Mapping CSR performance at corporate and supply chain levels: a comparative perspective

1247

Abstract

Corporate Social Responsibility in general, and sustainable supply chain management in particular, have been a growing concern for companies and researchers over the past decade (Seuring and Miller 2008). However, in previous research work, sustainability has often been dealt with in a generic fashion. Thanks to the exploitation (Multiple Factor Analysis) of a CSR rating database (Innovest) reporting longitudinal scores both for social and environmental performance, on 1,198 companies belonging to different countries and distinct industries, we evidence different patterns and identify relationships between sustainable behaviour, sustainable supply chain, and specific context. Our findings from exploratory analysis help us to formulate a few propositions and suggest a general framework.

1. **INTRODUCTION**

The theme of Corporate Social Responsibility (CSR) has a long history: since 1953, Bowen claimed that companies have the obligation to "pursue those policies, to make those decisions, or to follow those lines of actions that are desirable in terms of objectives and values of our society" (Bowen, 1953, p. 6). Despite the age of the concept, pioneering initiatives –such as the philanthropic Macy's Company in New York in the late 1800 or the paternalistic Pullman Palace Car Company in Chicago (Heald, 1970)- as well as a growing interest from both practitioners and scholars little is known on actual corporate environmental and social practices on a large scale. What are the trends and characteristics of existing corporate initiatives regarding their different dimensions –namely social vs environmental- ? What is the influence of country and industry on environmental and social performance? Indeed, recent research on CSR has either focused on specific cases, countries or relevant industries (Handfield, Sroufe and Walton 2005, Bouquet and Deutsch 2008, Kortelainen 2008), or remained very general. In this research, we focus on a global approach and sample to identify trends and patterns of CSR. Specifically, we investigate to what extent sustainable performance varies across time, industries and across the globe. Further, we analyze the role of sustainable supply chain within corporate sustainability performance. While supply chain management has been identified as a strategic function of growing importance, its weight in corporate sustainable development is still unclear (Preuss 2005).

"Sustainable Supply Chain Management (or SCM) is defined as the management of supply chains where all the three dimensions of sustainability, namely the economic, environmental, and social ones, are taken into account" (Ciliberti, Pontrandolfo and Scozzi, 2008, p. 1580). In this paper we focus on the non-economic dimensions of sustainability and we argue that sustainable performance of companies can only be achieved through supply chain concrete initiatives. While in the past, the theme of sustainability was referred principally to environmental issues whereas CSR to social aspects (Robinson, 2004), nowadays many scholars consider corporate sustainability and CSR as synonymous (Lehtonen, 2004), and so do we.

Recent works in strategic management (Porter and Kramer, 2006) and supply chain (Bowen, Cousins, Lamming and Faruk, 2006, Zhu and Sarkis 2007, Carbone and Moatti, 2008) literature highlight the importance to establish a link between sustainable behaviour and specific context. Building on Porter & Kramer (2006), we expect companies belonging to different contexts, namely regarding country and industry, to follow distinct patterns towards

CSR both in terms of social and environmental issues. Moreover, as the institutionalisation of CSR is a dynamic process, sustainable strategy may consolidate and/or change over time.

We start by a brief literature review to outline gap in existing work and draw our research questions. In a second part, we evidence such dynamic patterns thanks to the exploitation of a CSR rating database (Innovest). Specifically, we used longitudinal scores over 6 years (from 2004 thru 2009) both for social and environmental performance, on 1,198 companies belonging to 39 different countries and various industries that we decided to group into 16 major sectors. We first run exploratory analysis through PCA (Principal Component Analysis) and MFA (Multiple Factor Analysis) to evidence different patterns to be linked to different institutional contexts. More precisely, we carry out a dynamic analysis across industries, as well as countries, both at CSR and sustainable supply chain levels. We also evidence different influences on the global sustainable performance, specifically regarding the balance between social and environmental dimensions on the one hand, and between supply chain vs. non supply chain CSR initiatives, on the other hand. Our findings help us to design a framework on the link between CSR and sustainable supply chain performance both on its social and its environmental dimension.

2. BACKGROUND

Since the Brundtland Report (WCED, 1987), sustainable development –defined as aiming to meet "the needs of the present generation without compromising (…) future generations"– has progressively been incorporated into governmental policy and corporate strategy. Not surprisingly, given the ambiguities that surround the sustainability issue, hundreds of different interpretations, related tools and methods have been proposed to render sustainability operational. The impact of sustainable development on corporate strategy has been tackled from different perspectives: stakeholder theory (Freeman 1984), the resource-based view (Aragon-Correa and Sharma 2003), and the recent "strategic CSR - corporate social responsibility" (Porter and Kramer 2006).

Despite the long history of CSR and the global momentum of sustainability, applications of CSR (and sustainability) concepts to supply chain have only emerged in the last few years, and they have predominantly concerned the environmental issues. Most of the existing studies examine specific sustainable supply chain segments: purchasing and inbound logistics, production and manufacturing, or distribution and outbound logistics.

Indeed, while the social and the environmental issues are clearly associated in the sustainable supply chain definition, a recent comprehensive literature review (Seuring and Muller, 2008)

revealed a clear deficit on the social dimension in sustainable supply chain research papers. Specifically, only 10% of the 191 studied papers (between 1994 and 2007) are addressing social issues while over 73% are focused on environment issues and the balance (16%) on overall sustainability. Similarly, almost no empirical analysis has been conducted on the use of social standards (except for Beske, Koplin and Seuring 2008 presented as the first study) while several research exist on the environment management standards. Against such a background, recent contributions (Matos and Hall, 2007) call for more research on the social dimension of sustainable SC, claiming that such dimension is emerging as the key challenge in sustainable supply chains. The underlying logic is that a greater understanding of the complex relationship between the social, environmental (and economic) issues is needed to fully understand, and hence manage, a firm's social and environmental impact both at corporate and supply chain levels (Linton, Klassen and Jayaraman, 2007; Seuring and Muller, 2008).

Our research purpose to integrate both dimensions of sustainability (environmental as well as social) should therefore help to decrease such deficit in current literature. In addition, by providing an encompassing view of all the sustainable supply chain issues and practices, this paper represents an attempt to fill a gap in the too "segmented" and anecdotic literature in this field.

In the general corporate context, previous research (Olitzky, Schmidt and Rynes 2003) found a positive correlation between environmental and social performance through a meta-analysis methodology. While it has been argued that it is far too early to transfer these findings to the supply chain level (Beske et al. 2008), our research aims at bringing light to such question, and better understand the relationship between social and environmental performance at the corporate as well as at the supply chain level. Additionally, we wish to further analyse the role of supply chain management in the overall sustainable performance and in each of its components (social and environment). Doing so, we will provide a first answer to Markley and Davis' (2007) call for research which explores the impact of a sustainable supply chain on the CSR performance of firms.

A growing body of literature on CSR is taking into account cross-cultural and country-related differences: on the one hand, empirical studies (Chapple and Moon, 2005) and on the other hand theoretical models (Matten and Moon, 2008) provide illustrations or attempt explanations of such different ways of implementing CSR according to different contexts. However, among the empirical contributions we have not met any longitudinal study which

may help in depicting, on a global scale, patterns of CSR issues at corporate level and CSR determinants at country level.

Although an increasing number of research is dealing with sustainable supply chain with reference to specific contexts, predominantly in well developed countries (Andersen and Skjott-Larsen, 2009), but more recently also with reference to developing and emerging countries (Ciliberti et al., 2008; Asif Salam, 2008) or on a global basis (Vachon and Mao, 2008), the comparative approach has not yet been applied in this field, to our knowledge. Industry-specific works for sustainable supply chain research exist, although most of them rely on a case study (Matos and Hall, 2007) or survey-based methodology (Simpson, Power and Samson, 2007).

