

“Sustainability and Balanced Scorecard Reporting: What determines public disclosure decision?”

Abstract

The purpose of this study is to investigate whether companies providing sustainability report (SR) also publicly report their balanced scorecard (BSC) implementation/adoption and to examine if there is any correlation between BSC disclosure, market perception, size and industry. To facilitate an exploratory analysis, we focus on the top 100 publicly listed firms in Australia. Two seemingly competing predictions from voluntary disclosure theory and socio-political theories adopted in sustainability/environmental reporting literature are considered and used as complementary theories in this study. The results show that BSC disclosure increased from 2007 to 2008 despite the onset of the global financial crisis. Although all BSC disclosers also provide SRs, only around half of the SR disclosers also disclose their BSC publicly in both years. Logistic regressions for 2007 and 2008 are conducted to ascertain if the financial crisis has affected BSC public disclosure decisions and its association with the variables of interest. The analyses show, for both 2008 and 2007, that size and industry prominence are positively and significantly related to BSC disclosure supporting predictions from socio-political theories. Suggestions that the BSC disclosers outperform the non-disclosers in terms of shareholder returns holds true in 2007 but not in 2008 suggesting that the financial crisis may have introduced more volatility to overall market performance.

Keywords: *Balanced scorecard (BSC), strategic performance measurement system (SPMS), sustainability reporting, top 100 Australian listed companies*

Introduction

Since Johnson and Kaplan’s (1987) well-debated critique about the ‘rise and fall of management accounting’, several contemporary management accounting concepts including multi-perspective strategic performance measure system (SPMS) have been proposed. By early 1990s, Kaplan and Norton (1992) have already introduced the most common SPMS variant now widely known as the Balanced Scorecard (BSC). Their BSC model promotes the translation of organisational mission and strategies into objectives. Performance measures and targets are developed from the objectives set in each of the four perspectives: (1) financial; (2) customer; (3) internal business processes; and (4) learning and growth.

Before the turn of the millennium, Bain and Company (1999, cited in Langfield-Smith, et al, 2009) reported that 55% and 45% of those surveyed in the US and in Europe, respectively, used some form of BSC. In Australia, Renaissance Worldwide (2000, cited in Langfield-Smith, et al, 2009) found that more than 30% of firms in the top 500 used varying forms of multi-perspective scorecard. It is important to note that not all multi-perspective SPMS are exact implementations of the Kaplan and Norton BSC model since others omit, change or add other perspectives such as social and environmental matters (Malina & Selto, 2001; Ittner, Larcker &

Randall, 2003; Zingales & Hockerts, 2003). This research is not restricted to the strict definition of BSC but covers the varying forms of multi-perspective scorecard¹.

In the same vein, the environmental/sustainability reporting literature has become exhaustive over the past few decades (Gray, Kouhy & Lavers, 1995a; Deegan, Rankin & Tobin, 2002; KPMG, 2008). Although the literature suggests that increased reporting does not always translate to improved performance², more recent studies provide evidence of positive association between environmental disclosure and performance (see Al-Tuwaijri, Christensen & Hughes, 2004; Clarkson, Li, Richardson & Vasvari, 2008). There is also evidence that environmental performance information is valuable to investors (see for example, Blacconiere and Patten, 1994; Cormier & Magnan, 1997; Clarkson, Li & Richardson, 2004).

Given this, it seems reasonable to suggest that ‘superior performers’ are more willing to publicly disclose their ‘type’ than the ‘inferior performers’ who are likely to disclose less and remain silent. This is, in fact, what voluntary disclosure theory (Verrecchia, 1983; Dye, 1985) predicts. Although this theory has an intuitive appeal, socio political theories - such as political economy, legitimacy and stakeholder theory – offer additional insights. According to these overlapping theories, social disclosure is a function of the political and social pressures faced by the firm. To the extent that large and prominent companies face more scrutiny, these firms are more likely to provide more disclosure. The predictions from these two sets of theories apply to non-mandatory disclosures which is the focus in this study.

Thus, the motivation for this research emerged from these two strands of literature: the environmental/sustainability reporting research and the value relevance of strategic performance measurement system (SPMS). In the same manner that sustainability reports (SRs) increase over time and while the use of SPMS gains popularity, it is reasonable to expect that firms adopting some form of multi-perspective scorecard would become increasingly willing to disclose this information in their publicly available reports. Likewise, it is highly likely that companies that are large and those belonging to prominent industries are more willing to publicly disclose their SPMS adoption to avoid public scrutiny.

