H.G. and Vermueulen F., (1998). International expansion through start – up or acquisition: a learning perspective. *Academy of Management Journal*, 41 (1), 7 – 26.
- Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 11, 408-427.
- Bellesi, F., Lehrer, D. and Tal, A. (2005). "Comparative advantage: the impact of ISO 14001 environmental certification on exports", *Environmental Science and Technology*, vol. 39, pp. 1943-1953.

- Berry, M.A. and Rondinelli, D.A. (1998). Proactive corporate Environmental Management: Anew Industrial Revolution. *The academy of Management Executive* (1993 - 2005) Vol. 12, No. 2 (may, 1998), pp. 38 - 50
- Buyse, K.E. and Verbeke A. (2003). Proactive environmental strategies: A stakeholder management perspective. *Strategic Management Journal* 24: 453-470 (2003).
- Cerin, P., & Karlson, L. (2002). Business incentives for sustainability, a property rights approach. *Ecological Economics*, 40(1), 13-22.
- Christmann, P. and Taylor, G. (2001). Globalization and the environment: determinants of firm self – regulation. *Journal of international Business studies* 3, 439 – 458.
- Cohen J., Cohen P., West S.G., Aiken, L.S. (2003). *Applied multiple regression /correlation analysis for the behavioral sciences*. Lawrence Erlbaum Associates, Publishers.
- Costantini, V. and Mazzanti, M. (2011). On the green and innovative side of trade competitiveness? The impact of environmental policies and innovations on EU exports. Elsevier B.V.
- Darnall, N. and Henriques, I. (2009). Adopting Proactive Environmental Strategy: The Influence of Stakeholders and Firm Size. *Journal of Management Studies* ©.
- Darnall, N., Henriques, I., and Sadorsky, P. (2008). Do environmental management systems improve business performance in an international setting? *Journal of International Management* 14 (4), 364 - 376.
- Darnall, N., (2002). Motivations for participating in a US voluntary environmental initiative: the multi-state working group and EPA's EMS pilot program. In: Sharma, S., Starik, M. (Eds.), *Research in Corporate Sustainability: The Evolving Theory and Practice of Organizations in the Natural Environment*. Edward Elgar Publishing, Inc., Northampton, MA, pp. 123–154.
- Dierickx, I., & Cool, K. (1989). Asset stock accumulation and sustainability of competitive advantage. *Management Science*, 35, 1504-1511.
- Eriksson, K., Johanson, J., Majkgard, A. & Sharma, D. 1997. Experiential knowledge and cost in the internationalisation process. *Journal of International Business Studies*. 28 (2): 337-360.
- EU, Commission of the European Communities, (2003). Commission Recommendation of 06/05/2003 concerning the definition of micro, small and medium-sized enterprises. Brussels. 06/05/ 2003 C 1422 final. 12pp.

- Freeman, R. (1984). *Strategic management: A stakeholder perspective*. Boston, MA: Pitman.
- Groves, K. S. (2006). Leader emotional expressivity, visionary leadership, and organizational change. *Leadership & Organization Development Journal*, 27, 566-583.
- Hillary, R., (2000). *Small and Medium-Sized Enterprises and the Environment: Business Imperatives*. Published by Greenleaf Publishing Limited.
- Hoffman, A., & Hoffman, J. (1999). Institutional Evolution and Change: Environmentalism and the U.S. Chemical Industry. *The Academy of Management Journal*, Vol. 42, No. 4. (Aug., 1999), pp. 351-371.
- Javalgi, R.G., White, D.S., & Lee, O., (2000). Firm characteristics influencing export propensity: an empirical investigation by industry type. *Journal of Business Research* 4, 217–228.
- Katsikeas, C.S., Leo Nidou, L.C., & Morgan, N.A., (2000). Firm-level export performance assessment: review, evaluation, and development. *Journal of the Academy of Marketing Science* 2, 493–511.
- Langhelle, O. (1999) Sustainable development: Exploring the ethics of Our Common Future. *International Political Science Review*, (1999) , Vol. 20, No. 2, 129-149
- Lehmann, M., Christensen, P. & Larsen, J.M., (2005). Self-regulation and new institutions: the case of Green Network in Denmark. In: Sharma, S., Arago´n-Correa, J.A. (Eds.), *New Perspectives in Research on Corporate Sustainability: Corporate Environmental Strategy and Competitive Advantage*. Edward Elgar Publishing, pp. 96–113.
- Martin – Tapia, I., Arangon-Correa, J.A., & Rueda-Manzanares, A. (2009). *Environmental strategy and exports in medium, small and micro enterprises*. Elsevier.
- Martin – Tapia, I., Arangon-Correa, J.A., & Senise-Barrio, M. E. (2008). Being green and export intensity of SMEs: the moderating influence of perceived uncertainty. Elsevier.
- Morhardt, J.E. (2001). Scoring corporate environmental reports for comprehensiveness, a comparison of three systems. *Environmental Management*, 27, 881 – 892.
- Myro, R. y Martí, P.E. (2012). *PYMES en la exportación de la IQ española* Universidad Complutense de Madrid.