In our research, we aim at analysing country-specific and industry-specific patterns for CSR, on a global scale, both at corporate and supply chain level, according to an exploratory approach.

3. METHODS

Because of the novelty of the subject, we decided to start with an exploratory approach. Indeed, as outlined previously, no data and research could be found on our subject (Forza 2002; Beske, Koplin & Seuring 2008) i.e. on identifying a relationship between sustainable supply chain results and corporate sustainability performance, as well as linking social and environmental dimensions at the supply chain level. We found openness and flexibility essential to our research in order to design a framework of sustainable supply chain trajectories that could be further analyzed in the future.

3.1 DATA SOURCES AND DESCRIPTION

The data used in this study stem from Innovest database that has been widely recognized as one of the major global provider for companies rating through "non traditional" performance evaluation. Actually, companies adopting sustainable behavior are expecting to visibly improve their sustainable performance, as assessed by external observers. As far as we know, specialized rating agencies are providing the only existing standardized measures for both social and environmental performance evaluation, although we acknowledge the difficulty to externally assess that a company really improves its environmental (and social) performance (Darnall, Jolley & Handfield 2008).

Other studies have previously used the same data source or other recognized rating database (cf. Chatterji, Levine and Toffel, 2009) and a recent conceptual paper about the role of

sustainable supply chain in companies' competitive advantage, suggests to use such a source to validate the presumed positive correlation between sustainable supply chains and CSR performance (Markley and Davis, 2007). Specifically, Innovest is an international investment research firm that has been analyzing non-financial drivers of risk and shareholder value since 1999, on a monthly basis, for over 2680 major companies around the world. Original Innovest database is unbalanced. In order to ensure consistency and completeness of our data, we removed from the base every company and year where the global score for non-financial performance of companies (IVA-Intangible Value Asset) was unavailable. This resulted into a sample of 1198 companies observed through 6 years between 2004 and 2009. Finally, as our research purpose does not require monthly data, we have decided to simplify the base and group monthly data into quarterly data. Our final sample resulted into 28691 unique observations.

The companies of our sample are originating from 39 different countries. Among existing and recognized research companies for non financial performance rating, we have selected Innovest for its global coverage. Indeed, our sample includes 32% of US companies compared with 100% for KLD for example. Other well represented countries in the final sample are: United Kingdom (15.7%), Japan (15.2%), Canada (4.7%), Australia (3.7%), France (3.7%) or Germany (2.9%). Our sample is also covering a wide range of industries that we have grouped into 16 categories. The most represented industries are "Services" (29.9%), "Energy and utilities" (11.3%), Electric and Electronic (10.3%), "Chemicals and Pharmaceuticals" (7.1%), "Miscellaneous manufacturing" (6.9%), "Consumer Goods" (6.6%) and Retail (6.5%). Noteworthy, Innovest scores have been adjusted to account for industry-specific features and allow to compare companies by smoothening industry effects.

More precisely, Innovest provides "Intangible Value Assessment" (IVA), a global score (with seven levels: AAA to CCC), that is broken into two major sub-scores accounting for environmental and social dimensions. These rating have been obtained through the compilation of various scores (grade from 1 to 10) that are classified into 8 different groups of constructs (see Innovest Methodology and construct details in appendix 1).

For the purpose of our study, we have analyzed the content of each group and subgroup and have selected our own scores and grouping of IVA items that account for environmental and social dimensions at the corporate as well as at the supply chain level. Specifically, we have built six major blocks of variables accounting for: global scoring (including overall rating as well as social and environmental rating), corporate environmental strategy, corporate

environmental policies and tools, corporate social issues, supply chain environmental initiatives and finally supply chain social issues (see appendix 2 for details).

In line with the literature, the environmental supply chain block concerns "operating risks", such as spills and releases, toxic emissions, hazardous waste (Beske et al. , 2008), "historic liabilities" such as those relating to contaminated sites; the adoption of "risk indicators" (referring to resource use efficiency, recycling, regulatory/legal risk, CO_2 emissions), and finally "product-materials", i.e. global screening approaches, such as life cycle analysis, suppliers environmental audit, eco-labels (Matos et Hall, 2007; Noci, 2000; Bowen et al, 2002). The social side of supply chain management involves working conditions occurring through the supply chain –at direct or indirect suppliers' particularly- such as salary level, child labour, security, working hours (blocks "human rights/ child and forced labour", "oppressive regimes", "intellectual capital/product development"). Such dimension is particularly at stake as more and more products, materials or components are sourced from "low cost countries" where regulations are minimal (Ciliberti et al. 2008). Two other dimensions complete the social supply chain block: on the one hand all the initiatives addressing other "supply chain actors" (Simpson & Power, 2005), on the other hand, "product safety", referring to the societal acceptance of a product, i.e. its stewardship. Our blocks were finally validated after discussion with experts and professionals.

3.2 DATA ANALYSIS

Multiple factor analysis (cf. Abdi and Valentin, 2007) analyzes observations described by several blocks or sets of variables. MFA seeks the common structures present in all or some of these sets. MFA is used to analyze a set of observations described by several groups of variables. The analysis derives an integrated picture of the observations and of the relationships between the groups of variables. These characteristics allow us to argue that MFA is particular suitable to our research objective, that is depicting a global view of CSR practices and at the same time analyzing the relationships between our different sets of variables, i.e. those pertaining on the one hand to the environmental and the social corporate dimensions and, on the other hand, to the environmental and social dimensions at the supply chain level. MFA is performed in two steps. First a principal component analysis (PCA) is performed on each data set which is then "normalized" (by dividing all its elements by the square root of the first *eigenvalue*). Second, the normalized data sets are merged to form a unique matrix and a global PCA is performed on this matrix. The individual data sets are then projected onto the global analysis to analyze communalities and discrepancies.

Before running the global MFA, the homogeneity of our longitudinal set of data was controlled through Principal Component Analysis (PCA) per block of variables and per year (*charts available on demand*). PCA results confirm that the structure of our data is consistent over the time, thus allowing for global analysis. Moreover, evidence of internal consistency of variables within each block is provided by α Cronbach test which is deemed acceptable as it is predominantly higher than 0.6 (see appendix 3).

## 4. WHAT PATTERNS FOR SUSTAINABLE SUPPLY CHAIN MANAGEMENT?

Here we discuss some of the first results of the explorative step of our research, which highlight specific links among the social and the environmental CSR performance, both at the corporate and at the supply chain levels. They also confirm the dynamic process of CSR integration in companies' practices, as well as the influence of several types of pressures on the different CSR dimensions. Finally, each country on the one hand, and each industry on the other hand, is characterised by a different combination and importance of each CSR dimension.

4.1 WEIGHING THE DIFFERENT DIMENSIONS OF CSR

The overall MFA results, summarised in a chart showing the correlation between the partial axes of each PCA (figure 1), highlight alternative ways of implementing CSR into companies' practices, which can be distinguished by crossing axis F1, which refers to "an overall high/low CSR performance relying on superior/inferior environmental performance both at corporate and supply chain levels", with axis F2, which predominantly takes into account "high or low social performance both at corporate and supply chain level" again. First of all, and as it has been argued by previous works (cf. Belin-Meunier, 2009 for a critical literature review), this chart confirms the priority of environmental initiatives compared to the social ones, as the former are much stronger correlated to high overall CSR scores. Secondly, it interestingly supports the idea that, in order to be successful, the implementation of CSR practices needs to be extended to supply chain activities.

