
The Push Factors for Corporate Social Responsibility: A Probit Analysis

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In the last two decades in OECD countries there has been increased development of Social Responsible (CSR is the acronym of Corporate Social Responsibility) certified firms. This certification is assigned by public and private companies which guarantee that the behaviour of a certain firm is environmentally and sociologically correct. The first part of our work is devoted at establishing a certification index defined as the intersection of two of the three main international indices (Domini 400 Social Index, Dow Jones Sustainability World Index, FTSE4Good Index). The purpose of this is to overcome certain problems related to the multiplicity of CSR definitions and certifications. The sample obtained is a data panel of 417 enterprises (317 CSR firms and 100 firms as a control sample) belonging mainly to OCSE countries. The core of our analysis makes some probit analyses in order to study the structural causes that push enterprises towards social certification. The descriptive statistics, combined and supported by probit analysis, seem to stress the focal role of economic development as one of the main causes of social certification. Moreover, we have also studied the role of industrial sectors in social certification and other variables such as critical consumption and the structural production system of the enterprises.

Keywords: Corporate Social Responsibility, Growth.

Jel Classification: M14, C23, O10

Introduction

Over the past two decades, the term “Corporate Social Responsibility” (CSR, hereafter¹) has become part of everyday vocabulary, in line with the increasing number of CSR firms² in OECD countries (see figures 1 and 2). It is also increasingly popular among scholars and operators in the debate on the sustainability of economic development.

The diffusion of a certain term clearly proves the propagation of the phenomenon, which should therefore be carefully investigated and analyzed, keeping in mind the potential ambiguity caused by generic usage. So, what does CSR mean? What are the main factors which push firms to adopt sustainable behaviour and then obtain certification?

In this article we will reflect on this topic, starting from an empiric research looking, through a quantitative approach, certain aspects related to the logics and dynamics behind the corporate social certification process. As we will see, a “macro” analysis like this, can help us not only to define the overall scenario, but also to identify more specific interpretations and more detailed research hypothesis.

Given the importance of the phenomenon, the economic literature has begun to develop the theme of sustainability and CSR. The economic debate has mainly focused on three aspects: first, the very definition of CSR (see Garriga and Mele, 2004; Dahlsrud, 2008, Beurden and Gossling, 2008, etc.) and how it can be measured (Türker, 2008), secondly the main reasons which lead companies to adopt sustainable behaviour and subsequently obtain certification (Sotorrio and Sanchez, 2008; Detomasi, 2007; Udayasankar, 2007), and thirdly the effect of CSR on the economic and financial system (Beurden and Gossling, 2008; Sotorrio and Sanchez, 2008).

Given that currently definitions of CSR are not homogeneous (Dahlsrud, 2008), it is difficult to give the concept a single defining definition. Moreover, given that CSR is “not a variable and therefore it is not measurable”, the economic literature has introduced the concept of Corporate Social Performance (CSP), conceived to make CSR applicable and practical (Maron

1 CSR can be defined as ‘a business organization’s configuration of principles of social responsibility, processes of social responsiveness, and policies, programs, and observable outcomes as they relate to the firm’s societal relationships’ (Wood 1991a: 693).

2 This term defines those firms that adopt ethical behaviour, both in the environmental field (respecting biodiversity, adopting environmentally friendly fuels, using alternative energy sources, reclaiming polluted areas, etc.), and in purely business (improving workers’ conditions, respecting all types of diversity, allowing for good governance and transparency in the management of business, etc.). See Dahlsrud (2008).

2006). Even if CSP is difficult to measure, it can be transformed into measurable variables. Beurden and Gössling (2008), in line with Sotorrio and Sanchez (2008), describe CSP as “a concept of three categories”: CSP₁: social disclosure about social concerns (Wu, 2006; Orlitzky et al., 2003); CSP₂: corporate action, such as philanthropy, social programs and pollution control; CSP₃: corporate reputation ratings or social indices that may be provided by social rating institutions, such as KLD, EIRIS; Fortune, Moskowitz, or *ad hoc* indices drawn up by researchers themselves (Beliveau et al., 1994; Brammer et al., 2006; Hillman et al., 2001; Johnson and Greening, 1999; Mahoney and Thorne, 2005; Moore, 2001). In this regard, this paper refers to the category CSP₃.

