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The Effect of Sustainability Reporting on Financial Performance: An Empirical Study Using Listed Companies

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Abstract

Purpose - This study investigates the effect sustainability reporting has on companies' financial performance. Sustainability reports are voluntarily released by companies that provide additional information to the stakeholders regarding the impact their activities have on the environment and society.

Design/Methodology/Approach: This empirical paper analyses and identifies overlaps, gaps, limitations and flaws in current constructs of sustainability reporting. Using event study method to estimate abnormal returns for a 31 day event window for a sample of 68 listed companies, 17 listed in New Zealand Stock Exchange (NZX) and 51 listed in the Australian Stock exchange (ASX).

Findings: Results of the empirical study indicate that sustainability reporting is statistically significant in explaining abnormal returns for the Australian companies. The cross-sectional analysis results of the combined dataset for the two countries support the view that the contextual factors of industry type significantly impacts abnormal returns of the reporting companies. In this regard, this study identifies several contextual factors, such as industry and type of sustainability report, that have the potential to impact the relationship. Only the CSR type of sustainability report was significant in explaining the abnormal return of New Zealand companies.

Practical implications: To underscore the practical implications of the theory, it shows, by reference to the model, how sustainability reporting influences financial performance for companies engaged in industries that have environmental implications. However, the simplistic model may also have many other applications in management and the social sciences.

Originality value: The proposed model is highly original in providing a framework for studying the impact of sustainability reporting in companies that have an environmental impact.

Keywords: Sustainability, Stakeholder, Event Window, Abnormal Return

Paper type Research paper

I Introduction

The impact humans have on Earth has more than doubled over the last 45 years and is still growing as evidence shows that humans on an average are using 2.7 global hectares per capita, exceeding Earth's estimated average bio-capacity of 2.1 global hectares per capita (Peattie & Collins, 2009; World Wide Fund for Nature (WWF), 2008). Excessive and imprudent use of Earth's natural resources has been alleged to have contributed to climate change, pollution, habitat loss, overexploitation of species, and the spread of invasive species or genes. To control the impact humans are having on the Earth, the Living Planet Report (WWF, 2008) in 2008 emphasised that immediate action need to be taken to formulate and implement strategies that promote sustainable development. It is envisaged that a sustainable development initiatives will minimise the use of natural resources and reduce emissions of waste and pollutants over the life cycle so that it does not jeopardise the needs of future generations (Ofstad, 1994, p. 45). As corporations play an integral part in both intermediate and final production and consumption, it is postulated that sustainable production and consumption of resources by corporations would lead to an improvement in the environment and also reduce its associated side effects (Global Reporting Initiative (GRIP), 2004). Requiring companies to report on a regular basis regarding the impact their activities have had on the environment will allow: (i) stakeholders to be informed of the nature of activities companies are engaged in; (ii) stakeholders to monitor the effect such activities are having on their environment; and (iii) companies in consultation with the relevant stakeholders will be able to implement strategies to minimise the effect of such activities. The companies willingness to provide such reports provides support to the view that companies have learned to recognise that providing stakeholders with relevant information regarding their approach to sustainable development helps them maintain their implicit social licence to operate (for example Aras & Crowther, 2009; Committee for Economic Development (CED), 1971; Finch, 2005; Overland, 2007; Waddock, 2004). However, the nature of information disclosed remains debatable.

Both anecdotal and empirical evidence support the view that increased social and environmental reporting leads to an improvement in the financial performance and value of the company (Cohen, Fenn, & Konar, 1997; Feldman, Soyka, & Ameer, 1996; Jones, Frost, Loftus, & van der Laan, 2007; Klassen & McLaughlin, 1996). This to some extent has provided motivation to companies for release social, ethical and environmental reports to stakeholders.

Evidence shows that companies providing social, ethical and environmental reports have increased from 24% (of the 100 largest companies in the top reporting countries) in 1999, to 33% in 2005, and 45% in 2008 (KPMG, 2005, 2008; Milne & Gray, 2008). KPMG (2008) reported that around 80% of the largest 250 companies in the world issued social, ethical and environmental reports. However, in New Zealand companies providing social and environmental reports remain low. According to Milne and Gray (2008), during 2007 only 5% of the top 100 companies in New Zealand provided stand alone sustainability reports, and 26% incorporated the relevant information pertaining to sustainability into their annual reports. In comparison, 37% of the top 100 Australian companies provided stand alone social and environmental reports during 2008, whilst 8% incorporated the information into their annual reports (KPMG, 2008).

However, a lack of regulation and/or consistent guidelines regarding the structure and quality of sustainability reporting have led to the production of various types of reports that have a social, ethical and

environmental focus. Traditionally companies have used annual reports as a medium to inform stakeholders about accounting and economic performance as well as accountability and transparency (Finch, 2005; Gray, Owen, & Adams, 1996). However, their focus has predominantly been on the shareholders (Jones, et al., 2007), which meant that wider concerns of other stakeholders are left out (Criado-Jime´nez, Ferna´ndez-Chulia´n, Husillos-Carque´s, & Larrinaga-Gonza´lez, 2008; Gentry, 2007). For these reasons the reporting method that companies have used in the past has changed over the last decade or so to the triple bottom line¹ reporting method (Elkington, 1998a, 1998b, 1999, 2000; Wheeler & Elkington, 2001). However, a rapidly growing approach to social, ethical and environmental reporting is that outlined by the Global Reporting Initiative (GRI)². According to GRI, sustainability reports should contain information on “an organisations vision and strategy, profile, governance structure and management systems, GRI content index, and performance indicators” (GRI, 2002, p. 7). The GRI is aiming to elevate sustainability reporting to the same level of rigour, comparability, credibility and verifiability expected of financial reporting (GRI, 2002). Other organisations that also offer guidance on social, ethical and environmental reporting include: SustainAbility, a corporate sustainability think-tank and consulting organisation³; the UN Global Compact, a United Nations initiative encouraging corporations to adopt 10 established sustainability principles and report on them⁴; AccountAbility, a not-for-profit network comprised of businesses and civil and private organisations working to promote stakeholder engagement, responsible competitiveness, collaborative governance, and setting sustainability standards such as the AA1000 set of standards⁵; and the International Organization for Standardization (ISO), standard (ISO 14000) which addresses environmental management performance of a company and also provides a framework for organisations to base reports upon⁶.

The wide range of regimes used by companies to report their social, ethical and environmental activities has resulted not only in a lack of consistency but also in a wide variation in the structure and content between those reports (Finch, 2005). Also, companies using the same reporting regime often fail to produce structurally homogeneous sustainability reports due to ‘pick and choose’ type practices. This to some extent has contributed to inconsistencies in definitions, the rise of different terminologies and meanings for the term ‘sustainability’. Another plausible reason for inconsistencies is that the term ‘sustainable’ or ‘sustainability’ holds different meaning in different context and it also means different things to different people. Political and financial consequences of such reporting are also contributory factors as well. For these reasons reaching a common definition as well as developing a uniform strategy to tackle the Planet’s problems has been an ongoing challenge. Some common phrases that have been used to refer to sustainability include: corporate social responsibility (CSR), corporate sustainability, corporate citizenship, business ethics, and sustainable entrepreneurship. In many instances these terms have been used interchangeably to refer to the same overriding concept of social, ethical and environmental responsibility (Marrewijk, 2003).

