An Examination of Differences between Corporate Environmental Disclosure Practices within Voluntary and Mandatory Disclosure Systems in Australia

Introduction

Over the past four decades there has been a change in community attitudes towards the environment in Australia which has corresponded with an increase in environmental legislation and program development within Australia and internationally (Lothian 1994; Bates 1995; Welford 1999). During this period there has been an increase in the number of companies disclosing and in the quantity of disclosures made by those companies (Trotman 1979; Trotman & Bradley 1981; Gray, Kouhy & Lavers 1995b); however, the quality and content of those disclosures has been questionable (Deegan & Rankin 1996; Guthrie & Parker 1990; Rockness 1985).

In 1998 a new environmental reporting requirement was introduced into the Australian corporate landscape. The Australian *Corporations Law* was amended to include section 299(1)(f) which requires disclosing companies to include in the director's report information regarding compliance with relevant state or Commonwealth environmental regulations. However, many large companies and various industry groups resisted the requirement maintaining that implementation would result in increased compliance costs. Furthermore, voluntary reporting was espoused as the preferred method on the basis that market forces would prompt improvements in this area. Nevertheless, the mandatory disclosure requirement remains in place at this time.

This paper extends the literature in the environmental disclosure area by providing the results of a study examining differences in the annual report disclosure practices of Australian companies under both a voluntary and mandatory environmental disclosure environment. The paper proceeds with a review of literature relating to annual report environmental disclosure practices, perceptions of current corporate environmental performance, and the introduction of mandatory environmental disclosure requirements in Australia. In the sections that follow, the research proposition is developed; the research methodology is discussed; and finally the results and discussion are presented.

Content and quality of environmental disclosures

Companies may attempt to reduce legitimacy threats through public disclosures of information, including disclosures within the annual report (Zeghal & Ahmed 1990). O'Donovan (1999) identified a belief among Australian corporate executives that annual report disclosures were a useful tool in modifying both the media and public perception of the firm's environmental performance. However, in Australia the ethical shareholders groups describe the 'quality of information provided to the media by our companies' as a typical ethical and environmental concern (http://www.ethical.shares.green.net.au/. Accessed 03 May 2002).

Although there are numerous instances of firms engaging in voluntary disclosure, there is little evidence to suggest that voluntary disclosures provide relevant and reliable information to users of annual reports. For example, Rockness (1985) tested the reliability of voluntary environmental disclosures provided in annual reports of twenty-six United States firms in the oil, steel and pulp and paper industries. Subjects were required to evaluate the corporation's environmental performance (measured by CEP ratings) from the voluntary environmental disclosure information in the annual report. It was found that subjects assessing information provided in the annual reports mistakenly identified the worst environmental performers as the best and vice versa.

Previous studies have found that the community, including investors, is interested in the environmental performance of companies (Epstein & Freedman 1994; Lothian 1994). Nevertheless, the lack of availability and/or accessibility of environmental performance information may have resulted in many companies with poor environmental performance records continuing to enjoy an uninterrupted or unchanged provision of resources by society[1]. Furthermore, based on the research undertaken by Shane and Spicer (1983),

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[1] Of course, it would be presumptuous to state that the providers of these resources would cease to support the company if they were aware of the true extent of the company's environmental performance.

Blacconiere and Patten (1994) and Blacconiere and Northcutt (1997), it is conceivable that companies may face a legitimacy threat from some of their relevant publics when environmental information that could be perceived as negative by stakeholders is publicly disclosed.

Within a voluntary reporting framework the corporation is free to legitimise its environmental performance behaviour through self-laudatory disclosures within the annual report. Previous research examining voluntary environmental disclosures in annual reports has identified environmental disclosures to be mostly positive (Deegan & Gordon 1996; Deegan & Rankin 1996; Guthrie & Parker 1990) and potentially misleading to users (Rockness 1985). These results have led to criticisms of the voluntary environmental disclosure system. For example, Deegan and Gordon (1996, p. 198) argue that 'in an unregulated environment, management will be less than objective in its environmental disclosure practices'. Adopting a similar view, Deegan and Rankin (1996, p. 10) state:

> ...in the absence of disclosure regulations pertaining to environmental issues, ...Australian companies will only provide environmental information which is favourable to their corporate image.