- Poliakoff M., Fitzpatrick, J., Michael, Farren-Trevor R., & Anastas Paul, T. (2002). Green Chemistry: Science and Politics of Change. *Green Chemistry: Science and Politics of Change Science* 297, 807 (2002);
- Rondinelli, D.A., & London, T., (2003). How corporations and environmental groups cooperate: assessing cross-sectoral alliances and collaborations. *Academy of Management Executive* 17, 61–76.
- Roome, N., (1992). Developing environmental management strategies. *Business Strategy and the Environment* 1, 11–24.
- Russo M.V., & Fout P.A., (1997). A resource-based perspective on corporate environmental performance and profitability. *Academy of Management Journal* 4, 534–559.
- Rutherford, R., Blackburn, R.A., & Spence, L.J., (2000). Environmental management and the small firm: an international comparison. *International Journal of Entrepreneurial Behaviour & Research* 6, 310–325.
- Sapienza, H., Autio, E., George, C., & Zahra, S. A. (2006). A capabilities perspective on the effects of early internationalization on firm survival and growth. *Academy of Management Review*, 31(4), 914–933.
- Sharma S., Aragon- Correa J.A., Rueda-Manzanares A. (2007). The Contingent Influence of Organizational Capabilities on Proactive Environmental Strategy in the Service Sector: An Analysis of North American and European Ski Resorts. *Canadian Journal of Administrative Sciences* 24: 268–283.
- Sharma, S., & Vredenburg, H. (1998). Proactive corporate environmental strategy and the development of competitively valuable organizational capabilities [Special Issue]. *Strategic Management Journal*, 19, 729-753.
- Soley J., (2012). Spanish's Chemical Industry from the 19th Century to the Present. *American Institute of Chemical Engineers (AIChE)* August 2012.
- Stuart L. & Hart (1995). A Natural-Resource-Based View of the Firm. *The Academy of Management Review*, Vol. 20, No. 4. (Oct., 1995), pp. 986-1014.
- Verwaal, E., & Donkers, B., (2002). Firm size and export intensity: solving an empirical puzzle. *Journal of International Business Studies* 3, 603–613.
- Wakelin, K., (1998). Innovation and export behaviour at the firm level. *Research Policy* 2, 829–841.

Waldman, D. A., Sully de Luque, M., Washburn, N., House, R. J., Adetoun, B., Barrasa, A., Wilderom, & C. P. M. (2006). Cultural and leadership predictors of corporate social responsibility values of top management: A GLOBE study of 15 countries. *Journal of International Business*, 37, 823-837.

Westley F. & Mintzberg H., (1989). Visionary leadership and strategic management. *Strategic Management Journal*, 10, 17 – 32.

Links

- EPA. <http://www.epa.gov/sustainability/basicinfo.htm>
- Environment. European Commission. <http://ec.europa.eu/environment/emas/>
- UNESCO. <http://www.unesco.org/new/en/education/themes/leading-the-international-agenda/education-for-sustainable-development/sustainable-development/>.
- CEFIC - Council and EEA- Environmental European Agency. <http://www.cefic.org/>
- ICEX. <http://www.icex.es>
- Aduanas. Cámara de Comercio Exterior Español. <http://aduanas.camaras.org/>
- FEIQUE. <http://www.feique.org/>
- The World Bank. <http://data.worldbank.org>
- United States Census Bureau. <http://www.census.gov/>
- WTO. World Trade Organization (2010). http://www.wto.org/english/res_e/booksp_e/public_forum09_e.pdf

