CORPORATE SOCIAL RESPONSIBILITY

SECTION 2

THE EFFECTS OF GREENHOUSE GAS EMISSIONS AND GOVERNANCE FACTORS ON CORPORATE SOCIALLY RESPONSIBILITY DISCLOSURE

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Abstract

This paper investigates the impact of a plausible set of determinants, namely, greenhouse gas (GHG) emissions, Dow Jones Sustainability Index (DJSI), anti-bribery policy, the industry's profile and the company's size on the extent of CSR disclosure in the United States (US). The Environmental, Social and Governance (ESG) disclosure score is used as a proxy for the extent of CSR disclosure calculated by Bloomberg, incorporating different - in terms of importance - disclosure items. The relationship between the extent of CSR disclosure and its determinants was examined using multiple linear regression analysis incorporating 133 companies listed in S&P Composite 1500 Index for the year 2011. The results illustrate that the company's size, GHG emissions, DJSI and anti-bribery policy are significantly positively associated with the extent of CSR disclosure. In addition, there are significant differences among the industries' profile concerning the extent of CSR disclosure. The results cannot be generalized because the sample is based on US listed companies for the year 2011. This study presents initial empirical data investigating different types of disclosures and determinants which extend the scope of previous studies.

Keywords: Corporate Social Responsibility, Disclosure, Greenhouse Gas Emissions, Dow Jones Sustainability Index, Anti-bribery Policy, Industry

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1 Introduction

Corporate Social Responsibility (CSR) and CSR disclosure have been the subject of extensive research in the accounting literature. As far as CSR definition concerns, it "…means not only fulfilling legal expectations, but also going beyond compliance and investing 'more' into human capital, the environment and the relations with stakeholders" (Commission of European Communities in the Green paper, 2001). Since the concept of CSR changes over time and it means different things to different stakeholders and companies in different countries (Dawkins and Lewis 2003; Igalens and Gond 2005; Fafaliou et al. 2006; World Business Council for Sustainable Development 2003; Hackston and Milne, 1996), it is expected that the characteristics and the content of CSR disclosure will change over time too. The reporting role of companies not only focused on financial information, but on CSR initiatives information as well (Abd Rahman et al., 2011). Skouloudis et al. (2009) cited that the rise of non-financial reporting has been elaborated in order to present sufficient intangible and non-financial issues of the organizations. In general, CSR disclosure can be considered as a response to different stakeholder's groups (Tilt, 1994; Neu et al., 1998), in order to present and inform its CSR initiatives that have been integrated into the business operations (Sutantoputra, 2009). CSR disclosure can be used as an indication for CSR implementation; however, this does not necessarily mean that the companies provide the actual performance but the one that the company wants to present to stakeholders (Ullmann, 1985; Alon et al., 2010).

Different arguments are pointed out regarding the engagement of companies in CSR disclosure. In the first place, CSR disclosure can establish the legitimacy of the organization with the company's stakeholders (Mathews, 1995; Hooghiemstra, 2000; Gray et al., 1995; Adams et al., 1998; Huang and Kung, 2010). In addition, companies intend to increase their financial performance by influencing share prices and returns (Mathews, 1995), while Neimark (1992) mentioned that the presentation of CSR information in disclosure aims to present CSR performance maintaining its relations with stakeholders. Finally, reputation management and brand protection can be considered as important motives for the elaboration of CSR disclosure (Kolk, 2005).

This paper extends and contributes to the recent CSR disclosure literature by offering empirical evidence on the impact of a comprehensive set of corporate variables on corporate CSR disclosure. The extent of CSR disclosure is used as a proxy for corporate transparency level and company's commitment to CSR. The extent of CSR disclosure does not mean that the company has attained a high or a low level of CSR performance; it could be connected with corporate transparency level (Daub, 2007). Qu and Leung (2006) stated that the companies are forced to increase the transparency level in order to gain the confidence of capital markets. Contrary to the literature review, this study adopts a third party rating approach in order to estimate the extent of CSR disclosure. For the purpose of this study, the Environmental, Social and Governance (ESG) disclosure score calculated by Bloomberg is incorporated as a proxy for the extent of CSR disclosure. Regarding the determinants, the environmental aspect of corporate CO_2 emissions is used for the first time concerning the extent of CSR disclosure. In this way, it can be ascertained whether environmental performance is an important determinant of CSR disclosure initiatives. Another crucial determinant that examines the extent of CSR disclosure is the commitment of the companies to DJSI as it has been barely considered in empirical studies. This index evaluates companies in accordance with predetermined CSR criteria. Thus, whether the extent of CSR disclosure is affected by CSR performance can be detected. In addition, few studies introduced an industry classification as a determinant of the extent of CSR disclosure. Even if definitions of CSR concern all types of companies (Dahlsrud, 2008), there is great academic literature that CSR initiatives depend on industries that operate. In addition, the company's size is a significant aspect of CSR that should be investigated as larger companies face greater public pressure. However, it is noted that large companies are more resistant to CSR initiatives and they can resist to the stakeholders' concerns as well. As companies have begun to take into consideration the need to manage the risk of bribery, the role of anti bribery policy that companies adopt on the extent of CSR disclosure is investigated. Several attempts are made to incorporate in the recommended model determinants, such as environmental fines and corporate pollution data; however, the data was limited.

The study focused on the US companies because there are very few studies that have investigated them according to the recent academic literature. Furthermore, the study focused on S&P Composite 1500 listed companies as it is expected to develop voluntary CSR disclosures and retrieve corporate data from research database easier than non listed companies. The value of the study is to ascertain the type of companies that publish CSR information. Thus, an ESG disclosure score can be used as a communication tool by companies in order to emit specific information for their stakeholders. In addition, the results could be valuable for those organizations that recommend CSR disclosure requirements in order to pay more attention to specific determinants.