However, the perception of increasing numbers of CSR companies in the context of CSP₃ is partially distorted for two reasons. Firstly, there is no unambiguous definition of “socially responsible”. Secondly, since the creation of CSR, there has been a proliferation of certification agencies, evaluating firms on the basis of widely varying non-standard criteria. Both of these reduce the value to certification itself.

Regarding the impact of CSR on the economic system, several papers (Beurden and Gossling (2008); Sotorrio and Sanchez (2008), Orlitzky et al., 2003; Garriga and Mele, 2004; Kitzmueller, 2008) have analyzed this relationship, focusing primarily on the link between CSR and the financial performance of the certified firms. However, the effect of CSR is reflected on the whole economic system, in line with the stakeholder theory³. Therefore, there are different CSR effects to be classified according to different variables. Concerning this point, research shows that there is a difference in the prediction of financial performance between market-based accounting measures and CFP-based measures of CFP (Orlitzky et al., 2003; Wu, 2006).

Beurden and Gössling (2008) use CFP as an instrument to measure economic performance. It consists of two categories. CFP 1 incorporates market-based measures including stock performance, market return, market value to book value, price per share, share price appreciation and other market based measures; CFP 2 is the second category for measuring CFP, incorporating accounting-based measures.

For the factors that drive companies to CSR, research into corporate social responsibility is related to the analysis of value creation (Alexander and Buchholz, 1978; Belkaoui, 1976; Clarkson, 1995; Harrison and Freeman, 1999; Preston and O’Bannon, 1997; Kohers and Simpson, 2002; Vance, 1975; Waddock and Graves, 1997). Moreover, Sotorrio and Sanchez (2008) identify

³ The central idea in stakeholder theory is that the success of an organization depends on the extent to which the organization is capable of managing its relationships with key groups, such as financiers and shareholders, but also customers, employees, and even communities or societies.

different “starting points”: a) disclosure of information about social natures (Belkaoui and Karpik, 1989; Brammer and Pavelin, 2006, Fernandez Sanchez and Sotorrio, 2008; Roberts, 1992; Stanwick and Stanwick, 2006); b) the reasons behind spending on social performance, such as donations, philanthropy, etc. (Adams and Hardwick, 1998; Amato and Amato, 2007; Brammer and Millington, 2004, 2006; Navarro, 1988); c) a variety of principles, processes, policies, programmes and observable results relating to a company’s relations with society. In the latter case, certain social indices, credit ratings are provided by social institutions, such as EIRIS or KLD, or *ad hoc* indices drawn up by researchers themselves (Beliveau et al., 1994, Brammer et al., 2007, Hillman et al., 2001; Johnson and Greening, 1999; Mahoney and Thorne, 2005; Moore, 2001).

One of the main aims of our work consists in building a CSR index that intersects two of the three main international indices (Domini 400 Social Index, Dow Jones Sustainability World Index, FTSE4Good Index), in order to partially solve the problem related to multiple CSR definitions and certifications.

Our second purpose is to make some probit analyses by using a panel dataset, trying to find the structural causes which push enterprises to adapt social certification. The descriptive statistics combined and supported by probit analyses, seem to stress the focal role of the economic development as one of the main causes of social certification. Moreover we have studied the role of industrial sectors in social certification and other variables like critical consumption and the structural production system of the enterprises.

Our paper is organised as follows: in paragraph 2 the construction of the sample is explained, paragraph 3 shows the results of some descriptive statistics, paragraph 4 shows the data used to run our analysis. In paragraph 5 the aim of this study is formalized and better explained and the complete results are shown. Our conclusions are presented in paragraph 6.

The Sample

The first problem faced while building the sample was related to the redundancy of social certification. One way to overcome this problem is as follows: either to identify the best (most influential) rating agencies and take only the criteria that they express, or to use multiple assessments, so that an enterprise’s certification can be confirmed by several rating agencies. In our opinion, the most powerful way is a combination of the two solutions, i.e., use

multiple evaluation criteria characterized by good quality (Poddi and Vergalli, 2009). Therefore, our paper's first goal consists in defining a database of CSR firms that combine more than one certification index. Specifically, we selected the firms in our sample following the steps below:

1. First, we assumed that the group of corporate responsible firms includes enterprises which belong to at least two of the three main stock option indices of the market in 2004⁴ (i.e. Domini 400 Social Index, Dow Jones Sustainability World Index, FTSE4Good Index⁵). We then tried to complete the methodology used by Barnea and Rubin (2005) and by Waddock and Graves (1997). In this way, we obtained a sample consisting of 317 suitable firms.