The aim of this study is to explore the determinants of SPMS public disclosure decision. Firstly, this research will investigate whether companies providing sustainability report (SR) also publicly report their SPMS adoption. Secondly, it will examine if there is any correlation between corporate public disclosure of SPMS adoption, market perception, size and industry. This is valuable for both the report users as well as providers. While the users want transparency, the report providers would be interested to know if disclosures add value to their firm.

To facilitate an exploratory analysis, we focus on the top 100 publicly listed firms in Australia according to Standard and Poor’s/Australian Stock Exchange (S&P/ASX) index. Disclosures of SPMS and SR are found through content analysis of company websites and publicly available reports. Data are collected for 2007 and 2008, i.e. before and during the global financial crisis in an effort to understand its possible effect.

¹ As such, SPMS and BSC are interchangeably used to refer to different forms of multi-perspective performance measurement system.

² Early studies provide mixed results with some suggesting weak or even negative relationship between environmental performance and disclosures (e.g. Wiseman, 1982; Fekrat, Inclad & Petroni, 1996; Freedman & Jaggi, 1996; Hughes, Anderson & Golden, 2001).

The results show that whilst all SPMS/BSC disclosers also provide SRs, only around half of the SR disclosers also disclose their SPMS publicly (49 out of 83 in 2008 and 42 out of 74 in 2007). In terms of correlation with the variables of interest, both the 2008 and 2007 logistic regression analyses show that size and industry are positively and significantly related to SPMS disclosure supporting predictions from socio-political theories. Suggestions that the BSC disclosers outperform the non-disclosers in terms of shareholder returns holds true in 2007 but not in 2008 suggesting that the financial crisis may have introduced more volatility to overall market performance.

The rest of the paper will proceed as follows. The next section outlines a short review of the relevant literature leading to hypotheses development. Research methods are provided next followed by the discussion of results. Finally, the concluding comments are offered together with the limitations and suggestions for further research.

Literature review and hypotheses development

Literature Review

There is a wealth of literature (see for example, Kaplan & Norton, 1996; Chenhall, 2005; Ittner, Larcker & Randall, 2003; Assiri, Zairi & Eid, 2006) identifying various advantages of adopting SPMS/BSC including, but not limited to, greater measurement diversity, strategic alignment and increased operational efficiencies. Numerous authors (Brancato, 1995; Fisher 1995a) report that firms find financial measures to be lacking in predictive ability to explain future performance as well as providing little information on the causes and solutions to problems. The adoption of SPMS allows firms to supplement financial metrics with a diverse mix of non-financial performance measures that can be used as leading indicators of financial performance (Ittner & Larcker, 1997; Behn & Riley, 1999; Banker, Potter & Srinivasan, 2000; Nagar & Rajan, 2001) thereby enabling better monitoring of strategic progress and success.

Whilst some studies show the positive impact of BSC implementation on financial and operating performance (Davis & Albright, 2004; DeBusk & Crabtree, 2006), others consider the linkages and effectiveness of BSC implementation to strategy and value drivers (Hoque & James, 2000; Iselin, Mia & Sands, 2008; Yu, Perera & Crowe, 2008). In their survey of 66 Australian manufacturing companies, Hoque and James (2000) provide evidence that greater BSC usage is associated with improved performance and larger firms make more use of BSC. In another Australian study, Iselin, et al (2008) interview fifty CEOs from the manufacturing corporations with sales revenue greater than \$100 million. They report that the strength of the alignment of strategic goals and the performance reporting system is positively associated with performance. Similarly, Yu, et al's (2008) survey of Australian manufacturing firm managers reveals that those who perceive that their BSC measures are linked to strategy and are causally affecting each other also perceive a higher level of BSC effectiveness.

Prior studies have also examined the effect of BSC adoption on shareholder returns (Ittner, et al, 2003; Crabtree & DeBusk, 2008) although the focus on these studies is on adoption and not on external disclosure. Turning to their findings, it appears that the results are mixed. Using a sample from the US financial services firms, Ittner, et al (2003) examine BSC usage as a dichotomous variable ('yes' for BSC users and 'no' for non-users). They find no evidence that BSC usage is associated with stock market returns although they acknowledge the existence of a time lag between BSC adoption and improved performance. In contrast, Crabtree and DeBusk (2008) investigate BSC adopters in the three-year period following adoption. Using data from an

online survey of the Institute of Management Accountants members and a matched pair design in conjunction with event study methodology, BSC-adopters are matched with non-adopters based on various criteria including industry. They report that BSC-adopters significantly outperformed their industry counterparts who did not adopt BSC.