Therefore, examining one specific type of report or comparing the same elements of different types of

1 *The triple bottom line reporting was developed by Elkington over the last decade and has become a base for both practitioners and academics for stakeholder communication. It emphasises reporting on social, economic, and environmental areas of company performance.*

2 *The GRI was launched in 1997 by UNEP and CERES and aims to develop a globally applicable framework and set of guidelines for sustainability reporting.*

3 *SustainAbility - <http://www.sustainability.com/aboutsustainability/keyfacts.asp?id=1038>*

4 *UN Global Compact - <http://www.unglobalcompact.org/>*

5 *AccountAbility - <http://www.accountability21.net/default.aspx?id=54>*

6 *International Organization for Standardization - http://www.iso.org/iso/iso_14000_essentials*

reports has been difficult and confusing and can also lead to conflicting results. The wide variation in reports makes it difficult to undertake any in-depth analysis as the number of similar reports available to conduct such studies is limited as well. To overcome such problems, this study takes a broad view of sustainability that encompasses the magnitude of reporting regimes such as GRI, triple bottom line, and CSR, similar to that used by Jones et al. (2007), Aerts, Cormier and Magnan (2008), and Finch (2005).

Providing sustainability can be costly and those costs are primarily incurred by the companies' shareholders. Unless there are tangible benefits associated with such reporting, in the absence of regulation, the motivation for the shareholders to continue allow companies to provide sustainability reports remain questionable. Therefore, this study first aims to investigate whether sustainability reporting by listed companies has an effect on their financial performance and value. Second, whether sustainability reporting has a similar effect on the listed companies in smaller economies compared to listed companies in larger economies.

II Literature Review

Most of the studies that have investigated the effect sustainability reporting has on the financial performance of companies have focused on only one specific environmental event disclosure. For example, Blacconiere and Patten (1994) examined the market impact of the 1984 Union Carbide chemical leak in Bhopal. They reported that 47 companies other than Union Carbide experienced significant negative reactions in the period following the catastrophe. Blacconiere and Northcut (1997) investigated the market reaction of 72 chemical companies to the Superfund Amendments and Reauthorization Act 1986, and Freedman and Patten (2004) examined the financial report environmental disclosures of 112 US firms in terms of their disclosures under the 1986 Toxic Release Inventory regulations. The findings of these studies indicate that companies that exposed those environmental events experienced negative market reactions, those companies with higher levels of environmental reporting prior to the event suffered less negative reactions than those companies with less environmental reporting. By focusing on only one aspect of sustainability reporting (environment) these studies have not been able to capture the full effect of the companies' overall sustainability reporting practices. This view is supported by Deegan (2004), who state that Freedman and Patten (2004) have used 1989 data which may not have been relevant and therefore, concluding that voluntary environmental disclosures are 'bad' may in fact have given a conflicting signal to the market.

A number of studies have also looked at the effect of the broader aspects of environmental reporting on share market performance. Cohen, et al. (1997) studied environmental performance in terms of 10 actual events, ranging from the number of environmental litigation proceedings, to the number and volume of oil and chemical spills for US companies. Klassen and McLaughlin (1996) measure environmental management performance in US companies using environmental awards to indicate strong environmental performance, and environmental crisis to indicate weak environmental performance. Lorraine, Collison & Power (2004) also look at strong and weak environmental performance information in terms of environmental awards and crises in an approach very similar to that of Klassen and McLaughlin (1996), but in a UK context. These studies have used relatively objective measures of sustainability performance such as externally generated performance measures and therefore, have signalled issues of impartiality concerning sustainability

reports generated internally by companies. Cohen et al. (1997) employed a longitudinal study to find that environmentally conscious investors either incur no penalty for investing in portfolio's with higher environmental performance (green portfolios), or perform better than other non-green portfolios. Klassen and McLaughlin (1996) and Lorraine et al. (2004) both used the event study method to examine the market impact of the sustainability related information and have obtained significantly different results. Whereas Klassen and McLaughlin (1996) find that in the US, a strong environmental performance is associated with significant positive returns, and weak environmental performance is associated with significantly negative market returns. In the UK, Lorraine et al. (2004) reported that only weak environmental performance is associated with a significant stock market response, and generally only to the extent that fines are imposed on the company. Furthermore, Lorraine et al. report that market reactions are lagged by a week after the publication of the sustainability related information. The results reported by studies stated above indicate that there are other significant factors involved in assessing the market impact of sustainability information that were not taken into account yet. For example, the causal relationship between environmental performance and market returns is not clear, as companies with better environmental performance are those that can afford to implement better environmental management systems or more efficient production and operation methods (Cohen, et al., 1997). In addition, there is evidence that country specific contextual factors have an impact on the relationship between sustainability performance reporting and measures of financial performance, including capital market performance for companies. The studies addressing contextual issues in the market impacts of sustainability reporting is reported below.

Contextual differences between the US and UK are reported in the studies of Feldman, et al. (1996) and Murray, Sinclair, Power and Gray (2006). Feldman et al. (1996) looked at the qualitative and quantitative environmental performance of US companies. The qualitative environmental performance was a subjective score ranging from 1 to 36 based on the company's environmental reporting, and quantitative environmental performance was based on the annual change in the company's Toxic Release Inventory releases per unit of company's capital. The company's environmental performance score is then measured against the change in beta to determine the effect of environmental performance on the stock price by way of change in systematic risk. Feldman et al. (1996) studied 300 US companies and reported that improved environmental performance leads to a statistically significant reduction in the systematic environmental risk of the company, which is valued by the sharemarket in the form of a higher stock price. Murray et al. (2006) looked at the relationship between UK companies' social and environmental performance disclosure and their financial market performance. Social and environmental disclosure is measured by the total number of pages of voluntary and mandatory social and environmental disclosures by the company in annual reports over a 10 year period. Using cross-sectional analysis of 100 of the UK's largest companies they find no direct relationship between the market reactions and the reporting. Murray et al. concluded that the result was expected given the inconclusive nature of previous literature on the relationship between social and environmental performance and market performance. However, using longitudinal analysis Murray et al. (2006) reported a convincing relationship between consistently high (low) returns and high (low) levels of social and environmental disclosure. This result is similar to that reported by Cohen et al. (1997). Murray et al. similarly concluded that there is no clear reason why this might be, and that the conceptual basis for the causal nature of the relationship between environmental and market performance is underdeveloped.

Country specific factors may have a role in explaining the contrasting conclusions of Feldman et al. (1996), who find a significant relationship between environmental reporting and market performance based on US data, and that of Murray et al. (2006) who, using UK data, find no significant relationship between environmental reporting and market performance. The results reported by Feldman et al. and Murray et al. are similar to the results reported by Klassen and McLaughlin (1996) and Lorraine et al (2004), apart from the fact that former authors data was derived from the internally generated environmental performance disclosures. The inconsistencies in results suggest that there may be fundamental contextual differences between the US and the UK that may have a moderating effect on the relationship between sustainability reporting and market performance.