2. In the second step, in order to build the control sample, we chose 100 non-CSR enterprises, to make it homogeneous for sectors with the CSR sample. For each economic sector, several firms were randomly chosen from the Dow Jones Global Index.

3. The selection process generated a sample consisting of 417 firms. In order to generate the time series necessary for our analysis, we started with the 2004 sample, and maintaining the total number of firms we worked backward until 1999, changing the non-CSR/CSR ratio⁶. After building our database (see the appendix), we downloaded the balance sheets of all 417 firms, using Perfect Analysis software⁷.

Descriptive Analysis

In Figure 1, we show the number of CSR firms from 1999 to 2009, according to the DJSI (Dow Jones Sustainability Index)⁸. We can see how the

4 In this sense we took the most famous and recognizable indices at an international level. The choice of year (2004) was due to our need to include the highest number of firms in our sample, given the novelty of this peculiar economic phenomenon.

5 For the stock market analysis, we referred to the following webpage: <http://www.sustainable-investment.org/>.

6 We started from the 2004 sample and we created a dummy variable for each year from 2004 to 1999, imposing the number 1 if that firm was certified as a CSR company in that year and zero otherwise, by using the intersection (for a couple of sets) of the three indices. We were not able to work further back than 1999 because the CSR firms available in our database were not sufficient. For the FTSE index we referred to the website: <http://www.sustainability-indexes.com/html/assessment/review2003.html>; for the Domini Social Index the data refer to the Domini 400 SocialSM Index (DS 400 Index).

7 Perfect Analysis contains the panel data of the stock prices, the level of dividends, and also other financial information about firms' balance, exchange rates and market indices. Moreover, it contains the main OECD economic indicators.

8 In our previous paper (Poddi and Vergalli, 2009) we showed the number of CSR firms and their growth rates, by using the sample built as described above. In this version, we update our data and we try to show the most recent data. In detail, each year the DJSI creates a ranking of the most virtuous enterprises in terms of social responsibility. Since 2004 the number of firms belonging to the DJSI has been almost constant and equals 318. However, a large turnover among firms can be noted, which

diffusion of the CSR phenomenon is not homogeneous from a geographical point of view. Indeed, Figure 1 shows nearly all firms belonging to developed countries⁹. The proliferation of sustainable indices may be a litmus test for the diffusion of the phenomenon. It is not a coincidence that most sustainability indices come from OECD countries. As such, recent studies have pointed out that social responsibility is influenced by the level of economic development. From figure 1, it can be seen that:

- the number of CSR enterprises has increased considerably, showing that “Corporate Social Responsibility” is a very relevant phenomenon which requires detailed investigation;
- the highest number of CSR enterprises is from the United States and the European Union, i.e., two of the most developed areas. From this first rough observation, we can infer that GDP is a crucial variable for the development of ethical conscience and therefore CSR.

In order to describe our database and the growth of CSR firms better, in figures 2 and 3 we show, the number of CSR firms *per capita* for each year, and the gross domestic product *per capita* of our database.

From these data, we can see that the number of the CSR enterprises seems to depend on the economic development of the area referred to and is not only time-related. In figure 2, although the EU has fewer enterprises than the USA, its growth rate is higher, probably because of the catch-up phenomenon. It is also important to note in figure 3 that the relation of the number of CSR enterprises and GDP *per capita* is the same but shows two groups with different curves¹⁰. In any case, from our brief descriptive analysis, GDP seems to be a very important variable for CSR.

implies strong competition and also strong interest in the topic of CSR. Therefore, by calculating the total number of firms, certified at least once, and observing social evolution, it is possible to obtain an indication of the growth rate in the number of CSR firms. In figure 1, we have adopted this criterion.

⁹ Nevertheless, it should be noted that the type of index adopted is of crucial importance: use of the DJSI influences selection of the sample in figure 1. In recent papers (i.e. Muller and Kolk, 2008), there is a study of CSR in emerging countries.

¹⁰ See, Poddi (2006) for more details.

