

Regulatory and industry influences on the communication of environmental information: a comparative study of top French and Australian firms

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Abstract

This study evaluates environmental disclosures in a country with explicit mandatory disclosures (France) and one where disclosures are virtually all voluntary (Australia). Comparative analysis using the Global Reporting Initiative (GRI) framework is conducted over a two year period during the Global Financial Crisis (GFC). The top French firms disclosed 55% in each year whereas the Australian firms' disclosures voluntarily rose from 37% to 45%. One of the strongest findings is that manufacturing firms' level of environmental disclosures is far higher than service-orientated firms (56-60% versus 34-38%). Interestingly, the worsening global economic crisis did not precipitate a drop in such 'social non-economic' disclosures. A key implication is that regulation per se may not be the sole answer to improved disclosure. Instead, more carefully targeted industry rules may well deliver a higher level of corporate transparency. Future research into countries with differing regulatory expectations, financial prowess and governance systems could add further insights.

Key words:

Environmental disclosure; communication; corporate social responsibility

1. Introduction

The topic of corporate social responsibility has blossomed into global prominence (Golob & Bartlett 2007; Farneti & Guthrie 2009). The international business arena is facing tremendous pressure to be socially

responsible and eventually report on issues other than those in the financial domain. The annual report or separate 'sustainability' documents are key communicating mediums to provide information for different stakeholders and to discharge environmental accountability towards broader society (Hooghiemstra 2000). Such reporting also allows corporations to articulate their principal concerns with regard to sustainable performance and development.

As the role and the expectation of business on society escalate (Golob & Bartlett 2007), firms have a wider responsibility and need to consider the impact of their business conduct upon the society and the environment. There is a growing concern internationally about the social and ecological impact of business activities (Farneti & Guthrie 2009). Despite the fact that corporate social responsibility has been in existence since the 1950s, concern for environmental reporting has gained widespread currency and serves as a core construct in the 1990s and the new millennium (De Bakker, Groenewegen & den Hond 2005).

Multiple theoretical lenses have been used in the environmental literature including the decision usefulness approach, economic-based and political economy theories (Liu & Anbumozhi 2009). Legitimacy theory remains one of the dominant perspectives used to explain corporate social responsibility reporting (Hooghiemstra 2000). Firms engage in environmental reporting to demonstrate that their actions are legitimate and conform to societal expectations. Viewed from the legitimacy framework, reporting is regarded as a way to legitimize activities as well as a channel to influence stakeholders' perceptions toward the company. It can be used to influence perceptions which eventually justify its continued existence (Guthrie & Parker 1989).

While accounting reports can be mandatory, solicited or voluntary (Woodward, Edwards & Birkin 1996; Van der Laan 2004), external reporting on corporate social responsibility issues predominantly remains voluntary. This research study compares and contrasts the level of environmental reporting using data from two countries with very different environmental reporting regulatory regimes: France (a rare example where mandatory rules are in place) and Australia (where such information is voluntary). Since May 2001 French¹ companies are required to make information available to investors with regard corporate social and environmental performance if they are listed on the stock exchange (Robins 2005; Tschopp 2005). However, due to the broadly written regulation, the presentation and extent of disclosure are subject to firm

¹ There are a number of other countries in which the mandatory environmental reporting has been introduced such as Sweden, Norway, the Netherlands and Denmark. Nevertheless, France is used in this study because it is the first country in the world that imposed such regulation (Tschopp 2005).

discretion, leaving room for variation in terms of uptake and diffusion (Tower et al. 2010).

Australia is chosen for this study because it is one of the most stable economic, political and social countries in the Asia Pacific region (Golob & Bartlett 2007), whilst corporate social responsibility reporting remains discretionary. The Australian Parliamentary Joint Committee on Corporations and Financial Services (2006) concluded that corporate social responsibility reporting should remain voluntary. This is because the Committee believes that corporate social responsibility reporting should be strongly encouraged rather than being enforced. Suggett and Goodsir (2002) argue that in Australia the community places emphasis on the meeting of social obligations (Suggett & Goodsir 2002). Hence, these social drivers potentially place much pressure on firms to report beyond core profit activities. Through use of this country comparative, data insights can be gleaned about the role of mandatory regulation on environmental reporting.

Top 30 firms from each country (France and Australia) are selected as the data sample because of their wider resource possession, giving them panoptic ability to adopt more proactive environmental management practices. Further, these firms have multiple stakeholders and, thus, may feel obligated to disclose such information. According to Liu and Anbumozhi (2009), listed companies use environmental information as a medium for stakeholder management.