The remainder of the paper is organized as follows. The next section documents recent academic literature on the extent of CSR disclosure and its determinants followed by the development of research hypotheses in Section 3. Section 4 describes the methodological steps of the study and the sample selection procedures. Section 5 presents the results followed by the discussion of results in section 6. The study concludes with a summary within the limitations of the study and ideas for further research.

2 Literature review

This section presents a summary of recent selected studies investigating the effect of the determinants on the extent of CSR disclosure.

Esa and Mohd Ghazali (2012) found that the board size and the financial leverage are positively significant to the extent of CSR disclosure of 27 Malaysian government-linked companies. The CSR disclosure index was based on 21 disclosure items categorizing them in five aspects, namely, human resource, value-added information, environment, community involvement and product or service information.

Abd Rahman et al. (2011) assessed whether determinants, namely, size, age, profitability and leverage have a significant impact on the extent of CSR disclosure of 44 government-linked companies (GLCs) listed on Bursa Malaysia from the year 2005 -

2006. In total, 16 disclosure items were elaborated and categorized in four topics in order to assess the CSR disclosure level: human resource, marketplace, community and environment. The results showed that only the company's size is a positively significant determinant explaining the extent of CSR disclosure.

Gamerschlag et al. (2011) incorporated a sample of the 130 biggest listed German companies on DAX, MDAX and SDAX for the year 2008 in order to explain what the determinants of voluntary CSR disclosure are. A CSR disclosure index was constructed in relation to Global Reporting Initiative requirements using the content analysis method in order to quantify the amount of CSR information. One of independent disclosure indices was developed called the total disclosure index (CSRTOT) which incorporated both the environmental and social aspects. The ordinary least square regression presented that higher profitability is associated more with environmental than social disclosures, while the German companies' CSR disclosure was affected by visibility, shareholder’s value, the relationship with US stakeholders, the company’s size and the industry membership.

Khan (2010) investigated the effects of corporate governance characteristics of all private commercial banks in Bangladesh on their CSR disclosures. In total, the study considered 60 CSR reporting items in order to assess the total disclosure score categorized in seven CSR categories. The multiple regressions showed that four characteristics, namely, non-executive directors, existence of foreign nationalities, size and profitability have a significantly positive impact on the CSR reporting.

Siregar and Bachtiar (2010) detected the impact of different determinants on the extent of CSR disclosure taking into account 87 public firms listed in the Indonesian Stock Exchange in 2003. To measure the level of CSR disclosure a checklist of disclosure items was elaborated by six CSR themes; environment, energy, labour, product, community, and others. Two indices were introduced in order to measure the level of CSR disclosure: corporate social disclosure index (CSDI) based on the number of corporate social disclosure items and corporate social disclosure length (CSDL) based on the number of disclosure sentences. The results present that the board size is positively significant to the extent of corporate social disclosure index. However, a very large board has a negative relationship with the CSR disclosure level. In addition, the company's size has a positive and significant effect on the CSR disclosure level.

Tagesson et al. (2009) explained the extent and the content of social disclosure information Internet-based social disclosure. In total, 169 companies on the Stockholm Stock Exchange and all State-owned corporations for the year 2007 were incorporated as sample of the study. The extent of the CSR disclosure score was based on 22 disclosure items, categorized into 3 aspects, environment, ethics disclosures and human resource disclosures adopting an unweighted-scoring approach. The results showed that a positive correlation between size and profitability and the CSR disclosure, while significant differences existed between the industry and corporate characteristics. State-owned corporations seem to disclose more social information than privately owned corporations

Reverte (2009) examined the determinants of CSR disclosures of the companies listed on the Madrid stock exchange and included in the IBEX35 index largest 35 firms in terms of market capitalization for the years 2005 and 2006. Three dependent variables were adopted as reported by the Observatory on corporate social responsibility in accordance with CSR disclosure; total CSR score, CSR content rating and CSR management systems rating. As far as the total CSR score concerns, the study revealed that important variables explaining CSR disclosure level were media exposure, the company’s size and environmental sensitive companies.

Said et al. (2009) took into account the Malaysian public listed companies in order to investigate the effects of eight corporate governance characteristics on the CSR disclosure. Developing a Hierarchical regression analysis revealed that only two variables were positively and significantly correlated to the extent of CSR disclosure, namely, government ownership and audit committee.

Branco and Rodrigues (2008) intended to compare the Internet, the corporate official web pages, and the annual reports as media of CSR disclosure and analyse what the determinants of disclosure are. 49 companies were listed on the Portuguese Stock Exchange (Euronext – Lisbon) by the end of 2003. The Social Responsibility Disclosure (SRD) index was based on four categories using content analysis; namely, environmental, human resources, products and consumers and community involvement. It was found that size and media exposure are positively significant with the SRD index based on official web pages, while the SRD index based on annual reports was affected by leverage and size.

Mohd Ghazali (2007) examined whether the ownership structure can affect CSR disclosure of 87 non-financial companies in the Bursa Malaysia Composite Index.

Regarding the assessment of the extent of CSR disclosure, 22 equally weighted items were developed being classified into different CSR aspects. Three independent variables were found significant to the extent of CSR disclosure; namely, director ownership, government as a substantial shareholder and size.

Hossain and Reaz (2007) covered all 38 banks that are listed on the Bombay Stock Exchange and the National Stock Exchange in order to ascertain what the primary determinants of the extent of voluntary disclosure are. A voluntary disclosure score was created based on 65 disclosure items categorizing them in nine CSR themes. Based on the ordinary least square regression model, it was found that the company's size and assets in- place are positively significant to the extent of voluntary disclosure.