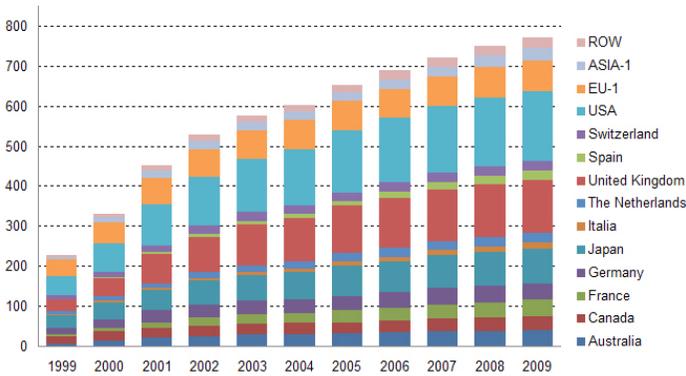


Figure 1: ROW includes Brazil, Chile and South Africa, EU-1 includes Austria, Belgium, Denmark, Finland, Greece, Ireland, Norway, Portugal, Sweden; ASIA-1 includes India, Indonesia, China, Malaysia, Singapore, Thailand, Taiwan, Hong Kong.

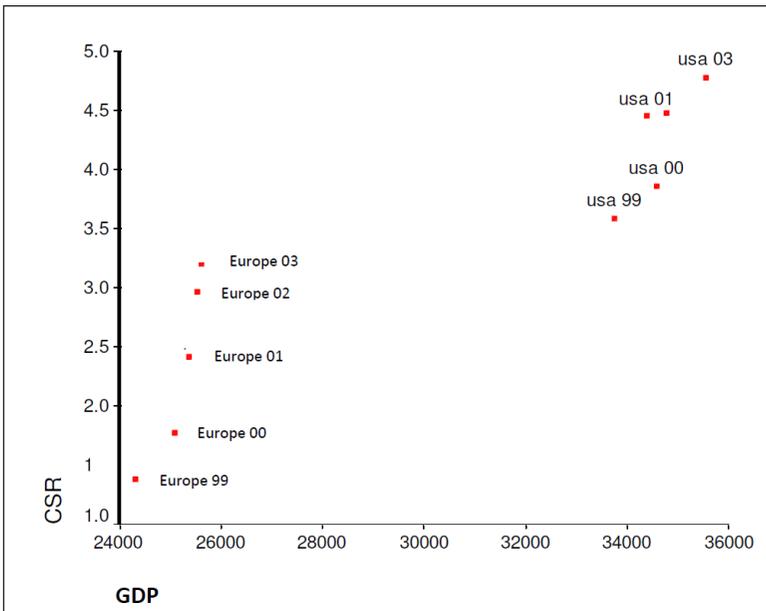


Figure 2: CSR and GDP per capita dispersion graph for EU and USA

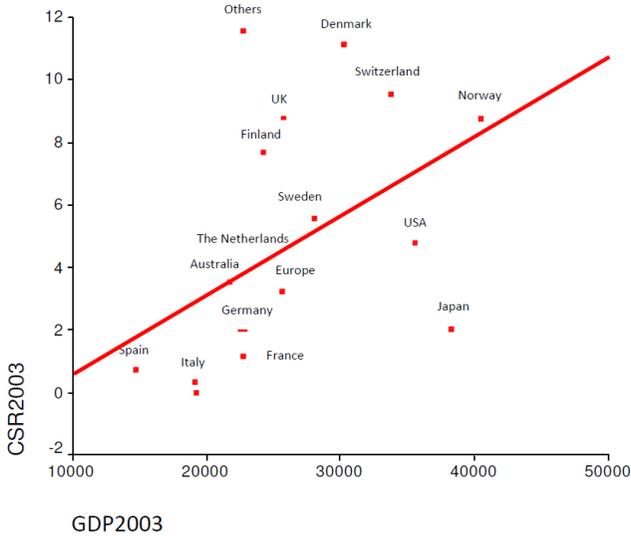


Figure 3: CSR and GDP per capita dispersion graph for all countries

Data

In order to identify the analytical variables, we referred to the existing literature, but also developed new focal variables, which we will introduce in the following paragraphs.

Size

Waddock e Graves (1997) hypothesized that larger companies are able to act more responsibly than smaller ones. We can therefore say that larger companies allocate part of their investment in activity bound to create or improve a relation with all the company's stakeholders. In this way, companies try to secure a greater acceptance from local communities and public opinion.

To measure the size of a company the number of employees, property value or total sales should be taken into account. However, Cowen et al. (1987) e Patten (1991) used the Fortune 500 index and the natural logarithm of sales. We will use company sales. In our work, total sales have been used to define a company's size, as illustrated by Stanwick and Stanwick (1998), based on the

work of Fonbrun and Stanley (1990) and Cowen et al. (1987).