This paper augments the empirical literature on environmental disclosure practices by analysing the trends in disclosure practices and making a comparison between two countries to enrich the corporate social responsibility debate. Undoubtedly, environmental issues and the ecological impact of business conduct are important. This is evidenced in the recent 2009 United Nations Climate Change Conference, commonly known as the Copenhagen Summit in which the Copenhagen Accord recognizes that climate change poses the greatest challenge of the present and proactive actions need to be taken to minimize its adverse impact. In addition, comparative study enables greater insights to be generated into environmental disclosure practices. Further, most prior assessments have focused on examination of a single country (see for example Deegan & Rankin 1996; Hackston & Milne 1996; Milne, Tregidga & Walton 2003; Daub 2007) and very few studies examine the communication of environmental information across countries in different regions. Likewise, use of the GRI framework as a unique model to assess the level of environmental disclosure can provide insights with regard to the extent of adoption of such a standard as an international reporting instrument. Hence, this study expands the existing pool of knowledge by exploring the

level of environmental disclosure to shed additional light on this pivotal issue.

The rest of the paper is organised as follows. The next section provides the background of the study where the relevant review of prior literature in relation to corporate social responsibility reporting practices is presented. Following that, the research methods are outlined. The results are then presented with concluding remarks and suggestions for future research offered in the final section.

2. Literature review

Unprecedented challenge placed by the wider stakeholders and the changing voice of the community has altered and shaped business responsibilities. As a result, the pursuit of sustainable development becomes the principle, endorsed by many corporations, to have greater transparency and better stakeholder management (Golob & Bartlett 2007). Against the backdrop of global business environment, corporate social responsibility reporting serves as a useful channel to disseminate information to social actors.

Golob and Bartlett (2007) examine the reporting patterns of corporate social responsibility in Australia and Slovenia. These two countries are selected because they differ in terms of national culture, yet the reporting pattern in both countries appears to be driven by market pressures and is predominantly voluntary. Using GRI and the World Business Council for Sustainable Development (WBCSD) as the template reporting framework, the findings indicate that Australian companies engage in corporate social responsibility reporting more actively than those in Slovenia. One possible justification offered by the authors is because Slovenia is still in its infancy regarding corporate social responsibility reporting. Whilst Australian corporate social responsibility reporting seems to cover wide ranging issues, Slovenian reporting is focused narrowly and the structure follows the one proposed by the European Commission's Green Paper on corporate social responsibility reporting 2001 (Commission of the European Communities 2001).

Lynch (2010) investigates the nature and extent of environmental reporting contained in 324 annual reports in the public sector. Specifically, the study examines the annual reports of 18 Australian state government departments of which 12 are responsible for environmentally sensitive areas over an eight-year period from 2001 to 2008. As society expects governments to manage public resources in a sustainable and responsible manner, the author asserts that detailed environmental performance will be disclosed in the annual reports. However, findings show that the reporting pattern is not consistent over time and the standard of reporting varies

between departments even though the amount of environmental disclosure increases. The findings also reveal a disappointing low level of GRI-based reporting. The author recommends mandatory GRI adoption for all government departments.

Skouloudis, Evangelinos and Kourmoussis (2010) assess the adoption of triple-bottom-line reporting according to GRI guidelines for companies operating in Greece. Using the GRI 2002 Guidelines, their findings indicate a very challenging framework for Greek firms. Major gaps exist where Greek firms are still lagging behind the international experience. Further, Greece's reporting on non-financial items varies significantly in terms of materiality and completeness, with low number of GRI adopters.

Brown, de Jong and Levy (2009) assess the degree of GRI's institutionalization by drawing on institutional theory. Eight criteria are used to assess the degree of GRI institutionalization which includes, among others the uptake of GRI reports, the emergence of new language and concepts, competitive pressures related to GRI and new institutional logic. The chronicle of GRI depicts how institutions emerge as a result of interactions among many actors and how the resources and economic structure shape emerging institutions. The governance perspective indicates that information must have usable format and content of which specialized knowledge is crucial.

Guthrie and Farneti (2008) analyse voluntary sustainability reporting by Australian public sector organisations in light of GRI G3 Guidelines (GRI 2006) supplemented by the *Sector Supplement for Public Agencies*, which adds another set of core indicators. Seven different levels of Australian government organisations are studied where content analysis is employed. Despite the fact that all of the organisations claimed that GRI indicators are being followed, their study found that the reporting pattern is diverse and fragmentary. The examination of social and environmental disclosure in the annual reports and the sustainability reports reveals that annual report remains as the main medium for sustainability disclosure. The authors suggest that sustainability reporting for public sector organisations in Australia is still in its infancy, with the *G3 Guidelines* and the *Sector Supplement for Public Agencies* too generic for public sector organisations.