Although neither Deegan and Gordon (1996) nor Deegan and Rankin (1996) suggest outright that mandatory reporting requirements should be introduced, it is clear that the authors believe that 'in the absence of disclosure regulations' and 'in an unregulated environment' a company's disclosure practices may not result in an accurate picture of its' environmental performance.

As a consequence of the previous absence of environmental disclosure regulations, literature relating to comparative empirical research of the quality of voluntary environmental disclosures and mandatory environmental disclosures provided by companies is limited. Furthermore, there is an absence of research examining differences in the disclosure practices of companies within these two systems. Nevertheless, two studies undertaken in the United States by Freedman and Jaggi

(1982) and Freedman and Wasley (1990) provide some insight into voluntary and mandatory environmental disclosures and their relationship to, or indication of, corporate pollution performance.

In 1973, the United States Securities and Exchange Commission (SEC) insisted companies include information relating to pollution performance in annual reports filed with the SEC. These reports are referred to as 10Ks and represent the mandatory pollution performance disclosures of listed companies. Freedman and Jaggi (1982, p. 168) explain:

> The underlying rationale for public disclosure of such information is that this information is perceived to be important for investors' decisions since it is expected to aid investors in evaluating the effectiveness of a firm's pollution abatement program and the risks associated with potential sanctions or fines for violating the pollution laws ...[and] may also be useful in evaluating managerial effectiveness and a firm's potential economic performance since pollution control may involve the use of better and more modern equipment.

The focus of previous studies on voluntary annual report disclosures and the exclusion of the content of mandatory disclosures were noted by Freedman and Jaggi (1982). Consequently, the authors examined the association between mandatory pollution disclosures in 10Ks and pollution performance using the CEP pollution performance index. Freedman and Jaggi (1982, p. 171) were unable to identify an association between pollution performance and mandatory pollution disclosures and concluded 'that pollution disclosures do not reflect actual pollution performance'.

In 1990, Freedman and Wasley published the results of a comparative study that specifically focused on differences between voluntary disclosures made in annual reports and the mandatory disclosures prescribed by the SEC in 10Ks. The study covered four industries in selective years between 1972 and 1976. Ninety-two percent of the correlations between voluntary disclosures and the CEP ratings were found to be insignificant (Freedman & Wasley 1990, p. 188). Similarly, ninety-six percent of the correlations relating to mandatory disclosures in 10Ks and the CEP ratings were not significant (Freedman & Wasley 1990, p. 190). These results were consistent with those obtained in the studies by both Freedman and Jaggi (1982) and Wiseman (1982) and the authors concluded:

> …that neither voluntary annual report environmental disclosures, nor mandatory 10k environmental disclosures are indicative of actual firm environmental performance. These findings may suggest the potential need to regulate voluntary annual report disclosures made by firms, and/or the need for the SEC to improve its mandatory environmental disclosure requirements to make them more indicative of actual firm environmental performance
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> (Freedman & Wasley 1990, p. 191).

While the results of these studies suggest that mandatory disclosures are also not reflective of actual environmental performance, several issues must be addressed. Firstly, the content analyses methodologies used were relatively simple. Freedman and Wasley (1990) adopted an environment disclosure index used by Wiseman (1982). Freedman and Jaggi (1982) used a similar weighting approach in their study. Pollution disclosures where identified and then weighted depending on the type of disclosure.

Secondly, there was no consideration of the quantity or nature of the disclosures included in the analysis. Therefore, it is not possible to conclude whether significant differences actually existed between the mandatory and voluntary disclosures of the companies. Previous research has shown that companies that may be considered poor environmental performers provide greater quantities of environmental disclosures (Al-tuwaijri, Christensen & Hughes 2000; Deegan, Rankin & Voght 2000; Li, Richardson & Thornton 1997; Deegan & Rankin 1996; Patten 1992; Rockness 1985).