Contingency and economic theories have formed the foundation for many of these studies. On the one hand, contingency theory promotes that management control systems must be aligned with organisational mission and strategy (for more, see Fisher, 1995b). On the other hand, economic theories advocate that the design of the firm's communication and reward systems should be a function of its strategy (see Milgrom & Roberts, 1992). These theories have been extended to argue that an important factor to manage links between strategy and performance is the identification and measurement of the drivers that lead to firm value (Ittner & Larcker, 2001). Promoting this argument, Ittner, Larcker and Randall (2003, p. 719) explains:

“By linking strategies to their underlying value drivers, and tying information systems, goals and objectives, resource allocation, and performance evaluation to these drivers, SPM systems are expected to improve communication of the *specific* actions required to achieve the chosen strategy, motivate performance against strategic value driver goals, and provide more rapid feedback on whether strategy is achieving its objectives”(italics, original).

In line with the goal of improving communication, Ittner, et al (2003) and others (e.g. Gates, 1999; Eccles, Herz, Keegan & Phillips, 2001) advocate that the value driver analysis, in particular, and the SPMS literature, in general, should not only influence the design and use of measurement systems but should also affect external disclosure requirements. It is this area of BSC research that has been left unattended and is the focus of this exploratory study. As the use of BSC gains credence not only as a performance measurement system but also as a means for improved communication, it is important to explore the effect of publicly disclosing the firms BSC implementation on the share market's perception.

Although seemingly unrelated, the sustainability (social and environmental) reporting literature can offer useful insights. As recently as forty or fifty years ago, it was a struggle to arouse general public interest concerning the declining state of the environment even in developed countries. These days, such concepts as becoming 'carbon neutral,' 'green consumerism' and 'eco-efficiency' appear to have a common place in the developed world. In fact, as the use of multi-perspective SPMS gains popularity and as climate change becomes a significant public policy issue, a growing body of research emerge on the viability of embedding sustainability into corporate strategy and using the BSC as a vehicle to align corporate values with financial performance (see for example, Epstein & Roy, 2001; Figge, Hahn, Schaltegger & Wagner, 2002; Crawford & Scaletta, 2006). The literature suggests that a Sustainability Balanced Scorecard (SBSC) can be developed in a number of ways such as: (1) by incorporating sustainability measures within the original four BSC perspectives as introduced by Kaplan and Norton (1996); (2) by adding a fifth 'sustainability' or 'social & environmental' perspective to the BSC; or (3) developing a separate sustainability scorecard. Novo Nordisk, a Danish pharmaceutical manufacturer is an example of a company that builds sustainability measures into its BSC (see Zingales and Hockerts, 2003).

Clarkson, Li, Richardson and Vasvari (2008) classify the environmental accounting research into three groups: (1) strategic factors affecting firm's decisions to disclose environmental information; (2) the relationship between environmental performance and disclosure; and (3) the value relevance of environmental performance information. Indeed, it is

interesting to note the similarities between these research categories and those of prior research in the SPMS adoption literature despite the fact that BSC disclosure has not been examined yet.

Given that more reporting measures and guidelines are now available for firms providing sustainability reports (SRs), it is conceivable that companies providing these reports are the ones more willing to provide SPMS/BSC disclosure as they are more likely to have this information readily available. Furthermore, in the same manner that SRs of all kinds continue to increase over time (e.g. Gray, Kouhy & Lavers, 1995a; Deegan, Rankin & Tobin, 2002; KPMG, 2008), it is reasonable to expect that BSC public disclosure will also increase.

Hypotheses Development

Two possibly competing theories used in the sustainability reporting literature are considered useful in this study. In the voluntary reporting literature, Verrecchia (1983) and Dye (1985), propose that firms with 'good news' have greater incentives to disclose their 'superior type' to distinguish themselves from the inferior performing firms. The notion is that inferior performers will have difficulty mimicking the disclosure activity of superior performers because of proprietary costs associated with disclosure. As a result, this theory suggests that good performers are likely to disclose more. The voluntary disclosure theory is later applied to environmental reporting studies (see Li, et al, 1997; Bewley & Li, 2000; Clarkson, et al, 2008) predicting positive relationship between the level of voluntary environmental disclosures and firms with superior environmental performance (due to proactive environmental strategies). As noted earlier, more recent environmental reporting research provide evidence of positive association between environmental disclosure and performance (see Al-Tuwaijri, Christensen & Hughes, 2004; Clarkson, et al, 2008) suggesting support for the voluntary disclosure theory.