Guthrie, Cuganesan and Ward (2008) examine the social and environmental reporting practices of the Australian Food and Beverage Industry. They note that there have been very limited studies to date that focus solely upon industry-specific reporting. Food and beverage is chosen because of its significance to the Australian economy and environment, coupled with the intense contemporary issues surrounding the industry such as food safety and obesity. Using the GRI 2002 guidelines, supplemented with industry-specific items relevant to the Australian food

and beverage industry, content analysis is applied to various reporting media; annual reports and websites. Their results indicate that firms are using both reporting media for social and environmental reporting, with corporate websites indicating a higher frequency of disclosure. The authors suggest that generally accepted social and environmental guidelines tailored specifically for web-based communication should be established to allow rigorous and reliable disclosure.

The focus of Farneti and Guthrie's (2009) study is to identify contextual factors for sustainability reporting of Australian public sector agencies. 'Better social and environmental practice' agencies (those that follow GRI Guidelines) were invited to participate in the study. Semi-structured interviews with key preparers are conducted to explore the motivation for the voluntary reporting of sustainability information. Findings from the interviews reveal that the main purpose of reporting is to inform internal stakeholders, with the annual report being only one of the media used to channel social and environmental information. GRI implementation is seen to be difficult due to its generic framework, while other extended performance reporting frameworks such as the balanced scorecard and triple bottom line have already been adopted. Their findings also indicate that a key individual within each organisation drives the social and environmental reporting process.

Liu and Anbumozhi (2009) provide an empirical observation on Chinese listed firms with regard to corporate environmental information. They assert that the strategy adopted by Chinese listed firms tends to be influenced by pressure from the government, whilst pressure from other important stakeholders like shareholders and creditors appears to be weaker. An interesting finding revealed relates to selectivity of the disclosure of environmental information. The authors suggest that more aggressive and effective legislative and administrative measures should be promoted so that Chinese enterprises would become more proactive, to improve their environmental performance.

In France, Depoers (2000) examines the economic determinants of the extent of disclosure for 102 industrial and commercial listed firms. An index of financial and non-financial voluntary information is used to assess the level of discretionary disclosure. As a pioneer voluntary disclosure study in France, the major contribution of this paper is to explore the incentives to withhold and the incentives to disclose discretionary information. The results indicate that managers make strategic disclosures in which they disclose the information when firm size and foreign activity are imperative. On the other hand, information is concealed if managers feel that disclosure may place the firm's competitive position at stake and may increase pressure from labour.

A case study for a French company, Total SA, one of the largest oil and gas company in the world, is conducted by Cho (2009). The paper examines the environmental disclosure decisions and practices following two important environmental-related disasters that occurred in France less than two years apart; a) the 20,000-ton Erika oil spill on December 9, 1999 and b) the deadly explosion of chemical plant on September 21, 2001. As a result, international media have negatively publicized the events causing considerable damage towards the firm's reputation and image. The findings provide support for legitimacy theory in which environmental disclosure is used as a powerful legitimating device. A more open communication strategy is being employed to restore damaged firm reputation and image.

As highlighted in the above literature, most previous studies use the GRI (Griffin & Mahon 1997) guidelines as the template benchmark to assess the level of environmental disclosures by listed companies around the world. The GRI is almost universally employed as it is clearly the most acknowledged international corporate social responsibility reporting benchmark in the world (Brown, de Jong & Levy 2009). Therefore, this set of global guidelines is used as the reporting framework to conduct the comparative analysis between top French and Australian listed companies. By employing the GRI 2006 framework, this paper seeks to answer the following research questions:

- a) *What is the level of environmental communication for the Top 30 French and Australian listed firms?*
- b) *Does the listed company's country influence the level of disclosure?*
- c) *What other company characteristics (such as size, profit, leverage and industry category) affect the communication of environmental information for the Top 30 French and Australian listed firms?*

3. Research methods

This study utilises a positivist empirical research method seeking to explain what is being reported with regard to environmental disclosure. It also examines possible firm specific factors that could explain variations in the level of disclosure over time.

The Top 30 listed firms for 2007 and 2008 from each country, France and Australia, are selected for this study. All 30 environmental performance indicators from the GRI 2006 guidelines are used to assess the reporting of environmental accountabilities by the sample firms. The study records the incidence of disclosure by giving a score of one if the firm reports on the item and zero otherwise. It should be noted that it is not the aim to analyse the quality of environmental information disclosure, however an argument could be made that the higher the quantity of information provided by a

firm, the higher the quality may be offered to stakeholders seeking to understand company environmental activities.

Consistent with prior studies, a disclosure index is used to capture the strength of environmental disclosure (see for example Cowan & Gadenne 2005; Frost et al. 2005; Clarkson et al. 2008). The internationally accepted framework, GRI, is used as the benchmark to measure the level of environmental disclosure for the Top 30 French and Australian listed firms (refer Appendix 1 for the list of items included in the Environmental Disclosure Index ($EnvDis_{j,t}$)). Table 1 summarises the variables used in this study.