Figure 1: Multiple Factor analysis: partial axes chart[1]

---

[1] See appendix 4 for details on the contribution of each partial axis to MFA

Axes partiels (axes F1 et F2 : 50,94 %)
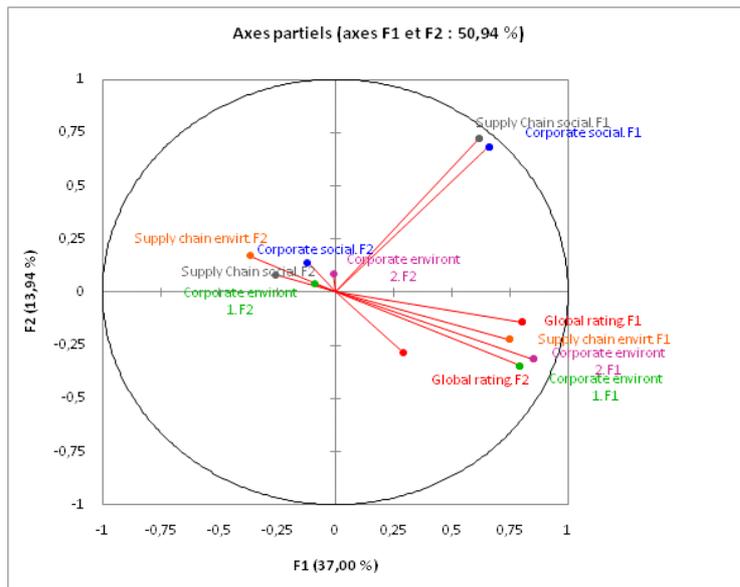
More precisely, and referring to each item contribution to axes, the right side of axis F1 shows high correlation between the following characteristics: high CSR performance, the existence of a well performing environmental business strategy which has also been translated into a structured Environmental Management System[1] and, at the supply chain level, the existence of a risk prevention attitude, both for infrastructures (site liabilities), processes (energy use, emissions, recycling) and products (safety and stewardship). The upper side of axis F2 shows a well developed social policy (governance concerns, employee motivation and development, labour relations) which is accompanied by some of the items composing the Social Supply Chain score, namely: activities and policies about human rights, oppressive regimes, child and forced labour.

The high contribution of the "environmental management system" item to axis F1 may be a second promising evidence of a positive relationship between environmental management systems (such as ISO 14000) and sustainability, as it had been first shown by Kleindorfer, Singhal & Wassenhove (2005).

The individual data sets, grouped by country and industry are then projected onto the global analysis, in order to seize communalities and discrepancies.

4.2 THE INFLUENCE OF COUNTRY AND INDUSTRY ON CSR PERFORMANCE

---

[1] We refer to the following definition of EMS "collection of internal policies, assessments, plans and implementation actions affecting the entire organization and its relationship with the natural environment" (Darnall, Jolley & Handfield 2008)

Some scholars have stressed the importance of studying the impact of national approaches on CSR (Berthoin-Antal & Sobzack, 2007; Matten and Moon, 2008), in line with institutional theory which suggests including the influence exerted by institutional pressures among the antecedents of different CSR practices. Separately, recent comparative studies between several countries evidenced the influence of cultural, historical, demographic and economic (level of development, GDP/inhabitant) issues on corporate ethical (Sims and Gegez 2004, Volkema, 2004, Burnaz, Atakan, Topcu and Singhapakdi 2009) or environmental behaviour (Montgomery and Stone 2009). Separately, logistics has also been shown to be influenced by cultural, geographic and economic factors (Luo, Van Hoek and Roos, 2001), further reinforcing the interest to better understand the role of nationality in sustainable supply chain practices. We therefore aim at identifying several groups of countries with specific features in terms of corporate and supply chain sustainable performance, and explain similarities and discrepancies through previously analyzed factors. For consistency and representativeness reasons, we decided to exclude from our country based analysis those countries with too small number of companies. We therefore focus here on a sample covering 29 different countries, as summarized in appendix 5.

Following a recent stream in the CSR literature (Chapple, Gond, Orlitzky and Louche 2008), we first relied on the Variety of Capitalism theory, which identifies different institutional contexts according to cross-national differences and similarities. In particular, we refer to the Amable's (2003) taxonomy of five capitalist systems, built on several features of the institutional contexts, such as financial governance, labour market, social protection, training systems, corporate governance and the development of the welfare state.

Accordingly, our results confirm that our sample countries reflect quite homogeneous varieties of capitalism, in terms of environmental, social and overall CSR performance. Continental European Economies (FR, NL, BE, CH, DE, NO, IE) and Social –Democratic Economies (FI, SE, DK) display best performing scores, along the axis F1 and, especially for the first group, also along the axis F2, except for Ireland, which seems to be an outlier, showing a considerably less performing behavior on the social dimension. Such good results overall for this group could trace to the significant role of governmental institutions and related regulations, as well as cultural and historical features of the European countries, compared to other well developed areas. Indeed, Market-based Capitalism (GB, CA, US, AU) lacks behind CEE both in terms of environmental performance (with the US performing quite negatively) and social behaviour. This can be explained through higher individualism as a characteristic of these countries' culture (Burnaz et al., 2009). However, Great Britain (GB)

and Canada (CA) to a lesser extent, are performing better than US mainly on the environmental dimension. Such finding could trace to proximity (whether geographic for Great Britain or cultural for Canada) influence from CEE countries. Indeed, such proximity favours trade exchanges between Continental European Economies and Great Britain on the one hand, and Canada on the other hand, leading to contagion of concern for sustainability. Mediterranean Economies (IT, PT, GR, ES) show quite poor environmental performance (except for Spain, the positive outlier in this group), which is slightly counterbalanced by higher concern for social issues. These poor results compared to other European countries, could be explained through the level of economic development as evidenced through average GDP per inhabitant: in 2009, among Continental European Economies, GDP per capita ranged from 40,873 US dollars as for Germany to 79,089 USD as for Norway; among Mediterranean Economies, GDP ranged from 21,414 USD as for Portugal to 35,084 USD as for Italy (World Bank, 2010). Results for Asian Economies (JP, HK, KR) are extremely poor in the social field, and not homogeneous in the environmental one. Specifically, Japan (JP) positive results on the environmental dimension contrast with extremely poor records displayed by the other Asian countries. Such finding is in line with previous research (Gond et al. 2008) showing that Japanese companies have been pushed by their national legal framework to engage into environmental practices while generally low national motivation for environment in other Asian Economies –combined with only recent concern from authorities-led to very limited commitment to environmental actions. Further, Japan concern for environment can also be analyzed as a result of their geographic natural constraints, forcing them to optimize existing limited resources. Noteworthy, our graph also evidences very poor results of Japan and Korea on the social dimension (while other Asian countries -Singapore, Honk Kong- are displaying slightly lower than average social performance). Finally, New Zeeland, Mexico and Brazil also show extremely poor performance on the social dimension of CSR.

