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Environmental disclosure: does regulation solve the lack of comparability and objectivity?

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Abstract

The main aim in this research was to investigate the impact of regulation on environmental disclosure (ED). Lack of objectivity and comparability have been indicated in earlier studies as the main limitations of companies' ED and understanding how regulation can influence these limitations is fundamental for the advancement of discussions about the need to regulate these practices or not. Environmental information was analyzed in the annual reports for the year 2007 of 120 companies of equivalent size, from the oil and natural gas sector, in four countries with cultural similarities: the United States, Canada, England and Australia. To classify the data, a scale was used that was adapted from two studies on environmental disclosure, the study by Clarkson et al (2008) and by Wiseman (1982). To analyze the regulatory differences, existing studies were used in which this survey was previously undertaken. The results showed that, in countless with more extensive and specific regulatory mechanisms with greater enforcement power, environmental disclosure practices are more objective and comparable, that is, regulation can be one of the solutions to improve companies' environmental disclosure.

1. INTRODUCTION

The discussion on whether to regulate environmental information disclosure or not gained strength as a result of the creation of the International Integrated Reporting Council – IIRC in December 2009 and the Amsterdam declaration on transparency and reporting, issued by the Board of the Global Reporting Initiative – GRI in 2009. The aim in this declaration was to sensitize those in power to adopt global mandatory standards for socio-environmental disclosure and corporate governance practices (GRI, 2009). According to the GRI (2009), the main causes of the most recent global economic crisis would have been mitigated if an objective and uniform transparency and accountability system existed on a global scale. This system should be based on the practice of due diligence and on accountability about socio-environmental performance and corporate governance.

In the academic context, the predominant thinking is also pro-regulation. Authors like Freedman and Wasley (1990), Harte and Owen (1991), Gray, Owen and Adams (1996), Gallhofer and Haslam (1997), Beets and Souther (1999), Gray and Bebbington (2001), Adams (2004), Holgaard and Jorgensen (2005) and Freedman and Stagliano (2007) defend that, to solve corporate environmental disclosure – CED problems, these practices would need regulation.

A wide range of arguments is used to justify this need, including: the lack of uniformity or comparability among companies; the lack of depth and objectivity in the environmental information disclosed on a voluntary base; the non-existence of continuing disclosure (most companies do not publish environmental reports on a regular base); the constancy in the disclosure of positive information only and the lack of credibility of the environmental information disclosed, as they are not subject to external audits (Deegan; Gordon, 1996; Deegan; Rankin, 1996; Skillius; Wennberg, 1998; Gray; Bebbington, 2001; Costa; Marion, 2007).

Despite pro-regulation arguments, little is known about its impact on environmental information disclosure. According to Leuz and Wysocki (2008), even research on regulation and disclosure in general is scarce. Some studies exist though (Larrinaga *et al,* 2002; Cowan; Gadenne,

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2005; Frost, 2007; Ribeiro; Bellen; Carvalho, 2011) which are aimed at analyzing the impact of regulation on environmental disclosure practices. These studies reached distinct results: while some found a beneficial relation, others did not so much. Larrinaga *et al* (2002) in Spain and Frost (2007) in Australia investigated the phase before and after regulation was implemented, reaching different results, which could be attributed to variables like the degree of enforcement and the specificity level of regulations. Ribeiro, Bellen and Carvalho (2011), in turn, analyzed environmental disclosure practices across countries and concluded that they react to regulatory stimuli.

Although these studies give some direction about the advantages and disadvantages of introducing regulations, none of them investigates the impact of disclosure rules directly on the flaws earlier researchers have indicated. As a result, the objective of this research was to **analyze how the investigated companies' environmental disclosure practices behave in view of different regulatory stimuli**. This analysis was focused on two of the main aspects considered in earlier studies as utility limiters of environmental information published by the companies: lack of objectivity and lack of comparability.

To isolate the effect of regulation, the main sample characteristics had to be outlined that affect the environmental disclosure level: cultural similarity, sector and company size (Trotman; Bradley, 1981; Hackston; Milne, 1996; Gamble *et al,* 1996; Halme; Huse, 1997; Gray *et al,* 2001; Cormier; Gordon, 2001; Cormier *et al,* 2005; Guthrie *et al*, 2008).

The research hypotheses are interconnected with one of the branches of the economic theory of regulation, which indicates that regulation needs to be established, in the first place, to protect and serve the public in general or a significant part of it (Stigler, 1971), that is, regulation needs to present more benefits than costs to society, and with studies on the economic consequences of regulated disclosure (Leuz; Wysocki, 2008), which show the importance of regulating disclosure to fight against flaws and negative external influences in the markets. Based on these studies, it is expected that:

- **In the most regulated countries, the environmental information disclosed will be more objective.**
- **In the most regulated countries, the environmental information disclosed will be more comparable.**

The confirmation of these hypotheses is an indicator that increasing the regulation can be a solution to improve environmental disclosure, even when this is characterized as predominantly voluntary (Gray; Bebbington, 2001).

2. STUDIES THAT INVESTIGATED THE RELATION BETWEEN REGULATION AND ENVIRONMENTAL DISCLOSURE

The global academic branch that investigates questions related to environmental information disclosure goes back a long time and is well developed (Moser; Martin, 2012). Nevertheless, not many studies have addressed the regulatory aspect of environmental disclosure though.

Roberts (1991) undertook one of the first environmental disclosure studies concerned with comparing disclosure practices in companies from different countries. According to that author, the aim of her work was to examine the incidence of CED through Europe, based on the type and level of companies' environmental information disclosure. In addition, she explored whether established environmental disclosure patterns existed in the different countries under analysis or not. For her sample, she selected 110 companies from five European countries (France, Germany, the Netherlands, Switzerland and Sweden), which were active in highly polluting sectors. The data were classified with a view to the quantitative and qualitative measurement of results. Roberts (1991) reached the following conclusions: (1) most companies analyzed disclosed some environmental information, but the general disclosure level was very low, (2) on average, the companies disclosed less environmental information than information about their employees, (3) the company's location seems to help to explain the amount of environmental information disseminated, (4) the type of country weakly influences the environmental contents the companies disclose, (5) the highest level of environmental disclosure was found in Germany, followed by Sweden, France, the Netherlands and Switzerland and (6) the characteristics of employee information considerably differ from environmental information. Although the study by Roberts (1991) presents an important comparison among different countries, no social, political or economic factor that could explain these differences was addressed in depth, that is, the study remained limited to the indication of existing differences, without exploring the motivation behind them.