Furthermore, unlike many of the more recent studies, particularly those undertaken in Australia (Deegan & Gordon 1996; Deegan & Rankin 1996), the studies by Freedman and Jaggi (1982) and Freedman and Wasley (1990) did not include a consideration of the nature of the disclosure; that is, whether the corporation is reflected positively, negatively or otherwise by the disclosure content.

In a comparative international analysis of social and environmental disclosures in corporate annual reports in Australia, the United Kingdom and the United States, Guthrie and Parker (1990) found that the United States provided significantly greater quantities of 'bad news' information than either the United Kingdom or Australia. Australian companies provided the least amount of 'bad news' information on the environment. Guthrie and Parker (1990) suggest that differences in disclosure practices between the three countries appear to be a result of differences in the level of government or accounting body regulations. The high levels of disclosure regulation in the United States have resulted in more companies reporting on negative events in the annual report than in Australia where only minimal regulations were in effect. Considering Guthrie and Parker's (1990) results and comments from Deegan and Gordon (1996) and Deegan and Rankin (1996), it may be implied therefore, that mandatory disclosure requirements may result in environmental disclosure practices that are more reflective of actual environmental performance.

The annual report is considered an important tool for companies to *communicate* information to users (O'Donovan 1999). Therefore, the manner in which the corporation portrays its activities in the report is indicative of how its management is 'selling' it to users. Australian research has shown that voluntary disclosures in annual reports are mostly positive in nature (Deegan & Gordon 1996; Deegan & Rankin 1996). Thus, many companies have attempted to portray themselves in a positive manner when discussing issues relating to the environment.

Finally, pollution or environmental performance was assessed against either mandatory *or* voluntary disclosures in the Freedman and Wasley (1990) study. No direct comparison was undertaken between the voluntary and mandatory disclosures to identify differences in disclosure practices under the two systems. Consequently, when combined with an absence of consideration of the nature and quantity of the disclosures included in the analysis, it is not possible to conclude whether significant differences actually existed *between disclosure practices* within voluntary and mandatory disclosure systems.

Perceptions of Current Corporate Environmental Performance

The findings relating to the quality and content of corporate environmental disclosures are of concern when the environmental performance of Australian companies remains questionable. The Australian Conservation Foundation (ACF) has published an annual 'Perception Report' on the environmental performance of Australia's top 100 companies. The *Age* and *Sydney Morning Herald* use the results as part of the environmental section in the annual Good Reputation Index. The first ACF report published in 2000 (p2) identified the following perceptions of the performance of these companies:

1. Corporate Australia in the main is currently failing to fulfil its environmental responsibilities;
2. There are positive signs that corporate Australia's poor environmental performance could be reversed in the coming years;
3. Many companies, indeed entire corporate sectors, have failed to recognise and act on their environmental responsibilities performance could be reversed in the coming years;
4. Many companies have failed to fully translate what on paper appear to be best practice environmental strategies to their 'on their ground' environmental performance.
5. Many Australian companies have failed to bring in the same standard of environmental strategies and initiatives as those used by their overseas parent companies. This is symptomatic of a wider trend that sees corporate Australia lagging behind overseas corporations on a wide range of environmental issues.

The ACF prepared a follow-up report in 2001 which used the perceptions listed above as a benchmark for the overall performance of the top 100 listed companies in 2001. The ACF's perceptions remained unchanged for all points excepting point 3 where it was noted that some improvement had occurred in the financial sector. Coupled with the concerns expressed over the quality and content of annual report disclosures, the results of the ACF's investigation suggests that calls for environmental disclosures to be regulated could not be dismissed.

Section 299 (1)(f) of the Corporations Law

To a large extent Australian corporate and industry attempts to avoid legislated environmental disclosure requirements have been successful. Prior to 1998 there was a notable absence of legislation in Australia pertaining to the disclosure of environmental information in corporate annual reports. A *Corporation and Securities Industry Bill* was supported by the Australian Government House of Representatives in the 1970's but was not processed through the lower house due to a change in Government (Trotman & Bradley 1981). Legislation relating to non-financial corporate environmental disclosure was subsequently destined to remain out of the political landscape until the end of the twentieth Century.