Jennifer Ho and Taylor (2007) developed sixty disclosure items in order to develop a triple bottom-line (TBL) disclosure score. The study took into account 50 of the largest US and Japanese companies in order to construct the total TBL disclosure index with four sub-indices; i.e., economic disclosure, social disclosure, environmental disclosure and non-economic disclosure (social and environmental). Two multiple regression models were employed based on unranked and ranked approach. Regarding the total TBL disclosure index, it is shown that size and country variables are positively related the extent of TBL disclosure. Furthermore, liquidity and industry membership are negatively significant with TBL disclosure score, while profitability is negatively significant with TBL disclosure score only in case of unranked regression approach. In addition, TBL score was higher for Japanese firms, with environmental disclosure being the key aspect.

Alsaeed (2006) developed a disclosure checklist of 20 voluntary items in order to calculate the voluntary disclosure level by 40 Saudi publicly held firms which were listed on the Saudi stock market. Based on the unweighted voluntary index approach, it was shown that only the company's size was an important factor that was associated with the level of disclosure elaborating multiple linear regression analysis.

Haniffa and Cooke (2005) investigated the role of effects of culture and corporate governance on CSR disclosure initiatives in two different periods. The sample of the study focused on 139 non-financial companies listed on the Kuala Lumpur Stock Exchange of Malaysia. Two different CSR disclosure indices were elaborated in regression models; corporate social disclosure index and corporate social disclosure length. Both of them are constituted by five different aspects; namely, environment, employees, community, products and value-added. The results showed that a number of variables affect the CSR disclosure initiatives, i.e. boards dominated by Malay directors, boards dominated by executive directors, chair with multiple directorships, foreign share ownership, size, profitability, multiple listing and type industry.

According to recent empirical studies, several remarks could be underlined. The results of the empirical studies should not be generalized because the majority of them took into account only one year and focused on the companies of one country. The sample of the studies ranged from 27 to 169 listed companies as they are more likely to integrate CSR initiatives than non listed companies. In addition, CSR and corporate data could be retrieved from scientific databases easier for listed companies than non-listed ones. Literature review's studies have been conducted both to developed and developing countries; however, studies on the US are limited. Furthermore, the regression analysis was considered the most appropriate statistical tool to analyze the relationship between the extent of the CSR disclosure and the explanatory variables. Different terms were encountered for CSR disclosure including social disclosure, TBL disclosure, and voluntary disclosure. Regardless of the term used, all of them incorporated different aspects of CSR depending on the authors' perceptions. In most of the cases, only the annual report was considered the main source for the construction and the development of the CSR disclosure score. Regarding the explanatory determinants, each study introduced different variables according to the authors' perceptions, such as profitability and industry's profile. In most of the studies, the explanatory power of the proposed models can be characterized as satisfactory ranging from 0.678 to 0.0397. The content analysis was based on the predetermined CSR disclosure items in order to elaborate an index of the extent of CSR disclosure of each company.

3 Development of hypotheses

Five plausible independent variables were considered, most of which were not employed in previous empirical studies to explain the extent of CSR disclosure; namely, GHG emissions, DJSI, anti bribery policy, industry profile and company's size.

3.1 Company's size

The company’s size is considered as an important determinant that has frequently been used to explain the extent of CSR disclosure. Branco and Rodrigues (2008, 2006a) stated that size can be used as a proxy for public visibility, while Bowen (2000) argued that organizational size is an unsatisfactory measure of organizational visibility. Furthermore, Meznar & Nigh (1995) used size as a proxy for a good measure of organizational power. According to the literature review, several reasons have been cited in order to excuse the important role of the company's size on CSR disclosure. Large in size companies tend to be subject to political visible and regulatory pressure from external interests (Belkaoui and Karpik, 1989; Tagesson et al., 2009; Brown and Deegan, 1998); thus, companies are driven to make voluntary disclosures to demonstrate that their business operations are legitimate, consistent with good corporate citizenship and mitigate political costs (Brammer and Pavelin, 2006b; Mohd Ghazali, 2007). Likewise, Cowen et al. (1987) supported that the larger firms deal with more scrutiny from governmental bodies and other societal groups. Finally, Lang and Lundholm (1993) pointed out that the larger companies may have lower disclosure costs because of scale economics. From an empirical perspective, numerous studies have found that there is a positive relationship between the extent of CSR disclosure and the company's size (Haniffa and Cook, 2005; Alsaeed, 2006; Mohd Ghazali, 2007; Branco and Rodrigues, 2008; Tagesson et al., 2009; Said et al., 2009; Siregar and Bachtiar, 2010; Abd Rahman et al., 2011; Gamerschlag et al., 2011).

Table 1. Summary of recent studies

Authors	Year of reference	Source of data	Number of companies	R^2	Type of disclosure	Explanatory variables
Esa and Mohd Ghazali (2012)	2005/2007	Corporate annual reports	27 Malaysian government-linked companies (GLCs	0.339	CSR	Significant: board size, financial leverage Not significant: Company size, profitability, proportion of independent directors
Gamerschlag et al. (2011)	2008	Reports provided in English	130 biggest listed German companies on DAX, MDAX and SDAX	CSRTOT: 0.48	CSR	CSRTOT Significant: Visibility, Shareholder structure, Relationship to US stakeholders, Size, Industry classification Not significant: Profitability
Abd Rahman et al. (2011)	2005 and 2006	Annual reports	44 government-linked companies (GLCs) listed on Bursa Malaysia	2005: 0.328 2006: 0.300	CSR	2005 & 2006 Significant: Size Not significant: Age, Profitability, Leverage
Khan (2010)	2007-2008	Corporate annual reports	30 private commercial banks listed on the Dhaka Stock Exchange	42.53	CSR	Significant: Size, Profitability, Foreign shareholders, Composition of women Not significant: Women directors, Gearing
Siregar and Bachtiar (2010)	2003	Annual reports	87 public firms listed in the Indonesian Stock Exchange	CSDI: 0.1080 CSDL: 0.0397	Social	Significant: board size, board size^2, size. Not significant: foreign ownership, profitability, leverage
Said et al. (2009)	2006	Annual reports and web sites	150 Malaysian public listed companies	0.19	CSR	Significant: government ownership, audit committee Not significant: the board size, board independence, duality, ten largest shareholders, managerial ownership, foreign ownership and
Tagesson et al. (2009)	2006/2007	Internet-based social disclosure	169 companies on Stockholm Stock Exchange and all State-owned corporations	0.366	Social	Significant: Profitability, Ownership identity, Size, Industry (IT and Raw materials) Not significant: Ownership structure
Reverte (2009)	2005	Observatory on corporate social responsibility	Spanish firms listed on the Madrid Stock Exchange and included in the IBEX35 index.	Total CSR rating: 0.429	CSR	Total CSR rating Significant: Size, Media exposure, Industry environmental sensitivity, Not significant: International listing, Ownership concentration, Profitability, Leverage