An alternative prediction is offered by the overlapping socio-political theories including political economy, legitimacy and stakeholder theory (see Lindblom, 1994; Gray, Kouhy & Lavers, 1995b; O'Donovan, 2002; Patten, 2002; Eljido-Ten, 2008; 2009). Collectively, these theories advocate that as firms face more societal and political pressures; and as their legitimacy is threatened by increased public scrutiny due to poor environmental performance, their incentive to provide more environmental disclosures is also heightened. Hence, in the environmental reporting literature, the socio-political theories appear to suggest negative association between disclosure and performance (Patten, 2002; Clarkson, et al, 2008).

Both sets of theories are useful in this study; however, their predictions are taken to be complementary rather than competing. In line with voluntary disclosure theory, it appeals to intuition that firms that collect sustainability data for reporting purposes and those that adopt BSC have more incentive to publicly disclose their BSC implementation to signal their 'superior type'. In doing so, there is higher potential for disclosers to outperform the firms that do not provide disclosure. Hence, the following hypotheses are introduced:

H1: Companies providing sustainability report (SR) are more willing to provide BSC disclosure in publicly available reports as implied in the voluntary disclosure theories.

H2: BSC disclosers are more likely to outperform the non-disclosers in terms of both shareholder returns and share price since they convey their 'superior type' as implied in the voluntary disclosure theories.

Similarly, in line with the socio-political theories, BSC disclosure is a function of the political and social pressures faced by the firm. To the extent that companies that are large and those that belong to prominent industries face more societal scrutiny, these firms are more likely to provide more disclosure. Thus, the following hypotheses are developed:

H3: BSC disclosers are more likely to be large firms as they face more societal pressures as implied in socio-political theories.

H4: Firms belonging to prominent industries are more likely to provide BSC disclosure as they face more societal pressures as implied in socio-political theories.

Research Design

Data Collection

Prior research examining the relationship between BSC and other variables such as size and market factors (Hoque & James, 2000; Ittner, et al, 2003; Iselin, et al, 2008), focus mainly on BSC adoption and not on external disclosure. These studies use data from company interviews/surveys thereby limiting the coverage of their findings to those firms willing to participate in the study.

In contrast, this research is an archival-empirical study, using publicly available data from corporate reports including company websites. Being exploratory, we start by doing a word search from DatAnalysis to find listed companies that are using SPMS. Using terms such as “balanced scorecard,” “strategic performance system,” “performance measurement model” and other variations, we compile 43 companies, all of which are in the top 100. From this, it is decided to focus on the top 100 publicly listed firms in Australia according to Standard and Poor/Australian Stock Exchange (S&P/ASX) index. This decision is further justified since many of these firms are providing SR. Likewise, by virtue of their market position in the top 100, they are more likely to be under closer public scrutiny.

To enable a comparison before and during the global financial crisis, data on firm disclosures are collected for two years - 2007 and 2008 - by going through the company website and doing a search on company reports such as the annual reports (including concise or interim reports), shareholder review report, sustainability/environmental reports, social impact/stakeholder report and other website documents. Industry and financial data such as market capitalisation, total revenue, earnings per share and share prices are gathered from FinAnalysis and MintGlobal databases. Four of the companies in the top 100 S&P/ASX index as at September 2009 have missing figures for the periods being analysed, hence excluded from the sample.

SPMS Disclosure Models

The empirical tests in this study use measures of SPMS and SR disclosure, market performance, market perception, firm size and industry classification. Equation 1 is used to test H1 while Equation 2 is used to test H2 to H4. Bivariate correlation and logistic regression are used in the following equations:

$$\text{SPMS}_i(\text{year}) = \beta_0 + \beta_1 \text{SR}_i(\text{year}) + e \quad (1)$$

$$\text{SPMS}_i(\text{year}) = \beta_0 + \beta_1 \text{EPSG}_i(\text{year-1}) + \beta_2 \text{YESPG}_i(\text{year}) + \beta_3 \text{LGREV}_i(\text{year}) + \beta_4 \text{IND}_i + e \quad (2)$$

Where:

SPMS_i(year) = 1 for firms publicly disclosing some form of strategic performance measurement system; 0 otherwise, for firm *i* in 2007 and 2008;

SR_i(year) = 1 for firms publicly disclosing their sustainability/environmental report; 0 otherwise, for firm *i* in 2007 and 2008;

β₀ = Intercept

EPSG_i(year-1) = Growth in earnings per share for firm *i* in 2006 and 2007;