After Roberts (1991), Gamble *et al* (1996) developed another study that was concerned with investigating the effect of environmental disclosure based on a regulatory framework in a cross-country context. The authors intended to investigate the environmental information disclosed in the annual reports of 276 companies in nine economic sectors, originating in 27 countries, between 1989 and 1991. That author's work was important because of his empirical study about the effects of different regulatory frameworks on CED practices. Although the research did not compare the regulations found in further depth, the authors collected the regulations in each country from the research sample in great detail. For the environmental data collected from the annual reports, the researchers chose a classification that explored the information characteristics in qualitative terms, through a ranking into short and qualitative discussions, long and qualitative discussions, footnote discussions and information found in the financial reports. As regards the research results found, Gamble *et al* (1996) affirm that their main conclusions were: (1) significant statistical differences exist in the general and individual level of environmental disclosure between 1989 and 1990, (2) significant negative statistical differences exist in the level of disclosure between 1990 and 1991, (3) the United States present the largest number of companies that disclosure environmental information in their corporate reports and (4) the British-American accounting model produced the highest percentage of companies that employ different forms of environmental disclosure. The researchers' main contribution was to show that different forms of regulation present distinct results in terms of CED practices.

Buhr and Freedman (1996) undertook the next study that attempted to investigate the effect of the regulatory framework on the environmental disclosure level in a cross-country context. According to those authors, the aim of their study was to develop a comparison based on the type of document, the nature of the information

and the quantity of environmental disclosure between voluntary and compulsory environmental disclosure in the United States and Canada. Buhr and Freedman (1996) affirm that, although these two countries are political, economic and socially similar, differences exist in the business climate as well as in the legal systems, which can produce distinct environmental disclosure practices. To investigate this question, those authors chose a sample of 136 Canadian and American companies that were active in sectors with great environmental impact. For data collection, the authors used annual reports and 10K forms, as well as a classification framework with four categories of environmental information: legal or costs, emissions, management and other environmental information. Based on the statistical results, Buhr and Freedman (1996) concluded that, in general, no significant differences in environmental disclosure practices exist between the United States and Canada. The authors highlight that the companies analyzed in both countries failed to appropriately provide environmental information and that differences exist in the types of information disclosed, that is, American companies disclose more compulsory information and Canadian companies more voluntary information. In addition, Canadian companies are more prone to publishing environmental reports when compared to North American companies. Another important aspect in the study by Buhr and Freedman (1996) was the investigation in terms of environmental policy implications. According to the researchers, three conclusions can be drawn from their research with regard to the implementation of environmental disclosure practices. In the first, it is considered that any voluntary attempt to encourage North American companies' disclosure of environmental pollution tends to fail. In the second, related to Canada, to achieve appropriate environmental disclosure based on voluntary policies, a radical transformation in the current government system is needed, which does not seem feasible (at least not in the short term). The third and most important conclusion is that, in both countries investigated, the compulsory policy form would be the most appropriate to impose and develop environmental disclosure practices.

In the next year, 1997, Halme and Huse undertook a study to investigate CED differences among Scandinavian countries. The main aim in that research was to verify the relation between environmental disclosure practices in the annual reports and some governance, industry and regulation variables. To reach the objective proposed in the study, Halme and Huse (1997) developed four hypotheses, which were tested in 160 companies from four countries: Finland, Norway, Sweden and Spain. The following hypotheses were established:

1. The more dispersed the company stocks, the higher the environmental disclosure level;
2. The more board members, the greater the company's environmental attention;
3. A positive relation should exist between the environmental disclosure level and degree of pollution in the company's industrial sector;
4. The environmental disclosure in the annual reports should vary among the countries and reach higher levels in countries with a higher degree of regulation, such as Norway.

Based on their hypothesis test, Halme and Huse (1997) concluded that: (1) the most representative research variable was the type of industry and the results indicate that the extent of a certain industry's environmental impact is positively related to its CED level, (2) the general results did not indicate any significant relation between stock dispersion and the number of board members on the one hand and environmental information disclosure on the other, (3) the Norwegian companies showed to be more prone to environmental information disclosure than the companies from the other countries and this difference can be related to the existence of regulatory standards that require the disclosure of some information in the Norwegian companies' annual reports and (4) no significant relation was found between the company's size and level of environmental disclosure but, nevertheless, the results indicate that large companies tend to disclosure more generic information about the environment when compared to medium and small-sized companies' environmental information disclosure.

In the year subsequent to the study by Halme and Huse (1997), Adams *et al* (1998) produced a study to assess the socio-environmental disclosure in 150 annual reports of companies from European countries like France, Germany, the Netherlands, Sweden, Switzerland and England. According to the authors, several differences exist among the analyzed countries, which can relate to the culture, accounting system, banking and financial system, governance and legislative system or to the local inhabitants' expressed social values. The authors concluded that many factors exist that can influence the extent and style of socio-environmental disclosure and highlight that their research found significant differences in both the types and quantities of environmental information the companies from different countries disclose. They also point out that these differences are related neither to the size nor the type of industry that were part of the sample. They believe that these differences are much more due to complex aspects intrinsic to the countries analyzed.

More recently, three studies should be highlighted that involve the comparison among different countries' institutional and regulatory factors and their relation to CED practices. The first was elaborated by Holland and Foo (2003) and was aimed at investigating the impact of existing regulatory differences between the USA and England among the environmental disclosure practices of 40 companies from different polluting sectors. Holland and Foo (2003) only investigated annual reports and found some differences between both countries' environmental disclosure practices. First, the British companies publish most of their environmental information in specific parts of the annual reports, while North American companies are more focused on the part of the board's report and on the financial statements. Second, the North American companies reveal greater legislative emphasis than the British companies which, in turn, are more focused on environmental information related to their environmental management system. Finally, the authors conclude that significant differences exist between the CED practices of companies in both countries and that voluntary disclosure based on environmental performance activities is a better model than that created by the legislative reaction.