Senator Andrew Murray of the Australian Democrats proposed the amendment to include s. 299 (1)(f) in the Australian Corporations Law during the process of the *Company Law Review Act 1998*. The section was not initially included in the review but a late amendment was subsequently supported by the Australian Labor Party. In expressing the Democrat's motivation for including the amendment Senator Murray stated:

> the reason we [include the amendment] is not just our well-known attachment to environmental matters, but the fact that many companies are materially affected financially in terms of environmental situations. I think we only have to recall some of BHP's financial consequences for environmental matters to be well aware of that

(Senate Hansard, 24th June 1998, p. 4014).

The amendment applies to public companies and large proprietary companies and requires the disclosure of information on environmental performance in annual reports from 1 July 1998. While many criticisms have been made of the section (Baird 2000), its inclusion represented a new stage in corporate environmental reporting in Australia.

According to s. 299 (1)(f) these companies are required to include in the Directors Report:

> '(f) if the entity's operations are subject to any particular and significant environmental regulation under a law of the Commonwealth or of a State or Territory – details of the entity's performance in relation to environmental regulation'

Following the amendment, there was some confusion due to the ambiguity of the requirements, particularly the meaning of the terms 'particular' and 'significant', and the failure to include the word 'disclose' prior to 'details of the entity's performance' (Deegan 1999). These issues were particularly important in light of the penalty for non-compliance. Under s. 344 of the Corporations Law, contravention of the requirements of s. 299 (1)(f) may result in penalties of up to A$200000.

To provide guidance on the operation of s. 299(1)(f) the Australian Securities and Investment Commission (ASIC) issued Practice Notes 68.72 through 68.75. Practice Note 68.74 indicated that the disclosures were not limited to financial issues and would not be as technical as that which would be reported to regulatory authorities. Practice Note 68.75 states that companies should comply 'with the spirit as well as the terms of the law'.

The Australian Industry Group (AIG) opposed the section. The AIG (1998) had previously expressed an opposition to mandatory environmental reporting in Australia and criticised the lack of consultation prior to the section's introduction and the ambiguous nature of the wording of the section. In defending their stance against mandatory reporting the AIG argued 'mandatory reporting is being introduced despite there being no evidence the current voluntary reporting has been unsuccessful' (AIG 1998). Regardless of this opposition, the AIG has released guidelines on reporting under s. 299 (1)(f). The AIG recommends that companies limit reporting to one or two pages and:

- Voluntary and mandatory be kept separate in the annual report

- Providing excessive information may detract from the importance of other information required in the annual report
- Information required for s. 299 (1)(f) will be less detailed than the information which would appear in the detailed voluntary environmental report and should be limited to general information

The AIG also addressed the issue of 'significance' by advising that companies should interpret the term in a broad sense and relate it to the extent of risk as determined by the company's directors. Apart from these points the AIG continued to promote its support and preference for the use of voluntary environmental reporting in annual reports to 'identify environmental achievements and where future improvements are required' (AIG 1999).

The Australian Liberal National Coalition government also opposed the amendment. On the 10th July 1998 the Treasurer, Peter Costello referred s. 299 (1)(f) to the Parliamentary Joint Statutory Committee on Corporations and Securities (PJSC) along with several other matters. It was one of three amendments during the proceedings of the *Company Law Review Act 1998* opposed by the Government. Submissions to the PJSC relating to s. 299 (1)(f) were outlined in the Senate Committee Report. Forty-six submissions were received with forty of those expressing opposition to the section.

After considering the submissions, which were heavily weighted against the retention of the section, the PJSC recommended that s. 299 (1)(f) be deleted from the Corporations Law. In justifying the decision to support the majority of submissions the PJSC stated that the environmental groups had 'put different views to the above conclusions. These views were not as persuasive as those from the business community' (Commonwealth of Australia 1999).