STLT (Short Term Debt / Long Term Debt)

Myers (1977) and Wallace et al. (1994) found a positive correlation between leverage, the accounting value of debt over shares value and social responsibility. Therefore, in our work STLT is the ratio between short-term/long-term debt. Considering the important role of indebtedness, we wanted to discern its type. Data source: Perfect Analysis - "Common Size "ST Debt (% of Assets)" and "LT Debt (% of Assets)."

INTE (intensity of work)

We will then consider the ratio between number of employees and total assets. In the Perfect Analysis database - "profit and loss" - data were collected on the number of employees under the heading "Employees Units". For total assets: balance sheet "total assets".

GDP

The analysis was continued by confronting the increase of CSR companies with the variations of the *per capita* GDP during the years considered. This was to hypothesize a positive connection between growth and socially responsible investments carried out by companies, as we have briefly observed by figures 2 and 3. The data used were taken from the World Bank's database.

Critical Demand, D

Socially responsible companies improve their image on the market since consumers are often interested in brands and companies with a good CSR reputation. From benefits such as visibility and reputation stem a diversification advantage (Fombrun, 1996; Fombrun e Von Riel 2003), which can have positive consequences in terms of increasing and retaining customers, leading to more sales. This can lead companies to adopt social certifications as a strategic choice based on the theory of critical demand: the larger the group of critical consumers, the larger their request for innovative products to satisfy their needs. The data used in this paper come from a research carried out by MORI (Market and Opinion Research International)¹¹.

Sector

The characteristics of an industrial sector can potentially influence

¹¹ MORI (Market and Opinion Research International) – www.mori.com

the responsible practices of a company. Dierkes and Preston (1977) found that companies whose economic activities modify the environment are scrutinized more with regard to their environmental performance than companies operating in other sectors. Consumer oriented companies on the other hand, might be interested in showing off their social commitment, in order to positively influence their reputation and ultimately, increasing their sales (Cowen et. al., 1987).

As regards CSR industrial sector, their composition is indicated in Tab. 1. The definition of the percentage for each sector is useful in order to create a homogeneous control sample, composed of non-CSR companies in July 2004, and also to understand the relation between industrial affiliation and firm propensity towards CSR certification.

Table 1: Industrial composition of the sample

Industrial Sector	Freq.	Percentage
Discretionary consumption	90	21,6
Basic consumption	30	7,2
Energy	12	2,9
Finance	110	26,4
Health	26	6,2
Industry	51	12,2
Information technology	44	10,6
Materials	22	5,3
Telecommunications	26	6,2
Utility	6	1,4

Adopting the definitions listed in the SIC (Standard Industrial Classification):

- "discretionary consumption" indicates the following products: household appliances, entertainment, cars, clothing, hotel, retail and leisure. They are the goods with a reducing demand in case of economic downturns;
- "basic consumption" means food, beverages, tobacco, personal and household products;
- "energy" refers to the extraction and refining of oil and gas;
- "finance" includes banks, financial services, insurance;
- "Health" includes services and equipment for health, pharmaceuticals and biotechnology;
- the sector "industry" includes: transportation, aerospace, defense, construction, electrical, industrial conglomerates, machinery, commercial

services, transport infrastructure (airports, railways, ports);

- “information technology” includes software, hardware, tools and electronic equipment, semiconductors;
- in “materials” chemicals, building materials, container, metals and mining, paper are inserted;
- “telecommunications” include diversified services and wireless;
- “utility” includes the distribution of electricity, gas, water and multi-services.

From Table 1, we see that a fifth of CSR companies are in the “finance” group therefore, banks, insurance and securities services in general. This may be due to two peculiar characteristics of this sector: on the one hand, these companies have lower costs for social certification than firms in other sectors. This is because of their smaller involvement in activities which cause negative externalities. On the other hand, given that this sector is characterized by low capital intensity, it can easily convert its activities into socially responsible ones. Table 1 can therefore be read in light of the following interpretations: i) low capital intensity, ii) a lower impact through negative externalities; iii) ease of conversion of production and therefore lower costs. Following this analysis, it is not surprising to observe how the group “energy” is poorly represented, as it is the group linked to the “consumer base” to which tobacco belongs. At the same time, again not surprising, a large number of computer companies belong to this group.