The second study was undertaken by Jorgensen and Soderstrom (2007). According to those authors, their main objective was to investigate how environmental information disclosure varies according to commercial and environmental legislation in different countries. As the research method, they selected a sample of 117 countries and decided to develop a survey, involving some auditors and managers from the countries analyzed, focusing on how they perceive the influence of regulations

in the environmental disclosure process. The researchers concluded that evidence exists that legal institutions strongly affect environmental disclosure practices. They also found evidence that environmental disclosure and disclosure rules are co-determined, that is, across the countries, environmental information disclosure varies according to the legal institutions, environmental laws and disclosure rules.

Aerts, Cormier and Magnan (2006) developed the third comparative study highlighted. In their research, the authors used institutional theory, more specifically the part about mimetic isomorphism, to investigate the imitation of environmental disclosure practices among countries from different countries and sectors. Their study was aimed at exploring aspects of intra-industrial imitation in three countries (Canada, France and Germany) across a six-year period. The sample size consisted of 1058 companies, divided among the three countries analyzed. According to Aerts, Cormier and Magnan (2006), the results suggest that, in a given year, the trend for one company to imitate another is determined by the group's general trend towards imitation, and this process is stronger in industries with a high concentration of individuals and weaker in companies subject to media exposure. Another relevant aspect the authors found is that higher-quality environmental reports show a higher degree of similarity when compared to low-quality reports. In addition, the strengths moving the similarity process differ among the countries investigated. The conclusions from the study by Aerts, Cormier and Magnan (2006) are relevant, as they highlight that a very wide range of institutional differences exist among some countries, which can exert a determinant influence on environmental disclosure practices.

In Brazil, although not many studies exist that investigated this issue from a regulatory perspective, the research by Mussoi and Van Bellen (2010) permits some inferences about the matter. The authors investigated the difference among the profiles of the information published in the annual reports, environmental reports and 20F forms of the 28 companies whose stocks are traded on the New York Stock Exchange – NYSE. Mussoi and Van Bellen (2010) concluded, among other things, that a distinguished profile exists in the compulsory information disclosed to the Securities and Exchange Commission - SEC in the 20F forms. This information was more objective and focused on the companies' risk assessment. The authors attributed these characteristics to the compulsory disclosure standards required by SEC. Although Mussoi and Van Bellen (2010) perceived this trend, the authors' study was not aimed at analyzing the regulatory issue and, therefore, it did not curtail the variables that could influence voluntary CED.

3. METHODOLOGICAL PROCEDURES

3.1. Choice of the companies

In order to guarantee that the research results can be attributed to the countries' regulatory frameworks, minimizing the influence from other factors, the research universe was selected in view of some variables that have demonstrated a significant impact on voluntary environmental disclosure practices in earlier studies (Trotman; Bradley, 1981; Gray *et al,* 2001; Hackston; Milne, 1996; Cormier; Gordon, 2001; Cormier; Magnan; Velthoven, 2005 Halme; Huse, 1997; Gao; Heravi; Xiao, 2005; Guthrie; Cuganesan; Ward, 2008; Gamble *et al,* 1996). The first factor outlined related to the analyzed countries' cultural and legal characteristics. Four developed countries were selected (United States, England, Australia and Canada), with Anglo-Saxon characteristics and a common law legal system (Nobes; Parker, 2008). Then, the companies were selected per economic activity sector. To delimit this criterion, the researchers chose to collect the companies from a highly polluting and strongly regulated sector, that of oil and natural gas. The third variable chosen was the company size. Mainly due to data accessibility, the gross income for 2007 was chosen, the year before the economic crisis. The year 2007 was chosen because it is the most current before the 2008 crisis, which could influence the research results.

To outline the study population, the stock exchange with the most representative business volume was selected in each country. For the United States, this was the New York Stock Exchange – NYSE, for Canada the Toronto Stock Exchange – TSX, for England the London Stock Exchange – LSX and for Australia the Australian Stock Exchange – ASX. Based on the stock exchange websites, all companies in the sector were separated, which the entities themselves had designated as Oil and Natural Gas. In total, 385 companies were found, of which 263 (68%) presented an active website and income information for 2007.

To consider the differences in income levels, a cap of 1.3 billion dollars was adopted as the maximum income level. In the USA, 70 oil companies are listed on the NYSE, 30 of whom showed less than US$1.3 billion in income, while the income ranges above this value are much higher, which would make comparison with other countries unfeasible. For the remaining countries, the 30 largest companies with income levels below this limit were selected. The choice of 30 companies per country was mainly motivated by the need for homogeneous gross income levels. On the whole, 120 publicly traded companies were selected (30 from each country), which represents 46% of the entire population with an active website and income data available for verification.

3.2. Data collection and classification

According to Gray and Bebbington (2001), there are basically three ways for companies to publish environmental information: in their annual reports, in specific environmental reports and through non-standardized information on the Internet. In this research, data collection was focused on the first option, that is, the annual reports – AR for 2007. The remaining disclosure forms were not included, as the companies under analysis practically did not use them (out of 120 companies, only five presented specific environmental reports).

Another factor defined was the place where this information was collected in the annual reports. The legal rules found in the countries under investigations require that annual reports consist of two parts: the financial statements and the Managements Discussion and Analysis – MD&A. The problem when combining information from these two parts relates to their distinct characteristics. While the financial information is audited, MD&A information is not and this can cause great discrepancy when comparing the data. To avoid this problem, this research was concentrated on the analysis of MD&A reports.