In making the recommendation the PJSC report outlines the following points:

- It is inappropriate for the Corporations Law to require inclusion in the annual director's report of details of performance in relation to environmental regulation

- Environmental reporting is not a matter which relates to the Corporation Law
- Why should environmental performance be singled out as a worthwhile performance indicator?
- Mandatory reporting of environmental performance may be unproductive
- Voluntary reporting would encourage better companies to achieve best practice and the market would adversely deal with companies that lag
- The provision is vague and uncertain and lacks any safeguards
- Companies already have to disclose material effects
- Additional information provided by s. 299 (1)(f) is non-material and is being reported up to a year after the event
- It's exclusion of overseas operations from the requirements
- Duplication of existing Commonwealth and State environmental reporting requirements

It was suggested that the quality of the information provided in the mandatory sections of the report would not be as good as that provided in the voluntary sections. Considering the international experience[2], this argument is questionable. Bebbington (1999) investigated the effect of the introduction of mandatory environmental reporting in Denmark. In the first year the quality of the information *was* questionable with only seventeen percent of companies providing information of a high quality, the remainder providing basic information (Bebbington 1999, p. 3). It was noted that the *quality of the*

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[2] Internationally, legislation particularly relating to mandatory environmental disclosure is increasing. In 1995, the Danish Parliament adopted the *Green Accounts Act* in response to an increase in community and public concern over environmental issues in Denmark during the 1980's and 1990's. Mandatory environmental and social reporting is also required in France. Listed companies are now required to publish information in annual reports regarding resource and energy use and consumption; greenhouse gas emissions; efforts relating to the reduction of environmental risks; cooperation with communities, non-government organisation and trade unions; and the company's effect on biodiversity. Other European countries including Sweden and Norway also have reporting requirements, although less stringent than those required in Denmark and France. The United Kingdom government discussed draft legislation on mandatory environmental reporting in 2002.

reports increased between the first and second years. Firms preparing green accounts were found to experience a positive economic, environmental or organisational benefit as a result of the environmental reporting process. Of particular importance was the acknowledgement by several companies that mandatory reporting had acted as an impetus for improved or new environmental policies.

It has been expected that the inclusion of s. 299(1)(f) will result in companies that had previously not disclosed environmental information now doing so (Deegan 1999). KPMG (1999) also argue that mandatory reporting requirements play an important role in increasing corporate environmental disclosures[3].

At this early stage the section has been effective in increasing the number of companies disclosing environmental compliance information in the statutory section of the annual report. For example Frost (2001)[4] identified a significant increase in the number of companies discussing requirements to comply with, and environmental performance with respect to, environmental regulations in the statutory section of the annual report. An increase in the number of companies reporting breaches also occurred although the number of companies doing so was minimal. Notwithstanding the proposed deletion of s. 299 (1)(f), many companies have chosen to continue with compliance. Frost (2001, p. 15) concluded that s. 299 (1)(f) had been 'effective in increasing the level [*sic*] information disclosed on performance related to environmental regulations'.

Proposition development

From the previous discussion it can be argued that the introduction of Australian mandatory reporting requirements may act as a stimulus to encourage companies to reduce their impact on society in order to avoid the *potential* scrutiny of their

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[3] Nevertheless, the report also identified Australian companies as being slower to adopt new reporting techniques such as the production of stand-alone environmental reports.

[4] This study examined annual reports of eighty companies to identify the number of companies reporting on compliance with environmental regulation, and information regarding breaches of regulations.

operations following the disclosure of non-compliance with environmental regulations within the annual report. The inclusion of mandatory reporting requirements in the annual report should provide users of the annual report with a factual account of the entity's compliance with environmental regulation over the reporting period. Such disclosures will allow a comparison of environmental information with that provided by the corporation in the voluntary sections of the annual report. Therefore, disclosure of actual environmental performance in the statutory section should permit users to obtain a clearer picture of corporate environmental performance regardless of the content of material provided in the voluntary sections. Consequently where a company is placed in a position of potentially increased scrutiny, it will be placed under greater pressure to improve its disclosure behaviour. This may occur firstly, by using more factual and less self-laudatory comments in its reporting practices, and secondly, by improving its environmental performance in order to avoid the mandated publication of unfavourable environmental performance information in the annual report.