YESPG_i(year)	=	Growth in year end share price for firm <i>i</i> in 2007 and 2008;
LGREV_i(year)	=	Natural log for total revenue for firm <i>i</i> in 2007 and 2008;
IND_i	=	1 for firms belonging to prominent industries (energy, transportation, materials,); 0 otherwise, for firm <i>i</i> ;
<i>e</i>	=	error term

Variable Measurement

SPMS and SR Disclosure. The initial part of the analysis is to determine which companies provide sustainability/environmental report (SR) and SPMS disclosures in their company website and/or publicly available corporate reports. Hence, both the SR and SPMS disclosure are dichotomous variables given a value of 1 for discloser, 0 otherwise. Any form of SR disclosure is considered valid (i.e. given a 1) regardless of whether it is on the website, in the annual report or in a separate stand-alone report and no distinction is given for positive or negative news. To be valid, however, the SR disclosure should be more than a generic³ environmental/sustainability statement.

Since the main focus here is SPMS public reporting, the following criteria must be satisfied before a firm is given a score of 1 (i.e. SPMS-discloser): (1) must show a range of ‘perspectives’ in addition to financial, including but not limited to, customer/market, business process, staff, health, environment, community and sustainability; (2) must have a strategy statement for each perspective; (3) must include objectives, goals or targets or a forward-looking statement of what is expected; and (4) must show a performance section, which could include initiatives and/or actual measurements, which is essentially a backward-looking statement.

Market Performance. Prior studies use various forms of proxy for financial performance, such return on assets (e.g. Roberts, 1992) and shareholder returns (e.g. Ittner, et al, 2003; Crabtree & Debusk, 2008) recognising a time lag. In this exploratory study, the focus is on the market performance of firms providing SPMS disclosure to ascertain whether disclosers outperform those that do not. Hence, to be consistent with prior research, the lagged values of earnings per share growth (EPSG) are used. Furthermore, if the assertion in mainstream finance holds, i.e. that financial markets are ‘*informationally efficient*’,⁴ then it follows that the share price of firms should reflect its ‘superior/inferior type’. Therefore, another proxy chosen for market performance in this research is the year-end share price growth (YESPG).

Firm Size. The size of the firm can also be measured in a number of ways such as total assets, number of employees, sales and market capitalisation. In this study, the natural log of revenue is used consistent with prior accounting research (Roberts, 1992; Hoque & James, 2000; Eljido-Ten, 2009).

Industry Prominence. The notion advanced in previous studies is that industry classification captures certain systematic relation between consumer visibility and other associated risks such as social/environmental responsibility risk that could lead to regulatory intervention. In this study, industry prominence is also a dichotomous variable: a score of 1 is

³Some examples of generic statements not considered as sufficient for SR includes a company stating that: (1) they do eTree printing of annual reports; (2) they comply with safety/health/environmental regulation without providing more details; and (3) they are listed on some sustainability index without giving sufficient information.

⁴ The *efficient market hypothesis* suggests that financial markets already reflect all available information and as such share prices instantly change to reflect any new information (Fama, 1965).

awarded to firms in prominent industries; 0 otherwise. As in previous research, the prominent industries are those in the energy, utilities, transportation, materials and telecommunication industries (Wiseman, 1986, Roberts, 1992; Elijido-Ten, 2009).

Results and Discussion

Descriptive Statistics

Descriptive statistics are shown in Table 1. Panel A shows the continuous variables whilst Panel B has the dichotomous variables. Since lagged values are used for earnings per share growth (EPSG), the 2006 and 2007 EPSG are shown in Table 2. EPSG in 2007 has a maximum (minimum) of 324.10 (-132.90) and a mean (standard deviation) of 18.8 (62.6) while EPSG in 2006 has lower maximum (minimum) 182.70 (-213.00) and a mean (standard deviation) of 12.4 (47.9). This indicates higher shareholder return volatility in 2007 compared to 2006. The year-end share prices for 2007 and 2008 show similar trend with 2008 showing higher volatility as reflected in its range of 111.14 (compared to 64.32 in 2007) and a negative mean of -6.1179 (compare to 4.6749 in 2007). Despite the fact that Australia has not been as badly hit by the global financial crisis compared to other countries such as the US and many European countries, the descriptive statistics for the top 100 Australian companies show that the Australian share market has not been immune to the crisis. The natural log of 2007 (2008) revenues have a minimum of 6.45 (5.6), maximum of 10.73 (9.33) with mean of 9.33 (9.43) and standard deviation of .777 (.751).