After collecting the forms, the next step was to measure each company's environmental disclosure level. To measure the environmental disclosure level, a scale was used that was adapted from two studies on environmental disclosure, the study by Clarkson *et al* (2008) and by Wiseman (1982). The studies had to be combined because of their different foci as, while the classification proposed by Clarkson *et al.* (2008) is more complete and comprehensive and based on the GRI (Global Reporting Initiative) model, the scale by Wiseman (1982) is more used to analyze the annual reports, as it includes information about lawsuits and environmental liabilities, items not addressed in the study by Clarkson *et al.* (2008).

The scale adapted from the two studies cited earlier contains 97 items, divided in two information groups and eight subgroups. The groups were used to classify the general information type disclosed, which can be (1) quantitative or (2) descriptive. Quantitative information is directly focused on the company's environmental performance and this type of information is more useful for the decision process, as it permits the objective assessment of a certain organization's environmental indicators and actions. Descriptive information, in turn, is related to the companies' environmental intentions and policies, and this type of information is more useful to assess a certain company's risks and environmental profile. The eight subgroups, then, are needed to classify the specific environmental information type disseminated in the reports and divided into: (I) environmental indicators, (II) environmental spending, (III) information about environmental lawsuits, (IV) administrative and governance structure for environmental issues, (V) credibility of environmental actions, (VI) environmental vision and strategy, (VII) environmental regulatory profile and (VIII) other generic descriptive information.

3.3. Data treatment

This research was aimed at analyzing the main reflexes of different environmental regulatory frameworks on environmental disclosure practices. As a starting point for this analysis, the main criticism against and limitations of the voluntary practices in current literature were verified, after which a parallel was drawn with the regulated practices. The two main points of criticism or limitations found in earlier studies were the lack of objectivity and lack of comparability of the environmental information published.

To measure the objectivity, two paradigms were used, that of environmental performance and that of environmental information utility for external users. On the environmental performance side, Ilinitch, Soderstrom and Thomas (1998) affirm that there are many ways of measuring a company's environmental performance, as it can be measured in the process or in the outcomes of this process, and either internal or externally. What is important is to choose the most appropriate form. The authors highlight that one way to effectively measure a company's environmental performance is through the analysis of its environmental performance indicators. In this respect, Keeble, Topiol and Berkeley (2003) highlight that the most objective way for companies to demonstrate their environmental performance is through environmental indicators. In the scale used in this study, the main environmental performance indicators elaborated by the GRI and by the International Petroleum Industry Environmental Conservation Association – IPIECA were included. Thus, it could be verified whether the companies analyzed objectively demonstrate their environmental performance to their stakeholders.

UNCTAD (1997) presents another distinct view on the objectivity or relevance of environmental information for external users. According to that entity, the environmental information types external users use can be classified according to their importance for the decision process, as follows:

- Category 1: financially quantifiable data related to environmental liabilities and provisions, exceptional environmental costs and environmental fees or rates;
- Category 2: qualitative data related to environmental policies, procedures and the progress of these policies and other environmental costs;
- Category 3: non-financial but quantifiable and verifiable information or data related to environmental performance measurement.

The closer to category 1, the more objective the information for the external users' decision process will be. It should be highlighted that UNCTAD's (1997) work was clearly focused on investors, but the stakeholders are a much larger and more heterogeneous group. This fact could turn the information about environmental performance more relevant (only category 3 for the organization), as they serve a wide range of users, who are not just investors. To get around this conflict, both viewpoints were considered in the data analysis.

The other aspect investigated in the research was comparability. Different concepts and comparability measures exist. As regards disclosure, the most common measure for this characteristic is uniformity. According to DeFond *et al.* (2011), increased uniformity leads to increased comparability, that is, a very strong link exists between the two concepts, mainly in companies active in the same sector and of similar sizes and institutional environments. Despite other comparability concepts in this research, it is measured through the uniformity of the environmental contents the companies disclose.

Uniformity is one of the indicators of the comparability power among different companies' reports and, thus, it can be measured by directly observing how many companies disseminate the same group of information. In this study, uniformity was measured in general per country and information group and individually per country and most disclosed information type. To measure uniformity in general, two measures were selected: the number of companies that disseminates the specific information item and the mean number, called range. The range corresponds to the mean distribution of the environmental information disseminated in each group. Thus, the result showed how many companies disseminate the information in the scale, and not just in the specific information item. To measure individual uniformity, then, the five most disseminated data were used, as well as the comparison of how many companies disseminated them in each country investigated.

3.4. Research limitations

This research comes with some limitations. First, the obtained results cannot be generalized, due to their

lack of compliance with statistical rigor in the choice of the sample. The research hypotheses were not statistically tested and, therefore, cannot be classified as statistical hypotheses. Thus, they were confirmed or rejected based on qualitative signs only.

4. PRESENTATION AND ANALYSIS OF RESULTS

4.1. Regulatory differences

The regulatory process is very complex and can present different facets. Nevertheless, the regulations show some core characteristics which representatives from the regulatory power should always assess, as they are responsible for the successful adoption or not of a given set of rules. These characteristics include: the extent of the regulation, its specificity level and degree of coercion (enforcement power). These were the main characteristics analyzed in the regulatory frameworks of the countries involved in the study.

To check for differences among the analyzed countries' environmental disclosure rules, secondary sources were used, including previously published papers and studies on the theme (Gamble *Et Al.,* 1996; Skillius; Wennberg, 1998; Iiiee, 2002; Repetto; Macskimming; Isunza, 2002; Nyquist, 2003; Alciatore; Dee; Easton, 2004; Kpmg; Unep, 2006; Ribeiro; Bellen; Carvalho, 2011).

What can be concluded from these studies is that the main differences among the countries relate to the rulemaking entity, the specificity of the regulations, the enforcement mechanisms and the number of rules. The most regulated country, that is, the country with the most extensive and specific regulatory framework for environmental disclosure and with the greatest enforcement power was the United States. As regards the other countries, the Canadian regulatory framework most closely approximated the North American in terms of the contents and enforceability of its standards. The British model differs from the others by its imposition (corporate legislation), less severe enforcement and distinguished disclosure contents required and the Australian model by its coercive strictness, greater specificity and more limited extent. These differences are summarized in the figure below (Table 1).