Studies in other international contexts have also been examined. Aerts, Cormier and Magnan (2008) looked at companies from continental Europe (Belgium, France, Netherlands and Germany), and North America (Canada and US), while Cormier and Magnan (2007) studied French, Canadian and German companies. Both Aerts et al. (2008) and Cormier and Magnan (2007) examined a comprehensive range of environmental disclosures by grouping them into 6 categories: expenditures and risk; laws and regulation; pollution abatement; sustainable development; land remediation; and environmental management. Aerts et al. reported that enhanced environmental reporting is related to more accurate earnings forecasts by analysts, but that the relationship is stronger in Europe than North America. Cormier and Magnan provided support for contextual differences in the effects of environmental reporting, with environmental reporting having a significant moderating effect on the market valuation of German companies' earnings, but not for Canadian or French companies. It is interesting to note that the differences in the results are attributable to the differences in the contextual factors arising from the differences in the reporting regulatory environment. In North America there is a strong regulatory environment in terms of environmental disclosures related to risk and exposure, whereas in Europe, there is a strong focus on sustainable development and environmental management reporting. Further, the ecological or Green movement is stronger in Germany and Green parties are represented in the parliaments in both Germany and France, but not Canada. Both Aerts et al. and Cormier and Magnan have contradicted the findings reported in earlier literature (Feldman, et al., 1996; Klassen & McLaughlin, 1996; Lorraine, et al., 2004; Murray, et al., 2006) that European countries value information regarding sustainability reports more highly than North American countries. Reviews of the contextual factors relating to sustainability reporting by other authors have also noted inconsistencies in the literature. In discussing country and industry-specific differences in corporate social responsibility reports, Chen and Bouvain (2009, p. 20) state, "... findings are inconclusive or contradictory and it is often difficult to compare previous studies owing to the idiosyncratic methods used in each stud." Chen and Bouvain go on to examine the contextual differences in reporting between the UK, US, Germany and Australia. Overall they find that Germany has substantially different CSR reporting practices than the US, UK or Australia. They note that US, UK and Australia are defined as having liberal market economies, with reporting systems based on serving the interests of shareholders, while Germany is deemed to have a coordinated market economy, with a reporting system that is primarily designed to serve the interests of holders of debt and tax authorities. One way of addressing the inconsistencies in international sustainability reporting is to have mandatory sustainability reporting, and associated quality assurance services, however a full discussion of this is beyond the scope of this study (for details refer to Criado-Jime'nez, et al., 2008; Manetti & Becatti, 2008;

Mobus, 2005; Overland, 2007).

Jones, et al. (2007) examined the sustainability reporting of Australian companies. In terms of defining sustainability Jones et al. took a broader view of social and environmental reporting practices that fall under the more general concept of "sustainability reporting. Jones et al. examined annual reports, sustainability reports, and sustainability disclosure on the companies' websites. Sustainability information was then scored against the GRI's set of social and environmental indicators, with a maximum score of 40 based on the qualitative level of information reported. Jones et al. compared the sustainability reporting score to both the market performance, as measured by abnormal returns using a market index, and financial performance, as measured by a range of variables including financial ratios, measures of cash positions, operating and free cash flows, profitability, financial structure, debt servicing capacity, and a number of valuation multiples. Jones et al. reported that there is a negative relationship between sustainability reporting and abnormal returns of a company, but that the coefficients were generally not statistically significant. However, there is a significant relationship between sustainability reporting and many measures of company financial performance. Measures that were found to be particularly significant included ratios involving cash position, working capital, retained earnings, capital structure, and operating cash flows. In the context of New Zealand, there is a paucity of literature regarding the market impact of sustainability reporting. New Zealand has mixed results in terms of the quality and quantity of sustainability reporting being produced. Contributors to the movement towards sustainability reporting include organisations such as the New Zealand Business Council for Sustainable Development (NZBCSD)⁷, who require their 70 plus members to produce a triple bottom line report within three years of becoming a member, the New Zealand Institute of Chartered Accountants (NZICA), who each year review company reports and judge the Sustainable Development Reporting Section in the Institute's Annual Report Awards (Casey, 2008), and the Sustainable Business Network, who have worked with over 200 New Zealand organisations to promote sustainable business practices, including reporting (Sustainable Business Network, 2009). Membership to these organisations continue to grow, as does the number and level of sustainability disclosures by New Zealand companies (Chapman & Milne, 2004). However there is a lack of studies concerning the financial or market impacts of sustainability disclosures by New Zealand companies, which this study intends to fulfil.

In summary, the findings of the studies involving sustainability reporting and financial performance provide support to the view that there is evidence of improved financial performance arising from sustainability reporting. Lack of theories supporting such relationship means that the evidence of any causal relationship remains unclear and inconclusive (Cohen, et al., 1997; Feldman, et al., 1996; Klassen & McLaughlin, 1996; Lorraine, et al., 2004; Murray, et al., 2006). Also a lack of consistencies in sustainability reporting means that quality data is not available to undertake studies that could address the right questions that need to be answered. However, the conceptual model developed by Feldman, et al. (1996) (see Figure 2 in the Appendix) and the theoretical model of Richardson et al. (1999) (see Figure 3 in the Appendix) provide support for the existence of a causal relationship between sustainability reporting and financial performance. Taking cognisance of this view, this study uses a more current data and investigates whether sustainability reporting leads to financial performance. In doing so, this study contributes to the extant literature in two

⁷ *New Zealand Business Council for Sustainable Development - <http://www.nzbcSD.org.nz/directory.asp>*

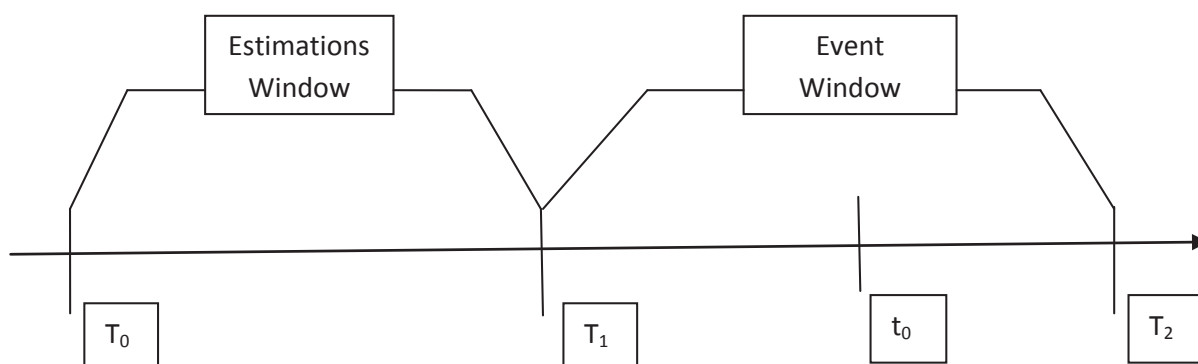
ways: first, by addressing the identified gap in the research literature; and second, by adding to a growing area of research regarding the effect of context on the market impact of sustainability reporting by examining New Zealand and Australian listed companies.