Table 1: Variables description

Variable	Description
$EnvDis_{j,t}$	The aggregate environmental disclosure score for firm j for time period t based on the total sum of score awarded per item of the thirty [30] points, expressed as a proportion of the total possible score.
$CoreEnvDis_{j,t}$	The aggregate 'core' environmental disclosure score for firm j for time period t based on the total sum of scores awarded per item of the seventeen [17] points, expressed as a proportion of the total possible score.
$AddEnvDis_{j,t}$	The aggregate 'additional' environmental disclosure score for firm j for time period t based on the total sum of scores awarded per item of the thirteen [13] points, expressed as a proportion of the total possible score.
$TA_{j,t}$	The total assets (expressed in AUD\$) of firm j as at the end of time period t .
$LogTA_{j,t}$	Logarithmic transformation of the total assets (expressed in AUD\$) of firm j as at the end of time period t .
$Ind_{j,t}$	Indicator variable where firm j is scored one [1] if operated in a manufacturing industry, otherwise two [2] if operated in a service industry for time period t .
$Lev_{j,t}$	The proportion of total liabilities of firm j as at the end of time period t to the total assets of firm j as at the end of time period t .
$ROA_{j,t}$	The proportion of net earnings after interest, depreciation and taxation of firm j from time period t divided by the total assets of firm j as at the end of time period t .
$Country_{j,t}$	Indicator variable where firm j is scored one [1] if it is from France; otherwise firm j is scored two [2] if it is from Australia for time period t .

Traditionally, annual reports serve as the primary avenue to disseminate information to various stakeholders (Wiseman 1982; Guthrie & Parker 1989; Roberts 1992). Over the past decade, however, most firms publish their social and environmental involvement in separate reports. Thus,

relying solely on annual reports may provide limited insights into the environmental reporting practices and may not provide a comprehensive view of the firm’s extended performance (Guthrie & Farneti 2008). For this reason, this study examines environmental disclosures from annual report and discrete corporate social responsibility reports for the period under study. Table 2 reveals that a reasonable minority of French and Australian firms provide stand-alone corporate responsibility reports with this use of medium slowly growing during the decade.

Table 2: Corporate Responsibility Reporting Mediums for France and Australia

	Stand-alone Corporate Responsibility Report	Corporate Responsibility Report integrated in Annual Report
	%	%
Year 2005		
France	40	0
Australia	23	0
Year 2008		
France	47	12
Australia	37	8

Source: KPMG International Survey of Corporate Responsibility Reporting 2008. The above table indicates the result of a tri-annual international survey on corporate responsibility reporting practices of the Top 100 conducted by KPMG.

The environmental reporting analysis is being conducted in an economic period of woe. Table 3 shows the deepening economic crisis from 2005-2009, especially for France. In France, GDP growth and business confidence fell whilst unemployment rose. In contrast, Australia is one of the few countries in the world to deal with the global economic crisis mostly unscathed. GDP still grew albeit more slowly and unemployment rose only marginally.

Table 3: France and Australia Economic Condition (2005-2009)

Year	GDP Growth (%)		Unemployment Rate (%)		Business Confidence		Inflation Rate (%)	
	France	Aust	France	Aust	France	Aust	France	Aust
2009	-2.53	1.35	9.44	5.58	79.83	0.49	0.01	1.85
2008	-0.40	2.38	7.86	4.24	96.17	11.16	2.82	4.35
2007	0.45	4.05	8.33	4.36	109.00	9.73	1.48	2.35
2006	0.55	2.85	9.26	4.78	106.50	9.05	1.68	3.55
2005	0.43	2.75	9.30	5.06	100.25	6.43	1.73	2.68

Source: INSEE (translated as the French National Institute for Statistics and Economic Studies), National Statistics Office, Australian Bureau of Statistic and Trading Economics (<http://tradingeconomics.com>) accessed on 12 July 2010. [§]The business confidence is measured by the level of optimism that business leaders have about the performance of the economy and how they feel about their organisation's prospect.

4. Research findings

Table 4 reveals a more depressing story of falling profits between 2007 and 2008. In both countries firm profits fell by around 50%.

Table 4: Top 30 French and Australian Listed Firms' Size and ROA (2008-2007)

Country		2008	2007	Year Change	p-value
France	$TA_{i,t}$ (Mean)	120,482,673,116	109,668,336,583	+10,814,336,533	0.888
	$ROA_{i,t}$ (Mean) %	2.78%	5.89%	-3.11%	0.095***
Australia	$TA_{i,t}$ (Mean)	56,384,948,843	54,670,717,512	1,714,231,331	0.943
	$ROA_{i,t}$ (Mean) %	3.95%	6.73%	-2.78%	0.348
Total	$TA_{i,t}$ (Mean)	88,433,810,979	82,169,527,048	6,264,283,932	0.877
	$ROA_{i,t}$ (Mean) %	3.36%	6.31%	-2.95%	0.089***

Legend: *** significant at the 0.01, confidence level.