It is premature in the life of s. 299(1)(f) and beyond the scope of this paper to determine whether its impact has resulted in an improvement in environmental performance. The purpose of this research is to examine differences in the way that companies report on the environment within the voluntary and mandatory sections of the annual report. Therefore, the introduction of s. 299(1)(f) provides an opportunity to compare corporate reporting of environmental information in both the voluntary and statutory sections of annual reports. In the past, companies have been found to report significantly high levels of positive information when discussing environmental information in the company annual report. This research utilises the introduction of s. 299(1)(f) to examine whether companies continue to report information on environmental performance in positive tones when under surveillance via legislated disclosure requirements. Any significant reduction in the proportion of positive disclosures in the statutory section as compared to that provided in the voluntary section would provide support for arguments suggesting that mandatory reporting improves the quality of disclosures. In addition, suggestions that companies use increased levels of self-puffery in the voluntary sections of the annual report would be further substantiated. Accordingly the following proposition is proposed:

P1. Australian listed companies provide a greater proportion of positive environmental disclosures within a voluntary reporting environment than within a mandatory reporting environment.

Methodology

Sample

The sample comprised twenty-five companies reporting on the National Pollutant Inventory[5] in the 1999/2000 reporting year, and with annual reports appearing on the Connect4 database during the period 1998 to 2000 inclusive. The companies came from several industries including oil and gas producers, mining companies, packaging and building materials, chemical and pharmaceutical, and food, wine and retail. A summary of the number of companies from each category is provided in table 1:

Table 1: Industry Type of Sample Companies

Industry Groups	*Frequency*
Building, Packaging	2
Chemical, Fertilizer	4
Mining, Oil, Gas	9
Diversified Industrial	2
Food, Wine	5
Timber & Board	2
Household Goods	1
Total	25

[5] Companies reporting on the National Pollutant Inventory are those emitting polluting substances in excess of the thresholds outlined by Environment Australia.

Voluntary Environmental Disclosures

Three consecutive years of annual report data for each of the twenty-five sample firms were examined to ascertain the quantity and type of environmental disclosures. This is consistent with the approach taken in many previous empirical studies into social and environmental disclosures involving analysis of annual report and accounts information. While it is acknowledged that other disclosure instruments may be used by companies and that a minimal amount of a company's social reporting may occur in published annual reports (Unerman 1999) the annual report is still considered a useful instrument for the dissemination of information to stakeholders (Zeghal & Ahmed 1990).

The annual report has been noted as a significant source of environmental information for users in previous studies (Deegan & Rankin 1997; Tilt 1994). Arguing in support of using the annual report for reporting social disclosures Gray, Kouhy and Lavers (1995b, p82) stated:

> The construction of the financial image of the organisation is critical in terms of how the organisation is seen and judged. The social and environmental factors frequently will produce conflicts with the financial ambitions of the organisation and its owners. The presentation, within the same document or reporting process, of the financial on the one hand and the social and environmental on the other, becomes an important element in demonstrating the extent (if at all) to which the organisation reconciles these matters.

In addition, the use of annual reports allows the results of this research to be comparable with previous studies in the field.

Content analysis was used to investigate the environmental disclosures of the sample companies from annual reports in the associated periods. Content analysis is described as 'a research technique for the objective, systematic, and quantitative description of the manifest content of communication' (Zikmund 2000, p230). It is acknowledged that quantity of disclosures is a measure of the importance of an issue to an organisation (Krippendorff 1980).

For the purposes of this research, voluntary environmental disclosures are those not appearing in the statutory directors report. This approach is adopted following the amendment to include s. 299 (1)(f) in the Australian *Corporations Law*[6]. The section outlines the statutory requirement for the disclosure of environmental information in the annual report. This practice was adopted to distinguish between disclosures that companies make which are voluntary and those required by legislation. The voluntary sections of the report are not audited and allow for greater discretion by the corporation on the content of material included.