III. Research Method And Procedure Of Data Analysis

The event study method is used to investigate the impact sustainability reporting has on the value of the companies in New Zealand and Australia. Using the market announcement of the sustainability report as the event day 0, the event window for this study is defined as the period beginning 10 trading days prior to day 0, and extending to 20 days past day 0, excluding market holidays, giving 31 days in total. The estimation window used for estimating normal returns was the 250 trading days, excluding market holidays, prior to the event window, that is, from 260 days to 11 days prior to event day 0. This estimation window is similar to that used MacKinlay (1997) and Corrado & Zivney (1992). This gives the event time as $T_0 = -260$, $t_0 = 0$, $T_1 = -10$, and $T_2 = 20$ as depicted by Figure 1 below.

Figure 1:

Event Window and Estimation Period



(Adapted from MacKinlay, 1997, p.20 and Peterson, 1999, p.38)

Where, T_0 is the first period of estimation window; T_1 is the first period used in the estimation of abnormal returns; t_0 is the event period; and T_2 is the last period used in the estimation of abnormal returns.

Using the corresponding T_0 and T_2 dates in calendar time, the daily returns for each company and for the corresponding market index (either NZX50 or ASX200) are retrieved from the DataStream database. The abnormal returns were determined as follows:

First, the daily returns for each company over the estimation window was regressed against the daily market index return over the same period using equation 1 to determine the value for α_i and β_i (regression parameters) for each company.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad \dots\dots\dots 1$$

Where

- R_{it} = period t return on security i
- R_{mt} = period t return on market portfolio
- ε_{it} = disturbance term with expected value 0
- α, β = parameters from the regression

Second, the regression parameters determined in step 1 above for each company are used in Equation 2 to estimate the abnormal return for each day in the event window.

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \dots\dots\dots 2$$

Where

AR_{it} = abnormal return for security i in period t

Third, the individual abnormal returns were aggregated across securities using a simple average, as given by Equation 3.

$$CAR_t = \frac{1}{N} \sum_{i=1}^N AR_{it} \dots\dots\dots 3$$

Where

CAR_t = aggregate cumulative abnormal returns

This process was performed for data from large listed companies in New Zealand and Australia as well as the combined dataset. Significance testing of aggregate abnormal returns (CAR) was performed for the three sets of companies for days -1 to 1.

Cross-sectional dummy regression analysis was then performed on the day -1 to 1 aggregate abnormal return. The regression equation and dummy variables used are as follows:

$$CAR_{it} = \alpha_{it} + \beta1_{it}D1 + \beta2_{it}D2 + \beta3_{it}D3 \dots\dots\dots 4$$

Where:

D1 = Environmental Report Type

D2 = Sustainable Report Type

D3 = Corporate Responsibility Report Type

α_{it} = Intercept Term (Annual Report Type)

The dummies variables D1, D2 and D3 equal 1 if the sustainability report is of the corresponding type, otherwise 0.

A second cross-sectional dummy regression was performed using a combined dataset of all New Zealand and Australian companies'. A dummy variable for dirty industry membership was included to examine the industry effect. The regression equation is as follows:

$$CAR_{it} = \alpha_{it} + \beta1_{it}D1 + \beta2_{it}D2 + \beta3_{it}D3 + \beta4_{it}D4 + \beta5_{it}D5 \dots\dots\dots 5$$

Where:

D4 = Country

D5 = Dirty Industry Membership

The dummy variable D4 equals 1 if the company is from New Zealand, otherwise 0. The dummy variable D5 equals 1 if the company operates in a dirty industry, otherwise 0. The industries were split into dirty or other industries based on the 10 most environmentally intensive industries using a similar method to Cole, Elliot & Shimamoto (2005) and Mani and Wheeler (1997).

III.1 Data and Data Sources

The sustainability reporting and stock return data was gathered from numerous sources. The sustainability reports varied significantly in their size and content and came from a broad range of industries. The sample included 68 listed companies, 17 listed in New Zealand Stock Exchange (NZX) and 51 listed in the Australian Stock Exchange (ASX).

For New Zealand companies, the sustainability reports ranged in length from 2 to 82 pages, with a mean of 24.9 pages and a median of 21 pages. The sustainability reports of Australian companies ranged in length from 6 to 194 pages, with a mean of 42.4 pages and a median of 38 pages. On average, the annual report type was the shortest type of sustainability report, while the sustainable type was the longest. The number of each type of sustainability report for New Zealand and Australia is reported in Table 1 below.

Table 1: Distribution of Sustainability Report from New Zealand and Australia

Type of Report	New Zealand		Australia	
	Number	%	Number	%
Annual Report (with Corporate Responsibility Section)	11	65%	7	14%
Environment, Health & Safety	2	12%	8	16%
Sustainability (Environment/Social/Economics)	2	12%	22	43%
Corporate Responsibility (EHS/Community/Social)	2	12%	14	27%
Total	17	100%	51	100%

The results in Table 1 indicate that 65% of the New Zealand companies investigated tended to disclose sustainability information in the annual report, while only 43% of the Australian companies prefer to use the specific sustainable report type. A plausible reason for the differences in reporting methods could be due to the fact that high costs are associated with producing standalone sustainability reports; therefore small companies in New Zealand have used annual reports to disclose such information.

Table 2 reports the data for companies in different industries that have disclosed sustainability reports. Results show that Australian companies are represented in a wider range of sectors than New Zealand companies. This may be due to the fact that there are more Australian companies than New Zealand companies. The key difference however, is that many of the Australian companies come from sectors regarded as having a greater impact on the environment, in particular, the mining, chemicals, oil and gas, and steel & metals industries (hereafter dirty industries). It can be concluded that companies that undertake sustainability reporting mostly tends to belong to the dirty industries. The reporting dates for New Zealand companies ranged from September 30, 2003, to August 21, 2009. The reporting dates for Australia companies range from April 30, 2002, to July 10, 2009. It is to be noted that a high number of both the New Zealand and Australian event dates were between the months of September 2008 through to December 2008.

Table 2: Distribution of Companies across Industries for New Zealand and Australia

Industry	New Zealand		Australia	
	Number	%	Number	%
Banks	1	6%	2	4%
Beverages	0		3	6%
Chemicals	0		2	4%
Construction & Building Materials	1	6%	2	4%
Diversified Industrials	1	6%	2	4%
Electricity	2	12%	1	2%
Food Producers & Processors	1	6%	1	2%
Forestry & Paper	2	12%	1	2%
General Retailers	1	6%	1	2%
Insurance	0		1	2%
Leisure, Entertainment & Hotels	1	6%	0	
Mining	0		13	25%
Multi-Utilities	0		2	4%
Oil & Gas	1	6%	4	8%
Packaging	0		1	2%
Pharmaceuticals & Biotechnology	0		1	2%
Real Estate	1	6%	6	12%
Speciality & Other Finance	0		1	2%
Steel & Other Metals	0		3	6%
Support Services	1	6%	1	2%
Telecommunication Services	1	6%	1	2%
Transport	3	18%	2	4%
Total	17	100%	51	100%

IV. Results

Table 3 and Table 4 report the aggregate abnormal returns over the event window for New Zealand and Australian companies and Table 5 report the results for the combined dataset. It can be seen that New Zealand has a positive aggregate cumulative abnormal return over the event window, while Australia has a negative aggregate cumulative abnormal return over the event window.

