Applying Stakeholder Theory to Analyze Corporate Environmental Performance: Evidence from Australia’s Top 100 Listed Companies

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Abstract:

This study uses the stakeholder framework to analyse corporate environmental behaviour by Top 100 Australian listed companies. By adopting Ullmann’s (1985) three-dimensional framework comprising of stakeholder power, strategic posture and economic performance the empirical results provides important insights on the determinants of corporate environmental performance. The findings in this study suggest that the level of ownership dispersion (SP), the industry sensitivity characterized by the increased regulatory sanctions (GP) as well as the top management’s conviction on environmental issues (EC) (a measure of strategic posture) are the main significant factors influencing the decision to incorporate superior environmental activities in corporate strategic plans. Measures of past and current economic performance, which consist of three accounting-based measures showed no significant relation with the firms’ environmental performance. Suggestions that size and age of the firms could act as intervening variables are not supported by the results in this study.

Keywords: Stakeholder theory, environmental performance, Australian Top 100.

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1.0 INTRODUCTION

The stakeholder theory has been used quite extensively in the management literature since Freeman’s landmark book “Strategic Management: A Stakeholder Approach” was published in 1984. Freeman (1984, p. 1) proposes that “current approaches to understanding the business environment fail to take account of a wide range of groups who can affect or are affected by the corporation, its stakeholders.” He further argues that in order to manage effectively in “turbulent times” which typifies the dynamic nature of the business environment of today, the stakeholder theory offers a way to address the ever changing demands brought about by different groups having legitimate stakes of varying degrees from the firm.

Corporate social responsibility (CSR) is one area in which the stakeholder theory has been commonly applied (Ullmann, 1985; Roberts, 1992; Clarkson, 1995; Davenport, 2000) because the changing nature of the business environment created a demand for firms to acknowledge their responsibility to a broader constituency than their shareholders/owners and to help solve important social problems especially those they have helped to create. CSR commonly includes, but is not limited to, such things as the firm’s community involvement, acknowledgement of concern for employees, energy conservation, making products safer, pollution abatement and other environmentally related issues.
Ullmann (1985), in his critique of the conflicting results from prior CSR research, offers a framework used to understand the possible relationships among economic performance, social disclosures and social performance. Building on the concept of Freeman’s stakeholder theory, Ullmann develops a three dimensional framework which includes *stakeholder power, strategic posture and economic performance* to explain why companies engage in socially responsible activities.

This research adopts the stakeholder framework to analyze a subset of CSR, that is, the corporate environmental performance of Australian companies. The decision to focus on the environmental issues was made due to the fact that community awareness on environmental issues has heightened\(^1\) particularly in the last two decades. Using the Australian Conservation Foundation’s (ACF) 2002 environmental performance ranking of Australia’s Top 100 companies, the aim of this study is to test empirically, by operationalizing Ullmann’s framework, whether there are significant association between the firm’s environmental performance and the three dimensions of stakeholder power, strategic posture and economic performance. This study improves on prior research by using an independent, third-party ranking system as a measure for the level of corporate environmental performance.

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\(^1\) Dunlap and Scarce (1991) documented in their American poll findings that public concern about the environment was at an all-time high. In a similar manner, a growing interest on environmentalism in Australia is evidenced by the increase in membership of environmental lobby groups like the Australian Conservation Foundation and Greenpeace and Wilderness Society (Deegan and Gordon, 1996). Vogel (2002) also reported that socially responsible investing has become more popular with over $1.5 trillion worldwide invested in accordance with social and ethical principles. And most recently (February 2004), the ratification of the Kyoto Protocol is a clear manifestation of the global community’s increasing environmental awareness and concern.
The rest of the paper is organized in the following order. Section 2 introduces the theoretical foundation of the stakeholder framework adopted in this study and looks at relevant prior studies. Section 3 provides the hypotheses development while Section 4 describes the sample and the research method used as well as the variable specification. Section 5 details the findings and discusses the results and finally section 6 concludes and offers some recommendations for future research.

2.0 THEORETICAL FOUNDATION AND PRIOR STUDIES

2.1 The Stakeholder Theory

The basic proposition of the stakeholder theory is that the firm’s success is dependent upon the successful management of all the relationships that a firm has with its stakeholders – a term originally introduced by Stanford Research Institute (SRI) to refer to “those groups without whose support the organization would cease to exist” (Freeman, 1983, p.33). When viewed as such, the conventional view that the success of the firm is dependent solely upon maximizing shareholders’ wealth is not sufficient because the entity is perceived to be a nexus of explicit and implicit contracts (Jensen and Meckling, 1976) between the firm and its various stakeholders. Furthermore, in contrast with the institutional theory where norms are imposed to the firms, the stakeholder theory assumes that firms have the ability to influence not just society in general but its various stakeholders in particular.

In developing the stakeholder theory, Freeman (1983) incorporates the stakeholder concept into categories: (1) a business planning and policy model; and (2) a corporate
social responsibility model of stakeholder management. In the first model, the stakeholder analysis focus on developing and evaluating the approval of corporate strategic decision by groups whose support is required for the firm’s continued existence. The stakeholders identified in this model include the owners, customers, public groups and suppliers. Although these groups are not adversarial in nature, their possibly conflicting behaviour is considered a constraint on the strategy developed by management to best match the firm’s resources with the environment. In the second model, the corporate planning and analysis extends to include external influences which may be adversarial to the firm. These adversarial groups may include the regulatory, environmentalist and/or special interest groups concerned with social issues. The second model enables managers to consider a strategic plan that is adaptable to changes in the social demands of nontraditional stakeholder groups.

