

**DETERMINANTS OF ENVIRONMENTAL DISCLOSURES
IN A DEVELOPING COUNTRY:
AN APPLICATION OF THE STAKEHOLDER THEORY**

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ABSTRACT

This study uses the stakeholder theory to uncover the determinants of environmental disclosures in Malaysian companies. The stakeholder theory is operationalised using Ullman's (1985) three-dimensional framework that includes *stakeholder power*, *strategic posture* and *economic performance*. Given the current regulatory framework in Malaysia where no mandatory environmental reporting is required and where the companies' environmental performance is kept confidential, the findings suggest that the main determinants in providing environmental disclosures is the level of environmental concern (EC) by the top management (a measure of strategic posture) and the government's power (GP) to sanction companies (a measure of stakeholder power). Measures of economic performance showed no significant relation with the level of environmental disclosure. This study also found that the majority of environmental disclosures are still confined to the provision of general or vague descriptions. Hence, there is a lot of room for improvement as to the quality of disclosure.

1.0 INTRODUCTION

A shift on society's level of social and environmental awareness¹ created a demand for corporate social and environmental reporting. As a result, there is considerable evidence (see for example Trotman, 1979; Kelly, 1981; Guthrie and Parker, 1990; Deegan, 1994; Gibson and Guthrie, 1995; Kent, Kwong and Marshall, 1997) that many companies voluntarily disclose social and environmental information in their annual reports and some even produce stand-alone environmental reports. However, because of the limited mandatory reporting regulations in many countries, it is conceivable that corporate entities practice a fair amount of liberty in choosing what to disclose and what not to disclose.

It is, therefore, not surprising that prior studies indicated a wide diversity on corporate environmental (and social) reporting practices (Kelly, 1981; 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) whilst others providing 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 showing a negative association between environmental disclosures and environmental performance (Patten, 1991, 1992, 2002; Hughes, et.al. 2001). These studies seem to suggest that in the absence of stringent environmental reporting regulatory regime, the wide variations in reporting practices could make it difficult for the report users to rely solely on the information provided to make informed judgment and decisions about the company.

Whilst previous studies have focused mainly in the developed economies of North America, UK and Australia, there is a scarcity of studies conducted from the context of the developing economies. This study aims to extend this body of literature by providing empirical evidence on the possible determinants of the quality and the quantity of environmental disclosures in a developing country where there is equally no mandatory environmental reporting requirement. Studies of this kind are important if we are to understand specific country settings as we can not generalize the findings from one country to another specially if the countries are of different culture and of different stages of economic development.

This study also adds to the literature on the application of the stakeholder theory by adopting Ullman's (1985) three dimensional model which covers the *stakeholder power*, *strategic posture* and *economic performance*. The stakeholder theory proposes that the firm's success is dependent upon the successful management of its relationships with its stakeholders. In the absence of any mandatory reporting requirement or a particular environmental disaster that would necessitate more environmental disclosure (e.g. Patten, 1991, 1992), the stakeholder theory is likely to uncover the possible determinants for providing corporate environmental disclosures.

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 (ACF) and Greenpeace and Wilderness Society (GWS). Deegan and Gordon (1996) reported a 258% increase on environmental lobby group membership from 1988 to 1990 and a 1200% increase during the period 1975 to 1990.

The country of Malaysia is chosen in this study for two reasons. Firstly, whilst Malaysia (like many other countries) has no mandatory environmental reporting requirement, it is well documented that there is an increase in the corporate environmental reporting from 1999 to 2001 (see the Environmental Resources Management of Malaysia (ERMM) Report, 2002). Thus, a further examination of the determinants of corporate environmental reporting is likely to give us more insights on the motivations behind environmental reporting. Secondly, Malaysia is a country in the Southeast Asian region that has been experiencing a tremendous growth in the economy since the early eighties. With its Vision 2020 (a vision to reach the status of a developed economy by 2020) and its fast economic growth, Malaysia is seen to be in the early stages of becoming an industrialized nation. As such, this country is also likely to be experiencing more the downside of industrialisation. As Teoh and Thong (1984) suggested, “in recent years there have been many cases of pollution of rivers caused by effluents discharged from palm oil mills and rubber factories which have seriously affected the livelihood of many fishing communities.” If Malaysia is to continue to achieve its vision (which supposedly is also the goal of many other developing countries), then the findings from this experience could provide insights both to the report providers, the report users and the regulators in order to devise ways and means on how to move forward.