Table 3: Aggregate Abnormal Returns and Aggregate Cumulative Abnormal Returns for New Zealand and Australian Companies over the Event Window

New Zealand Companies		
Event Day	Aggregate Abnormal Returns	Aggregate Cumulative Abnormal Returns
-10	0.227	0.227
-9	0.785	1.011
-8	0.561	1.573
-7	-0.053	1.520
-6	-0.256	1.264
-5	-0.015	1.249

-4	-0.489	0.760
-3	0.630	1.390
-2	1.742	3.132
-1	-0.223	2.909
0	0.321	3.230
1	-0.477	2.753
2	-0.169	2.585
3	0.491	3.076
4	-0.012	3.064
5	-0.558	2.506
6	-0.013	2.492
7	0.407	2.899
8	0.542	3.442
9	-0.020	3.422
10	0.203	3.625
11	0.100	3.724
12	0.075	3.799
13	0.021	3.820
14	0.257	4.077
15	-0.153	3.924
16	-0.076	3.849
17	0.471	4.319
18	-0.227	4.092
19	-0.140	3.952
20	-0.026	3.926

Table 4: Aggregate Abnormal Returns and Aggregate Cumulative Abnormal Returns for New Zealand and Australian Companies over the Event Window

Australian Companies		
Event Day	Aggregate Abnormal Returns	Aggregate Cumulative Abnormal Returns
-10	-0.160	-0.160
-9	-0.425	-0.586
-8	0.272	-0.314
-7	-0.808	-1.123
-6	0.041	-1.081
-5	0.562	-0.519
-4	-0.728	-1.247
-3	-0.298	-1.545
-2	0.571	-0.975

-1	0.796	-0.179
0	0.189	0.010
1	-1.238	-1.228
2	-1.167	-2.395
3	-0.358	-2.753
4	0.147	-2.606
5	0.406	-2.200
6	0.559	-1.641
7	-0.207	-1.848
8	-0.588	-2.437
9	0.481	-1.956
10	-0.233	-2.189
11	0.566	-1.622
12	0.375	-1.248
13	-0.030	-1.278
14	-0.009	-1.287
15	-0.143	-1.430
16	-0.039	-1.469
17	-1.590	-3.059
18	-0.340	-3.399
19	-0.022	-3.421
20	-0.328	-3.749

Table 4: Aggregate Abnormal Returns and Aggregate Cumulative Abnormal Returns for New Zealand and Australian Companies over the Event Window

Australian Companies		
Event Day	Aggregate Abnormal Returns	Aggregate Cumulative Abnormal Returns
-10	-0.160	-0.160
-9	-0.425	-0.586
-8	0.272	-0.314
-7	-0.808	-1.123
-6	0.041	-1.081
-5	0.562	-0.519
-4	-0.728	-1.247
-3	-0.298	-1.545

-2	0.571	-0.975
-1	0.796	-0.179
0	0.189	0.010
1	-1.238	-1.228
2	-1.167	-2.395
3	-0.358	-2.753
4	0.147	-2.606
5	0.406	-2.200
6	0.559	-1.641
7	-0.207	-1.848
8	-0.588	-2.437
9	0.481	-1.956
10	-0.233	-2.189
11	0.566	-1.622
12	0.375	-1.248
13	-0.030	-1.278
14	-0.009	-1.287
15	-0.143	-1.430
16	-0.039	-1.469
17	-1.590	-3.059
18	-0.340	-3.399
19	-0.022	-3.421
20	-0.328	-3.749

Figure 2

Conceptual Model Linking Corporate Environmental Management and Performance with Firm Value

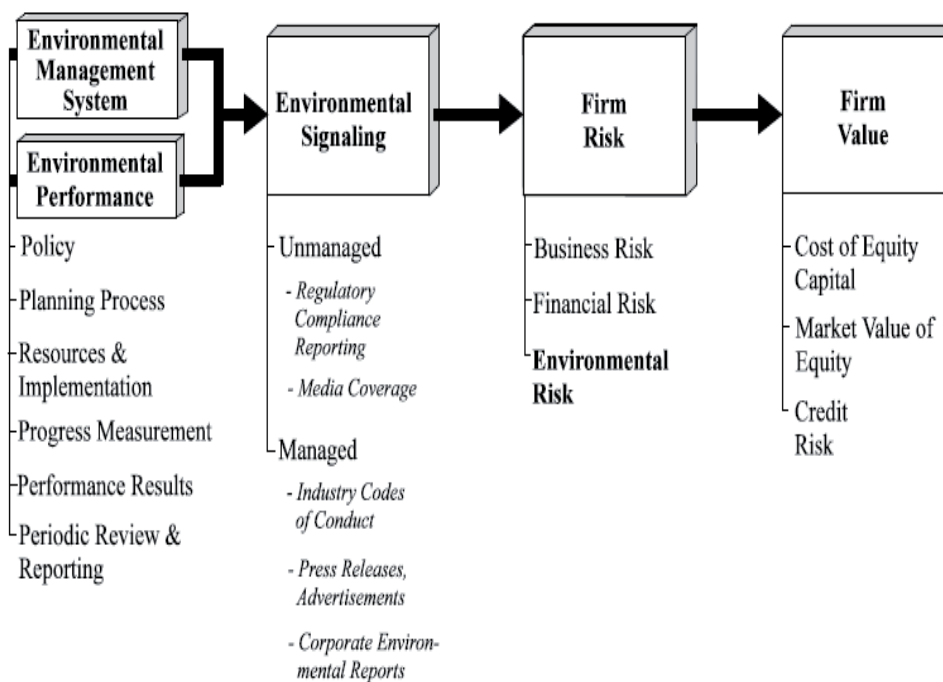


Table 6 reports the results of the statistical significance testing of the New Zealand day -1, day 0, and day 1 aggregate abnormal returns. The abnormal returns of day -1, 0, and 1 are -0.22%, 0.32%, and -0.48% respectively. However, the results are not statistically significant indicating that returns are not significantly different from 0. Table 7 reports the significance test for the Australian companies. The results for days -1, day 0, and day 1 show that the aggregate abnormal returns are 0.80%, 0.19%, and -1.24% respectively. These results are not statistically significant indicating abnormal returns are not statistically different from 0. However, the results for day 1 are statistically significant at 99% level.