Panel B of Table 1 clearly shows an increase in both SPMS and SR disclosure. In 2007, less than half (43.75%) of the sample firms provide SPMS disclosure. This has grown to 51% in 2008. Although SRs are more common, the same trend is shown with SR disclosers increasing from 76% in 2007 to 86% in 2008. The descriptive statistics also show that only about 40% of the firms included in the sample belong to high-profile industries such as utilities, energy, transportation and materials (which includes the mining industry).

INSERT TABLE 1 ABOUT HERE

SPMS and SR Bivariate Correlations

Table 2 contains the correlation matrix. In Panel A, the Pearson product moment correlation (see the bottom left side of Table 2) indicates that the 2007 and 2008 SPMS disclosures have a high correlation coefficient of 0.78 at a significance level of $p < 0.0001$ indicating close association as expected. More importantly, bivariate correlations between SPMS and SR for both years are positively and significantly related at $p < 0.0001$ supporting H1. Indeed, the results show that whilst all SPMS/BSC disclosers also provide SRs, only about half (57% or 42 out of 74) of the SR disclosers also provide SPMS disclosure publicly in 2007. About the same proportion holds true for 2008, albeit slightly more at 59% (49 out of 83).

There is no indication that an unacceptable level of multicollinearity is present because none of the correlation coefficient between predictor variables is higher than 0.80⁵. As an added check, non-parametric Spearman's rho correlation is shown in the top right side of Table 2.

⁵ A number of statistics experts (see, for example, Hair *et al* 1998; Tabachnik & Fidell 2001) agree that a harmful level of multicollinearity is not present until the correlation coefficient reaches around 0.80 or 0.90.

Overall, the significance levels shown in non-parametric measure appear to coincide with the parametric measure.

The matrix also shows the bivariate correlations for the dependent variables SPMS07 and SPMS08 and the independent variables. The results show that the size, industry prominence and sustainability reporting are significant and positively associated with both SPMS07 and SPMS08 at $p < .01$. Both measures of market performance, EPS growth and YESP growth are also positively related to SPMS at 5% significance level but only for 2007.

INSERT TABLE 2 ABOUT HERE

Logistic Regression Results

H2, H3 and H4 are tested using logistic regressions for the two periods 2007 and 2008. In 2007, the period before the global financial crisis, the empirical model is significant at the 0.0001 level with a Chi-square score statistic of 37.902 and 4 degrees of freedom. The Cox & Snell R^2 and Nagelkerke R^2 are .326 and .437, respectively, indicating that the model explains between 33% and 44% of the variability in the dependent variable. Although the Cox & Snell R^2 and Nagelkerke R^2 are both lower at .209 and .278 respectively during the financial crisis period (2008), the model remains significant at 0.0001 level (Chi-square statistic of 22.48). In addition, the Hosmer-Lemeshow goodness-of-fit tests for both years are greater than 0.05 implying the model's estimates fit the data at an acceptable level.

The model estimation is presented in Table 3. For both 2007 and 2008, the analyses show that LGREV and IND both have positive sign and significant at 0.01 level supporting H3 and H4. The odds ratio (Exp(B)) for LGREV suggests that in 2007 (2008), the odds of a firm providing SPMS disclosure publicly is 3.91 (3.34) times higher for companies that are large. For IND, the odds ratio is 9.95 times in 2007 but nearly halved in 2008. Hence, the prediction from socio-political theories that larger firms and those that belong to prominent industries are more likely to provide SPMS disclosure in publicly available reports are supported in the analysis for both periods.

INSERT TABLE 3 ABOUT HERE

Turning to the variables used as proxy for market performance, the analyses show quite different results before and during the financial crisis periods. EPSG is positive and significant at 5% level in 2007 but not in 2008. In contrast, YESPG is not significant in both periods and its B value has changed from positive in 2007 to negative in 2008. This could be taken as an indication that SPMS-disclosing firms have not been immune to the effects of the global financial crisis. It is also possible that year-end share price growth may not be the best proxy to capture share market perceptions since it is highly aggregated. Overall however, the result suggests that in terms of shareholder returns, SPMS disclosers outperform the non-disclosers in 2007 but not in 2008. Hence H2 is supported for the period before the global financial crisis.

Summary and Concluding Comments

This study sets out to investigate whether companies in the top 100 publicly listed firms in Australia providing sustainability report (SR) also publicly report their SPMS adoption for 2007 and 2008. The results show that SPMS disclosure increased from 2007 to 2008 despite the

financial crisis. Although all SPMS disclosers also provide SRs, only around half of the SR disclosers also disclose their SPMS publicly in both years.