As noted earlier, corporate environmental practices and reporting is one area in which much community awareness had developed. A manifestation of this is shown by the emergence of lobby groups like Greenpeace and Wilderness Society, Australian Conservation Foundation and World Wide Fund for Nature just to name a few. Even the global community came together at the 1992 Earth Summit in Rio de Janeiro to state its commitment to ecological sustainability. This creates public pressure for the government to intervene (Deegan and Gordon, 1996). As a result, regulations such as the Environmental Offences and Penalties Act 1989 in Australia and the Clean Air Act 1977, in the U.S. were enacted.
As proposed by the stakeholder theory, this increased level of environmental awareness creates the need for companies to extend their corporate planning to include the nontraditional stakeholders like the regulatory adversarial groups in order to adapt to changing social demands. It may appear that Australian companies have not lagged so far behind when it comes to environmental reporting. Corporate environmental reporting in Australia has been the subject of various studies for nearly three decades (see for example, Trotman, 1979; Kelly, 1981; Guthrie and Parker, 1990; Deegan, 1994; Gibson and Guthrie, 1995; Deegan and Gordon, 1996; Kent, Kwong and Marshall, 1997; O’Donovan, 2002). There is considerable evidence that many companies like BHP, Caltex, North Ltd. and WMC voluntarily disclose social and environmental information in their annual reports. Given that there are substantial costs involved in providing such disclosures magnified by the fact that environmental reporting is largely unregulated in Australia, conventional wisdom suggests that entities would only provide voluntary disclosures when their benefits exceed their cost.

It is, therefore, not surprising that prior studies both in Australia and elsewhere indicated a wide diversity on corporate environmental (and social) reporting practices (Kelly, 1981; O’Donovan, 2002).

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2 Only one accounting standard bears direct mandatory environmental regulation. AASB 1022 “Accounting for Extractive Industries” prescribes Australian corporate entities in the extractive industry to recognize the cost of restoration and rehabilitation of abandoned mining sites. The only other accounting standard that has the potential to require disclosure of environmental issues (although indirectly) is AASB 1034 “Information to be Disclosed on Financial Reports”. This standard requires disclosure of contingent liabilities which conceivably includes breaches of environmental regulations. As far as statutory regulation is concerned, to date the only source of environmental disclosure is found in Section 299 (1)(f) of the amendment to the Corporations Law (Corporations Law Simplification Act 1998). This requires certain organizations such as public companies and large proprietary companies to include in the Director’s Report details of the entities performance in relation to environmental regulation if the entity’s operations are subject to any particular and significant environmental regulation under the law of the Commonwealth or of a State of Territory. Whilst the introduction of Section 299 (1) (f), which took effect from 1998, is seen as a new stage in the Australian corporate environmental reporting, this statutory requirement is criticized for having no definitive guidance on how environmental issues should be disclosed. For example, the meaning of “particular” and “significant” is subject to interpretation (Nash and Awty, 2001).
Guthrie and Parker, 1990; Kent, et. al., 1997; Tilt and Symes, 1999; Hughes, Anderson and Golden, 2001; Patten, 2002) with many companies documented to provide disclosures that are favourable to their corporate image (Deegan and Rankin, 1996; Kent, et.al. 1997). Others provide inadequate environmental disclosures which showed no relationship with the firm’s environmental performance (Wiseman, 1982; Harte and Owen, 1991; Fekrat, Inclan and Petroni, 1996), and still others even show a negative association between environmental disclosures and environmental performance (Patten, 1991, 1992, 2002; Hughes, Anderson & Golden, 2001).

2.2 Ullmann’s Three-Dimensional Framework

After conducting an extensive analysis of prior CSR studies, Ullmann (1985) indicated that one of the reasons for the inconsistent findings in previous research is the lack of theory. He argued that CSR models previously developed in prior studies are misspecified because the relationship between firm strategy and social responsibility decisions is not included in the empirical tests. Ullmann proposed that firms use social disclosures as a means to manage their relationships with their stakeholders and the external environment. This is the basic tenet of the stakeholder theory. He then developed a three-dimensional strategic framework consistent with the concept advanced in the stakeholder theory by Freeman (1984).

Ullmann’s framework is useful to explain the correlations among social (and environmental) disclosures and performance as well as economic performance. The first dimension, **stakeholder power**, explains that a firm will be responsive to the intensity of
stakeholder demands. For example, when stakeholders control critical resources, the firm is likely to react in a way that satisfies their demands. The second dimension, **strategic posture**, describes the mode of response the firm is likely to take concerning social (and environmental) demands. Companies employing an active posture try to influence their firms’ status by continuously monitoring their position with stakeholders, for example, by initiating social responsibility programs as well as disclosing their commitment. The third dimension, **past and current economic performance**, determines the relative weight of a social demand and the attention it receives. This dimension is relevant because it is conceivable that firms suffering from poor profitability may place economic demands ahead of social demands.

**2.3 Prior Studies Adopting Ullmann’s Framework**

Roberts (1992) tested Ullmann’s model to understand the determinants of corporate social responsibility disclosure using a sample of 80 companies drawn from a population of 130 major companies investigated in 1984, 1985 and 1986 by the Council of Economic Priorities (CEP). Roberts found that his “measures of stakeholder power, strategic posture and economic performance are significantly related to levels of corporate social disclosure” (p. 595).

Previous Australian studies adopting Ullmann’s framework (Chan, 1996; Chan and Kent, 2003) have examined Australia’s top 110 listed companies’ environmental disclosures. By analyzing the content of the 1995 annual reports, Chan and Kent regress the quality and quantity of environmental disclosures against the variables chosen using Ullmann’s
three-dimensional framework and found some significant relationships. Their findings contribute to our knowledge on how Australian companies manage their stakeholders using environmental disclosures. However, the extent to which such disclosures are related to corporate environmental performance remains debatable. For example, numerous studies from the 1980s through to 2000s report either no significant or negative relationship between environmental disclosure and performance (see Wiseman, 1982; Rockness, 1985; Patten, 1991, 1992, 2002; Freedman & Jaggi, 1996; Hughes, Anderson & Golden, 2001). As a result, Freedman and Jaggi (1996) concluded that environmental disclosures as they exist cannot be used as a proxy for environmental performance. Thus, this study improves on prior research by using an independent, third-party ranking system as a measure for the level of corporate environmental performance.

Table 1 shows a comparison of the findings from Roberts’(1992), Chan (1996) and Chan & Kent’s (2003) study as well as the proposed variables for this study in line with prior relevant research.