Table 6: Significance Testing of Aggregate Abnormal Returns for New Zealand Companies for Event Days -1 to 1

Test Value = 0	New Zealand Companies					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
CAR Day -1	-0.318	16	0.754	-0.223	-1.709	1.263
CAR Day 0	1.138	16	0.272	0.321	-0.277	0.918
CAR Day 1	-1.227	16	0.238	-0.477	-1.300	0.347

Table 7: Significance Testing of Aggregate Abnormal Returns for Australian Companies for Event Days -1 to 1

Test Value = 0	Australian Companies					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
CAR Day -1	1.204	50	0.234	0.796	-0.532	2.124
CAR Day 0	0.395	50	0.694	0.189	-0.772	1.150
CAR Day 1	-3.068	50	0.003	-1.238	-2.048	-0.428

The results for the combined dataset of all New Zealand and Australian companies are reported in Table 8. The overall abnormal returns for day -1, day 0, and day 1 is 0.54%, 0.22%, and -1.05% respectively. Only the result for day 1 is statistically significant at the 99% confidence level.

Table 8: Significance Testing of Aggregate Abnormal Returns for Combined New Zealand Companies for Event Days -1 to 1

Test Value = 0	Combined New Zealand Companies and Australian Companies					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
CAR Day -1	1.029	67	0.307	0.541	-0.509	1.591
CAR Day 0	0.609	67	0.545	0.222	-0.506	0.950
CAR Day 1	-3.284	67	0.002	-1.48	-1.684	-0.411

Table 9 report the results for the cross-sectional dummy regression of abnormal returns against the sustainability report type using Equation 4. The results indicate that none of the four sustainability report

types are statistically significant predictor of abnormal returns for New Zealand companies on event days -1 or 0. However, the regression result for day 1 for the sustainability report type corporate responsibility (CSR) is statistically significant at the 5% confidence level. None of the remaining three sustainability report types are significant for day 1.

Table 9: Cross-sectional Dummy Regression of Abnormal Returns against Sustainability Report Type for New Zealand Companies

New Zealand Companies							
Event	Variable	B	Std. Error	t	Sig.	95% Confidence Interval for B	
						Lower	Upper
Day -1 CAR	Annual (Constant)	0.317	0.842	0.377	0.712	-1.502	2.136
	Environment	0.608	2.147	0.283	0.782	-4.030	5.245
	Sustainability	-1.062	2.147	-0.495	0.629	-5.700	3.576
	CSR	-4.138	2.147	-1.928	0.076	-8.775	0.500
Day 0 CAR	Annual (Constant)	0.492	0.363	1.360	0.197	-0.290	1.276
	Environment	0.056	0.924	0.061	0.953	-1.940	2.053
	Sustainability	-1.261	0.924	-1.364	0.196	-3.257	0.736
	CSR	-0.259	0.924	-0.280	0.784	-2.255	1.738
Day 1 CAR	Annual (Constant)	0.089	0.444	0.188	0.845	-0.870	1.047
	Environment	-0.762	1.132	-0.673	0.513	-3.207	1.683
	Sustainability	-1.570	1.132	-1.388	0.189	-4.015	0.874
	CSR	-2.472	1.312	-2.145	0.048	-4.917	-0.028

The results for the Australian companies' cross-sectional analysis are reported in Table 10. It shows that on day -1, all of the sustainability report types are statistically significant at the 95% confidence level. The annual report type has a significantly positive coefficient of 5.62%, while the environment, sustainable and CSR type reports have significantly negative abnormal returns of -4.98%, -5.81%, and -5.6% respectively. The result for day 0 for the report type environment is significantly different from 0 at the 95% confidence level. The day 1 dummy regression results are reported in Table 10. The results for the report type dummy variables indicate that the abnormal returns are significantly impacted by both the annual report type and the sustainable report type. The coefficient of the annual report and sustainable report type is -3.48% and 3.07% respectively and are statistically significant at the 95% confidence level. It is interesting to note that while these two report types have coefficients of a similar magnitude, they both have opposite signs.

Table 10: Cross-sectional Dummy Regression of Abnormal Returns against Sustainability Report Type for Australian Companies

Australian Companies							
Event	Variable	B	Std. Error	t	Sig.	95% Confidence Interval for B	
						Lower	Upper
Day -1 CAR	Annual (Constant)	5.620	1.674	3.359	0.002	2.254	8.987
	Environment	-4.975	2.292	-2.171	0.035	-9.585	-0.365
	Sustainability	-5.810	1.921	-3.024	0.004	-9.675	-1.945
	CSR	-5.602	2.040	-2.733	0.009	-9.725	-1.479

Day 0 CAR	Annual (Constant)	-1.882	1.224	-1.538	0.131	-4.344	0.580
	Environment	3.983	1.676	2.377	0.022	0.612	7.354
	Sustainability	2.797	1.405	1.991	0.052	-0.029	5.624
	CSR	0.871	1.499	0.581	0.564	-2.144	3.886
Day 1 CAR	Annual (Constant)	-3.482	1.043	-3.337	0.002	-5.581	-1.382
	Environment	1.418	1.429	0.993	0.326	-1.456	4.292
	Sustainability	3.071	1.198	2.564	0.014	0.662	5.481
	CSR	2.537	1.278	1.986	0.053	-0.033	5.108

Table 11 reports the results for Equation 5 utilising the combined datasets. The results generally support those results reported in Tables 9 and 10. The differences for the combined sample are the following: on day -1, the environment report type report is not statistically significant, and on the day 1, the sustainability type report is not statistically significant. One plausible reason for the differences in results could be due to the offsetting effects of the combination of the New Zealand and Australian abnormal returns. Table 11 reveals that dirty industry membership have a negative impact on abnormal returns for event days -1, 0 and 1. However, of these days, only the coefficient of day 0 is -1.52% which is statistically significant at the 95% confidence level.

Table 11: Cross-sectional Dummy Regression of Abnormal Returns against Sustainability Report Type, Country and Dirty Industry Membership for all Companies

New Zealand Companies							
Event	Variable	B	Std. Error	t	Sig.	95% Confidence Interval for B	
						Lower	Upper
Day -1 CAR	Annual (Constant)	5.218	1.417	3.683	0.001	2.386	8.051
	Environment	-2.722	1.717	-1.586	0.118	-6.153	0.709
	Sustainability	-4.643	1.480	-3.137	0.003	-7.666	-1.684
	CSR	-4.558	1.555	-2.931	0.005	-6.445	-1.449
	Country	-3.683	1.382	-2.666	0.010	-3.660	-0.921
	Dirty Industry	-1.513	1.074	-1.408	0.164	-1.939	0.635
Day 0 CAR	Annual (Constant)	0.041	0.990	0.041	0.960	-1.939	2.021
	Environment	2.776	1.200	2.314	0.240	-0.378	5.175
	Sustainability	1.226	1.035	1.184	0.241	0.843	3.294
	CSR	-0.255	1.087	-0.234	0.816	-2.427	1.918
	Country	0.197	0.966	0.204	0.839	-1.734	2.128
	Dirty Industry	-1.522	0.751	-2.027	0.047	-3.023	-0.021
Day 1 CAR	Annual (Constant)	-1.945	0.911	-2.136	0.037	-3.765	-0.125
	Environment	0.136	1.103	0.123	0.902	-2.069	2.341
	Sustainability	1.449	0.951	1.523	0.133	-0.453	3.351
	CSR	0.806	1.000	0.807	0.423	-1.192	2.804
	Country	1.264	0.888	1.424	0.160	-0.511	3.039
	Dirty Industry	-0.328	0.691	-0.475	0.637	-1.708	1.053

V Discussion

The day 0 abnormal returns of both New Zealand and Australian companies were not statistically significant may be due to a time lag between the release of the report and the ability of the market to incorporate that information into the share price. This is consistent with the observed significant abnormal return of Australian companies on day 1, and supports the results reported by Lorraine et al. (2004) in regard to the lagged effect of environmental performance reporting.