Figure 2: CSR practices per country[1]

---

[1] See appendix 5 for the complete list of countries /abbreviations
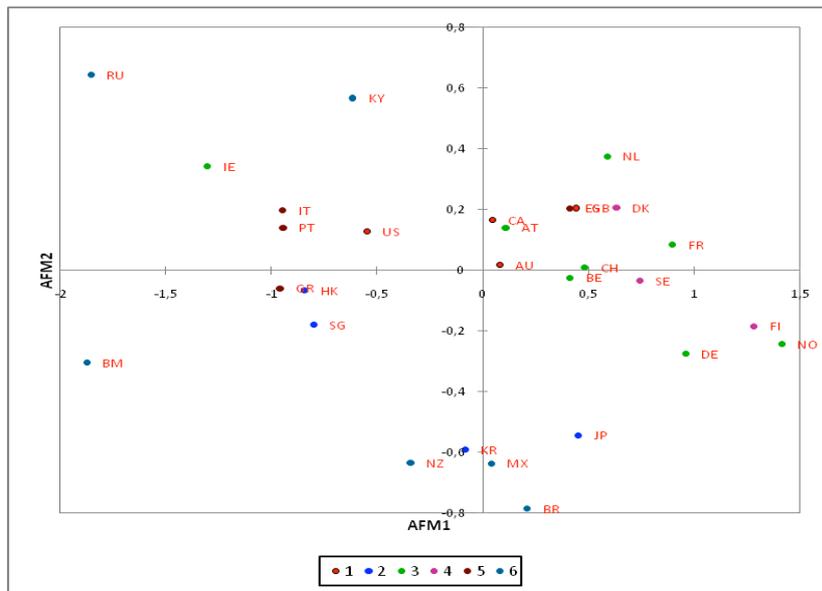
When looking at CSR dynamics (from 2004 to 2009), it is interesting to notice that the first two blocks of countries (Continental European and Social Democratic Economies), those for which the CSR performance was at the highest level both for the environmental and the social aspects, remain quite stable through time, although CEE countries have been slightly degrading on the social dimension. Conversely, all Mediterranean countries seem to be degrading their slightly better performance in the social field, showing, since 2007 up to 2009, decreasing (and negative) scores along the axis F2 of the MFA (cf. appendix 6). Looking at Market based Economies dynamics, they have on the one hand degraded their social performance during the last few years, in accordance with the economic downturn affecting global economies. On the other hand, they have shown significant improvements across time on the environmental dimension. Such a progression along the green axis is particularly true for US companies, which still lack behind UK (leading the group, on both CSR dimensions), but seem seizing new business opportunities linked to the political positive attitude towards the "green growth", pleaded by Al Gore and several non governmental institutions. Such trend is also probably resulting from the cultural and geographic contagion we previously referred to. Indeed, US is a preferred trading partner of Canada and UK, both focusing on CSR, and directly or indirectly influencing US firms behavior. Finally, among the countries belonging to the Asian group, Japan, which had been performing well on the environmental dimension since a long time, has also recently improved its social behavior. The other Asian Economies which had been degrading their environmental and social performances between 2004 and 2007, have significantly improved their results during the last few years. This may be linked to the specific role of "factory of the world" played by

some Asian countries; major western clients are exerting pressure on Asian suppliers to respect international standards and agreements on environmental and social conditions (Christmann and Taylor 2001). The influence of international customers onto Asian suppliers in their CSR practices can also be interpreted as a "supply chain contagion" effect (McFarland, Bloodgood and Payan 2008), i.e. resulting from market-based isomorphic pressures. These influences complement non-market pressures (Baron 1995), those referring to the specific components of national business systems or the Variety of Capitalism forms. Overall, these two pressures tend to evidence a move towards isomorphic behavior on a global scale.

Figure 2: CSR practices per industry
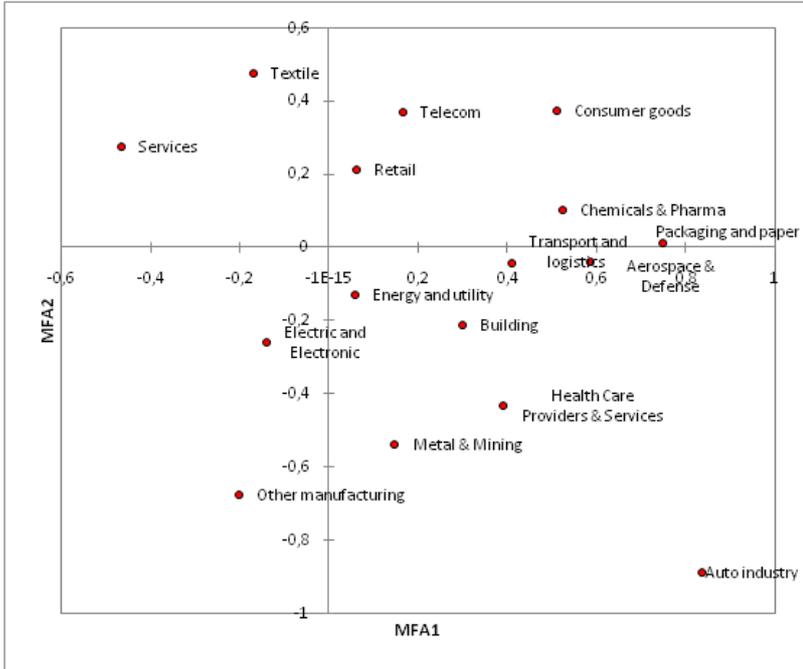
Concerning the analysis by industry (cf. figure 2), the best performing sectors on the environmental dimension are those that have undergone strong stakeholders' pressures, whether non market-based (mainly regulation) because of their high polluting impact (auto-industry, chemicals and pharmaceuticals, aerospace and defense, transport and logistics), or market-based (consumer goods, packaging) from their customers. Previous research results (Preuss 2005) have similarly shown that environmental friendly actions (requirement in supplier contracts, ISO 14001…) are concentrated in heavy polluting industries as they are under public scrutiny. Interestingly, electric and electronic companies have been under legal scrutiny since more recently and have not achieved strong environmental performance yet.

Nevertheless, their global CSR and environmental performance are clearly improving between 2004 and 2009 (see Appendix 7).

As far as the social dimension is concerned, the best performing industries are on the one hand labor intensive sectors (textile, retail and consumer goods) that have been criticized for unethical actions particularly at their far sourcing contractors and are reacting now to stakeholders' pressures. On the other hand, high involvement in social actions also concerns "virtual economy" (telecommunications, services) that should focus on the social side to improve its overall CSR performance because of its specific features less strongly and visibly impacting environment. However, between 2004 and 2009, services have undergone a dramatic fall of social performance which may be linked to the increasing practices of western economies to delocalize their "*call centers*" and other support services in low wage countries.

When looking at industry patterns across time (from 2004 to 2009), at a more general level, it is possible to confirm a certain isomorphic behaviour of companies, as most of the observed industries have moved towards the right and upper side of the charts, showing a converging improvement of their environmental and, to a minor extent, of their social performance (cf. appendix 7).

Figure 3: The implementation of CSR - a dynamic process
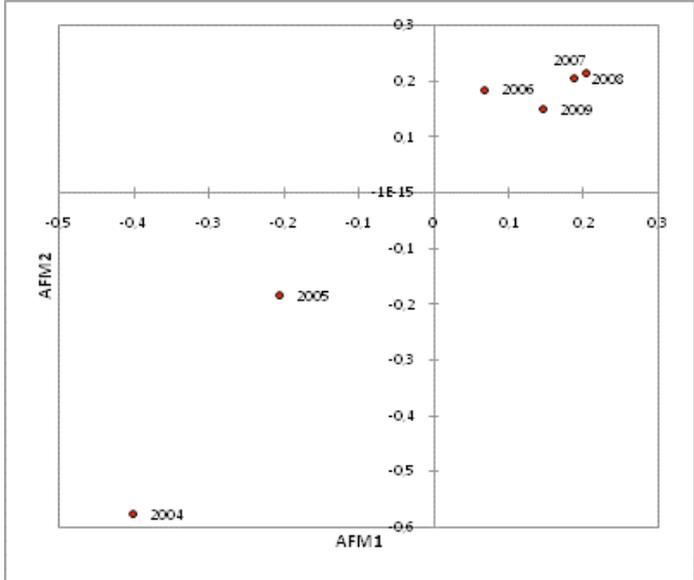
In order to wrap up the dynamic process for CSR implementation at a global level, we refer to the above graph which interestingly shows how CSR performance for the overall Innovest sample has been increasing for the last 6 years, moving from a very negative score in 2004 on both dimensions to a continuously improved score until 2008 before a slight worsening in 2009, maybe as a consequence of the generalised economic downturn.