[insert Table 1 about here]

3.0 HYPOTHESES DEVELOPMENT

3.1 Stakeholder Power

Stakeholder power is the first dimension in Ullmann’s model. As earlier mentioned, the success of the firm is not solely dependent upon the management of the firm’s relationship with its shareholders but with the management of its relationship with the stakeholders as a whole. Ullmann suggested that if the firm believes that its stakeholders
are concerned with social (and environmental) issues, the firm will be more motivated to perform well and disclose their performance. Thus it is hypothesized that:

**Hypothesis 1:** The power of the firm’s stakeholders is associated with the firm’s environmental performance.

From this hypothesis, it is necessary to identify the stakeholders. Freeman (1984) defines stakeholders as “any group or individual who can affect or is affected by the accomplishment of that organization’s goals” (p. 46). Using this definition, the potential stakeholders may be divided into two groups: (1) the primary stakeholders (the main providers of the firm’s resources) which includes the shareholders, creditors, customers, suppliers and employees; (2) secondary or adversarial stakeholders (those who have the capacity to mobilize public opinion in favour of or opposed to the firm) which consists of environmental lobby groups, regulators, the media and consumer advocacy groups. As it is not possible to examine all the stakeholders in one study like this, it is decided to limit the number of stakeholders to those who can exercise the strongest power on the firm. Consistent with Roberts (1992), this study chose representative stakeholders namely: (1) the shareholders, being a substantial group of stakeholders which in most cases are the primary provider of capital; (2) the creditors, having the ability to provide economic power to the firm through debt provision; and (3) the government, having the ability to intervene via legislation and regulations. In line with the first dimension and consistent with Hypothesis 1, the following stakeholder-specific testable hypotheses are developed:

**H1a: Shareholder Power (SP)**

The power of the shareholders, being the main provider of the firm’s scarce resource, may be measured by examining the degree of ownership concentration. Prior studies
(Christopher and Hassan, 1996; Craswell and Taylor, 1992; McKinnon and Dalimunthe, 1993; Malone, Fries and Jones, 1993; Frost, 1999) suggested that the wider the shareholder dispersion, the greater the likelihood that firms disclose more information. It also appeals to intuition that firms with widely dispersed ownership are more likely to incorporate good environmental performance in their strategic planning in order to attract investors. A growing number of researchers offered empirical support to the fact that the market incorporates the firm’s environmental performance in their assessment of the firm’s unbooked environmental liabilities which investors consider in their stock valuation (Barth and McNichols, 1994; Cormier and Magnan, 1997; Hughes, 2000; Clarkson, Li & Richardson, 2004). This suggests that:

**H1a: The firm’s level of shareholder concentration is negatively associated with its environmental performance.**

The level of ownership concentration is measured by the percentage of shareholders who own 5% or more of the total shareholding. This information is taken from the analysis of shareholding section of the annual reports.

**H1b: Creditor Power (CP)**

The creditors’ power as a stakeholder depends upon the degree to which the firm relies on debt financing (Roberts, 1992). As mentioned earlier, numerous studies suggest that the market considers the firm’s environmental performance in its assessment of the firm’s unbooked environmental liabilities which investors, and most likely creditors, consider in their assessment of how risky the firm is (Barth and McNichols, 1994; Cormier and Magnan, 1997; Hughes, 2000). These findings are confirmed by a more recently published study by Clarkson, Li and Richardson (2004) which estimates that the average
unbooked liabilities in the pulp and paper industry amounts to $560 million (or 16.6% of market capitalization) for high polluting firms\(^3\). This implies that the more the firm relies on debt financing, the more likely it will strive to incorporate a superior environmental performance strategy in its strategic planning decision in order to be seen as a company with lower risk, thus suggesting that:

\textit{H1b: The firms’ financial leverage (i.e. debt/equity ratio) is positively associated with its environmental performance.}

The creditor power (CP) as shown by the level of the firm’s leverage is measured as the average debt to equity (D/E) ratio, i.e. the beginning plus the ending D/E ratio divided by two.

\textit{H1c: Government Power (GP)}

The power of the government as a stakeholder is manifested in its enforcement mechanisms. Watts and Zimmerman (1978) argue that corporations use socially responsible activities to reduce the risk of governmental intrusions that may affect firm value. Hence, government can be viewed as a powerful stakeholder which the management needs to satisfy. It is conceivable that companies belonging to highly sensitive industries will face more stringent government regulation as these firms are the ones more likely to damage the environment through the use of hazardous substances and/or discharge hazardous wastes and effluents. Prior studies (Deegan and Gordon, 1996; Jaffar, Iskandar and Muhamad; 2002; Chan & Kent, 2003; Elijido-Ten, 2004) provide evidence that firms belonging to environmentally sensitive industries (ESI)

\(^3\) Clarkson, et.al.’s estimate of unbooked liabilities are comparable to Barth and McNichols’ (1994) estimate of 28.8% and Hughes’ (2000) estimate of 16.3% of market capitalization for the industries they considered in their study.
provide more environmental disclosures most likely to minimize government sanctions thus suggesting positive relationship. However, given the environmental sensitivity of the industry to which the firm belongs to, conventional wisdom would suggest that ESI companies would find it more difficult and costly to maintain superior environmental performance compared to its non-ESI counterparts. This suggests a negative relationship thus:

**H1c: Firms that belong to environmentally sensitive industries are more likely to show lower environmental performance than those in non-sensitive industries.**

This third proxy for stakeholder power (GP) is operationalised as a dummy variable representing the sensitivity of the industry to which the firm belongs, i.e. 1 for firms belonging to environmentally sensitive industries (ESI) and 0 for companies belonging to non-sensitive industries (non-ESI). The industries considered to be environmentally sensitive are those in the mining and resources, energy, building and forest/paper products, transport/logistics, steel and heavy metal and chemical industry. Previous studies (e.g. Wiseman, 1982; Patten, 1992, 2002; Kent, et. al. 1997; Hughes, 2000; Clarkson, Li and Richardson, 2004) identified these industries to be environmentally sensitive. All others are considered to be in non-ESI.

### 3.2 Strategic Posture

Strategic posture, the second dimension in Ullmann’s model, pertains to the way the entity responds to social demands. A firm adopting passive strategic posture makes no attempt to monitor and manage its relationship with its stakeholders. On the other hand, an active strategic posture implies continuous monitoring and management of the
company’s relationship with key stakeholders. Consequently, firms displaying active strategic posture are expected to show better environmental performance than those assuming a passive posture.

To generate testable hypotheses from this proposition, Chan and Kent (2003) used two proxies for strategic posture: (1) the recognition of social and environmental responsibility in the mission statement; and (2) the presence/absence of social and/or environmental committees. Roberts (1992) also used two proxies: (1) average size of the company’s public affairs staff; and (2) the presence/absence of corporate sponsored philanthropic foundation.