In Brazil, some regulatory initiatives have been taken with a view to environmental information disclosure. The Federal Accounting Council issued the Brazilian accounting standard – NBCT 15 in 2004. This standard establishes social and environmental information disclosure levels for all companies.

Table 1. Synthesis of direct regulations in each country

Country	United States				
Issue and Surveillance form of regulation	Direct and Centralized = The Securities and Exchange Comission - SEC created and supervises the standards				AICPA issues and SEC supervises
Homologation site	Federal regulation code Chapter 17				US GAAP
Number of standard and approval date	Regulation S-X, §210.4–10, (c), (6), (i) 1978	Regulation S-K, §229.101, (c),(xii) 1988	Regulation S-K, §229.103, (5) 1988	Regulation S-K, §229.303, (a) 1988	SOP 96-1 1996
Degree of enforcement	High - offenders are subject to penalties like fines, lawsuits and administrative processes. In addition, stockholders can sue them for bad administration				
Part of report involved	Financial statements and Board of Directors' report	Board of Directors' report	Board of Directors' report	Board of Directors' report	Financial statements
Summary of requirements	Requires that North American companies recognize and capitalize the future costs of the abandonment and dismantling of any asset they own. These costs include the costs of environmental restoration of the site affected by the asset's activity.	Requires that companies disclose the present and future effect of environmental laws or requirements on their capital spending, gains and competitiveness.	Requires that companies disclose any possibility or existence of any material legal or administrative lawsuit involving penalties deriving from environmental problems or offenses.	Requires that companies disseminate information about their environmental (including legal) risks and how they proceed to minimize them.	Indicates how companies should disclose their environmental remediation liabilities in financial terms.
Specificity level	High	Medium	High	Medium	High
Items involved in standard	Items III (30), II (24), VII (72) and IX (NI)	Items II (23) and VII (62, 65, 70, 71 and 75)	Items III (27, 28 and 29) and II (19)	Item VII (63, 67, 69, 73, 74)	Item IX (General)

Source: Ribeiro, Bellen and Carvalho (2011)

Table 1. Synthesis of direct regulations in each country (continued)

Country	Canada				
Issue and Surveillance form of regulation	Indirect and Decentralized = The Canadian Securities Administration - CSA created and the state commissions (ASC and OSC) supervise				Direct and Decentralized = The Australian Parliament created and ASIC supervises
Homologation site	National market regulation instruments				Corporations Act/2001
Number of standard and approval date	NI 51-102;2;1; 1.4; (d) (i)(ii) 2004	NI 51-102;2;5;5.1;(1) (k) 2004	NI 51-102;2;5;5.1; (4) 2004	NI 51-102;2;5;5.2 2004	Artigo 299 Item 1(f) 2001
Degree of enforcement	High - Fine of up to $5 million and, if bad faith is proven, the persons responsible for the information can be imprisoned for up to 5 years.				Medium - Compulsory retraction and fine of up to $1 million
Part of report involved	Board of Directors' report	Board of Directors' report	Board of Directors' report	Board of Directors' report	Board of Directors' report
Summary of requirements	Requires that companies disclose, in the operational income part, any influence of environmental issues on their present or future projects.	Requires that companies disclose the possible financial and operational effects of the environmental protection laws and regulation on their capital spending, gains and competitiveness.	Requires that companies that implemented any environmental policy that is fundamental to their operations disseminate these policies and the steps taken for their implementation.	Requires that companies describe all risk factors that can affect their activities, including environmental risks.	Requires that companies disclose whether they are subject to some environmental law or regulation and how they perform in this respect.
Specificity level	Low	High	Low	Medium	High
Items involved in standard	Item VII (Non-specific)	Item VII (62, 65, 70, 71 and 75)	Item VI (Non-specific)	Item VII (63 and 67)	Item VII (62 and 64)

Table 1. Synthesis of direct regulations in each country (continued)

Country	Australia	England		
Issue and Surveillance form of regulation	Direct and Decentralized = The Australian Parliament created and ASIC supervises	Direct and Decentralized = The British Parliament created and FSA supervises		
Homologation site	Corporations Act/2001	Companies Act - 2005 Alteration		
Number of standard and approval date	Artigo 299 Item 1(f) 2001	Article 172 Item 1(d) 2005	Article 417 Item 5(b) (i) 2005	Article 417 Item 6(b) 2005
Degree of enforcement	Medium - Compulsory retraction and fine of up to $1 million	Medium - civil lawsuit according to common law	Low - fine of up to $5 thousand pounds at most	
Part of report involved	Board of Directors' report	Board of Directors' report	Board of Directors' report	Board of Directors' report
Summary of requirements	Requires that companies disclose whether they are subject to some environmental law or regulation and how they perform in this respect.	Requires that company managers highlight that respect for the environment is part of the company's search for success.	Requires that companies disclose, in the part of their business review, their performance referent to environmental aspects.	Requires that companies disclose an in-depth and illustrative review of their business and provides for the use of performance indicators, including environmental ones, for this purpose.
Specificity level	High	Low	Low	Low
Items involved in standard	Item VII (62 and 64)	Item VI (Non-specific)	Items IV and VI (Non specific)	Items IV and VI (Non-specific)

As regards publicly traded companies, then, the Brazilian Securities Commissions –CVM has issued a normative instruction for the elaboration of reference forms (INST 480 from 2009). According to that instruction, companies are expected to disclose information about the "issuer's environmental policy and the costs incurred to comply with the environmental regulation and, if that is the case, with other environmental practices, including compliance with international environmental protection standards". This compulsoriness is similar to the rules required by the SEC and other securities commissions.

4.2. Objectivity

The first aspect analyzed in this study was the level and range of environmental disclosure in the companies included in the research, as shown in Table 2.