Such findings represent a promising evidence for a gradual incorporation of CSR principles into business practice, both at the corporate and the supply chain levels. They also support the existence of an isomorphic behaviour, pointed out previously, on the one hand, within the same Capitalist forms and, on the other hand, across the same industries. Such isomorphism reveals the ability of firms to understand "the new rules of the game", specifically materialized through regulations and diffusion of CSR rating (such as Innovest), and internalize those new requirements via an evolution of practices.

4.3 TOWARDS A FRAMEWORK FOR SUSTAINABLE SUPPLY CHAIN MANAGEMENT

Against the literature gap about the link between corporate and supply chain CSR performance on the one hand, and social versus environmental initiatives on the other hand, we rely on our first explorative results and provide a few propositions, to be tested in the future (cf. next figure).

Figure 4: Linking Sustainable Supply Chain to CSR
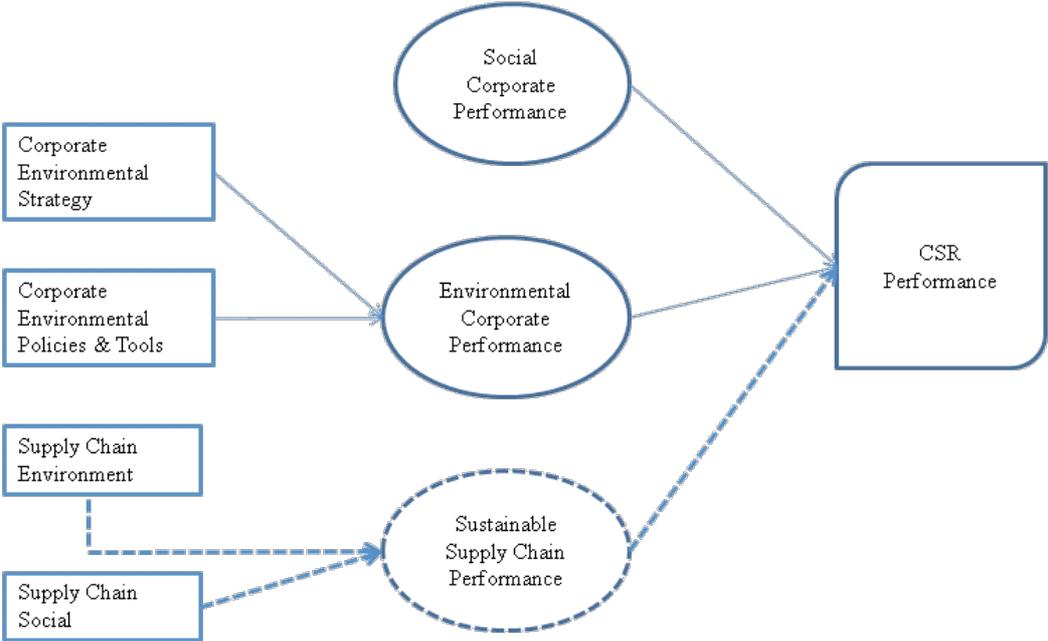
P1. CSR superior performance requires sustainable supply chain initiatives, both overall and for each CSR dimension (social and environmental).

P2. Environmental dimension displays a higher contribution to global CSR performance than the social one, both at the corporate and supply chain levels.

In order for us to test these two propositions, we will generate a complementary variable, "Sustainable supply chain performance", reflecting in an aggregate manner, the social and the environmental scores at the supply chain level. Such variable will be then used to measure the Sustainable Supply Chain impact on the overall CSR rating.

Once tested the weight of relationships between the different blocks of our model, we will develop further the study of the different forms of pressures on CSR behaviour. On a very general basis, we have observed that within each Capitalist System, companies tend to adopt isomorphic behaviour both at the corporate and supply chain levels, in each CSR dimension. Similarly, within each industry, companies tend to adopt a convergent behaviour. What deserves further investigation is the role of market vs non-market pressures on each CSR dimension as well as on the two organisational levels (corporate and supply chain). Assuming that Capitalist Systems mainly reflect non-market based pressures while Industries (as accounted for by Innovest database, smoothening Industry-specific regulatory effects) focus on the market-based influences, we will try to point out the different antecedents and/or hampering factors for each of the diverse CSR practices carried out by companies.

5. CONCLUSION

Our results, as they currently stand, confirm that national (and cross-country) contexts, industry and time affect and shape CSR practices. Further, our study evidences the key role of sustainable supply chain in overall CSR performance as well as the predominance of environmental versus social dimension.

Our results have several implications for theory. They first address the shortcomings deriving from the use of institutional theory applied to CSR that did not distinguish between different types of CSR, in its social and environmental components, both at the corporate and the supply chain levels. Such analysis helped us to reveal that isomorphism and allomorphism (Lippi, 2000) occur simultaneously: while all companies within our sample tend to evolve through similar trends towards overall CSR improvement, national and industry differences remain. Within this context, we particularly gave evidence to the fact that sustainable supply chain management is essential for CSR and that companies seem to behave in a quite consistent way, pursuing simultaneously social or/and environmental superior performance at these two organisational levels. Similarly the influence of the industry contributes to orientate CSR practices towards different fields. It is thus fundamental to carry on comparative CSR research, in order to contribute to the development of comparative CSR theory, taking into

account on the one hand the alternative institutional contexts and on the other hand the role of the industry as for enabling or hampering factors for CSR implementation.

Further, our study brings empirical contribution as it offers one of the first attempts to provide a large scale and longitudinal analysis on CSR performance and identify specific patterns.

Our work also has implications for practice. At a managerial level, we suggest that sustainable supply chain initiatives should be encouraged as they strongly improve overall CSR performance. Separately, we also recommend a localized approach for implementing CSR practices which seem to be more appropriate when embedded in the specific institutional context.

Despite what we believe are the main contributions of our work for both theory and practice, we recognize it has some limitations. First, it is a preliminary step of a predominantly explorative nature. In the future, we aim at refining the factors of influence for different CSR and sustainable supply chain behaviors, before testing their respective weight through confirmatory methods. Second, our analysis is confined at a very general level and deserves further development as far as concerns specific supply chain issues, and the influence of the different institutional pressures.

Despite these limitations, we believe that our study makes a useful contribution. It contributes to a deeper understanding of the role of supply chain in global CSR and current existing specificities regarding country and industry as well as social versus environmental dimensions.

References

Abdi H., Valentin, D. (2007), Multiple Factor Analysis (MFA), *in* Neil Salkind (Ed.), *Encyclopedia of Measurement and Statistics*, Thousand Oaks (CA): Sage.

Amable B. (2003), *The diversity of modern capitalism*, Oxford, Oxford University Press.

Andersen M., Skjoett-Larsen, T. (2009), Corporate social responsibility in global supply chains, *Supply Chain Management: An International Journal*, 14: 75 – 86

Aragon-Correa, J. A. & Sharma, S. (2003), A contingent resource-based view of proactive corporate environmental strategy, *Academy of Management Review*, 28(1): 71-88.

Asif Salam M. (2008), Corporate Social Responsibility in Purchasing and Supply Chain, *Journal of Business Ethics*, 85: 355-370

Baron D.P. (1995), Integrated Strategy: market and non market components, *California Management Review*, 37: 47-65.

Belin-Meunier C. (2009), *Logistique, SCM, et développement durable : Une revue de la littérature*, presented in a workshop in research in Logistics and transportation: histoires de Durabilité, 17 Septembre 2009, Paris.

Berthoin-Antal A., Sobzack A. (2007), Corporate social responsibility in France: A mix of national traditions and international influences, *Business and Society*, 46(1): 9-32.