In relation to Chan and Kent’s (2003) proxies, it is argued that whilst some companies may disclose their mission or vision statement in their annual reports, some may not do so. Some companies may disclose the existence of an environmental committee while others may not. Hence, it was decided that a better measure for environmental concern would be either recognition of social and environmental responsibility in the mission/vision statement or disclosure of environmental activities and commitment or both. EC is expected to have a positive sign thus:

**Hypothesis 2:** Firms disclosing their environmental activities and commitment and/or environmental concern in their vision/mission statement are more likely to have better environmental performance.

*Environmental Concern (EC)*

Environmental concern (EC) is operationalised using a dummy variable. 1 is given to companies which disclosed their environmental activities and commitment and/or if the
company includes environmental concern in their mission or vision statement in their annual report, zero otherwise.

### 3.3 Past and Present Economic Performance

Although market-based measure of economic performance can be used, the accounting-based performance measure is used in this study as it has the advantage of being free from investors’/market perceptions on the future earnings ability of the firm (as opposed to past performance). A measure that has been commonly used in previous studies is the return on assets. Ullmann’s third dimension is based on past and current economic performance of the firm, thus the Average Return on Assets (AROA) is used here as a proxy for economic performance. In addition (and consistent with Chan, 1996 and Chan and Kent, 2003), this study also used previous and current year’s return on assets (ROA) in order to assess the relationship between environmental performance and past as well as present economic performance. Given the substantial costs involved in becoming environmentally responsible, the economic performance of the firm is an important factor to consider in determining whether environmental issues will be in the priority list. Arguably in periods of low economic performance, the firms’ economic objectives will be given more attention than environmental concerns.

Therefore, it is predicted that the economic performance of the firm is directly related to environmental performance. Thus the third hypothesis is formed:

**Hypothesis 3:** Firms with higher ROA are more likely to have better environmental performance than firms with lower ROA.
As mentioned earlier, three alternative variables are used to test the independent variable of economic performance. The average return on assets (AROA) is simply last year’s ROA plus current year’s ROA divided by 2. PastROA is simply the 2001 return on assets and CurrentROA is the 2002 return on assets. All of these data are taken from FinAnalysis database and supplemented by the annual reports.

4.0 SAMPLE AND RESEARCH METHOD

4.1 Sample and Data Collection

In 2002, for the third year running, the Australian Conservation Foundation (ACF) analysed and published their report on the environmental performance of the top 100 Australian companies according to BRW’s annual list of the Top 1,000 enterprises in Australia and New Zealand. Although the report entitled, “Corporate Australia: Stuck In-Reverse - The Environmental Performance of Australia’s Top 100 Companies 2002,” criticised Australian companies for performing (environmentally speaking) worse than the previous year, the environmental performance ranking provided in the report is useful for a number of reasons. First, the ACF environmental ranking provides an independent, third-party measure of the firm’s environmental performance. Second, in contrast with previous studies where only environmental disclosures provided by the companies in annual reports are considered, ACF’s ranking is based on three criteria namely: a) environmental strategies; b) environmental footprints; and c) its focus on sustainability (see Appendix A for the full description of criteria used by ACF). This enables a more coherent examination on the firm’s strategic environmental policy instead of merely
analysing its environmental reporting policy. And third, given that the ACF report focus on the top 100 companies, these large firms are generally responsible for (or at least influential in) establishing corporate trends on the environmental performance arena.

The ACF’s ranking is used as the dependent variable (ACFR) in the model. In addition, other financial and ownership data were needed to test the hypotheses developed in the earlier section. This information were taken from the FinAnalysis database and/or the firm’s annual reports. FinAnalysis database only provides information on companies listed on the Australian Stock Exchange (ASX). Only 63 of the Top 100 are listed on the ASX and 2 were delisted in 2002 (thus 2002 financial data were missing). This gives a final sample of 61 companies.

4.2 Regression Model

The regression model used to test the above hypotheses is as follows:

\[
ACFR = \beta_0 + \beta_1 \text{SP}_i + \beta_2 \text{CP}_i + \beta_3 \text{GP}_i + \beta_4 \text{EC}_i + \beta_5 \text{AROA}_it / \text{Past ROA}_it + \beta_6 \text{LSIZ}_i + \beta_7 \text{AGE}_i + \epsilon_i
\]

Where:

- ACFR = Australian Conservation Foundation’s environmental performance ranking for firm \( i \) at period \( t \);
- \( \beta_0 \) = Intercept;
- SP = Percentage of ownership of firm \( i \) held by shareholders holding 5% or more of total shareholding at period \( t \);
- CP = Average debt to asset ratio of firm \( i \);
- GP = 1 for firms in environmentally sensitive industry; 0 otherwise;
- EC = 1 for firms disclosing their environmental activities & commitment in their annual report and/or includes environmental concern in Mission/Vision statement; 0 otherwise at period \( t \);
- AROA = Return on assets of firm \( i \) at period \( t-1 \) divided by two;
- Past ROA = 2001 Return on assets of firm \( i \);
- Current ROA = 2002 Return on assets of firm \( i \);
- LSIZ = Natural log of market capitalization of firm \( i \) at period \( t \);
- AGE = Age since firm \( i \) is listed in the ASX at period \( t \); and
- \( \epsilon \) = error term

Note that period \( t \) pertains to year 2002.
4.3 Dependent and Independent Variables

The environmental performance variable is operationalized by using the 2002 ACF ranking. ACF rated each company out of 10 for each of the three criteria used (see Appendix A). This means that the highest possible score is 30. The highest score awarded was 22 and the lowest was 5. However, as the top three ranking companies are not listed, the highest ACF score included in the sample is 16. For ease of analysis, the scores were converted into percentages, i.e. score of 15 (15 out of 30) was converted to 50%. The independent variables are as described in the hypotheses development section and shown in the regression model.