Two seemingly competing predictions from voluntary disclosure theory and socio-political theories adopted in sustainability/environmental reporting literature are considered and used as complementary theories in this study. Both theories are used in formulating hypotheses to examine if there is any correlation between SPMS public disclosure, market performance, size and industry. Logistic regressions for 2007 and 2008 are conducted to ascertain if the global financial crisis have affected SPMS public disclosure decisions and its association with the variables of interest. The analyses show, for both 2008 and 2007, that size and industry prominence are positively and significantly related to SPMS disclosure supporting predictions from socio-political theories. Suggestions that the market perception for SPMS disclosers is better than non-disclosers holds true in 2007 but not in 2008 suggesting that the financial crisis may have introduced more volatility to market perception.

The results from this exploratory research are of interest given the insights it provide. The positive and significant growth in shareholder returns for 2007 implies that, absent financial crisis (particularly one of a global nature), SPMS disclosers outperform the non-disclosers. Whilst this could be the outcome arising from efficiencies created by SPMS implementation, there is a real opportunity for SPMS-adopters to differentiate their 'superior type' from other firms as implied in the voluntary disclosure theory.

Likewise, the finding that all SPMS disclosers are also firms providing SRs could be taken to suggest that SPMS public disclosure will continue to increase just as SRs continue to increase over time. From the two years (2007 to 2008) examined in this study, there is already evidence that this is happening. This is potentially advantageous for both the report users as well as the preparers. From the users' point of view, information asymmetry could decrease as more companies show willingness to report on their performance measurement system thereby potentially achieving more transparency. For the preparers, the pressure to disclose SPMS could force them to re-examine and improve their financial as well as non-financial strategy, objectives and performance measures making the favourite quote, "*what gets measured gets done*," self fulfilling.

Moreover, given the insights from the socio-political theories that large and highly visible firms would provide more disclosures (which is supported by the findings in this research) it is also important that the report users be more discerning in interpreting these voluntary disclosures.

The findings from this study, however, are subject to a number of limitations. Although considerable efforts have been made to choose appropriate proxies after consulting the relevant literature, data constraints may limit the construct validity of some variables. Likewise, it is important to acknowledge the inherent limitations of positivistic empirical research to capture the complexity of numerous dimensions influencing disclosure decisions. It is also necessary to re-iterate that the focus in this study is on BSC public disclosure – not the actual BSC adoption. Furthermore, due to the fact that the empirical tests are performed on the top 100 publicly listed companies in Australia, its generalisability could be limited. Despite these constraints, the insights gathered from this exploratory research can be used as a springboard for more in-depth studies particularly since BSC disclosure continue to proliferate.

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Table 1: Descriptive Statistics

Panel A: Continuous Variables						
Variable	Variable Description	Range	Minimum	Maximum	Mean	Standard Deviation
EPSPG06	Earnings Per Share Growth for 2006	395.70	-213.00	182.70	12.4063	47.94825
EPSPG07	Earnings Per Share Growth from 2007	457.00	-132.90	324.10	18.8375	62.59807
YESPG07	Year End Share Price Growth for 2007	64.32	-4.65	59.67	4.6749	10.06532
YESPG08	Year End Share Price Growth for 2008	111.14	-95.95	15.19	-6.1179	14.88841
LGREV07	Natural log of total revenue for 2007	4.2804	6.4472	10.7276	9.330607	.7770596
LGREV08	Natural log of total revenue for 2008	5.31	5.60	10.92	9.4314	.75104
Panel B: Dichotomous Variables						
Variable	Variable Description	Number of Firms with 1	(%)	Number of Firms with 0	(%)	
SPMS07	1 for firms disclosing some form of Strategic Performance Measurement System (SPMS) in public reports for 2007; 0 otherwise	42	43.75%	54	56.25%	
SPMS08	1 for firms disclosing some form of Strategic Performance Measurement System (SPMS) in public reports for 2008; 0 otherwise	49	51.04%	47	48.96%	
SR07	1 for firms disclosing Sustainability Report (SR) in 2007; 0 otherwise	73	76.04%	23	23.96%	
SR08	1 for firms disclosing Sustainability Report (SR) in 2008; 0 otherwise	83	86.46%	13	13.54%	
IND	Industry Prominence: 1 for firms in the energy, transportation, materials and utilities industries; 0 otherwise	39	40.62%	57	59.38%	