Beske P., Koplin J., Seuring S. (2008), The use of environmental and social standards by German first-tier suppliers of the Volkswagen AG, *Corporate Social Responsibility & Environmental Management*, 15(2): 63-75.

Bouquet, C. and Y. Deutsch (2008), The Impact of Corporate Social Performance on a Firm's Multinationality. *Journal of Business Ethics* 80(4): 755-769.

Bowen F.E., Cousins P.D., Lamming R.C. and Faruk A.C. **(**2006) Horses for courses: explaining the gap between the theory and practice of green supply, *in* Joseph Sarkis, *Greening the Supply Chain,* Springer-Verlag, London.

Bowen H.R. (1953), *Social Responsibilities of the Businessman*, Harper & Row, New York.

Burnaz, S., Atakan, M., Topcu, Y., & Singhapakdi, A. (2009), An Exploratory Cross-Cultural Analysis of Marketing Ethics: The Case of Turkish, Thai, and American Businesspeople. *Journal of Business Ethics*, 90: 371-382.

Carbone V., Moatti, V. (2008), The green supply chain: preliminary results of a global survey, *Supply Chain Forum, an International Journal*, 9: 66-76.

Chapple W., Gond J.-P., Orlitzky M. and Louche C. (2008), The influence of institutional varieties of capitalism on corporate stakeholder responsibility, paper presented at the Academy of Management, Anaheim, US

Chapple, W., Moon, J. (2005) Corporate Social Responsibility (CSR) in Asia, *Business Society,* 44: 415-441

Chatterji A.K., Levine D.I., Toffel M.W. (2009), How Well Do Social Ratings Actually Measure Corporate Social Responsibility? *Journal of Economics and Management Strategy*, 18(1): 125-169.

Christmann P., Taylor G. **(**2001), Globalization and the environment: determinants of firm self-regulation in China, *Journal of International Business Studies*, 32(3):439-58

Ciliberti F., Pontrandolfo P., Scozzi B. **(**2008), Investigating corporate social responsibility in supply chains : a SME perspective, *Journal of cleaner production*, vol 16, pp 1579-1588.

Darnall N., Jolley G.J. and Handfield R. **(**2008), Environmental management systems and green supply chain management: complements for sustainability?, *Business Strategy and the Environment* 17(1): 30-45.

Forza, C. (2002), Survey research in operations management: a process-based perspective. *International Journal of Operations & Production Management*, 22(2): 152.

Handfield, R., Sroufe R. and Walton S. (2005), Integrating environmental management and supply chain strategies, *Business Strategy & the Environment* 14(1): 1-19

Heald, M. (1970), *The social responsibilities of business: company and community, 1900-1960*, Cleveland, Case Western Reserve University Press.

Kleindorfer, P.R. Singhal, K. and Van Wassenhove, L.N. (2005), Sustainable Operations Management, *Production and Operations Management*, 14: 482–492.

Kollman, K., Prakash A. (2002), EMS-based Environmental Regimes as Club Goods: Examining Variations in Firm-level Adoption of ISO 14001 and EMAS in U.K., U.S. and Germany, *Policy Sciences*, 35(1): 43.

Kortelainen, K. (2008), Global supply chains and social requirements: case studies of labour condition auditing in the People's Republic of China, *Business Strategy & the Environment* 17(7): 431-443

Lehtonen M. (2004), The environmental–social interface of sustainable development: Capabilities, social capital, institutions, *Ecological Economics*, 49 (2): 199–214.

Linton J.D., Klassen R. and Jayaraman V. (2007), Sustainable supply chains: An introduction, *Journal of Operations Management*, 25: 1075-1082.

Lippi, A. (2000), One theory, many practices. Institutional allomorphism in the managerialist reorganization of the Italian local governments. *Scandinavian Journal of Management*, 16: 455-477.

Luo, W., Van Hoek, R. I., & Roos, H. H. (2001), Cross-cultural Logistics Research: A Literature Review and Propositions. *International Journal of Logistics: Research & Applications*, 4(1): 57-78.

Markley M.J., Davis L. (2007), Exploring future competitive advantage through sustainable supply chains, *International Journal of Physical Distribution and Logistics Management*, 37: 763-774.

Matos S., Hall, J. (2007), Integrating sustainable development in the supply chain: The case of life cycle assessment in oil and gas and agricultural biotechnology, *Journal of Operations Management*, 25: 1083–1102.

Matten D., Moon, J. (2008), "Implicit" and "explicit" CSR: A conceptual framework for a comparative understanding of corporate social responsibility, *Academy of Management Review*, 33: 404-424.

McFarland R.G., Bloodgood J.M. and Payan J.M. (2008), Supply chain contagion, *Journal of Marketing*, 72: 63-79.

Montgomery, C. and Stone, G. (2009), Revisiting consumer environmental responsibility: a five nation cross-cultural analysis and comparison of consumer ecological opinions and behaviors. *International Journal of Management & Marketing Research (IJMMR)*, 2(1): 35-58.

Noci G. (2000), Environmental reporting in Italy: Current practices and future developments, *Business Strategy and the Environment*, 9: 211-23.

Orlitzky M., Schmidt F. L. and Rynes L. (2003), Corporate Social and Financial Performance: A Meta-analysis, *Organization Studies*, 24(3): 403-441.

Porter M., Kramer M.R. (2006), Strategy and Society, *Harvard Business Review*, 84: 78-83.

Preuss, L. (2005), Rhetoric and reality of corporate greening: a view from the supply chain management function. Business Strategy & the Environment, 14(2): 123-139

Robinson J. (2004), Squarring the circle? Some thoughts on the idea of sustainable development, *Ecological Economics* 48 (4), 369–384.

Seuring S. and Müller M. (2008), From a literature review to a conceptual framework for sustainable supply chain management, *Journal of cleaner production*, 16: 1699-1710.

Simpson D., Power, D. (2005), Use the supply relationship to develop lean and green suppliers, *Supply Chain Management: an International Journal*, 10: 60-68.

Simpson, D., Power, D., Samson, D. (2007) Greening the automotive supply chain: a relationship perspective, *International Journal of Operations & Production Management*, 27: 28 – 48

Sims, R. L. & Gegez, A. E. (2004), Attitudes Towards Business Ethics: A Five Nation Comparative Study. *Journal of Business Ethics*, 50(3): 253-265.

Vachon S., Mao, Z. (2008), Linking supply chain strength to sustainable development: a country-level analysis, *Journal of Cleaner Production*, 16: 1552-1560

Volkema, R. J. (2004), Demographic, cultural, and economic predictors of perceived ethicality of negotiation behavior: A nine-country analysis. *Journal of Business Research*, 57(1): 69-78.

WCED - World Commission on Environment and Development (1987), *Our Common Future*, Oxford Universitary Press.

Weaver G.R., Trevino, L.K., Cochran, P.L. (1999), Integrated and decoupled corporate social performance: management commitments, external pressures, and corporate ethics practices, *Academy of Management Journal*, 42: 539-552.

World Bank (2010), World Development Indicators database, http://databank.worldbank.org

Zhu Q. and Sarkis J. (2007), The moderating effect of institutional pressures on emergent green supply chain and performance, *International Journal of Production Research*, 45: 4333-4355.

Appendices

Appendix 1: IVA methodology and original Innovest sub-groups and categories

Intangible Value Assessment (IVA) Methodology:
Prior to an evaluation of any individual company, Innovest research analysts conduct an in-depth assessment of the competitive dynamics of that industry sector, with particular emphasis on the special risks and opportunities created by environmental and social factors.
The second step refers to the Collection of Company Data, using different sources: from companies (Annual Reports, Sustainability Reports, Websites), from government, from NGOs, Industry Associations, "Think Tanks," Other research organizations, and 750+ media sources.
They carry out then interactive, real-time interviews with company executives.
Once the interview/data gathering process is completed, each company is rated relative to its industry competitors. Companies are rated against the Innovest performance criteria, and given a weighted score, as well as a letter grade (AAA, BB etc.).