Table 1. Summary of recent studies (continued)

Authors	Year of reference	Source of data	Number of companies	R^2	Type of disclosure	Explanatory variables
Branco and Rodrigues (2008)	2003	Disclosures based on official web pages and annual reports	49 companies listed on Portuguese Stock Exchange	Annual reports: 0.432 Web pages 0.465	Social	SRD index based on annual reports Significant: size, media exposure Not significant: international experience, leverage, profitability, environmental sensitivity, consumer proximity. SRD index based on official web pages Significant: size, leverage Not significant: international experience, profitability, media exposure, environmental sensitivity, consumer proximity
Mohd Ghazali (2007)	2001	Corporate annual reports	87 companies included in the Bursa Malaysia Composite Index	27.0	CSR	Significant: Director ownership, Government as a substantial shareholder, Size Not significant: Ownership concentration, Profitability, Industry
Hossain and Reaz (2007)	2002/2003	Annual reports	38 listed banking companies in Stock Exchange and the National Stock Exchange India	0.256	Voluntary Disclosure	Significant: Size, Assets-in-place Not significant: Age, Multiple listing, Complexity of business, Board composition
Jennifer Ho and Taylor (2007)	2003	Annual reports, stand-alone reports, and home site web pages	50 US and Japanese companies with the highest market capitalization	Unranked R.: 0.361 Ranked R.: 0.339	TBL disclosures	Unranked Regressions Significant: SIZE, Liquidity, Industry membership, Country, profitability Not significant: Leverage Ranked Regressions Significant: Size, Industry membership, Country, Liquidity Not significant: Leverage, Profitability
Alsaeed (2006)	2003	Annual reports	40 Saudi publicly held firms were listed on the Saudi stock market	0.678	Voluntary disclosure	Significant: Size Not significant: Debt, Ownership dispersion, Firm age, Profit margin and return on equity, Liquidity, Audit firm size, Industry type
Haniffa and Cooke (2005)	1996 and 2002	Annual reports of Malaysian companies	139 non-financial companies listed on the main board of the Kuala Lumpur Stock Exchange	1996: 0.389 2002: 0.453	Social	Significant: Size, profitability, multiple listing, type industry, boards dominated by Malay directors, boards dominated by executive directors, chair with multiple directorships, foreign share ownership Not significant: Malay finance director, gearing.

On the contrary, Meznar and Nigh (1995) accentuated that large in size companies are more powerful and able to resist the external environment, whereas Udayasankar (2008) argued that both large and small in size companies are likely to develop CSR initiatives in order to differentiate their strategy and increase their efficiency in the resource exploitation process. In addition, it is supported that companies with smaller scale of operations may have greater benefits than larger ones implementing CSR initiatives in their operations building, thus, stronger relations with buyers and suppliers. Finally, Roberts (1992) did not find a significant impact of size on social disclosure in the US. As larger in size companies have more public visibility, it is expected to provide more CSR information in their disclosures. Thus, the hypothesis is:

H_1: Company's size has a positive impact on the extent of CSR disclosure.

3.2 Industry profile

Patten (1991) mentioned that the industry classification can be used as a proxy of public pressure, while Branco and Rodrigues (2008) cited that the industry can be considered as a proxy of social visibility. Cowen et al. (1987) noted that there are researches supporting that the type of industry is considered a vital determinant of CSR disclosure. In particular, consumer-oriented industries could possibly present more information on CSR disclosure in order to improve their corporate image among market consumers so as to increase their sales. In addition, CSR disclosure can be considered as an important mean to improve their corporate image for industries which face environmental pressures.

Michelon and Parbonetti (2012) focused on 8 industry types; namely, basic material, consumer cyclical, energy, health care, industrial, technology, telecommunication and utilities. The results presented that the industry variable is associated with differences in CSR disclosure across the information categories. Gamerschlag et al. (2011) adopted the classification provided by Deutsche Boerse in order to classify the sample of the study into 18 industries. As far as the total disclosure index is concerned, six different industries have a statistically significant impact on the extent of CSR disclosure. Haniffa and Cooke (2005) used the KLSE classification to examine whether the dimension of industry is an important determinant of the extent of CSR disclosure. The sample of the study was categorized in five industry types; i.e. consumer, construction/property, trading/services, plantations/mining and industrial. The results showed that the dimension of industry on CSR disclosure was not important as none of the industry types was significant. A unique exception was the two groups of industries, trading/services and construction/property, which were significant to the extent of CSR disclosure based on length of corporate social disclosure in 1996. Tagesson et al. (2009) took into account the Scandinavian Information Exchange index for classifying the sample into energy, raw materials, manufacturing, consumer goods, health services, finance, IT and telecommunications industry. It was found that Raw materials and IT industries play a key role in the extent of CSR disclosure.