Table 2. Ranking of environmental disclosure per country

Countries analyzed		ENG	AUS	USA	CAN	TOT
Number of pages in the reports analyzed		2179	2297	3805	1845	10126
ER with specific chapter containing environmental information		16	8	11	11	46
I	Environmental performance indicators (16)	2	2	2	1	7
II	Environmental spending or investments (10)	2	0	16	5	23
III	Environmental court cases and lawsuits (4)	5	4	59	14	82
IV	Governance structure and Adaptation of administrative system (9)	48	29	7	19	103
V	Credibilty of Environmental Policies (14)	38	17	25	12	92
TOTAL QUANTITATIVE ITEMS (53)		95	52	109	51	307
VI	View and Strategy (8)	52	33	11	48	144
VII	Environmental Profile (15)	76	72	323	170	641
VIII	Generic Environmental Initiatives (21)	51	41	31	61	184
TOTAL DESCRIPTIVE ITEMS (44)		179	146	365	279	969
GENERAL TOTAL (97)		274	198	474	330	1276
		First		Second		
		Third		Fourth		

Based on Table 1, it can be observed that the oil companies under analysis whose headquarters are located in the United States showed the highest environmental information disclosure level, that is, 474 (higher than the sum of England and Australia's scores), followed by companies headquartered in Canada with 330, British companies with 274 and Australian companies with 198. The environmental information the North American companies most published was required in the regulatory CED framework (Figure 1), a characteristic that can also be observed in the other countries.

The main difference in the North American oil companies is related to item VII, scoring 323 (50.39% higher than the sum of all other countries); to item III, scoring 59 (71.95%), and to item II, scoring 16 (69.57% of the total), the most regulated items. Item VII relates to the company's environmental profile and most of the information it contains is compulsory, so that higher levels were expected in all countries. The information this item contains is: how companies adapt to the environmental standards and regulations, the environmental risks and their relation with company activities and aspects of insurance against environmental events. Item III, in turn, is also compulsory in the United States, and contains information about trials and environmental lawsuits. Item II, then, relates to quantitative information about environmental spending and investments, in accordance with the SEC's rules.

Concerning the companies analyzed from the other countries, item VII was also the most published, but with lower disclosure levels, according to each country's regulatory framework, with Canadian companies ranking second (170), the British third (76) and the Australians, the country with the least extensive regulatory framework, fourth (72). Another point that should be highlighted in Table 1 is that the differences among the regulatory requisites reflected in the oil companies' disclosure of a wide environmental information range, and that this characteristic was mainly evidenced in England, which showed higher disclosure levels for items IV, V and VI when compared to the other countries.

The analysis of England's environmental disclosure rules revealed some points that differed from the other countries, like the need for managers to demonstrate their concern with the environmental issue. This concern tends to be reflected in those items related to environmental policies, environmental credibility and the administrative structure, which are the most disseminated in the British case. Another example that reinforces this viewpoint is Canada. In the Canadian rules, differently from the North American regulations, companies are obliged to disseminate their environmental policy, a prerequisite included in the information under item VI, with Canadian companies ranking second in the disclosure of this item (48), slightly behind the British (52). In addition, proportionately, item VI is the second most disseminated item in Canada, with 60% of the companies.

One positive aspect in the English companies under analysis, when compared to the other countries, is that they identified the importance of creating an exclusive area for environmental information inside their AR. Among the 30 companies under analysis that were headquartered in England, 16 adopted this practice, against 11 North American and Canadian and only eight Australian companies. The same aspect was observed in the research by Holland and Foo (2003), in which 58% of the British companies included a specific environmental chapter in their AR, against only 28% of the North American companies. Although separating an environmental chapter in the AR is a positive initiative,

the relation with the space reserved for the environmental information is even more. Concerning this criterion of using the annual reports for environmental information disclosure, the country with the best index of pages per environmental information quantity published was Canada with 17.89%, followed by England with 12.57%, the USA with 12.46% and Australia with 8.62%. According to Gray, Kouhy and Lavers (1995), the space reserved for environmental information in the annual reports shows the relative importance of this disclosure type for society. This importance can be translated in the form of environmental information demand, showing that Canadian oil companies receive the highest environmental charges from society.

Another aspect that can be inferred with regard to Table 1 is a weak point in the compulsory regulation, which different authors have appointed. According to Gunningnam, Grabosky and Sinclair (1998), Buhr (2007), Zerk (2006), KPMG and UNEP (2006) and Power (1991), one disadvantage of the regulated disclosure environment is the lack of innovation, that is, companies will only present what is restricted to the achievement of compliance, narrowing their voluntary CED alternatives. This aspect was mainly observed in the United States. Although the North American companies display great advantage in different groups, in some, they lag far behind the other countries. This can reflect the regulatory instruments of the Securities and Exchange Commission - SEC.

As the North American companies are focused on compliance with the disclosure rules, they restrict themselves to disclosing what is required by law, marginalizing other environmental information that could be useful for the decision process. This was also observed in Buhr and Freedman (1996), showing that the Canadian companies publish more voluntary information and the North American companies more compulsory information.

In terms of objectivity, measured through the environmental performance indicators, all countries showed very low scores, as they practically did not disclose that information. As regards objectivity for external users, then, the North American companies' score surpassed the others by far.

They published 71% of all information UNCTAD (1997) considers as category 1 (items II and III), that is, more objective information for investors' decision making. When examining the differences among the regulatory frameworks, it is perceived that part of this North American advantage can be attributed to the specificity level of SEC regulations. SEC standards are very specific as to the contents and form in which certain environmental information should be disseminated, mainly negative material information.

As regards the first research hypothesis raised, it was observed that, although few companies publish information about their direct environmental performance, in their relation with investors, the companies under analysis that are headquartered in the most regulated countries (higher degree of enforcement, specificity and range of CED standards) showed greater objectivity in their environmental information disclosure.

Concerning direct environmental performance, the little importance this group of companies attributes to the environmental performance indicators and environmental spending information stands out.

Considering that only 4.17% of the companies in the sample presented specific environmental reports, it was clear that most companies analyzed do not publish information on their direct environmental performance. In other words, almost all sample companies fail to provide appropriate environmental accountability to their stakeholders. That can be attributed to errors in the environmental disclosure practice standards. Except for British corporate law, which includes a small excerpt on the possibility of using indicators for environmental information disclosure, no other regulation establishes the compulsory publication of this information.