Empirical Analysis

In this section we study whether the role of economic growth and GDP per capita, affects a firm’s choice to become a CSR firm. To do this, we developed a probit analysis in which CSR is the dichotomous dependent variable and is equal to 1 for CSR firms and zero otherwise. Our analysis concerns the probability of regressors to affect dependent variable.

Specifically, we have regressed the following equation:

$$CSR_{c,t} = \alpha + \beta_1 SIZE_{c,t} + \beta_2 STLT_{c,t} + \beta_3 INTE_{c,t} + \beta_4 GDPPC_{c,t} + \beta_5 D_{c,t} + \beta_6 GDPG_{c,t} + \beta_7 GDPG_{c,t-1} + \eta_c + v_t + \varepsilon_{c,t} \quad (1)$$

Where the dependent variable is the probability of being a CSR firm for each firm (i), in country (c) and year (t). The regressors or independent variables are represented by the following variables: a) SIZE: the dimension of

each firm which is 1 for small enterprises, 2 for medium enterprises and 3 for the biggest ones according to the amount of sales; b) STLT: the ratio between long and short-term debt; c) INTE: the intensity of work, calculated as the ratio between the number of employees over the total asset; d) GDPPC is the gross domestic product *per capita* for each country and year; e) D: the critical demand ; f) GDPGct: the growth of the gross domestic product; g) GDPGct-1: the growth of the gross domestic product lagged one year. The regressions are made taking into account geographical (n_c) and time (v_t) fixed effects.

In table 2, we show the model with the most interesting results.

Table 2¹²: Probit Model, dependent variable: CSR.

Model	1		2		3		4		5	
	B	z-	β	z-	β	z-	β	z-	β	z-
Int.	- 3.1 (***)	- 6.1	-4.7 (***)	-8.5	-3.3 (***)	-6.6	-4.3 (***)	-6.9	-5.8 (***)	-6.5
SIZE	0.6 (***)	4.5	0.5 (***)	4.0	0.6 (***)	4.9	0.5 (***)	4.1	0.4 (***)	3.4
STLT (a)	0.50	0.9								
INTE	-0.007	-0.8								
GDPPC	0.00008 (***)	5.5	0.00007 (***)	4.1	0.00008 (***)	5.9	0.00006 (***)	3.8	0.00008 (***)	4.0
D (a)			0.00073 (***)	12.7			0.00068 (***)	11.4	0.00093 (***)	9.0
GDPG							-0.10 (***)	-2.7	-0.15 (***)	-3.22
GDPG- 1									0.11 (**)	2.06
\bar{R}^2	0.45		0.417		0.42		0.45		0.46	

Where:

\bar{R}^2 ¹³ is the adjusted R^2 ; β is the coefficient value; “z-” is the z stat with significance: (*) 90% Significant; (**) 95% significant; (***) 99% significant; (a) the data are multiplied for 10^{-9} .

Our first model takes into account the main variables which affects each firm to apply for CSR certification. The first insight stresses that one of the main focal variable which determines CSR choice, is SIZE. Given that SIZE has been built by taking into account total sales, the higher the total sales, the higher the funds useful for investment in new markets. In particular, each firm can also invest in socio-environmental activities and so obtain CSR

12 For details, see Poddi, L. (2006), paragraph 4.7.

13 It is important to stress that panel regressions have a low R^2 . This is due to the inter-temporal interpolation of data. Indeed, the panel is a merge of cross analysis with a historical series. Its explanatory function is between the two methods. The difference compared with the historical series is that there is a difference between individuals. For this reason we should see an R^2 quite similar to that of the cross section. We must therefore calculate the R^2 using the methodology adopted in these cases.

certification. So, it signals its “type” and its peculiar characteristics obtaining advertisements in the markets.

A further insight is strictly linked with the definition of this variable: under a given limit, increasing its size, the firm has an economy of scale. This means that average costs decrease with size. For this reason, the costs for certification may be cheaper than for smaller enterprises. Moreover, a large size usually entails, a wide range of shares and so a multiplicity of interests that must be satisfied. In case a firm’s management has no clearly identifiable goals, initially its priority must be to satisfy stakeholders’ interests and only afterwards to pursue universally accepted ethical principles, (see, Waddock and Graves, 1997 and Orlitzky, 2001).

Summarizing, the bigger the company, the higher the probability of more investment to satisfy all stakeholders. In this way, the firm obtains acknowledgement from public opinion.