The first research question posed relates to the level of environmental disclosures by French and Australian companies. Tables 5(a-d) show the overall level of these GRI-style disclosures ranged from 37-55% in 2007 to 44-55% in 2008. The French companies' disclosures stayed almost exactly the same over the two year period whereas the Australian firms rose despite the worsening economic conditions in both countries (Table 5a). In both countries listed manufacturing companies had a statistically significant higher level of environmental disclosures (56-60%) than service style firms (34-38%). This finding is consistent with legitimacy theory as manufacturing firms are far more likely to have environmental issues with their higher levels of processing and materials handling and

thus may feel a stronger need to legitimise their activities through communication (see Table 5b).

Table 5a: Mean Environmental Disclosures by Country (2007 and 2008)

Variables	Mean Environmental Disclosure ($EnvDis_{i,t}$)			
	n	Mean	t	Sig.
<i>Year 2007</i>			2.829	0.007*
France	30	0.550		
Australia	30	0.372		
<i>Year 2008</i>			1.662	0.103
France	30	0.554		
Australia	30	0.446		

*Legend: * significant at the 0.01 confidence level.*

Table 5b: Mean Environmental Disclosures by Industry (2007 and 2008)

Variables	Mean Environmental Disclosure ($EnvDis_{i,t}$)			
	n	Mean	t	Sig.
<i>Year 2007</i>			3.692	0.000*
Manufacturing	31	0.569		
Service	29	0.346		
<i>Year 2008</i>			3.592	0.001*
Manufacturing	31	0.605		
Service	29	0.387		

*Legend: * significant at the 0.01 confidence level.*

Table 5c: Mean Environmental Disclosures by Industry: Further Breakdown (2007 and 2008)

Variables	Mean Environmental Disclosure ($EnvDis_{i,t}$)			
	n	Mean	t	Sig.
<i>Year 2007</i>			2.073	0.047**
France - Manufacturing	18	0.606		
France - Service	12	0.467		
<i>Year 2008</i>			1.299	0.205
France - Manufacturing	18	0.591		
France - Service	12	0.500		
Mean Environmental Disclosure for Additional Indicators ($AddEnvDis_{i,t}$)				
<i>Year 2007</i>			2.677	0.012**
Australia - Manufacturing	13	0.518		
Australia - Service	17	0.261		
<i>Year 2008</i>			3.270	0.003*
Australia - Manufacturing	13	0.626		
Australia - Service	17	0.308		

*Legend: *, ** significant at the 0.01 and 0.05 confidence levels respectively.*

Table 5d: Mean Environmental Disclosure: Core versus Additional Indicators (2007 and 2008)

Variables Mean Environmental Disclosure for Core Indicators (<i>CoreEnvDis_{it}</i>)				
	n	Mean	t	Sig.
<i>Year 2007</i>			1.818	0.075***
France	30	0.563		
Australia	30	0.427		
<i>Year 2008</i>			1.189	0.240
France	30	0.578		
Australia	30	0.492		
Mean Environmental Disclosure for Additional Indicators (<i>AddEnvDis_{it}</i>)				
<i>Year 2007</i>			3.884	0.000*
France	30	0.533		
Australia	30	0.300		
<i>Year 2008</i>			1.997	0.051***
France	30	0.523		
Australia	30	0.385		

Legend: *, *** significant at the 0.01 and 0.10 confidence levels respectively.

Table 5c breaks down industry differences by country. French manufacturing firm disclosures fall across the two years whilst Australian companies rose sharply. Service firms in both countries increased in 2008.

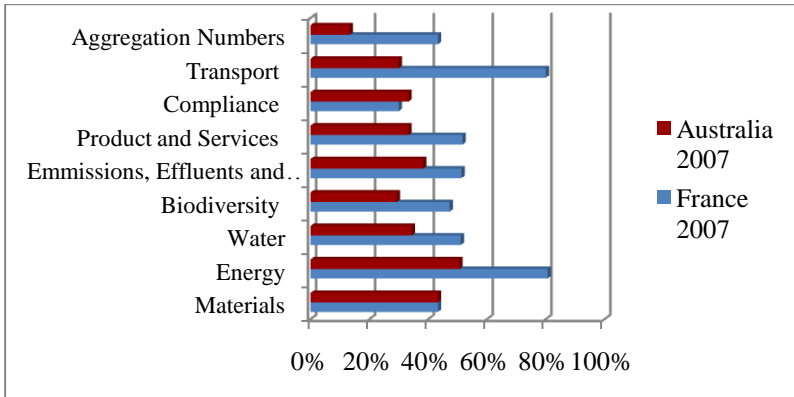
Table 5d splits the analysis² of key GRI indicators into their two component parts ('core' and 'additional' items). Both countries' firms communicated more 'core' items as the GFC deepened, however, only Australian entities increased their 'additional' item disclosures.