Branco and Rodrigues (2008) followed two types of industries based on prior literature as a proxy for environmental sensitivity; "more sensitive" and "less sensitive". Whilst, another categorization followed; namely, high and low profile industries as a proxy for consumer proximity. The results showed no statistically significant impact of industries on the CSR disclosure. Jennifer Ho and Taylor (2007) categorized six groups of industries, i.e. manufacturing, transportation, communication, electric, gas and sanitary services, wholesale trade, retail trade, finance, insurance and real estate and services into two distinct groups; manufacturing and non-manufacturing firms. Firms with membership in the manufacturing industry appeared to be a negatively significant determinant for all types of CSR disclosure except the social one. Alsaeed (2006) incorporated the identical approach in order to examine the effect of industry on the extent of CSR disclosure. The results showed that there is no effect of industry on the CSR disclosure. Mohd Ghazali (2007) investigated the impact of industry competitiveness on the extent of CSR disclosure. This was measured by the ratio of the sample company's sales to the total sales of the company in the same industry sector. The effect of the industry's competitiveness on the extent of CSR disclosure was not statistically significant. The following hypothesis is therefore proposed:

H_2: The extent of CSR disclosure significantly differs among different industries

3.3 GHG Emissions

For the first time, the study intends to investigate how corporate GHG emissions determine the extent of CSR disclosure. According to Sariannidis et al. (2013), GHG emissions can be used as a proxy for corporate environmental performance. In this study, GHG emissions are taken into account because the increased concentration of these emissions and mostly CO_2 in the Earth's atmosphere can lead to global warming with devastating repercussions to humanity and ecosystems (Sadorsky, 2009; Tol, 2005; Friedl and Getzne, 2003). The reporting procedure of GHG emissions could be a starting point for companies to identify sources of GHG savings and reduce emissions (Kauffmann et al., 2012; Wanga et al., 2004). Olson (2010) pointed out that some companies report their GHG emissions to present that their sustainability programs are effective in eliminating the environmental impact of their operations. Thus, reporting corporate GHG emissions data could be considered as a strong indication of CSR. In accordance with the international corporate reporting guidelines, companies should publicize their initiatives, structure, financial situation and performance timely and accurately. Furthermore, companies are encouraged to provide high quality standards for non-financial information, such as environmental and social reporting (Kauffmann et al., 2012). According to socio-political theories, companies with poorer environmental performance tend to provide more extensive environmental disclosures (Patten, 2002b). Companies which affect negatively the environment incorporate more information to their disclosure in relation to others (Cowen et al., 1987; Adams et al., 1998). On the other hand, the voluntary disclosure theory supports that companies with higher level of GHG performance tend to display more information to the society on their disclosure (Ghomi and Leung, 2013)

Several studies have investigated the role of environmental performance on the level of environmental disclosure; however, none of them takes into account the aspect of environmental performance on the extent of CSR disclosure. Dragomir (2010) focused on 60 of the largest European industrial corporate groups and founded that companies with higher pollution are likely to disclose more on their initiatives, but only to a moderate statistical effect. Thus, the transparency level of their initiatives may not be sufficient for an assessment of their sustainability. Clarkson et al. (2008) focused on a sample of 191 firms from the five most polluting industries in the US. The toxics release inventory was used as a proxy for the environmental performance and found a positive relationship between environmental performance and the level of environmental disclosure. In addition, Patten (2002) showed that there is a negative relation between the environmental disclosure and a toxics release inventory. Likewise, Bewley and Li (2000) examined the Canadian manufacturing sector and suggested that the companies with higher pollution propensity are more likely to enclose environmental information in their disclosures. Al-Tuwaijri et al. (2004) taking into account a sample of 198 US "Standard & Poors 500" firms and toxics release inventory to assess the environmental performance was found that the companies with good environmental performance disclose more pollution-environmental information than other companies do.

To sum up, it would be expected that companies producing higher levels of GHG emissions have a greater incentive to present in their CSR disclosure more information in order to diminish the political and social pressure by nongovernmental organizations, governmental bodies and community groups. Thus, the hypothesis is:

H_3: Higher levels of corporate GHG emissions have a positive impact on the extent of CSR disclosure.

3.4 Anti Bribery policy

A number of agencies incorporate anti - bribery policies in the notion of CSR. Bribery is considered among the most significant problems that societies pose and it is considered as immoral, unethical and harmful practice (Cleveland et al., 2009). Companies can play a vital role in the field of bribery combating the harmful repercussions, such as the lower economic, social and environmental welfare of citizens (OECD, 2008). An effective anti-bribery initiative could strengthen the corporate reputation building the respect of employees, raising trustworthiness with key stakeholders and supporting the enterprise's commitment to CSR (Transparency International, 2009). No prior empirical study incorporates the dimension of anti-bribery policies to the extent of CSR disclosure probably because the data are limited from the online research platforms.

As transparency is a necessary condition for CSR (Dubbink et al., 2008), it is expected that companies integrating anti-bribery policies present more CSR information in order to reinforce their transparency level as any information that is presented is properly and effectively dealt with. Thus, the hypothesis is:

H_4: Company's engagement with anti bribery policies has a positive impact on the extent of CSR disclosure

3.5 Dow Jones Sustainability Index

The popularity of sustainable investing has been increased a lot in the USA. More than one out of every nine dollars is invested under professional management according to sustainable and social criteria. More specifically, in 1995 639 million US dollars was invested, in 2005 2,290 trillion US dollars was invested, while in 2012 the overall total of SRI assets was increased to 3.74 trillion US dollars. Finally, from 1995 to 2012, the SRI universe has increased by 486 percent (US SIF, 2012).