The rest of the paper will be in the following order. Section 2 looks at the regulatory environment in Malaysia and introduces the theoretical framework adopted in this study. The third section describes prior relevant studies that provides the basis for hypotheses development. Section 4 provides the research method and the regression model 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 REGULATORY ENVIRONMENT AND THEORETICAL DEVELOPMENT

2.1 Malaysian Reporting Regulatory Environment

The main authority for the prevention and control of environmental pollution in Malaysia is the Department of Environment (DOE), a department under the umbrella of the Ministry of Science, Technology and Environment (MOSTE). DOE is empowered to develop standards and guidelines to ensure compliance and to enforce the Environmental Quality Act of 1974 (EQA).

There is no compulsory requirement for companies to provide environmental disclosures in their annual reports under the EQA and the Malaysian Companies Act of 1965 (CA). Section 37 of the EQA entitles the Director General of DOE to demand environmental information from companies in the event of non-compliance with the EQA but such information is not disclosed to the public. Section 169 subsection 7 of the CA requires directors to include information on any item, transaction or event of a material and unusual nature that may have arisen during the course of the financial year. Whilst this can be interpreted to include environmental information, it is often not provided as the phrase “material and unusual nature” can be vaguely interpreted.

The Listing Requirements (LR) of the Kuala Lumpur Stock Exchange (KLSE) 2001 could be another source of reporting regulations. “Item 16 of Appendix 9C specifies the inclusion of particulars of all sanctions and/or penalties imposed on the listed issuer and its subsidiaries, directors or management by the relevant regulatory bodies. This requirement therefore makes it compulsory for any public listed company to disclose in their annual report

environment-related litigation or penalties.” (ERMM, 2002, p. 33). While this requirement could have a positive impact on environmental reporting quality and quantity in Malaysian companies, the implementation of this ruling may not have taken effect immediately as none of the 2001 annual reports of the companies included in this study disclosed environment-related litigations or penalties.

Hence probably the only other source of environmental reporting guidelines is the Malaysian Accounting Standards Board (MASB) 1 and 20. MASB 1, par. 10 makes explicit reference to environmental reports encouraging companies “to present additional information if management believes they will assist users in making economic decisions”. MASB 20 sets out the disclosure requirements for the recognition of contingent liabilities and assets. Although MASB 20 does not provide specific details of the types of liability, it is foreseeable that environmental liabilities could potentially be included within a company’s financial statement. Despite the requirements of MASB 1 and 20, “environmental reporting is still a voluntary initiative in Malaysia...” (ERMM, 2002, p.39).

It is important to understand the motivations behind this voluntary environmental reporting regime in a country like Malaysia. This is because unlike other developed countries where public access to company specific information on environmental performance like the Council on Economic Performance rating and/or the Toxic Release Inventory in the US or its equivalent in Australia called the National Pollutant Inventory are available, the Department of Environment in Malaysia keeps this information confidential. This means that the general public has no way of cross checking the accuracy of the information provided in the annual reports of the firms.

2.2 Theoretical Foundation

Despite the limited mandatory reporting requirements, the literature on social and environmental accounting suggests that an increasing number of companies are now providing environmental disclosures albeit at varying levels. There are different theoretical frameworks used to explain why companies may provide voluntary disclosure. Understanding and using frameworks and models are helpful particularly in clarifying abstract concepts like social and environmental responsibility. This section aims to provide a brief discussion of the alternative frameworks and the one chosen for this study. However, before going into this discussion, it is important to understand the theory that underpins each framework. The next sub-section will provide a brief discussion of how the view of business entities changed and how the shift on public expectations helped shape the view of business organizations.

Do Companies Have Social Responsibility To Society?

Environmental (and social) accountability has not always been a common practice among business organizations. Traditionally, companies are regarded as purely economic institution whose function is to provide goods and services at a price the public is willing to pay. This classical view, proposed by Milton Friedman (1970) suggests that the firms’ sole responsibility to society is to maximize its profits. Whilst performing its function, the entity must utilize society’s resources efficiently such that as the firm increases its wealth, it also increases society’s wealth. This view assumes that the business organization’s social and economic performance is one and the same.

Whilst there may be some truth to this view, its main weakness lies in its failure to consider society's changing perception of the role of corporate entities. Change in public expectation resulted from an increase in the level of awareness and recognition of the importance of social and environmental issues. Hence, it is submitted that the Friedmanite view fails society's changing expectation as it does not consider the negative externalities created by the firms in their pursuit to maximize profits. Negative externality is said to be present "when the actions of one party negatively affect other parties who are not charged (or compensated) via the price mechanism" (Posner and Scott, 1980, p. 320). Some common examples of negative externalities resulting from the firm's pursuit of economic goals are the exploitation of the environment and the neglect of the employees' safety in the workplace.