In our regression GDPPRO is significant . This implies that the higher the GDP per capita, the higher the probability of becoming a CSR firm. The economic intuition behind this implies the syllogism that in a rich country (high GDP per capita), after having satisfied its elementary needs, an individual could develop a social sensibility. The indirect result is that the higher the social sensibility, the higher is the number of CSR firms.

INTE and STLT are not significant. As far as STLT is concerned, we can expect that the debt structure might recombine with a rise of long term debt. Nevertheless:

- this change might happen ex post the choice to become CSR by considering what are total costs and so, the debt weight, of certification;
- given that we have only 6 horizon years for our regression, these data are not sufficient to obtain sufficient information about debt and its effects;
- given that we know that the CSR firms have high sale values, even if the debt structure changes, it might be a negligible percentage compared to total sales.

As far as INTE (and in details, human capital intensity) is concerned, this depends on the different type of industrial sectors of CSR firms. For enterprises with high environmental impact, we expect that they might invest to reduce polluting output. This entails a change in industrial resources and so in capital. For high labour intensity firms, our expectation is a change in labour organization. These two different kinds of investment imply that the relation between the probability certifying as a CSR firm and human capital intensity is unclear. Nevertheless, if we focus on the costs that each firm should face in

order to become CSR, the costs that a oil company or a potentially pollutant firm must bear are certainly higher than companies with high labour intensity, such as in a bank. Indeed, in the first case, not only is the investment higher but it should also be used to control potential damage or reduce produced pollution.

In light of these insights, we can give a reason for the high percentage of banks and financial societies in the CSR database. Nevertheless, in our analysis, the relation between CSR and INTE is not significant because the control sample is homogeneous for the CSR group and therefore, probit regression cannot underline the difference in capital intensity.

Continuing our analysis of table 2, we can see that both models 2 and 3 show the main significant variables and omit standard less important variables¹⁴

We can see the significance of critical demand, even if it has a low impact. By looking at the three regressors, we notice that: even if the significance of SIZE is evident, it is not the same for the joint significance of GDPPRO and DEMAND¹⁵. Indeed, we expected an overlap of these two variables, because both explain the increased importance of sustainability and CSR. The coexistence of CSR and DEMAND implies that the two variables treat different facets of increasing wealth. On the one hand, critical demand increase CSR firms as being CSR is profitable. On the other hand, high GDP entails high financial resources for investment including sustainable investment. Therefore, if high GDP implies high investment and so more CSR firms, CSR development might be strongly pro cyclical.

By following this last insight, in models 4 and 5, we have added GDP growth rate and the lagged GDP growth rate. By looking at model 4, we can underline that there is a negative significant relation between the probability of becoming CSR and GDP growth rate. What could be the explanation of this finding? A possible answer is that the two variables are linked but with a time lag¹⁶. This fact entails that, if we observed tendency changes over the short term, the statistical software we use should recognize our variables as being negatively correlated. This intuition is hinted at in model 5 in which we added GDPG with one lag (PILG_1). Therefore, our results suggest that GDP *per capita* affects CSR certification.

Debate and conclusions

The recent debate on CSR is confirmed in the increased number of

14 About this, we have controlled for the balance-sheets variables, country and sector variables.

15 About this we have controlled for avoiding multi-collinearity problems.

16 For more details, compare figure 2 and 3 in Comincioli, Poddi and Vergalli (2012).

companies interested in obtaining CSR certification. As already mentioned, this is a relevant phenomenon that has interesting implications in several economic fields. In order to analyze this topic further, we need to understand the social certification phenomenon as a starting point. It is especially important to investigate why companies decide to sustain the costs required for certification. Our results allow us to distinguish different aspects, and to offer certain reflections.

Firstly, the remarkable growth over the past decade of certified companies does not seem to be evenly distributed in all countries analyzed. At first glance, it seems that this asymmetry is due to the link between the probability of classifying a company as CSR and the economic development of the country. Both the descriptive and econometric analyses confirm the positive relationship between these two elements.

Our investigation has also revealed a time gap that helps to explain the meaning and significance of this report. The increase in income *per capita* tends to develop consumer awareness of corporate social responsibility issues. It therefore increases so-called “critical consumption”, which rewards companies which just can enter the market with an image consistent with expectations. Competition between firms changes and at the same time creates new business opportunities related to a critical demand and new market segments. Increased certifications is therefore the answer at least, at a level of external communication. The response, however, is not instantaneous, but requires a certain amount of time.