A number of Socially Responsible Investments (SRI) indexes that include social responsibility criteria in their selection procedure have been elaborated, such as DJSI, FTSE4Good, Jantzi Social Index, Calvert Social Index and KLD. More specifically, DJSI monitors the performance of the top 10% of the 2500 largest companies in the S&P Global Broad Market Index that lead the field in terms of sustainability. The DISI is selected in this study as a proxy of CSR performance because in relation to others it proposes both a core of criteria that are applicable to all types of sectors and specific criteria relevant to specific sectors, taking into account the challenges and trends of each one (DJSI, 2013). By investing in SRI indexes, investors can combine both their financial objectives and social concerns (Sariannidis et al. 2010). Regarding prior empirical studies, there is only one study that used the DJSI variable as a proxy of corporate reputation adopting a dummy variable

(Michelon and Parbonetti, 2012). It was shown that the extent of CSR disclosure is affected by the commitment of the company to DJSI.

Thus, companies that belong to DJSI are expected to include more CSR information in their disclosure in order to present their CSR performance attracting the interest of socially responsible investors.

H_5: Companies belonging to DJSI has a positive impact on the extent of CSR disclosure.

4 Research methodology

4.1 Sample

The sample was drawn from the companies listed on the S&P Composite 1500 Index at the financial year 2011. The sample focused on large in size companies because they are more possible to integrate CSR disclosure initiatives. In addition, corporate data is more likely to be retrieved by online database platform. Out of 1500 companies, only 133 companies were included in the final sample of the study because of missing data. However, it is the fourth higher sample for this type of studies.

4.2 Dependent and independent variables

Regarding the extent of CSR disclosure, the majority of the prior empirical studies developed a checklist of disclosure items based on the literature and the authors' perception in order to assess the extent of CSR disclosure. This study incorporates the Environmental, Social and Governance (ESG) disclosure score estimated by Bloomberg and it is used as a proxy for the extent of CSR disclosure. The underlying idea is that a higher CSR score indicates that the company has provided more CSR information. The ESG disclosure score is constituted by three sub dimensions; socially disclosure score, environmental disclosure score and governance disclosure score. Prior studies assessed the CSR disclosure score based on specific types of disclosures, such as the annual report of web sites, whilst the ESG disclosure score is based on information available on public reports, such as the annual report, the corporate responsibility report and other disclosures.

The ESG disclosure score ranges from 0.1 for companies that disclose a minimum amount of social and environmental data to 100 for those that disclose every data point. Even if the weight approach has been criticized (Chang et al., 1983), in ESG disclosure score each data point is weighted in terms of importance. The ESG disclosure score is also tailored to the specific characteristics of each industry. Thus, each company is only evaluated in terms of the data that are relevant to its industry sector as each one has unique concerns (Fafaliou et al. 2006; Giannarakis and Litinas 2011; Giannarakis et al. 2011).

As far as independent variables are concerned, table 2 presents the definitions and measurement of the explanatory variables that are recommend in order to explain the extent of CSR disclosure. All data are retrieved by online Bloomberg's platform.

Table 2. Independent variables

Independent variables	Description
Company's Size	Log Total assets
Total Greenhouse gas emissions	Carbon Dioxide (CO_2), Methane, and Nitrous Oxide in thousands of metric tons
Dow Jones Sustainability Index	Dummy variable (value 1= company belongs to the DJSI, value 0= otherwise)
Anti bribery policy	Dummy variable (value 1=policies to prevent bribery, value 0=otherwise)
Industry profile	Dummy variables for different industry: Basic Materials, Communications, Consumer (Cyclical), Consumer (Non-cyclical), Energy, Financial, Industrial, Technology. Utilities industry is used as a reference variable.

Diverse types of regression analysis have been conducted in the field of CSR disclosure and its explanatory variables, such as multiple linear regression (Siregar and Bachtiar, 2010; Branco and Rodrigues, 2008; Haniffa and Cooke, 2005; Reverte, 2009), multivariate regression analysis through stepwise method (da Silva Monteiro and Aibar-Guzmán, 2010), unranked and ranked regression (Jennifer Ho and Taylor, 2007), hierarchical regression analysis (Said et al., 2009), binary logistic regression and ordinal logistic regression (Legendre and Coderre, 2013). Using eviews software, a multiple linear regression was performed in order to investigate the impact of predetermined explanatory variables on the extent of ESG disclosure score. The following model is estimated:

$$ESGDI = a_0 + b_1\,CSIZE + b_2\,GHG + b_3\,DJSI + b_4\,ABP + b_5\,IND + e \quad (1)$$

Where ESGDI= ESG disclosure index

CSIZE = Company's Size

GHG = Total Greenhouse gas emissions

DJSI = Dow Jones Sustainability Index

ABP = Anti bribery policy

IND = Industry's profile

a_0 = constant

e = residual

Before presenting the results of regression analysis, a number of statistical tests were elaborated. Durbin-Watson test is conducted to test whether the residuals are uncorrelated or not. A correlation matrix is used to assess multicollinearity between independent variables regression residuals, while White test is used in order to test for heteroscedasticity. Furthermore, a Jarque-Bera test is used for detecting the normality of observations. Intentions have been made to incorporate more explanatory variables, such as industry competitiveness and CEO duality; however, the statistical results were not important.

5 Results

5.1 Descriptive statistics and correlation matrix

The sample of 133 US companies spanning in nine industries, namely, basic materials (n=13), communications (n=7), consumer-cyclical (n=13), consumer-non-cyclical (n=28), energy (n=9), financial (n=16), industrial (n=22), technology (n=16) and utilities (n=9). Table 2 illustrates the descriptive statistics of the dependent and independent variables incorporated in this empirical study. The descriptive statistics table consists of statistics, such as mean, median, minimum, maximum and standard deviation. The mean of CSR disclosure score is 43.12 out of 100 that is generally satisfied as the concept of CSR is not mandatory. As far as the company's size is concerned, total assets have considerable dispersion values; thus, it can be inferred that this study incorporates not only large in size companies but small ones as well. In addition, a very small part of the companies belonged to DJSI as the mean score is only 0.24, while the proportion of companies that integrate anti-bribery policies is higher with a mean score of 0.45. Finally, the GHG emissions variable has a high standard deviation showing that the sample constitutes by companies with high and low environmental impact.