4.4 Control Variables

Size ($LSIZ$)

The literature suggests that larger firms are more likely to be under public scrutiny and are expected to have more influence on the environmental practices of the general business environment. It is also suggested that larger firms are the ones capable of having superior environmental resources. Hence prior studies include a control for the size factor in the model specification. Strictly speaking, control for size is already embedded in the sample selection given that the sample consists of the top 100 companies. However, given that even in the top 100 band, the top 50 firms are found to be significantly larger than the next 50 firms, it is necessary to introduce a further control for size to ensure that size is not driving the results. $LSIZ$ is defined as the natural log value of the firm’s market capitalization in 2002.
**Age (AGE)**

The variable AGE is included in the regression model as a control for perceived stability and/or inherent risk of the firm. AGE is the number of years since the company was listed in the Australian Stock Exchange (ASX) as of 2002. This information was taken from the ASX website for companies listed until January 2005. Companies which are either delisted by this date or have undergone restructuring or name change were still included in the sample. The AGE for these companies, however, was more difficult to find as ASX do not have data available for these firms. In these circumstances, the company’s own website and/or other websites (such as Yahoo Investor Web) were used to obtain the data needed.

**5.0 RESULTS AND DISCUSSION**

**5.1 Descriptive Statistics**

Descriptive statistics is shown in Table 2. Panel A shows the dependent variable ACFR and the independent continuous variables whilst Panel B has the indicator independent variables. The dependent variable ACFR showed a minimum score of 16.67% and a maximum of 53.33% with mean (median) of 32.21 (31.67) indicating that the environmental performance of Australia’s Top 100 listed firms is generally low. Shareholder power (SP) has a minimum of 5.45%, a maximum of almost 86.5% and a mean (median) of 38.11% (40.85%) suggesting that the firms included in the sample have varying degrees of ownership structure. The creditor power (CP) has a wide range from a low of 50% to a high of 1793%. The median of 155.56% is probably a better representation rather than the mean of 333.52% which is nearly double that of the median
because firms in the financial sector are highly levered. Despite this, it is still clear that majority of the Australian companies are highly geared. Although three measures of economic performance are used in the regression, in the interest of brevity, only the average return on assets (AROA) which is representative of the past and present economic performance is shown here. AROA indicates that half the companies in the sample have AROA of 6.96% and above. This is not far behind the mean return of 7.3%. The age (AGE) of the firms ranged from a minimum of 2 to a maximum of 131 years.

Panel B shows that less than half (about 40%) of the ACF ranked firms are in the environmentally sensitive industry (GP = 24), however, majority (67%) of the firms showed environmental concern (EC) by either including this concern in their Vision/Mission Statement and/or disclosing their environmental activities/initiatives in their annual reports.

[insert Table 2 about here]

5.2 Correlation Matrix and Bivariate Results

The Pearson product moment correlation matrix, shown in the bottom left side of Table 3, indicates that there is no indication that an unacceptable level of multicollinearity is present between independent variables as the highest correlation coefficient is 0.563 for environmental concern (EC) and government power (GP). Farrar & Glauber (1967) suggest that harmful levels of multicollinearity were not present until the correlation coefficient reached 0.8 or 0.9. As a robustness check, non-parametric Spearman’s
correlation is shown in the top right side of Table 3. Overall, the significance levels shown in non-parametric measure appear to coincide with parametric measure.

[insert Table 3 about here]

The correlation matrix in Table 3 also shows the bivariate results using ordinary least squares (OLS) regressions between the dependent variable ACFR and the independent variables. The result showed that EC is significantly positively associated with ACFR at the significance level of 0.02 one tailed or at \( p<.05 \) two tailed.

The only other two independent variables that are mildly significant at \( p=.10 \) with ACFR are shareholder power (SP) showing negative correlation and size according to market capitalization (LSIZE) showing positive correlation. Most of the independent variables have the expected sign with the exception of AROA which shows a negative coefficient but is not significant.

5.3 Multivariate Analysis and Discussion

Ordinary least squares (OLS) regression was performed on the dependent variable ACFR against all the independent and control variables. The results are shown in Table 4 Panel A. The model explains about 16% of the variation on environmental performance ranking and is significant at \( p=.0209 \).

Hypothesis 1 is partly supported with shareholder power (SP) being weakly significant at \( p<.10 \) and government power (GP) showing a slightly stronger significant association at \( p<.05 \). Both SP and GP have the predicted negative sign of the coefficient. SP has
consistently shown a significant association (albeit marginal) both in the bivariate and multivariate analysis implying that the wider the ownership dispersion, the more likely it is that management will incorporate better environmental performance decision in their strategic plan to effectively manage the widespread owners being one of the most powerful stakeholders.

The GP (which is represented by the dummy variable 1 for firms in the environmentally sensitivity industry (ESI), 0 otherwise) multivariate result is in line with the prediction that it is more difficult for firms in the ESI to achieve better environmental performance than those firm belonging to non-ESI. Companies in the highly environmentally-sensitive industries are the ones most likely to face government and regulatory sanctions. Government prosecutions relating to environmental incidents naturally affect the environmental performance of the firms. As such, it is much harder for these firms to be seen as environmentally superior. This may imply that government sanctions can play a vital role in encouraging good corporate citizenship. It is interesting to note, however, that the top ranking company (in fact for the third year running since 2000) belongs to an environmentally sensitive industry hence suggesting that superior environmental performance is not confined to ‘clean’ industries.

Of the three stakeholders represented in hypothesis 1, only the variable for creditor power (CP) showed no significant association and its coefficient is negative, contrary to prediction. Despite the fact that majority of the companies are highly levered, implying that creditors represent a strong stakeholder group, CP still appears to be insignificant.
Although this finding may sound unusual, it is consistent with Chan (1996) and Chan and Kent’s (2003) findings in their Australian environmental disclosure study. One possible reason driving this insignificant result is the inclusion of firms in the financial and insurance sector. Previous studies tend to exclude firms in this sector because they have certain characteristics that stand out from other industries, e.g. firms in this sector are characterized by being highly geared. In order to check the sensitivity of the results, OLS regressions were recalculated excluding the firms in this sector. The results in Table 4 Panel B showed that when financial and insurance companies were excluded, CP becomes marginally significantly related at p<.10 but SP is no longer significant.

Hypothesis 2 is strongly supported in the multivariate results with environmental concern (EC) showing a significantly positive association with the ACF environmental performance ranking at p<.01. This is consistent with the bivariate findings and is highly expected as those companies portraying an active strategic posture, i.e. a great concern for the environment, are the ones likely to incorporate superior environmental performance in their strategic planning. This also reinforces the significance of the top management’s philosophy as manifested in their strategic posture. This is consistent with the findings in Teoh and Thong’s (1984) Malaysian survey, i.e. that the primary contributing factor leading to social awareness is the philosophy adopted by top management.