At the same time economic development and demand for critical consumption seem to explain social certification. Here, we can also offer certain additional reflections. On the one hand, it is quite clear that increased revenues are correlated with increased financial investment in activities not strictly related to the production cycles of the company, such as various forms of advertising and signaling. Moreover, size is certainly related with economies of scale and therefore with lower marginal costs, compared to smaller firms. This then supports access to niche market segments, such as segments associated with critical consumption. It should also be noted that if one can assume that both of these elements are relevant in determining the higher propensity to certification by large companies, on the other hand they seem to suggest completely different interpretations, which could almost be contradictory.

The first aspect, seems to suggest that the certification is to be interpreted as a social activity primarily, with the ability of corporate communication, rather than actual “ethical” or socially responsible behavior. In other words, the company is certified not because it decides to redefine

their strategies and / or redesign its organization , but because it can support large investments in shares. These have a principally communicative value e.g., advertising campaigns and targeted sponsorships, for solidarity and support to social causes that meet the public's aspirations and which are sufficient to meet certification requirements.

The second element, however, points to cost structures capable of supporting important and substantial organizational changes in the manufacturing process and relations with internal and external stakeholders. This, of course in terms of economic rationality, creates synergy with social and ethical aims. In short, it effectively reorientates business practices towards ethical and social responsibility.

We cannot say, though in general which is the more relevant argument. Again, more targeted and qualitative studies of specific sectors and individual companies need to be made in order to answer this question.

A third important element is the low (or zero, statistically) relevance of the "labor intensive" variable for certification. Like the previous ones, this element should be looked at in the context of the sector they belong to, to be interpreted more precisely. In our analysis, this is apparent from the *ad hoc* construction of the control sample, which is derived consistent with the sectorial composition of the CSR sample. This homogeneity implies the absence of sectorial significance in the probit analysis.

However, from a theoretical point of view, we can propose certain reflections on this matter. We could say that there is a certain kind of understanding by companies on the real meaning of social certification. If we review the areas of corporate social responsibility (the environment, market, work), we can still notice that there is a low or no relevance for the intensity of work, which could affect estimates and reduces their significance. In contrast (and consistent with the previous statement of GDP and firm size), applying the logic of social responsibility concerns mainly relations with the outside world, i.e., the most "visible" and therefore more readily appreciated on the market: environmental sustainability, relations with local communities, and relations with customers and the market.

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Table 1: Industrial composition of the sample

Industrial Sector	Freq.	Percentage
Discretionary consumption	90	21,6
Basic consumption	30	7,2
Energy	12	2,9
Finance	110	26,4
Health	26	6,2
Industry	51	12,2
Information technology	44	10,6
Materials	22	5,3
Telecommunications	26	6,2
Utility	6	1,4

Table 2¹⁷: Probit Model, dependent variable: CSR.

Model	1		2		3		4		5	
	B	z-	β	z-	β	z-	β	z-	β	z-
Int.	- 3.1 (***)	- 6.1	-4.7 (***)	-8.5	-3.3 (***)	-6.6	-4.3 (***)	-6.9	-5.8 (***)	-6.5
SIZE	0.6 (***)	4.5	0.5 (***)	4.0	0.6 (***)	4.9	0.5 (***)	4.1	0.4 (***)	3.4
STLT (a)	0.50	0.9								
INTE	-0.007	-0.8								
GDPPC	0.00008 (***)	5.5	0.00007 (***)	4.1	0.00008 (***)	5.9	0.00006 (***)	3.8	0.00008 (***)	4.0
D (a)			0.00073 (***)	12.7			0.00068 (***)	11.4	0.00093 (***)	9.0
GDPG							-0.10 (***)	-2.7	-0.15 (***)	-3.22
GDPG- 1									0.11 (**)	2.06
\bar{R}^2	0.45		0.417		0.42		0.45		0.46	

Where: \bar{R}^2 ¹⁸ is the adjusted R^2 ; β is the coefficient value; "z-" is the z stat with significance: (*) 90% Significant; (**) 95% significant; (***) 99% significant; (a) the data are multiplied for 10-9.

17 For details, see Poddi, L. (2006), paragraph 4.7.

18 It is important to stress that panel regressions have a low R2. This is due to the inter-temporal interpolation of data. Indeed, the panel is a merge of cross analysis with a historical series. Its explanatory function is between the two methods. The difference compared with the historical series is that there is a difference between individuals. For this reason we should see an R2 quite similar to that of the cross section. We must therefore calculate the R2 using the methodology adopted in these cases.