Content analysis measurement techniques of social disclosures in past studies include number of words (Deegan & Gordon 1996; Deegan & Rankin 1996), number of sentences (Hackston & Milne 1996), number of pages (Cowen, Ferreri & Parker 1987), percentage of pages (Guthrie & Parker 1989; Gray, Kouhy & Lavers 1995b) and percentage of total disclosure (Trotman & Bradley 1981).

The use of words or proportions of a page has been criticised as decreasing reliability and providing meaningless results or measures (Milne & Adler 1999). An examination of annual reports identified large differences in sentence length both within and between companies. In order to avoid difficulties in accounting for these differences, words were selected as the unit of measurement in this research. However, to maintain meaningfulness, sentences were firstly identified and recorded with the number of words within the sentences then counted.

The disclosures were then classified into three subcategories according to whether the disclosure was negative, neutral or positive in its' reflection of the organisation's approach to environmental issues. Although an increase in the number of categories used in content analysis may also increase subjectivity and reduce reliability, it also provides the researcher with greater detail on the content of the material (Krippendorff 1980). Following the initial analysis it was identified that many companies, when reporting on negative information reported on positive information in the same sentence. This

[6] The Corporations Law is now the Corporations Act 2001

reporting phenomena lead to a fourth classification of positive/negative being included in the worksheet.

In an effort to enhance the reliability of the coding instrument, a second coder was employed to independently undertake a proportion of the content analysis task, with a view to later examining the amount of inter-coder agreement. Following the initial sample coding the coders discussed any differences in coding results. The coding instrument and instructions were refined until a high level of agreement was achieved[7].

Two disclosure variables were used for this analysis – positive proportion of voluntary environmental disclosures and positive proportion of legislative environmental disclosures. The positive proportion of disclosures did not include the positive/negative category as it did not contain exclusively positive information.

Results and discussion

The positive proportions of disclosure variables for both legislative and voluntary environmental disclosures were not normally distributed and as such violated the stringent assumptions of the one-sample and paired samples t-test. Therefore non-parametric Wilcoxon signed-rank tests were conducted.

Firstly, comparisons between the proportions of positive disclosures between the voluntary and the statutory sections of the annual reports for each year were undertaken. Table 2 displays the results of the paired samples Wilcoxon signed-rank test. The results show that the proportion of positive disclosures were significantly greater in the voluntary sections of the annual report than in the statutory sections for both the 1999 and 2000 years at a 95% confidence interval. In 1998 the proportion of positive disclosures were not as great but still significant at a 90% confidence interval.

[7] Two measures of reliability were utilised in this study – the coefficient of reliability (98.2%) and Scott's pi (82.6%). Acceptable levels of reliability are considered to be 80 per cent above chance (Hackston & Milne 1996, p. 87).

Therefore, it may be noted that the companies have a propensity to disclose higher levels of positive environmental disclosures in the voluntary sections of the annual report than in the statutory sections of the annual report.

Table 2: Wilcoxon signed-rank test comparing proportion of positive disclosures in voluntary and mandatory sections of company annual reports

Disclosure variables		*N*	*Mean rank*	*Sum of ranks*
Positive % of disclosure – legislated vs voluntary 1998	Negative ranks	5	3.80	19.00
	Positive ranks	1	2.00	2.00
	Ties	0		
	Total	6		
Positive % of disclosure – legislated vs voluntary 1999	Negative ranks	10	8.40	84.00
	Positive ranks	3	2.33	7.00
	Ties	1		
	Total	14		
Positive % of disclosure – legislated vs voluntary 2000	Negative ranks	13	10.69	139.00
	Positive ranks	4	3.50	14.00
	Ties	3		
	Total	20		

	Positive % of disclosure – legislated vs voluntary 1998	Positive % of disclosure – legislated vs voluntary 1999	Positive % of disclosure – legislated vs voluntary 2000
Z score	-1.782a	-2.691a	-2.959a
Asymp. Sig. (2-tailed)	.075	.007	.003

a. Based on positive ranks
b. Wilcoxon signed ranks test

A Wilcoxon signed-rank test for one sample was also conducted on the individual variables over the test period to determine if the proportion of positive disclosures in the voluntary sections and the statutory sections were significant. As there were four categories, that is, positive, neutral, negative and positive/negative, the test proportion was set at .5 (being fifty percent of voluntary or mandatory disclosures for that year). The proportion of positive environmental disclosures was also included for the pre-operative period 1997. All environmental disclosures in 1997 were voluntary.