4.3 Comparability (uniformity)

Another aspect investigated in this study was the uniformity of the environmental information disclosed in the AR. Uniformity is the main indicator of comparability among the companies, that is, the more uniform the information disclosed, the greater the power to compare one company with the other. Two uniformity indicators were calculated: general uniformity and mean uniformity, also known as range. The uniformity was calculated in general per item (Table 3) and individually per information (Table 4). Mean uniformity or range, on the other hand, was calculated by dividing the general uniformity rate by the amount of information in each item. The two indicators provide a general view of the comparability power among the sample companies' environmental information evidenced. In Table 3, the general and mean levels of uniformity in each country analyzed are displayed.

As observed in Table 3, the oil companies with the highest general mean uniformity level of environmental disclosure are headquartered in the United States (0.163), followed by Canada (0.113), England (0.094) and Australia (0.068). Individually, the North American and English companies stand out on the quantitative items, with a range of 0.069 and 0.060, respectively. In terms of general uniformity, all North American companies analyzed present at least one descriptive and one quantitative piece of information, which is not the case in the other countries, where not all companies evidence the quantitative data.

Concerning the type of item disclosed, again, type VII shows the highest uniformity level (0.98), followed by type VI (0.52). In general terms, all countries present at least one type of descriptive information, which is not the case for the quantitative information, which appears in 78.3% of the sample companies. In other words, 21.7% of the companies analyzed do not evidence any quantitative environmental information.

The range of the descriptive items (0.184) is also much wider than that of quantitative data (0.048) and this indicator represents the concentration of environmental disclosure in certain information on the scale. Concerning the descriptive items, the disclosure is concentrated in 18.4% of the information and, for the quantitative items, in 4.8%.

Table 3. Level of general and mean uniformity of the items disclosed

Countries analyzed	England		Australia		USA		Canada		General	
Mean number of pages in ER	72.63		76.57		126.83		61.5		84.38	
Mean number of ER with environmental chapter	0.533		0.267		0.367		0.367		0.383	
Aspect analyzed	Uniform	Range	Uniform	Range	Uniform	Range	Uniform	Range	Uniform	Range
Environmental performance indicators (16)	0.067	0.004	0.067	0.004	0.067	0.004	0.033	0.002	0.058	0.004
Environmental Spending or Investments (10)	0.067	0.007	0.000	0	0.367	0.053	0.133	0.017	0.142	0.019
Environmental court cases and lawsuits (4)	0.133	0.042	0.100	0.033	0.933	0.492	0.367	0.117	0.383	0.171
Governance structure and Adaptation of administrative system (9)	0.567	0.178	0.500	0.107	0.167	0.026	0.400	0.07	0.408	0.095
Credibility of Environmental Policies (14)	0.500	0.09	0.467	0.04	0.600	0.06	0.233	0.029	0.450	0.055
Total Quantitative (53)	0.767	0.06	0.700	0.033	1.000	0.069	0.667	0.032	0.783	0.048
View and Strategy (8)	0.700	0.217	0.567	0.138	0.233	0.046	0.600	0.2	0.525	0.15
Environmental profile(15)	0.933	0.169	1.000	0.16	1.000	0.718	1.000	0.378	0.983	0.356
Generic Environmental Initiatives (21)	0.600	0.081	0.467	0.065	0.400	0.049	0.533	0.097	0.500	0.073
Total Descriptive (44)	1.000	0.136	1.000	0.111	1.000	0.277	1.000	0.211	1.000	0.184
General Total (97)	1.000	0.094	1.000	0.068	1.000	0.163	1.000	0.113	1.000	0.11

Table 4. Level of Individual Uniformity per Country

England		Cies	%	RK.
64	Declaration of compliance with local or international environmental standards	19	63.33%	1
68	Declaration by the company, affirming its commitment to the highest environmental standards	16	53.33%	2
59	Declaration reaffirming strategic commitment to the environment	15	50.00%	3
42	Has or is awaiting certification from environmental programs or licenses issued by regulatory entities	13	43.33%	4
56	Declaration by the company about monitoring or periodical reviews of its environmental performance	13	43.33%	5
Australia		Cies	%	RK.
64	Declaration of compliance with local or international environmental standards	28	93.33%	1
62	Declaration that the company's activity is subject to different local and national environmental laws	26	86.67%	2
42	Has or is awaiting certification from environmental programs or licenses issued by regulatory entities	13	43.33%	3
59	Declaration reaffirming strategic commitment to the environment	12	40.00%	4
32	Existence of an environmental committee on the board or in another executive instance	10	33.33%	5
United States		Cies	%	RK.
62	Declaration that the company's activity is subject to different local and national environmental laws	30	100.00%	1
63	Declaration by the company, indicating that its activity may entail environmental risks	29	96.67%	2
64	Declaration of compliance with local or international environmental standards	29	96.67%	3
65	A general view of the consequences the possible impact of environmental legislation can entail for the company or its products	29	96.67%	4
29	Declaration that the company is subject to legal or administrative trials involving environmental issues	28	93.33%	5
Canada		Cies	%	RK.
63	Declaration by the company, indicating that its activity may entail environmental risks	24	80.00%	1
73	Declaration that the company may have no control over its environmental risks	23	76.67%	2
62	Declaration that the company's activity is subject to different local and national environmental laws	15	50.00%	3
64	Declaration of compliance with local or international environmental standards	15	50.00%	4
69	Declaration that the company invests to reduce the risk of environmental problems	15	50.00%	5
Legend:				
	Negative environmental information			
	Positive environmental information			
	Neutral environmental information			

Besides general uniformity, each country's individual uniformity and compliance level need to be analyzed. In Table 3, the environmental contents the companies in each country most disclosed are highlighted.

The first oil companies observed were from England. The information the British companies most disclosed is very coherent with their country's regulatory requisites, which require the disclosure of the board's environmental commitment and of the company's environmental performance. As observed in Table 3, information 68 and 59 mainly relate to the company's environmental commitment, and this represents 40.79% of the information the British companies published most.

The most disseminated information item is 64, with a uniformity level of only 63.33%, which means that only 19 out of 30 possible British companies published this information. Therefore, the uniformity indicator of the most disseminated information is also low as, on average, only 15.2 companies publish this information, representing a low level of compliance with the environmental disclosure standards.