Table 2. Descriptive statistics of the dependent and independent variables

Variables	Mean	Median	Maximum	Minimum	Std. Dev.
ESG disclosure score	43.13270	42.14880	85.12400	21.07440	12.20334
GHG emissions	6327.648	990.0000	136000.0	8.667000	16549.74
Anti bribery policy	0.451128	0.000000	1.000000	0.000000	0.499487
Assets	107315.3	19844.00	2265792.	837.4000	344848.6
DJSI	0.240602	0.000000	1.000000	0.000000	0.429065

Finally, there are considerable differences of the CSR disclosure score among industries. Utilities companies along with technological and consumer-non-cyclical ones present the higher mean of ESG disclosure score, while industrial and consumer-cyclical get the lower median scores indicating different approaches of industries to CSR disclosure initiatives.

Table 3 demonstrates the correlation coefficients among our set of plausible variables. According to Gujarati (1988), when the correlations between independent variables exceed 0.8 or 0.9, it could have harmful repercussions to the recommended model. In this study, the higher correlation absolute value is 0.56 between GHG emissions and utility industry; thus, there is no multicollinearity limitation for the interpretation of the regressions results.

5.2 Multiple regression results

Table 3 illustrates the results for the multiple regression model. The F-value of the US companies in 2011 is 3.73 (significant at 1%) for the level of CSR disclosure. The model is significant with R^2=0.27 and Adjusted R^2=0.19. This suggests that the independent variables explain 19% of the variance in CSR disclosure score. It can be inferred that there are other related variables ignored in the recommended model. Furthermore, the White's test implies that no corrective procedure should be followed as the chi-squared test is not significant. Regarding the correlation aspect, Durbin-Watson test is approximately 2 meaning that no autocorrelation problem exists.

The regression results show that anti - bribery policy is significantly positive on the extent of CSR disclosure at the 1% level. As far as the company's size is concerned, the results show that it is significantly positive at 5% level. Furthermore, DJSI is positive and significant at the 5% level with CSR disclosure score. The results also show that GHG emissions affect CSR disclosures positively at 10% level. Regarding the industry’s impact on the CSRE disclosure score, industrial and utility industries are negatively and positively significant at 10% and 1% level, respectively, on the CSR disclosure score. Thus, the proposed model is transformed as follows:

$$ESGDI = a_0 + b_1\, CSIZE + b_2\, GHG + b_3\, DJSI + b_4\, ABP + b_5\, IND + e \qquad (2)$$

Table 3. Regression results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Anti Bribery Policy	0.160593	0.048155	3.334900	0.0011
Assets	2.03E-07	7.85E-08	2.590871	0.0108
DJSI	0.124790	0.053749	2.321746	0.0219
GHG emissions	3.31E-06	1.74E-06	1.900106	0.0598
Industrial Ind.	-0.213568	0.122502	-1.743378	0.0838
Communication Ind.	-0.094762	0.148130	-0.639720	0.5236
Consumer cyclical Ind.	-0.212386	0.130224	-1.630933	0.1055
Consumer Non cyclical Ind.	-0.015016	0.121436	-0.123652	0.9018
Energy Ind.	-0.057961	0.130431	-0.444382	0.6576
Financial Ind.	-0.211547	0.138110	-1.531726	0.1282
Basic Materials Ind.	-0.154295	0.124319	-1.241120	0.2170
Technology Ind.	-0.014938	0.129541	-0.115317	0.9084
C	3.689485	0.112404	32.82342	0.0000
R-squared	0.271824			
Adjusted R-squared	0.199007			
S.E. of regression	0.257101			
F-statistic	3.732949			
Prob(F-statistic)	0.000084			
Durbin-Watson stat	2.151131			

6 Discussion of results

Larger US companies tend to enclose more CSR information in their disclosures. There is a number of different reasons for the increased CSR disclosure score by larger companies. Firstly, the US large companies have the ability to spread the costs of CSR disclosure because of economics of scale (Lang and Lundholm, 1993; Alsaeed, 2006). In addition, accountability and visibility reasons are considered important factors for the increased level of CSR disclosure (Cormier and Gordon, 2001). In the light of the increased SRI, large companies try to attract the interest of investors by providing more CSR information and compete for international funding (Mohd Ghazali and Weetman, 2006). The result is consistent with prior empirical studies (Haniffa and Cook, 2005; Jennifer Ho and Taylor, 2007; Alsaeed, 2006; Hossain and Reaz, 2007; Mohd Ghazali, 2007; Branco and Rodrigues, 2008; Reverte, 2009; Tagesson et al., 2009; Said et al., 2009; Khan, 2010; Siregar and Bachtiar, 2010; Abd Rahman et al., 2011; Gamerschlag et al., 2011; Esa and Mohd Ghazali, 2012).

The study illustrates that the two types of industries, namely, industrial and utility, has a negative and positive explanatory power, respectively, regarding the CSR disclosure score. The result of utility industry is consistent with Gamerschlag et al. (2011) focusing on the German companies, while the industrial one is inconsistent with Gamerschlag et al. (2011). One the other hand, the results are inconsistent with Michelon and Parbonetti's (2012) study which incorporates both the US and European companies and Tagesson et al. (2009) on the Swedish companies. Utility industries can be considered as polluting industries, they have more powerful stakeholders and higher visibility; thus they tend to present higher level of CSR disclosure. On the contrary, the companies that operate in the industrial industry probably do not implement adequate CSR initiatives, which normally lead to lower levels of CSR disclosures.