Figure 1a and 1b provide further detail on the 30 GRI items as categorised³ into key elements (see Appendix 1 for the specifics on each item). Energy and transport are the items most communicated whilst biodiversity compliance and aggregate/summary numbers the least disclosed. Both countries have similar trends for communicating these environmental categories.

²Additional partitioned multiple regression analysis is conducted (full tables not shown for brevity) reveals similar predictor variables for both categories. In 2007 and 2008, *CoreEnvDis_{it}* is positively influenced by size (*LogTA_{it}*) with more in French companies. Whereas being in the manufacturing industry is the best predictor of 'additional' item in both countries in both years.

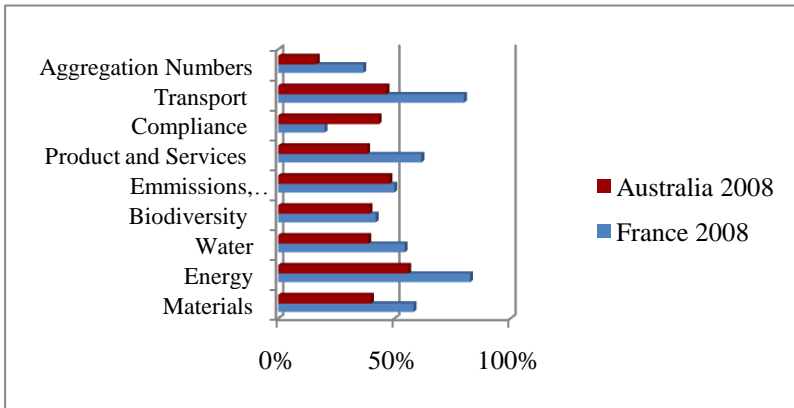
³Besides splitting the environmental disclosure into a number of dimensions of sustainability which include environment, human rights, labour issues, society, product responsibility, and economy, the Guidelines also sub-divide them into 'core' indicators and 'additional' indicators. The former refers to the indicators identified as of interest to most stakeholders and are material to most reporting organisations while the latter are indicators that are deemed relevant to some organisations but may not necessarily be for the majority. Further analysis (not shown for brevity) finds that 'core' GRI items have slightly higher disclosures in each year and by each country than those GRI items that they dub 'additional'.

Figure 1a: GRI Environmental Indicators for France and Australia in 2007



Source: Original figure

Figure 1b: GRI Environmental Indicators for France and Australia in 2008



Source: Original figure

Predictor variables to explain the level of environmental disclosures are explored in Table 5 and 6 and Appendix 2. Correlation matrices for both years show no major problem with multicollinearity between the independent variables with the highest correlations no more than 0.578 and 0.562 in 2007 and 2008 respectively (Appendix 2).

Table 6(a) full and backward regressions highlight the key predictors of GRI disclosures in 2007 as being size ($LogTA_{j,t}$), industry ($Ind_{j,t}$), and country ($Country_{j,t}$). Larger French manufacturing firms have the highest level of environmental disclosures. Whereas in 2008, size, industry, and leverage are predictor variables (but not country because the Australian firms' GRI disclosures rose in a similar way to the French disclosures). In 2008, larger, less leveraged manufacturing firms are the highest communicators (Table 6b). Profit ($ROA_{j,t}$), is not a predictor in either year.

Table 6a: Multiple Regression Analysis for 2007

Regression model	Full			Backward		
n	60			60		
F value	5.551			8.736		
Significance	0.000			0.000		
Adjusted R Squared	0.278			0.282		
Variables	B	t-value	p-value	B	t-value	p-value
Constant	-0.373	-0.685	0.496	-0.087	-0.175	0.862
$LogTA_{j,t}$	0.130	2.397	0.020**	0.097	2.035	0.047**
$Ind_{j,t}$	-0.227	-3.700	0.001*	-0.237	-3.941	0.000*
$Lev_{j,t}$	-0.160	-0.897	0.374	ns	ns	ns
$ROA_{j,t}$	0.240	0.725	0.471	ns	ns	ns
$Country_{j,t}$	-0.047	-1.535	0.131	-0.053	-1.759	0.084***

Legend: Multiple regression equation is stated as: $EnvDis_{j,t} = \alpha_i + \beta_1 LogTA_{j,t} + \beta_2 Ind_{j,t} + \beta_3 Lev_{j,t} + \beta_4 ROA_{j,t} + \beta_5 Country_{j,t} + \varepsilon_j$. See Table 1 for definitions of all variables. *, **, *** significant at the 0.01, 0.05 and 0.10 confidence levels respectively.