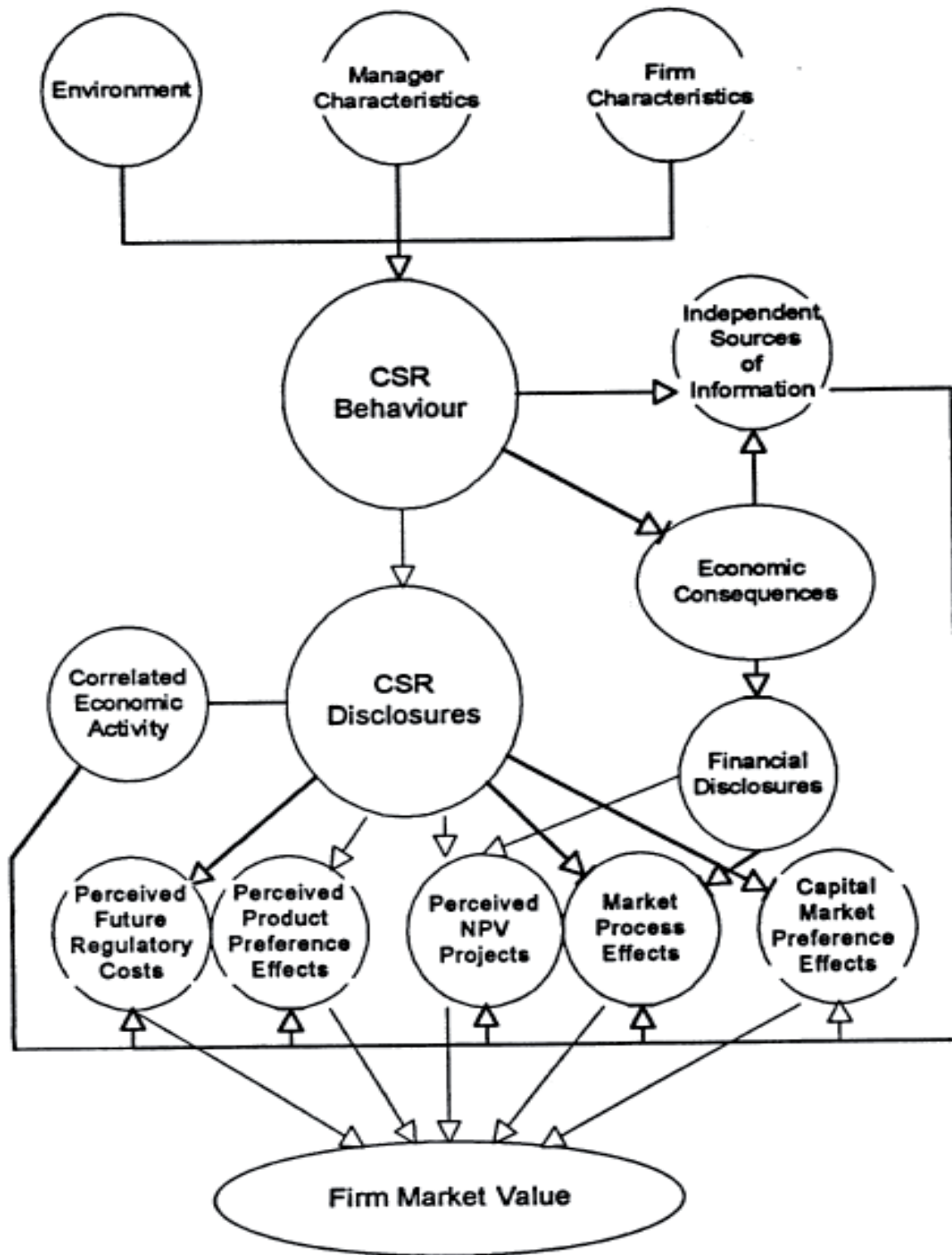
A negative trend in abnormal returns over the event window for Australian companies is statistically significant and also supports the tentative findings reported Jones et al. (2007). For Australia, this study also found that companies in the resources sector, such as mining and the steel & metals industries, have higher rates of sustainability reporting than other sectors. The result for the Equation 5 cross-sectional analysis indicate that dirty industry membership is related to significantly negative abnormal returns suggesting that market participants are sceptical about the information contained in the reports of companies operating in dirty industries. Alternatively, it may be that the sustainability reports of those companies operating in high environmental impact industries are not able to convince investors that the company is sufficiently managing its environmental risks.

The results for New Zealand companies show a general positive trend in abnormal returns over the event window. However, these results are not statistically significant. These results are in line with those reported in the UK by Murray, et al. (2006) in that companies with high levels of sustainability reporting also tended to have high market returns as well. All companies included in this study for New Zealand have high levels of sustainability reporting, hence the result reported by Murray et al. indicate that one could expect higher accompanying share market returns as well. While this result is also noted by Cohen et al. (1997), there is no clear explanation as to why this may be, especially in light of contrasting results between this study and Jones et al. (2007) regarding the negative cumulative abnormal returns of Australian companies. One plausible explanation is that contextual factors may have impacted the relationship between sustainability reporting and market returns. The results for Australian companies are in line with the literature (see Jones et al., adding corroborative evidence to the Australian context. However, there are no previous results to directly compare the findings for New Zealand. However, the similarity in the results reported by Murray et al. (2006) suggests that New Zealand may have contextual factors similar to the UK as well.

There are a number of contextual factors that different between New Zealand and Australia. One contextual factor is the difference in reporting type, that is, 65% of New Zealand reports were of annual report type whilst 43% of Australian reports were of the sustainability report type. Another contextual factor is the difference in industry type. For example, the mining industry comprised 25% of Australian reporting companies, but there were no mining company reports in New Zealand. In addition, evidence shows that companies operating in dirty industries suffered negative abnormal returns, and Australia had more companies in such industries than New Zealand. Different sample size used and differences in perception towards sustainability reporting between the countries may also be the contributory factors as well. Australia has a higher rate of sustainability reporting compared to New Zealand and a longer history in Australia means that investors have had more opportunity to develop methods to assess the information content of sustainability reports, while in New Zealand this practice remains relatively new among listed companies and is not widespread. Hence this provides support to the view that there are differences in the manner in which sustainability reports are perceived and interpreted in different countries.