As the perception of corporate entities' role in society changed, many believe that the classical view is no longer sufficient, hence a neoclassical view has gained a new breed of supporters. This view is vividly described by Chan (1996, p. 10) while summarizing the impetus for Freeman's stakeholder view:

"This [neoclassical] view acknowledged that the firm's primary function in society, which is to create wealth, is tempered with an obligation on the firm to act in a socially responsible manner. This neoclassical view can be summarized as embracing three elements:

1. Corporations have responsibilities that go beyond the production of goods and services at a profit;
2. These responsibilities involve helping to solve important social problems, especially those they have helped to create;
3. Corporations have a broader constituency than stockholders alone."

The rationale for the change is explained in terms of a different view of the relationship between the firm and society. Business entities are created and given permission to operate by the society in which they exist. As such, the firm's right to operate is provided by society (not solely by the parties that has direct financial interest like the investors and creditors). Therefore society can choose to create or not create the firm (Donaldson, 1982).

A manifestation of this is shown by the emergence of lobby groups creating public pressure for government intervention (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. have been enacted. Government regulations such as these impose compliance costs (including penalties for non-compliance) which are then eventually passed on to the general public in the form of higher prices for goods and services. This increase in prices may then reduce the firms' competitive advantage and in extreme cases may cause the entity's demise. Hence arguably, it is in the best interest of the firms to avoid government intervention by considering both the rules and the expectations of society to preserve its flexibility in conducting its business affairs (Chan, 1996; Frost, 1999).

If one accepts that companies have moral obligations to society, how then should companies discharge their accountability in the absence of mandatory regulations? There are a number of ways in which the firm can voluntarily discharge their accountability but letting society know how this is done is equally important. The most commonly used vehicle to inform the public of the firm's social and environmental accountability is via the annual reports. Previous studies suggest that this public document is used by the management to persuade and send specific signals and messages to the public (Salancik and Meindl, 1984; Amernic,

1992). It is also documented that the annual report has a significant influence on the way the general public and financial markets react to a company (Anderson and Epstein, 1995).

By looking at it in this manner, one could somehow make sense of the possible motivations and benefits from the provision of voluntary environmental disclosures in the annual report. To understand these motivations, the literature suggests a number of theoretical frameworks that can be used to explain why companies provide voluntary disclosures. The most common frameworks used in the literature are briefly summarized below.

Political Economy Theory

Political economy theory posits that “accounting systems act as mechanisms used to create, distribute and mystify power” (Buhr, 1998, p. 165). This theory is based upon economic theories of self-interest. Political economy suggests that environmental (and social) disclosures are “pre-emptive and used to enforce an agenda to stave-off intervention” (Frost, 2000, p. 668). The emergence of pressure groups creates a threat to companies who may face increased government intervention in the form of regulatory action which then creates “political costs” (Whittred, Zimmer and Taylor, 1996). Companies are therefore predicted to counter possible political costs by resorting to government lobbying and providing social responsibility disclosures (Watts and Zimmerman, 1978). Analysing social disclosures using this framework would require greater emphasis on the interplay between the firm’s social information content and external parties (e.g. lobby groups, government intervention and the like).

Legitimacy Theory

“Because legitimacy is conferred and controlled by those outside the organization it is necessary for the corporation to communicate its activities to the public.” (Buhr, 1998, p. 164).

Legitimacy theory has been offered in the literature as a way to explain the firms’ environmental disclosure policies (Hogner, 1982; Lindblom, 1983; Patten, 1991, 1992, 2002). This theory revolves around the concept of a social contract. The social contract is an implicit contract with society agreeing “to perform socially desirable actions in return for society’s approval of its objectives and its ultimate survival” (Guthrie and Parker, 1989, p. 344). Legitimacy theory suggests that companies should aim to achieve congruence between their financial objectives and the accepted social norms. This entails having to incorporate social and environmental issues in their decision-making process. In addition, entities should not only “have to get themselves in environmental shape, they also have to be seen to do so” (White and Mazur, 1994, p. 9). This means that the firm needs to inform the public of its activities (as Buhr states in the above quotation). Legitimacy theory therefore posits that by providing sufficient social and environmental disclosures, the entity hopes to improve its overall public image and ultimately justify its continued existence.