[insert Table 4 about here]

Hypothesis 3 which tests for significant association between environmental performance and past and present economic performance is not supported. Three measures of
economic performance, i.e. PastROA, CurrentROA and AROA were each used one at a time in the OLS regression and model. All three measures showed no significant association. However to the extent that one may infer from non-significant results, AROA had higher explanatory power than the other two economic performance measures. In the interest of brevity, only AROA is shown in Table 4. Although the sign of the AROA coefficient is not as predicted, this finding is consistent with Chan (1996) and Chan and Kent (2003). Chan and Kent offered a possible reason for this insignificant association suggesting that economic performance may not be best approximated in a linear relationship with the dependent variable. It may be that a certain threshold level of economic performance (e.g. maintaining profitability for, say, a period of 5 years) must be attained first before non-economic objectives such as better environmental performance is considered by the management.

5.4 Robustness Check

Roberts (1992, p. 599) argued that a time lag between measures of the explanatory factors and disclosure is necessary mainly because of:

“(1) the dynamic nature of strategic planning, (2) the focus of stakeholder theory on meeting the long-term interests of stakeholders, (3) the empirical findings of Cowen, et. al. (1987) and McGuire, et. al. (1988), and (4) the fact that social disclosures relate primarily to past social responsibility activities.”

Hence, to ensure the robustness of the results, multivariate OLS regression was recalculated using lagged values for the continuous variables of debt to equity ratio (CP), return on assets (ROA), natural log of market capitalisation (LSIZ) and the firm’s age (AGE) at $t - 1$, i.e. for 2001. SP was not lagged because there is not much movement in
the level of ownership for the firms included in the study. The OLS results using lagged continuous dependent variables (not shown) are very similar to the original multivariate results shown in Table 4 with SP, GP and EC showing significant relationships at $p<.10$, $p<.05$ and $p<.01$ respectively with the overall explanatory power of the lagged model becoming slightly more significant at 0.015 indicating that the original results are robust whether or not lagged values were used.

6.0 SUMMARY, CONCLUSION AND FUTURE RESEARCH DIRECTION

This study uses the stakeholder framework to analyse corporate environmental behaviour by Top 100 Australian listed companies. By adopting Ullmann’s (1985) three-dimensional framework comprising of stakeholder power, strategic posture and economic performance the empirical results provide important insights on the determinants of corporate environmental performance.

The findings in this study suggest that the level of ownership dispersion (SP), the industry sensitivity characterized by the increased regulatory sanctions (GP) as well as the top management’s conviction on environmental issues (EC) (a measure of strategic posture) are the main significant factors influencing the decision to incorporate superior environmental activities in corporate strategic plans. Measures of past and current economic performance, which consist of three accounting-based measures showed no significant relation with the firms’ environmental performance. Suggestions that size and age of the firms could act as intervening variables are not supported by the results in this study.
The empirical results provide evidence that the application of the stakeholder theory can contribute towards our understanding of how corporate entities behave particularly in adopting to the rapidly changing business environment. Although these results are subject to several limitations such as the constraint on the choice of stakeholders and the proxies used including the constraint of the sample used (i.e. only large listed companies), the findings in this study are useful as a springboard for future research.

A number of future research directions emanates from these results. In line with Robert’s (1992) suggestion, other stakeholders such as suppliers, special interest/lobby groups and customers may be included. Second, this study can be replicated by using environmental disclosure as the dependent variable and including the environmental performance measure as one of the independent variables. This will provide an inter-temporal comparison with the findings provided by Chan (1996) and Chan and Kent (2003). And finally, given the inherent limitation of positive empirical research to capture the complex nature of the rapidly changing business environment, the findings in this study could provide relevant insights on some case studies of representative companies by adopting the stakeholder framework.
REFERENCES:


APPENDIX A:
AUSTRALIAN CONSERVATION FOUNDATION’S (ACF) CRITERIA FOR DETERMINING CORPORATE ENVIRONMENTAL PERFORMANCE

1. ENVIRONMENTAL STRATEGIES – the company has implemented the best available strategies to create environmentally friendly products and services (i.e. the company has the best available environmental management system, an environmental policy and reports on its environmental performance).

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Poor</td>
<td>Poor</td>
<td>Average</td>
<td>Good</td>
<td>Very Good</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

The company has established an Environmental Management System that:

- is certified to ISO 14001 or equivalent and has external independent annual audits;
- maintains continual improvement towards corporate objectives and targets (e.g. energy conservation, water conservation) that are signed off by senior management; and
- has a scope that incorporates all the company’s processes, products or services that may have a significant impact on the environment.

The company has taken responsibility for its processes, products or services throughout their life cycle by:

- implementing the international standard from the ISO 14000 series for Life Cycle assessment;
- following a policy of considering the environmental and ethical position of other companies, etc. with which it invests, forms contracts or forms any other type of partnership;
- following a policy of using environmentally sustainable resources in production or the provision of services; and
- introducing strategies aimed at achieving environmental sustainability.

The company reports publicly on its environmental performance through which it:

- accurately reports on the environmental impact of all of its varying activities;
- provides information to compare its current environmental performance with its environmental performance in previous reporting years;
- provides information on the company’s environmental targets and objectives for the following reporting period;
- accurately reports on compliance with environmental laws and regulations in compliance with 299(1)(f) of the Corporations Law;
- allows for stakeholder feedback; and
- has obtained independent verification of the contents of the report.

The company has an environmental policy that sets measurable objectives and targets.

2. ENVIRONMENTAL FOOTPRINT – the company does not have a harmful impact on land, air, water, plants, animals and human health either through its own activities or the activities of its partners.

<table>
<thead>
<tr>
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<th>1</th>
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<th>4</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Poor</td>
<td>Poor</td>
<td>Average</td>
<td>Good</td>
<td>Very Good</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

- The company is not compliance based. For example, the company’s environmental performance is beyond the minimal standards set by environmental legislation and other forms of regulation. This criterion applies to the company’s overseas operations (if any).
- The company does not have an adverse impact on land, air, water, plants and animals. Such impacts may include direct and indirect adverse impacts.
- The company does not produce or process uranium, native forest woodchips or GMOs; predominantly avoids using virgin resources; and has a plan to phase out the use of virgin resources.
- The company has not been the subject of legal action or substantial community action/criticism as a result of environmentally harmful activities.