Table 6b: Multiple Regression Analysis for 2008

Regression model	Full			Backward		
n	60			60		
F value	3.852			6.384		
Significance	0.005			0.001		
Adjusted R Squared	0.195			0.215		
Variables	B	t-value	p-value	B	t-value	p-value
Constant	0.241	0.428	0.670	0.048	0.098	0.923
$Log(TA)_{j,t}$	0.085	1.463	0.149	0.098	1.882	0.065***
$Ind_{j,t}$	-0.212	-3.261	0.002*	-0.225	-3.654	0.001*
$Lev_{j,t}$	-0.344	-1.580	0.120	-0.350	-2.072	0.043**
$ROA_{j,t}$	-0.015	-0.038	0.970	ns	ns	ns
$Country_{j,t}$	-0.025	-0.759	0.451	ns	ns	ns

Legend: Multiple regression equation is stated as: $EnvDis_{j,t} = \alpha_i + \beta_1 LogTA_{j,t} + \beta_2 Ind_{j,t} + \beta_3 Lev_{j,t} + \beta_4 ROA_{j,t} + \beta_5 Country_{j,t} + \varepsilon_i$. See Table 1 for definitions of all variables. *, **, *** significant at the 0.01, 0.05 and 0.10 confidence levels respectively.

5. Conclusion

This study assesses environmental disclosures in a country with high mandatory disclosures (France) and one with low disclosures (Australia) over a two year period where the economic climate is worsening. The French firms, with their mandatory requirements, disclosed 55% of the GRI target in each year whereas the Australian firms (in their more *laissez-faire* situation) rose from 37 to 45%. Interestingly, the worsening global economic crisis did not precipitate a drop in such ‘social non-economic’ disclosures. There may be an interaction between higher communication in annual reports based on regulatory influences versus the move towards an equilibrium disclosure level without mandatory rules. In other words, the level of environmental disclosures may be approximating an equilibrium disclosure level of 45-55%. Energy and transport issues are especially well addressed.

Past studies have shown that variations in social and environmental disclosure occur across countries, companies, industries and time (see for example Patten 1991; Gray, Kouhy & Lavers 1995; Hackston & Milne 1996; Adams, Hill & Roberts 1998; Gray et al. 2001). This study notes that larger companies have higher environmental disclosures, a result which is consistent with legitimacy theory. Legitimacy theory posits that

firms provide social reporting to demonstrate a sense of moral obligation and to maintain social legitimacy. The degree of legitimacy differs from one firm to another depending upon firm visibility and public pressure (Oliver 1991). Larger firms tend to receive more attention than smaller counterparts, and are under greater pressure to demonstrate social concerns (Trotman & Bradley 1981). In addition, larger firms could undertake more activities that have impact on the society and they also have more shareholders who are concerned about companies' social activities (Cowen et al. 1987; Hackton & Milne 1996). Hence, annual report and/or separate 'sustainability' documents are effective means to communicate such information (Hooghiemstra 2000).

One of the strongest findings is that manufacturing firm levels of environmental disclosures is far higher than service-orientated firms (56-60% versus 34-38%). This again is consistent with legitimacy theory as higher profile companies will seek to be seen as a clear communicator of potentially controversial environmental activities. Cho (2009) argues the industry focus does influence corporate social responsibility disclosure as higher profile firms are exposed to constant ethical and social pressure around the globe, and firms that work within environmentally sensitive industries are subject to increased public pressure and thus need to be thought of as providing strong environmental stewardship.

Further research should track environmental disclosures farther across the changing economic conditions. Moreover, analysis of additional countries with differing regulatory expectations, financial prowess and governance systems could add further insights. A key implication is that regulation per se may not be the sole answer to improved disclosure. Instead more carefully targeted industry rules and expectations may well deliver a higher level of corporate transparency.

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Appendix 1: GRI 2006 Environmental Indicators

No.	Code	Core/ Additional	Category	Description
1	EN1	Core	Materials	Materials used by weight or volume
2	EN2	Core	Materials	% of materials used that are recycled input materials
3	EN3	Core	Energy	Direct energy consumption by primary energy source.
4	EN4	Core	Energy	Indirect energy consumption by primary source.
5	EN5	Additional	Energy	Energy saved due to conservation and efficiency improvements.
6	EN6	Additional	Energy	Initiatives to provide energy-efficient or renewable energy based products and services, and reductions in energy requirements as a result of these initiatives.
7	EN7	Additional	Energy	Initiatives to reduce indirect energy consumption and reductions achieved.
8	EN8	Core	Water	Total water withdrawal by source.
9	EN9	Additional	Water	Water sources significantly affected by withdrawal of water.
10	EN10	Additional	Water	Percentage and total volume of water recycled and reused.
11	EN11	Core	Biodiversity	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas.