Table 2: Correlations

Panel A: SPMS and SR Disclosure Bivariate Correlations

		SPMS08	SPMS07	SR08	SR07
SPMS08	Correlation	1	.780**	.404**	.280**
	Sig. (2-tailed)		.000	.000	.006
SPMS07	Correlation	.780**	1	.349**	.446**
	Sig. (2-tailed)	.000		.000	.000
SR08	Pearson Correlation	.404**	.349**	1	.705**
	Sig. (2-tailed)	.000	.000		.000
SR07	Pearson Correlation	.280**	.446**	.705**	1
	Sig. (2-tailed)	.006	.000	.000	
N		96	96	96	96

Panel B: 2007 Bivariate Correlations

		SPMS07	EPSPG06	YESPG07	LGREV07	INDUSTRY
SPMS07	Correlation	1	.125	.314**	.378**	.339
	Sig. (2-tailed)		.225	.002	.000	.001
EPSPG06	Correlation	.205	1	.229	.113	-.213
	Sig. (2-tailed)	.045		.025	.274	.037
YESPG07	Correlation	.212	.234	1	.246	-.047
	Sig. (2-tailed)	.038	.022		.016	.649
LGREV07	Correlation	.346**	.106	.144	1	-.049
	Sig. (2-tailed)	.001	.305	.161		.633
INDUSTRY	Correlation	.339	-.096	.106	-.139	1
	Sig. (2-tailed)	.001	.350	.306	.178	
N		96	96	96	96	96

*. Correlation is significant at the 0.05 level (2-tailed).

** . Correlation is significant at the 0.01 level (2-tailed).

Panel C: 2008 Bivariate Correlations

		SPMS08	EPSPG07	YESPG08	LGREV08	INDUSTRY
SPMS08	Correlation	1	.011	.100	.325**	.301**
	Sig. (2-tailed)		.916	.334	.001	.003
EPSPG07	Correlation	.058	1	-.063	.092	.002
	Sig. (2-tailed)	.576		.542	.371	.982
YESPG08	Correlation	-.068	-.384**	1	-.102	.312**
	Sig. (2-tailed)	.510	.000		.324	.002
LGREV08	Correlation	.316**	.007	-.147	1	.008
	Sig. (2-tailed)	.002	.948	.152		.938
INDUSTRY	Correlation	.301**	.073	.021	-.087	1
	Sig. (2-tailed)	.003	.477	.843	.401	
N		96	96	96	96	96

** . Correlation is significant at the 0.01 level (2-tailed).

Note: Spearman's rho is on the top right hand side while Pearson Correlation is on bottom left side of Table 2

Table 3: Logistic Regression Model and Results for 2007 and 2008

Panel A: Logistic Regression Model

$$SPMS_i(\text{year}) = \beta_0 + \beta_1 EPSG_i(\text{year-1}) + \beta_2 YESPG_i(\text{year}) + \beta_3 LGREV_i(\text{year}) + \beta_4 IND_i + e$$

Where:

- SPMS_i(year)** = 1 for firms publicly disclosing some form of strategic performance measurement system; 0 otherwise, for firm *i* in 2007 and 2008;
- β₀** = Intercept
- EPSG_i(year-1)** = Growth in earnings per share for firm *i* in 2006 and 2007;
- YESPG_i(year)** = Growth in year end share price for firm *i* in 2007 and 2008;
- LGREV_i(year)** = Natural log for total revenue for firm *i* in 2007 and 2008;
- IND_i** = 1 for firms belonging to prominent industries (energy, transportation, materials and utilities); 0 otherwise, for firm *i*;
- e** = error term

Panel B: 2007 Results (N=96)

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1 ^a EPSG06	.015	.007	4.598	1	.032	1.015	1.001	1.030
YESPG07	.058	.045	1.697	1	.193	1.060	.971	1.157
LGREV07	1.363	.395	11.892	1	.001	3.910	1.801	8.485
IND	2.298	.589	15.211	1	.000	9.955	3.137	31.592
Constant	-14.355	3.813	14.174	1	.000	.000		

Model Chi-square = 37.902 with 4 d.f., significant at less than 0.0001 level; Cox & Snell R² .326; Nagelkerke R² .437

Panel C: 2008 Results (N=96)

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Step 1 ^a EPSG07	.000	.004	.009	1	.926	1.000	.992	1.009
YESPG08	-.007	.024	.095	1	.758	.993	.947	1.040
LGREV08	1.206	.383	9.937	1	.002	3.340	1.578	7.068
IND	1.588	.500	10.071	1	.002	4.895	1.836	13.055
Constant	-12.000	3.656	10.772	1	.001	.000		

Model Chi-square = 22.48 with 4 d.f., significant at less than 0.0001 level; Cox & Snell R² .209; Nagelkerke R² .278