The literature review identified a model by Feldman, et al. (1996) that links environmental management and performance with company value through a reduction in a companies' exposure to systematic environmental risk (see Figure 2). According to the Feldman et al. model, a decrease in share price of Australian companies is due to an increase in the cost of capital caused by an increase in the systematic environmental risk of the company. If this is the case, then Australian companies issuing sustainability

Figure 3 A Model of the Capital Market Impacts of Corporate Social Responsibility



Source: Richardson, Welker & Hutchinson, 1999, p. 19

reports may be signalling to the market that they are unable to manage their environmental risks.

The differences in cumulative abnormal returns for New Zealand and Australian companies indicate that there are differences in the expectations of the market participants for the information contained within the sustainability reports in these countries (see Figure 4). For New Zealand, the pre-event rise in cumulative abnormal returns suggest that the market is anticipating that the reports will confirm that the firms have had strong sustainability performance and that this is good for the earning prospects of the company. The post event period seems to suggest that the expectations were confirmed as the cumulative abnormal return plot levels with no further notable rises or falls. The Australian cumulative abnormal return plot also shows an increase in abnormal returns several days prior to the release of the report. However the sharp, and statistically significant, drop in the abnormal returns following event day 0 suggests that market expectations regarding the information in the sustainability reports are not confirmed, and in fact the companies may have performed worse than expected in terms of sustainability management.

The statistically significant result for the CSR report type for New Zealand companies is difficult to interpret given that the event day's overall abnormal return was not statistically significant. However, this may have been due to clustering of returns and a small sample size.

The mixed findings from the Australian cross-sectional dummy regression (see Table 10) suggest that prior to the release of the sustainability report it was perceived that all the report types could contain information relevant to pricing the security. However, on event day 0, only the environmental report type was actually deemed relevant for pricing the security. Still, day -1 and day 0 did not have overall significant abnormal returns, while day 1 had a significantly negative abnormal return. On day 1, the annual report type had a significantly negative coefficient, and the sustainability type had a significantly positive coefficient. This suggests that the annual and sustainable report types are the form of disclosure that the market ultimately based the security pricing decision on. The difference in the signs of the coefficients suggests that the annual report type of sustainability disclosure tends to convey information implying that the company has increased risk, while the sustainable report type leads the market to believe that prospects for the company are better than previously expected, or that the company has decreased in risk.

VI Conclusion

The results of this study provide support to the view that there is a statistically significant relationship between sustainability reporting and market returns for Australian companies but not for New Zealand companies. However, there is evidence of a systematic positive relationship between sustainability reporting and market returns over the event window in New Zealand.

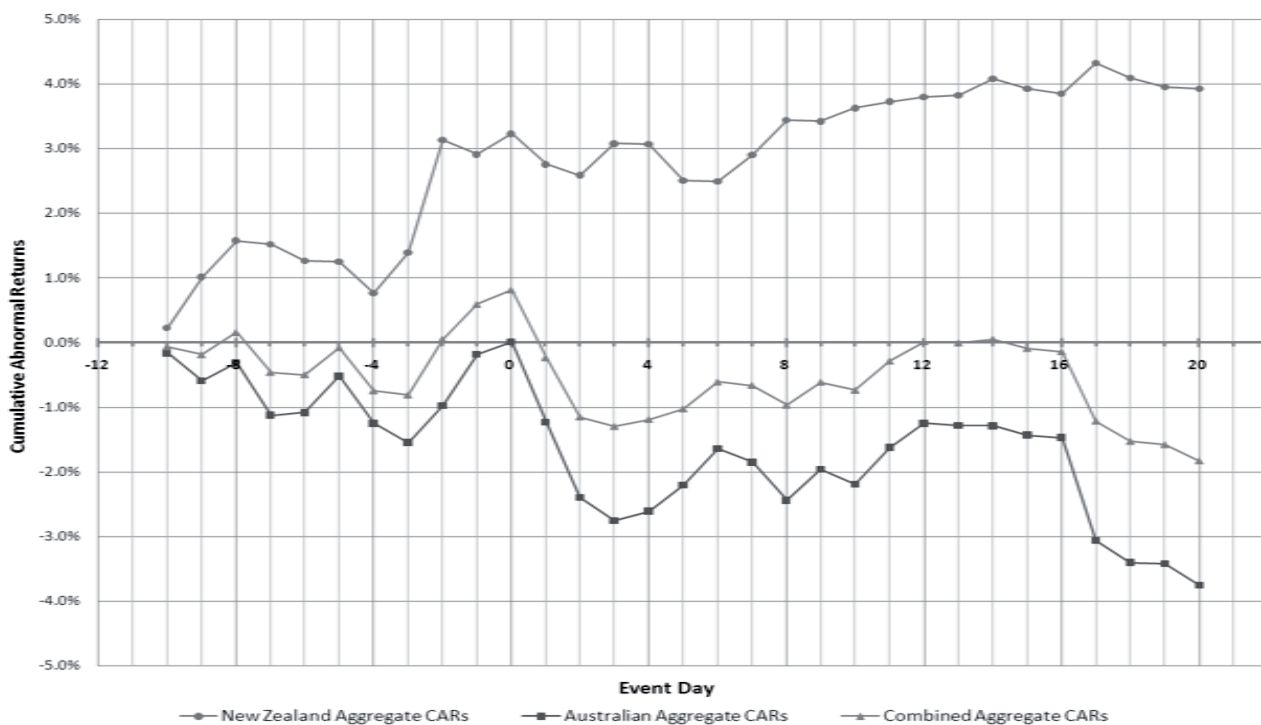
This study adds support to the view that context influences the relationship between sustainability reporting and market returns. In this regard, this study identified several contextual factors, such as industry and type of sustainability report, that have the potential to impact the relationship. Only the CSR type of sustainability report was significant in explaining the abnormal return of New Zealand companies.

The findings indicate that the annual and sustainable report types were only significant on day 1 for Australian Companies. The fact that day 1 results are statistically significant for these two report types indicate that these two types of sustainability reports have the most impact on market returns. However,

these findings are inconsistent in terms of significance levels and signs for the sustainability reports across event days. Therefore, caution need to be exercised when interpreting the results of this study because of the limitations regarding the number and as well as the nature of companies' reports that were available.

Further studies need to be undertaken that focus on the contextual factors and their effect on the relationship between sustainability reporting and market performance. As pointed out by Jones et al. (2007) "... there is a need for corroborating evidence from other international jurisdictions". Hence more studies which investigate the relationship between sustainability reporting and market returns are needed using wider datasets, and ideally these studies will recognise the global nature of sustainability issues and will seek to establish a solid foundation for researching the market impact of sustainability reporting in the future. A global study that applies the same measurement and analytical framework will further add and build upon the impact of sustainability reporting on market.

Figure 4: Aggregate Cumulative Abnormal Return Plot over the 31 Day Event Window for New Zealand and Australian Companies



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