Innovest sub-groups and categories:
Strategic governance
Strategy; Strategic Capability/Adaptability; Traditional Governance Concerns.
Products & services
Intellectual Capital/Product Development; Product Safety.
Human Capital
Employee Motivation & Development; Labor Relations; Health & Safety.
Stakeholder Capital
Customer/ Stakeholder Partnerships; Local Communities; Supply Chain actors.
Emerging markets
EM Strategy; Human Rights/ Child and Forced Labor; Oppressive regimes.
EV21: Risk Factors
Historic Liabilities; Operating Risk; Leading/Sustainability Risk Indicators; Industry Specific Risk.
EV21: Environmental Management Capacity
Environmental Strategy; Environmental Governance; Environmental Management Systems; Environmental Audit; Environmental Accounting/ Reporting; Env. Training & Development, Environmental Certification, Products/ Materials.
EV21: Opportunity factors
Strategic Competence; Environmental Opportunity; Performance.

Appendix 2: our study categories (established as per initial Innovest categories)

Block 1: Global Ratings (comprising the following items)
CSR Score: synthesis of CSR performance
Environnemental score: synthesis of environmental performance
Social score: synthesis of social performance
Block 2: Corporate environnemental strategy (comprising the following items)
Strategic Competence : Environmental business development strategy/planning, organizational structure for environmental business development
Environmental Opportunity: Environmental sensitivity of geographic regions served, environmental sensitivity of demographic regions served, phase-out potential of product and services, environment improvement potential
Performance: Current environmental businesses, environmental businesses under development.
Block 3: Corporate environmental (policies and tools)
Environmental Policies : Stated policies, integration with core business, environmental profitability linkages, consistency across all operations / international, internal culture
Environmental Governance: Board structure, senior environmental officer, environment as a factor in compensation, …
Environmental Management Systems: existence, number and qualification of EHS staff, ISO 14000/other certified EMS, environmental KPI
Environmental Audit : Existence, adequacy, frequency, impartiality
Environmental Accounting/ Reporting: Environmental reporting, environmental accounting
Env Training & Development: Training and development

Environmental Certification: Environmental code signatory (CERES, other) , voluntary environmental reduction programs (EPA, …)

Block 4: Corporate Social items

Strategic Capability/Adaptability: Addresses social policies and standards, whether or not they are consistently applied across operations, board committee/mechanisms for overseeing social issues, auditing, performance tracking, compensation links, and reporting. Finally, if appropriate, addresses demonstrated ability to adapt (or not adapt) to sustainability trends or situations, along with systems that facilitate adaptation, such as a strategic planning process that monitors and incorporates sustainability trends. Then it will enable to draft a scenario bases on how the company is going to set up and monitor its operational sustainable structures and departments in relation with its sustainable strategy, with a view to offer a consistent frame to address all the issues to be covered.
Traditional Governance Concerns: Describe traditional governance issues including board/management diversity, board independence, separate CEO/Chairman, shareholder activism response, lobbying/campaign finance policies and bribery policies.
Employee Motivation & Development: Motivated and skilled employees are a rare resource that a company cannot dispend to keep on the long term. This section will particularly focus on how to hire, maintain and retain this type of resource, with regards to various local situations and regulatory contexts.
Labor Relations: Describe union situation, collective bargaining policies, procedures (access to management, grievance, whistleblower protection), workforce reduction policies and performance, claims litigation, fines.
Health & Safety: Describe H&S programs, auditing procedures, performance (absenteeism, illness, injury rates, etc.), any other relevant factors
Local Communities: describe community support programs and how far the company is attached to its local communities. This part is very similar to the emerging markets factors to the extent that a strong community involvement reinforces the license to operate in its current market. The relevance of measures undertaken to insert the company into its local context, especially in depressed areas are key with that regards. An estimation of the degree of exposure to local communities pressure in terms of turnover, potential revenue, indirect risk in revenue, retorsions measures, subventions and refunding will help to design the most likely scenario.
EM Strategy: For many firms, this will be the most important section in terms of social issues and impacts. In these cases, focus on describing marketing and production strategies as well as social impacts and programs. As most of the emerging markets represent the new source of long-term growth for many industries, there needs to be addresses how far the company can be affected by entering into this market to which extent its long-term growth is linked to developing there. The degree of longterm economic exposure will be questioned with regards to the company's ability first to keep a license to operate (social acceptance), second to take profit from the specific opportunities

Block 5: Supply Chain Environment

Historic Liabilities: Contaminated site liabilities or other historic liabilities
Operating Risk: Spills and releases, regulatory compliance, toxic emissions, hazardous waste,.
Leading/Sustainability Risk Indicators: Resource use efficiency/recycling, energy efficiency, market risk for the products, regulatory/legal risk, other emissions (GHG)
Products/ Materials : Life cycle analysis, suppliers environmental screens, eco-labels

Block 6: Supply chain social

Intellectual Capital/Product Development: Integration of social responsibility elements in R&D. Describe proprietary knowledge related to sustainability/social issues, products and services. Describe strategy and programs to develop products and services with positive social characteristics. Describe company's ability to develop a strong knowledge management through IT systems, employees' involvement, total quality management and quality assurance system. This section also focuses on the R&D chain throughout the company (links, experience return, cross-fertilization process, etc.)
Product Safety: Product stewardship and safety aspects. Describe how the company ensures that, from technical but also social points of view the products and services delivered to the market can satisfy multiple requirements, explicit or implicit.
Supply Chain actors: Describe screening policies (required codes of conduct, etc.), audits by company and third parties, supplier training and partnership programs, minority and woman owned business contracting programs and policies
Human Rights/ Child and Forced Labor: Describe human rights policies and concerns, codes by which the firm abides, claims, litigation, controversies, etc.
Oppressive regimes: Describe activities and involvement in regions considered to be oppressive regimes by credible third parties (note sources). Describe programs to ensure protection of local communities…

Appendix 3: Alpha Cronbach 2004-2005-2006-2007-2008-2009 per each PCA

| |
|---|
| PCA **Global rating.** : 0,471 ; 0,811 ; 0,904 ; 0,921 ; 0,923 ; 0,933 |
| PCA **Corporate Social :** 0,976; 0,953; 0,865; 0,816 ; 0,817 ; 0,786 |
| PCA **Corporate Environmental strategy** : 0,798 ; 0,780 ; 0,759 ; 0,770 ; 0,767 ; 0,749 |
| PCA **Corporate Environmental policies and tools**: 0,933 ; 0,928 ; 0,921 ; 0,915 ; 0,918 ; 0,909 |
| PCA **Supply Chain Social :** 0,963 ; 0,910 ; 0,721 ; 0,647 ; 0,660 ; 0,673 |
| PCA **Supply Chain Environment** : 0,576 ; 0,571 ; 0,559 ; 0,575 ; 0,589 ; 0,689 |

Appendix 4: Contribution of each partial axis to MFA

	F1	F2
Global rating.F1	0,804	-0,141
Global rating.F2	0,290	-0,284
Corporate social.F1	0,659	0,684
Corporate social.F2	-0,119	0,138
Corporate environt 1.F1	0,792	-0,347
Corporate environt 1.F2	-0,087	0,039
Corporate environt 2.F1	0,849	-0,315
Corporate environt 2.F2	-0,008	0,088
Supply Chain social.F1	0,618	0,721
Supply Chain social.F2	-0,259	0,080
Supply chain envirt.F1	0,747	-0,223
Supply chain envirt.F2	-0,368	0,171