The p-statistics in table 3 show that in all years the proportion of positive disclosures in the voluntary disclosure sections of the company annual reports were significantly greater than the other three categories. This is consistent with the results of previous literature examining voluntary environmental disclosure practices (Deegan, Rankin & Voght 2000; Deegan & Rankin 1996). In contrast, the proportions of positive disclosures in the statutory sections were not significant in any of the test years.

Table 3: Wilcoxon signed rank test for one sample (one-tailed) for proportion of positive disclosures in company annual reports with a test median of .5

	N	*Wilcoxon Statistic*	*P*	*Estimated median*
Positive % of voluntary disclosure words 1997	19	190.0	0.000*	0.9500
Positive % of voluntary disclosure words 1998	17	139.5	0.002*	0.9100
Positive % of legislated disclosure words 1998	7	20.0	0.176	0.6425
Positive % of voluntary disclosure words 1999	15	120.0	0.000*	0.9200
Positive % of legislated disclosure words 1999	23	133.0	0.566	0.4875
Positive % of voluntary disclosure words 2000	20	210.0	0.000*	0.9375
Positive % of legislated disclosure words 2000	24	198.5	0.085	0.6250

*Significant at the .05 level

Overall, the results suggest that companies adopt different disclosure approaches when the disclosures are potentially under surveillance or increased scrutiny via legislated environmental disclosure requirements. This research provides evidence that companies are more likely to use greater levels of self-puffery within a voluntary reporting environment than within a mandatory reporting environment. The noted reduction in the proportion of positive environmental disclosures in the statutory sections of the annual reports suggests that stakeholders may be more likely to receive information that is less favourable to the corporation (and potentially more decision-useful to stakeholders) within a legislated disclosure environment.

Based on these results the research proposition suggesting that *Australian listed companies provide a greater proportion of positive environmental disclosures within a voluntary reporting environment than within a mandatory reporting environment* is supported.

Conclusion

Previous research has identified that the information content of voluntary environmental disclosures in the annual report may be questionable (Rockness 1985). As discussed earlier, voluntary environmental disclosures tend to be predominantly positive in nature, containing little negative information (Deegan, Rankin & Voght 2000; Deegan & Gordon 1996; Deegan & Rankin 1996; Guthrie & Parker 1990). Based on such results, it has been argued that the strategic use of voluntary disclosures by companies is indicative of a need for mandatory reporting requirements. As stated by Deegan, Rankin and Voght (2000, p. 127):

> Arguably, stakeholders have a 'right to know' about the social and environmental implications of an organization's operations at all times—not just when management has been 'shocked' into action by 'legitimacy threatening' events. Regulation might be necessary to ensure that this 'right to know' is satisfied.

The amendment of the Australian Corporations Law to include s. 299 (1)(f) has provided an opportunity to examine the nature of environmental disclosures within both a voluntary and mandatory disclosure framework. This research has shown that companies adopt a different approach to environmental disclosures in the statutory sections of the corporation's annual report to those disclosed in the voluntary sections of the annual report. Companies are *more* inclined to disclose large proportions of positive information within a voluntary reporting framework than within a mandatory reporting framework.

Based on these results, it may be argued that under circumstances where the environmental disclosures may be scrutinized by a regulatory authority, companies appear to be less self-laudatory and more conservative in their disclosure practices. It would also appear that within a mandatory reporting environment the opportunity to use voluntary environmental disclosures as a technique for improving legitimacy might be reduced, particularly if the environmental performance of the corporation is questionable. Therefore, based on the results of this research, the introduction and continuation of mandatory requirements for environmental disclosures may be more likely to result in the stakeholders 'right to know' being satisfied.

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