3. FOCUS ON SUSTAINABILITY – the company has proven, particularly in the last twelve months, that it can make the big changes that are necessary to create products and services for future generations that will not harm land, air, water, plants, animals and human health.

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<thead>
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<th>4</th>
<th>5</th>
<th>6</th>
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<th>8</th>
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<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very Poor</td>
<td>Poor</td>
<td>Average</td>
<td>Good</td>
<td>Very Good</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

- The company has demonstrated measurable progress in undertaking its own activities in an environmentally sustainable fashion.
- The company predominantly produces products or services that benefit the environment and will contribute to global sustainability.
- The company is developing technologies, which will enable it or other corporations to produce products or services that will benefit the environment and contribute to global sustainability.
- The company gives its expertise or resources to organisations that contribute in a positive way to global sustainability and promote environmental responsibility.

FINAL SCORE OUT OF 30
TABLE 1: SUMMARY OF STUDIES ADOPTING ULLMANN’S FRAMEWORK

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample =&gt; US</td>
<td>HOW MEASURED</td>
<td>FINDINGS</td>
<td>Sample =&gt; Australia</td>
<td>HOW MEASURED</td>
<td>FINDINGS</td>
</tr>
<tr>
<td>cos. investigated</td>
<td>102 largest listed firms</td>
<td></td>
<td>companies ranked by ACF in 2002</td>
<td>accdg to env'tal performance</td>
<td></td>
</tr>
<tr>
<td>in 1984-86 by the CEP</td>
<td>(BRW, 1995)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Dependent Variables**

| SOCIAL DISCLOSURE | CEP ratings | QUALITY | Questionnaire rated | ACFR - ACF Ranking on company | QUANTITY | No. of sentences | environmental performance |

**Independent Variables (expected sign)**

<table>
<thead>
<tr>
<th>1ST DIMENSION</th>
<th>Independent Variables (expected sign)</th>
<th>2ND DIMENSION</th>
<th>IVs (expected sign)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stakeholder Power</td>
<td>Stockholders (-) % ownership - 5%+ not sig. / -</td>
<td>Stakeholder Power</td>
<td>SP (-) =&gt; % ownership - 5%+</td>
</tr>
<tr>
<td></td>
<td>Creditor (+) Ave. D/E =&gt; '81-84 sig. @ .10 / +</td>
<td>Creditor (+) Ave. D/E</td>
<td>CP(+) =&gt; Ave. D/E</td>
</tr>
<tr>
<td></td>
<td>Gov'/Regulators (+) Political contributions sig. @ .05 / +</td>
<td>Regulator (+)</td>
<td>GP (+) =&gt;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lobby Group (+) 1=high ind. Sensitivity sig. / +</td>
<td>1= high industry sensitivity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 = low sensitivity</td>
<td>0 = low industry sensitivity</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Strategic Posture</th>
<th>2ND DIMENSION</th>
<th>Strategic Posture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Public Affairs (+) Ave. size of public affairs staff - '83-'84 sig. @ .10 / +</td>
<td>Mission Statement (+) 1 = acknowledgment sig. / +</td>
<td>EC(+) =&gt; 1=disclosure of environment mental activites on A/R &amp;/or putting</td>
</tr>
<tr>
<td>Philanthropic foundation (+) 1 = PF; 0 = nil sig. @ .01 / + Env'tl Committee (+) 1 = committee exist sig. / + env'tl concern on Msn/Vision Stmnt,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3RD DIMENSION</td>
<td>Strategic Posture</td>
<td></td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Econ. Performance</td>
<td>3RD DIMENSION</td>
<td>Econ. Performance</td>
</tr>
<tr>
<td>MGRROE (+) Ave. change in ROE sig. @ .05 / + ROE '94 (+)</td>
<td>1994 Return on Assets not sig. AROA(+) =&gt; Ave. Ret.on Assets</td>
<td></td>
</tr>
<tr>
<td>1981-84 ROE '95 (+)</td>
<td>1995 Return on Assets not sig. PastROA(+) =&gt; 2001 ROA</td>
<td></td>
</tr>
<tr>
<td>BETA (-) 1984 beta mrkt model sig. @ .10 / -</td>
<td>Average ROE (+) Ave ROE not sig. CurrentROA(+) =&gt; 2002 ROA</td>
<td></td>
</tr>
</tbody>
</table>

**Control Variables**

<table>
<thead>
<tr>
<th>CONTROL VARIABLES</th>
<th>CONTROL VARIABLES</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGE (+) age in 1984 sig. @ .01 / +</td>
<td>SIZE (+) log market capitalisation sig. / +</td>
</tr>
<tr>
<td>IND (+) 1 = auto, airline, oil; sig. @ .05 / +</td>
<td>RISK (+) age since inception sig. / +</td>
</tr>
<tr>
<td>0 = others</td>
<td>AGE(+) =&gt; number of years since</td>
</tr>
<tr>
<td>SIZE (+/-) Ave. revenues '81-84 not sig. / -</td>
<td>LSIZ(+) =&gt; log market capitalisation</td>
</tr>
</tbody>
</table>

for listed up to 2002
### Table 2: Descriptive Statistics

#### Panel A: Continuous Variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Variable Description</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACFR</td>
<td>ACF environmental performance ranking (%) for firm ( i ) at period ( t )</td>
<td>16.6667</td>
<td>53.3333</td>
<td>32.2131</td>
<td>31.6667</td>
<td>8.7598</td>
</tr>
<tr>
<td>SP</td>
<td>Percentage of ownership of firm ( i ) held by shareholders holding 5% or more of firm ( i ) at period ( t )</td>
<td>5.4500</td>
<td>86.5000</td>
<td>38.1105</td>
<td>40.8500</td>
<td>20.2631</td>
</tr>
<tr>
<td>CP</td>
<td>Average debt to equity ratio of firm ( i ) at period ( t )</td>
<td>0.5003</td>
<td>17.9330</td>
<td>3.3352</td>
<td>1.5556</td>
<td>4.4410</td>
</tr>
<tr>
<td>AROA</td>
<td>Average return on assets of firm ( i ) at period ( t )</td>
<td>-0.0094</td>
<td>0.2135</td>
<td>0.0730</td>
<td>0.0696</td>
<td>0.0469</td>
</tr>
<tr>
<td>LSIZ</td>
<td>Natural log of market capitalisation of firm ( i ) at period ( t )</td>
<td>8.6181</td>
<td>10.7927</td>
<td>9.6360</td>
<td>9.5941</td>
<td>0.5616</td>
</tr>
<tr>
<td>AGE</td>
<td>Age since incorporation of firm ( i ) at period ( t )</td>
<td>2.0000</td>
<td>131.0000</td>
<td>27.2787</td>
<td>18.0000</td>
<td>28.1129</td>
</tr>
</tbody>
</table>