Appendix 5: Country list

Code	Country	Code	Country	Code	Country
AT	Austria	FI	Finland	MX	Mexico
AU	Australia	FR	France	NL	Netherlands
BE	Belgium	GB	United Kingdom	NO	Norway
BM	Bermuda	GR	Greece	NZ	New Zealand
BR	Brazil	HK	Hong Kong	PT	Portugal
CA	Canada	IE	Ireland	RU	Russia
CH	Switzerland	IT	Italy	SE	Sweden
DE	Germany	JP	Japan	SG	Singapore
DK	Denmark	KR	Korea, South	US	United States
ES	Spain	KY	Cayman Islands		

Appendix 6: Country projection on MFA axes - 2004-2005-2006-2007-2008-2009
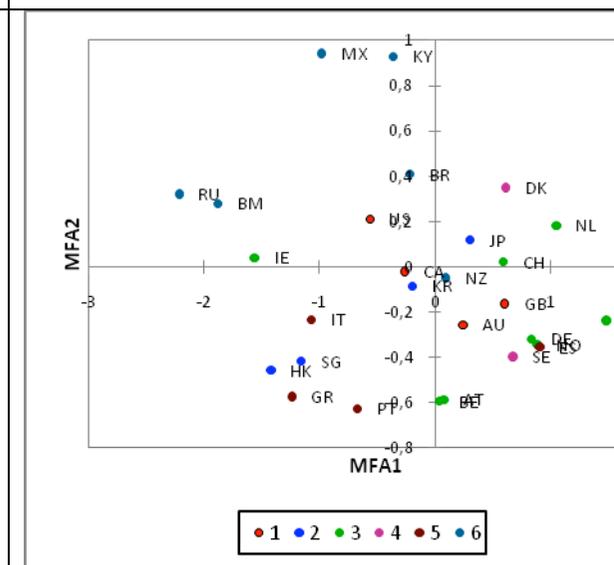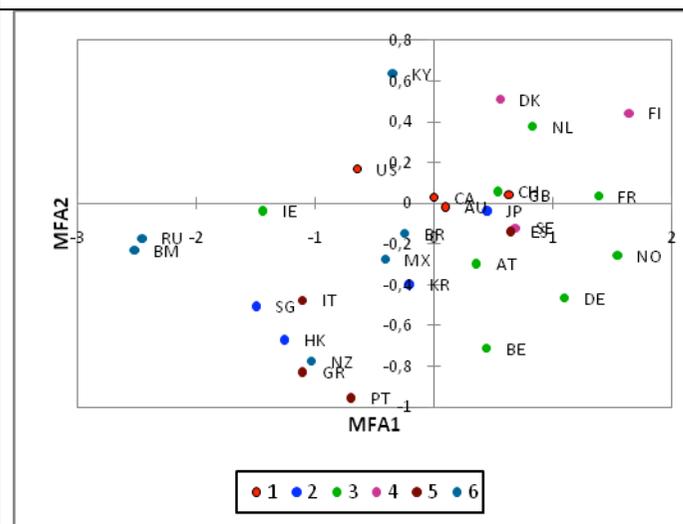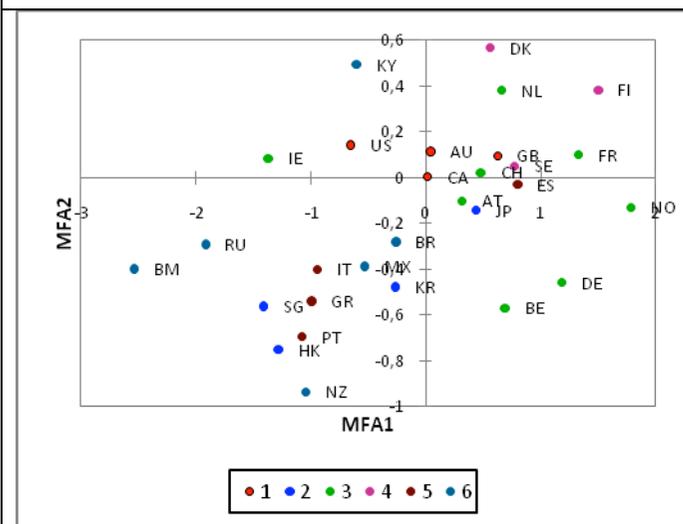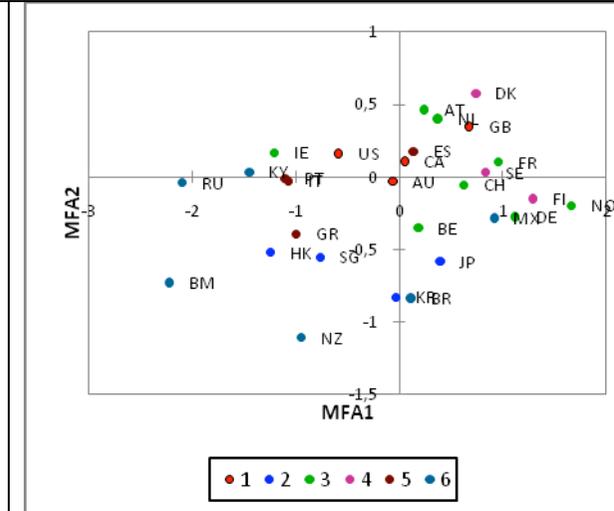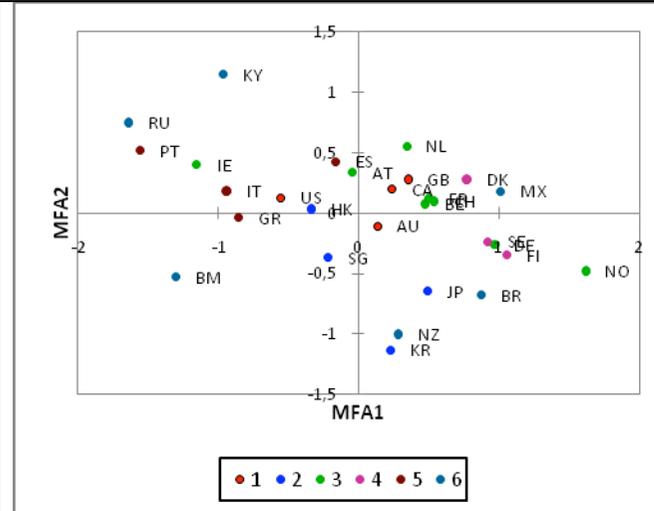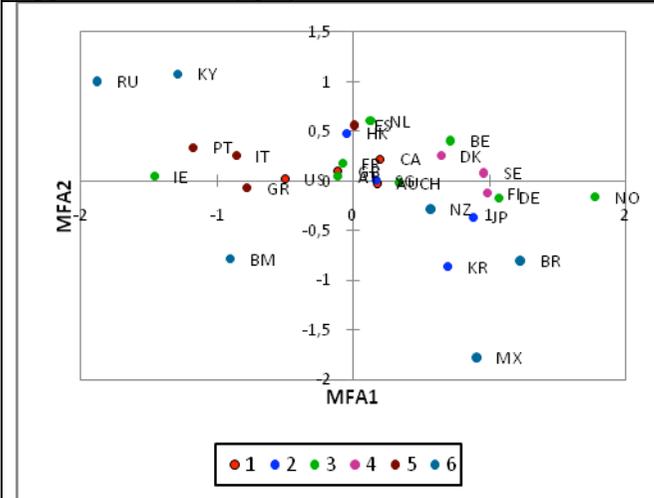
Appendix 7: Industry projection on MFA axes - 2004-2005-2006-2007-2008-2009