The next country analyzed was Australia. Like England, the Australian oil companies also published the information required in their corporate law. The difference is that the Australian law is less extensive than the British, so that companies in the country need to publish less environmental information to achieve compliance. As observed in Table 4, information 64 and 62 were much more published than the others. This big difference can be attributed to the Australian environmental regulatory framework, which requires that companies disclose their compliance with environmental legislation and their performance with regard to these standards. Information 64 and 62 are directly related to this aspect, that is, information 64 says that the company complies with environmental laws and 62 that the companies may be subject to different environmental laws. When compared to English, Australian companies' compliance level is quite high. Ninety-three percent or 28 companies published information 64, against 86% or 26 companies for information 62, while only 19 British companies (63%) published the information most disseminated in that country. As regards general uniformity, other environmental information types were not very uniform in Australia, showing the relevant impact of compulsory disclosure rules in that country.

Concerning the USA, North American companies were expected to display the largest quantity of compulsory information and the highest uniformity level, considering the more extensive regulatory framework and stricter enforcement and surveillance mechanisms. As observed in Table 4, forecasts on the North American companies' degree and type of disclosure were confirmed. All information types these companies most published are compulsory according to SEC laws and their compliance level with these standards is high, as an average 20 companies disclose the information established by law. The individual uniformity level is also very high, reaching 100% for information 62 and 96% for the next three information types.

Like in the North American companies, a high level of compulsory information disclosure was expected in Canada. According to Table 4, like in the other countries, the Canadian environmental disclosure standard strictly follows the environmental regulatory framework.

Most information published in Canada complies with the market standard requirements. The most disclosed information types include environmental regulations (62) and environmental risks (63 and 73). Although Canada presents a stricter regulatory framework than England and Australia, the Canadian oil companies' uniformity level is equivalent to that in the other two countries. In comparison with the North American companies' level, it is very low. On average, only 18.4 companies publish all of the most disclosed information. Concerning the compliance level, it is also low, as 80% of the companies publish the most disclosed information in Australia, against almost 100% in the USA.

As regards the second research hypothesis, in general, it can be confirmed. In other words, **companies headquartered in countries with a stricter regulatory framework for environmental disclosure showed a higher degree of comparability (uniformity) in their environmental information disclosure.**

5. CONCLUSIONS

The aim in this research was to investigate the impact of regulation on the objectivity and comparability of companies' environmental information disclosure in countries with different regulatory frameworks. In the literature on the theme, these aspects are considered as negative in companies' environmental disclosure. Some conclusions can be observed based on what was presented in the analysis of the results.

First, great differences in contents, range and enforcement were observed among the different countries' environmental disclosure regulations. When examining the environmental regulatory frameworks in depth, it was observed that the USA presents the most extensive compulsory framework, with the best surveillance and enforcement mechanism. Canada ranked second, considerably approaching the North American standards in terms of contents as well as range of the regulations. England occupied the third place, with extensive regulations and distinguished compulsory environmental contents, but also weak enforcement mechanisms. Finally, Australia ranked fourth, with the least extensive requirements, but an enforcement mechanism slightly superior to that of England.

The results of the data collected from the MD&A reports were coherent with each country's regulatory levels. The North American oil companies most published environmental information in general, followed by the Canadian, British and Australian companies. As regards the environmental contents published, the companies also demonstrated compliance with their compulsory regulations, except for Canada, with considerable variations in the contents. The North American companies published more information under Items VII, II and III, all of which contained compulsory environmental contents. In the other countries, Item VII was also the most published, as it contained most of the compulsory environmental information.

The regulations also influenced the comparability of environmental disclosure. The country with the most uniform distribution of environmental information was the United States, followed by England, Canada and Australia. As regards uniformity, the range of the regulatory framework was not the preponderant aspect, as Canada ranked behind England, with a more limited regulatory framework. Other regulatory influences, like the enforcement mechanisms or regulatory contents, may influence this aspect more strongly. Although the

North American companies stand out in general, in some information groups, the British oil companies ranked first. This mainly derives from the peculiarities of the British regulatory framework, which requires that companies publish information under items IV and VI, with higher disclosure levels when compared to companies in the other countries.

Considering the type of information disclosed, all countries showed that the information their companies most disclosed are required in their compulsory rules. Concerning compliance, on the other hand, the companies showed considerable distinctions. While the North American (93%) and Australian companies (90%) showed very high compliance levels with compulsory environmental information, in Canada and England, the same was not true. The British case is quite peculiar, as the environmental requisites were established in 2005 and the data collected in 2007, which may arouse interpretative questions and partially explain the English companies' low degree of compliance. In the case of the Canadian companies, however, that does not happen, so that the low compliance level can only be attributed to faulty surveillance and enforcement mechanisms, or some author exogenous question that was not identified in this research.

Finally, strong indications were found to confirm the research hypotheses. In other words, the regulation process of environmental information showed to be a good tool to fight against some of the problems identified in earlier studies. The environmental information the oil companies under analysis published in the most regulated countries were more uniform and more objective, that is, less superficial. Nevertheless, some negative points were identified in this research. Most companies analyzed did not evidence environmental performance indicators in their AR and neither had another specific environmental report for this purpose, demonstrating that the disclosure of this information may have been neglected.

This research demonstrated that one option to put an end to this void in environmental performance information disclosure is to make it compulsory. It was also clear, however, that if this process is not based on specific rules that are easy to understand and accompanied by efficient punishment and surveillance mechanisms, it may not work (like in the case of the Canadian companies), which would simply cause a high cost for the companies and for society, without the equivalent benefits. In sum, it can be concluded that there are positive (greater uniformity and greater objectivity) and negative (focus on compliance and ineffective enforcement mechanisms) sides to compulsory environmental disclosure.

Some questions were left unanswered and, in future studies, the reasons for companies' lack of compliance with the environmental regulations can be investigated, the reasons why these regulations do not include information about direct environmental performance and whether different implementation forms produce distinct results.

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