#### Panel B: Indicator Variables

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Variable Description</th>
<th>Number of Firms with 1 (%)</th>
<th>Number of Firms with 0 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP</td>
<td>Government Power: 1 for firms in environmentally sensitive industry; 0 otherwise</td>
<td>24.00</td>
<td>37.00</td>
</tr>
<tr>
<td>EC</td>
<td>Environmental Concern: 1 for firms disclosing environmental practices in their annual reports and/or includes environmental concern in Mission/Vision statement; 0 otherwise</td>
<td>41.00</td>
<td>67.21</td>
</tr>
</tbody>
</table>

### Table 3: Correlation Matrix ##

<table>
<thead>
<tr>
<th></th>
<th>ACFR</th>
<th>SP</th>
<th>CP</th>
<th>GP</th>
<th>EC</th>
<th>AROA</th>
<th>LSIZ</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACFR</td>
<td></td>
<td>-0.211</td>
<td>0.010</td>
<td>-0.042</td>
<td>0.235</td>
<td>-0.147</td>
<td>0.147</td>
<td>0.132</td>
</tr>
<tr>
<td>SP</td>
<td></td>
<td></td>
<td>-0.168*</td>
<td>1</td>
<td>-0.102</td>
<td>-0.145</td>
<td>0.036</td>
<td>0.085</td>
</tr>
<tr>
<td>CP</td>
<td></td>
<td></td>
<td></td>
<td>0.098</td>
<td></td>
<td>0.217</td>
<td>0.133</td>
<td>0.392</td>
</tr>
<tr>
<td>GP</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.153</td>
<td>-0.268</td>
<td></td>
</tr>
<tr>
<td>EC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.258**</td>
</tr>
<tr>
<td>AROA</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td>LSIZ</td>
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<td></td>
</tr>
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<td>AGE</td>
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</tr>
</tbody>
</table>

* Correlation is significant at the 0.10 level (1-tailed).
** Correlation is significant at the 0.05 level (1-tailed).
*** Correlation is significant at the 0.01 level (1-tailed).

Note: ##Pearson Product Moment Correlation is in the bottom left matrix while Spearman's Correlation is in the top right matrix. For a complete description of the variables, see Table 2.
Table 4: OLS Results for ACF Ranking

**Panel A: All Industries (N=61)**

\[ ACFR_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 CP_{it} + \beta_3 GP_{it} + \beta_4 EC_{it} + \beta_5 AROA_{it} + \beta_6 LSIZ_{it} + \beta_7 AGE_{it} + e_t \]

Where: \( e \) is the error term and the rest of the variables are as described in Table 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>( B_0 )</th>
<th>SP</th>
<th>CP</th>
<th>GP</th>
<th>EC</th>
<th>AROA</th>
<th>LSIZ</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>coefficient</td>
<td>14.584</td>
<td>-0.099</td>
<td>-0.067</td>
<td>-6.248</td>
<td>9.306</td>
<td>-41.469</td>
<td>2.035</td>
<td>0.046</td>
</tr>
<tr>
<td>t-statistic</td>
<td>0.7280</td>
<td>-1.7822*</td>
<td>-0.1876</td>
<td>-2.2796**</td>
<td>3.3472 ***</td>
<td>-1.4460</td>
<td>0.9174</td>
<td>1.2008</td>
</tr>
<tr>
<td>p-value</td>
<td>0.4698</td>
<td>0.0804</td>
<td>0.8519</td>
<td>0.0267</td>
<td>0.0015</td>
<td>0.1541</td>
<td>0.3631</td>
<td>0.2352</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.2575</td>
<td>0.1594</td>
<td>F</td>
<td>2.6257</td>
<td>Sig.</td>
<td>0.0209</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant at the 1% level  
** Significant at the 5% level  
* Significant at the 10% level

**Panel B: Excluding Firms in Financial & Insurance Sector (N=50)**

\[ ACFR_{it} = \beta_0 + \beta_1 SP_{it} + \beta_2 CP_{it} + \beta_3 GP_{it} + \beta_4 EC_{it} + \beta_5 AROA_{it} + \beta_6 LSIZ_{it} + \beta_7 AGE_{it} + e_t \]

Where: \( e \) is the error term and the rest of the variables are as described in Table 2.

<table>
<thead>
<tr>
<th>Variable</th>
<th>( B_0 )</th>
<th>SP</th>
<th>CP</th>
<th>GP</th>
<th>EC</th>
<th>AROA</th>
<th>LSIZ</th>
<th>AGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>coefficient</td>
<td>28.9976</td>
<td>-0.0640</td>
<td>-3.8940</td>
<td>-6.4976</td>
<td>10.3082</td>
<td>-14.9714</td>
<td>0.6727</td>
<td>0.0399</td>
</tr>
<tr>
<td>t-statistic</td>
<td>1.3101</td>
<td>-0.9829</td>
<td>-1.9207*</td>
<td>-2.2321**</td>
<td>3.0495 ***</td>
<td>-0.4367</td>
<td>0.2722</td>
<td>0.9838</td>
</tr>
<tr>
<td>p-value</td>
<td>0.1973</td>
<td>0.3313</td>
<td>0.0616</td>
<td>0.0310</td>
<td>0.0039</td>
<td>0.6645</td>
<td>0.7868</td>
<td>0.3308</td>
</tr>
<tr>
<td>( R^2 )</td>
<td>0.2825</td>
<td>0.1629</td>
<td>F</td>
<td>2.3621</td>
<td>Sig.</td>
<td>0.0396</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*** Significant at the 1% level  
** Significant at the 5% level  
* Significant at the 10% level