As estimated, anti - bribery policy coefficient shows a positive significant impact on the extent of CSR disclosure. No prior empirical study has incorporated the aspect of anti - bribery initiatives on the CSR disclosure score. The integration of anti - bribery policies can act as an extra motive to publish more information as it is accurate and handled in truthful manner promoting the transparency level. Therefore, a company with corruption purposes can be prevented by stakeholders. As far as corporate GHG emissions is concerned, companies with higher levels of GHG emissions are under greater exposure to potential public and regulatory scrutiny than other firms (Patten, 2002b). Thus, companies incorporate in their CSR disclosure more information in order to reduce the societal and political pressure legitimating their existence in society. Finally, it could be the first step for higher pollutant companies to consider the aspect of CSR eliminating the GHG emissions in the near future. The result of the study is consistent with Cowen et al. (1987), Adams et al. (1998), Patten (2002b), Patten (2002) and Bewley and Li (2000).

Finally, the companies that belong to DJSI tend to present more CSR information in their disclosures. Not only do companies attract the interest of social investors but increase consumers' loyalty (Schiebel and Pochtrager, 2003; Fafaliou et al., 2006), increase sales (Weber, 2008), employees' satisfaction (Bansal and Roth, 2000) and entrance in new markets (Jantzi Social Index; JSE SRI Index; KLD; Calvert Index;

DJSI) as well. The result in this study is consistent with Michelon and Parbonetti (2012).

This study makes several implications. It can be inferred that the ESG disclosure score can be used as important tool in order to assess a company quickly in relation to the aforementioned determinants. It could used as an indication for a group of companies that implement anti - bribery policies, have superior CSR performance and emit larger quantities of GHG. In addition, the analysis of the determinants of the CSR disclosure can assist not only public investors and financial analysts (Qu et al., 2013), but other stakeholders as well, to outline reasonable prospects about the amount of information available. At a policy level, the analysis of determinants of CSR disclosure can be used to develop the implementation of disclosure guidelines that is proposed by organizations responsible for CSR disclosure format (da Silva Monteiro and Aibar-Guzmán, 2010; Qu et al., 2013). More specifically, regulators should amend the five aforementioned variables in order to be more effective and more informative to stakeholders. In relation to the development of disclosure, policy-regulators should pay attention, too, to smaller size companies, to companies that do not integrate CSR initiatives and anti - bribery policies, produce low levels of GHG emissions and to industries with no impact on the CSR disclosure.

7 Conclusions

In this study, the impact of GHG emissions, DJSI, anti - bribery policy, industry profile and company's size on the extent of CSR disclosure is examined. 133 listed companies are incorporated in the financial year 2011on S&P Composite 1500 Index companies as it is more possible to integrate CSR initiatives. In addition, it is easier for the listed companies to retrieve corporate data by the internet based databases, such as Bloomberg online database. Previous studies were extended in numerous ways. Firstly, this study is based on third-party rating calculation in order to evaluate the CSR disclosure score. Thus, the, ESG disclosure score is used as a proxy for corporate transparency level and company’s commitment to CSR. Secondly, new plausible determinants have been incorporated for the first time, such as corporate GHG emissions and anti - bribery policy while the aspect of DJSI in relation to the extent of CSR disclosure is investigated for the second time.

The results based on multivariate regressions analysis indicate that all investigated determinants are positively significant to the extent of CSR disclosure. Regarding the industry dimension, industrial industry has a negative impact on the CSR disclosure while the utility industry has a positive impact the CSR disclosure. As larger companies are under scrutiny from governmental bodies and corporate stakeholders, the US large companies tend to enclose more CSR information in their disclosures in order to attract the investors’ interest and legitimize their initiatives consistent with good corporate citizenship. More polluting companies as it is indicated by the GHG emissions aimed to reduce the societal and political pressure by presenting more information. Companies that belong to DJSI tend to provide more information on CSR disclosure in order to achieve higher benefits. The implementation of anti - bribery policies in business operations could be an extra motive to publish more information as it is managed in truthful manner reinforcing the transparency level. As expected, industries differed from each other. The utility industry has a positive impact on the extent of CSR disclosure, while the industrial one has a negative significant on the CSR disclosure. Regarding utility, it is considered a polluting industry with powerful stakeholders and higher visibility; thus, they increase the information in relation to CSR initiatives to diminish their pressures. Finally, the industrial industry has a negative impact on the level of CSR performance probably because the level of implementation of CSR initiatives is low.

Stakeholders have the opportunity to evaluate a company according to specific determinants. Thus, it can be ascertained through ESG disclosure score which the main corporate characteristics are. In addition, the extensive CSR disclosure information can be a significant indication of business commitment to CSR initiatives. According to da Silva Monteiro and Aibar-Guzmán (2010), the investigation of the extent of CSR disclosure is an important dimension in order to advance the development of CSR disclosure guidelines in order to be more effective and informative to stakeholders. However, regulators should pay attention to smaller size companies, to companies that do not integrate CSR initiatives and anti - bribery policies, produce low levels of GHG emissions and in industries with no impact on the CSR disclosure.

The study presents some limitations. To begin with, the sample of companies is based on the US companies for the year 2011. It is recommended to compare the results of the study with other countries, such as Japan or other European countries. In addition, the impact of the determinants should be investigated for a longer period of time for more reliable results. As SRI indexes, Bloomberg does not publicize information with regard to the evaluation formula, the requirement disclosure items and the weight of each data point that are incorporated into the ESG disclosure score. As far as the environmental indicator is concerned, it should adopt not only air pollution indicators but liquid and solid wastes ones as well. Finally, the study incorporates a small number of determinants of CSR disclosure. More plausible determinants, such as industry competitiveness, social and environmental fines and country risk are needed to be investigated as the avenue for future research in this field.

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