No.	Code	Core/ Additional	Category	Description
12	EN12	Core	Biodiversity	Description of significant impacts of activities, products, and services on biodiversity in protected areas and areas of high biodiversity value outside protected areas.
13	EN13	Additional	Biodiversity	Habitats protected or restored.
14	EN14	Additional	Biodiversity	Strategies, current actions, and future plans for managing impacts on biodiversity.
15	EN15	Additional	Biodiversity	Number of IUCN Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk.
16	EN16	Core	Emissions, Effluents and waste	Total direct and indirect greenhouse gas emissions by weight.
17	EN17	Core	Emissions, Effluents and waste	Other relevant indirect greenhouse gas emissions by weight.
18	EN18	Additional	Emissions, Effluents and waste	Initiatives to reduce greenhouse gas emissions and reductions achieved.
19	EN19	Core	Emissions, Effluents and waste	Emissions of ozone-depleting substances by weight.
20	EN20	Core	Emissions, Effluents and waste	NO, SO, and other significant air emissions by type and weight.
21	EN21	Core	Emissions, Effluents and waste	Total water discharge by quality and destination.
22	EN22	Core	Emissions, Effluents and waste	Total weight of waste by type and disposal method.

No.	Code	Core/ Additional	Category	Description
23	EN23	Core	Emissions, Effluents and waste	Total number and volume of significant spills.
24	EN24	Additional	Emissions, Effluents and waste	Weight of transported, imported, exported, or treated waste deemed hazardous under the terms of the Basel Convention Annex I, II, III, and VIII, and percentage of transported waste shipped internationally.
25	EN25	Additional	Emissions, Effluents and waste	Identity, size, protected status, and biodiversity value of water bodies and related habitats significantly affected by the reporting organisation's discharges of water and runoff.
26	EN26	Core	Products and services	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation.
27	EN27	Core	Products and services	Percentage of products sold and their packaging materials that are reclaimed by category.
28	EN28	Core	Compliance	Monetary value of significant fines and total number of non-monetary sanctions for noncompliance with environmental laws and regulations.
29	EN29	Additional	Transport	Significant environmental impacts of transporting products and other goods and materials used for the organisation's operations, and transporting members of the workforce.
30	EN30	Additional	Aggregation numbers	Total environmental protection expenditures and investments by type.

Legend: For each item of EN1-EN30, firm j is scored one [1] if it discloses the item in the firm's annual report and/or the discrete sustainability report, otherwise firm j is scored zero [0] for the item.

Appendix 2a: Pearson and Spearman Correlation Matrix for 2007

	<i>EnvDis_{j,t}</i>	<i>LogTA_{j,t}</i>	<i>Ind_{j,t}</i>	<i>Lev_{j,t}</i>	<i>ROA_{j,t}</i>	<i>Country_j</i>
<i>EnvDis_{j,t}</i>		0.180	-0.436*	-0.147	0.054	-0.348*
<i>LogTA_{j,t}</i>	0.216		0.256**	0.460*	-0.334*	-0.259**
<i>Ind_{j,t}</i>	-0.439*	0.221***		0.308**	-0.102	0.167
<i>Lev_{j,t}</i>	-0.113	0.388*	0.290**		-0.337*	0.071
<i>ROA_{j,t}</i>	-0.011	-0.332**	-0.079	-0.578*		0.045
<i>Country_j</i>	-0.322**	-0.252***	0.167	0.046	0.067	

Legend: See Table 1 for definitions of all variables. *, **, *** significant at the 0.01, 0.05 and 0.10 confidence levels respectively (two-tailed).

The upper half is Pearson correlation matrix while the lower half is the Spearman correlation matrix. As shown in Appendix 2a or 2b none of the 2007 and 2008 correlations are above the 0.8 benchmark figure for multicollinearity concerns (Field 2005).

Appendix 2b: Pearson and Spearman Correlation Matrix for 2008

	<i>EnvDis_{j,t}</i>	<i>LogTA_{j,t}</i>	<i>Ind_{j,t}</i>	<i>Lev_{j,t}</i>	<i>ROA_{j,t}</i>	<i>Country_{j,t}</i>
<i>EnvDis_{j,t}</i>		0.001	-0.427*	-0.245***	0.101	-0.213
<i>LogTA_{j,t}</i>	0.011		0.280**	0.467*	-0.070	-0.264**
<i>Ind_{j,t}</i>	-0.432*	0.257**		0.207	0.053	0.167
<i>Lev_{j,t}</i>	-0.220***	0.426*	0.221***		-0.562*	-0.036
<i>ROA_{j,t}</i>	0.158	-0.333**	-0.130	-0.532*		0.062
<i>Country_{j,t}</i>	0.218***	-0.254***	0.167	-0.085	0.133	

Legend: See Table 1 for definitions of all variables. *, **, *** significant at the 0.01, 0.05 and 0.10 confidence levels respectively (two-tailed).