Whilst the theoretical frameworks discussed above are distinct from each other, it is important to see these frameworks as overlapping perspectives on the same issue rather than as competing theories of reporting behaviour (Gray, Kouhy and Lavers, 1995; O’Donovan, 2002). The consequent expectation underpinning each framework is to provide “social responsibility disclosures in order to take advantage of certain benefits associated with those disclosures” (Kent, et. al., 1997, p. 23). The stakeholder framework which is discussed next is no exception to this expectation.

2.3 Stakeholder Framework: A Model for this Study

Freeman (1984), in his book *Strategic Management: A Stakeholder Approach*, provided the foundation for the stakeholder theory which was later used by other researchers like Ullman (1985) and Clarkson (1995). 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. 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. So why choose the stakeholder framework in this study?

The stakeholder theory is useful to explain voluntary environmental disclosures for two main reasons. First, Clarkson (1995) in his 10-year study on corporate social performance concluded that it was necessary to distinguish between social issues and stakeholder issues, i.e. issues that concern one or more stakeholder groups. These issues may not necessarily (but quite possibly) be the same concern of the society as a whole. Social issues are those issues of sufficient concern to society and as such should be the subject of legislation and regulation. Clarkson argued for the recognition of the distinction between social and stakeholder issues because "corporations and their managers manage their relationships with their stakeholders and not with society" (p. 100). In the context of this study, the stakeholders' demand for environmental disclosures is characterized as being stakeholder issues because the production of such information is still unregulated in Malaysia. Hence it is appropriate to use stakeholder theory in this study.

Second, to explain social disclosures, both legitimacy and stakeholder theory predict that such disclosures are used by firms as a means of legitimizing their operations. However, the two theories differ mainly on how corporate entities are conferred with legitimacy. Legitimacy theory focuses on society to assess the validity of corporate actions to gain legitimacy. Whilst there is nothing wrong in taking this view, it is sometimes difficult to test empirically. To use legitimacy theory effectively, it is common for researchers to identify specific events that are potentially threatening to the firm's legitimacy like the Exxon Valdez oil spill (Patten, 1992) or the Union Carbide leak (Blacconiere and Patten, 1994). As a consequence, the study may have to be restricted to the corporate entities threatened by a particular event.

As this study intends to observe all the Malaysian listed companies identified by the ERMM Report as disclosing environmental information not particularly related to any specific threatening event, the stakeholder theory is preferred because it provides a framework to uncover the determinants of and possible motivations behind corporate disclosures. Therefore, by focusing on stakeholder issues rather than general social issues, the stakeholder theory is considered to be more appropriate to develop testable hypotheses. The development of these hypotheses is considered next in line with prior studies.

3.0 PRIOR STUDIES AND HYPOTHESES DEVELOPMENT

3.1 Relevant Prior Studies

The application of the stakeholder theory is operationalised by Ullman (1985) when he introduced a framework for predicting corporate social activity using a three-dimensional

model consisting of: 1) stakeholder power; 2) strategic posture; and 3) economic performance. Ullman 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.

Roberts (1992) and Chan (1996) used Ullman's (1985) model to develop and test the determinants of environmental disclosures. Ullman's model is useful as it provides a framework to explain the relationships among social (and environmental) disclosure and the possible factors affected or being affected by it. Exploring and understanding the relationships of factors influencing the quality and quantity of disclosures is the focus of this study. Thus the use of Ullman's model is deemed appropriate in this study.

Ullman's model was tested by Roberts (1992) in a North American cross-sectional study of social disclosures. Roberts found that the three-dimensional model which "measures stakeholder power, strategic posture and economic performance are significantly related to levels of corporate social disclosure" (p. 595). A few years later, Ullman's model was again used, this time with reference to environmental disclosures, in an Australian cross-sectional study by Chan (1996). Unlike Roberts who ascertained that most of the variables are significantly related, Chan found that some of the variables are not significantly related. As mentioned earlier, whilst Malaysia may be of different culture and stage of economic development compared to the US and Australia, it is certainly insightful to understand the relationships between the variables of interest in order to understand the determinants of environmental disclosures. Table 1 shows a comparison of the findings from Roberts' and Chan's study and the proposed variables for this study.

[insert Table 1 about here]

3.2 Hypotheses Development

3.2.1 Stakeholder Power

Stakeholder power is the first dimension in Ullman's model. As earlier mentioned, the success of the firm is not solely dependent upon the management of the firm's relationship with shareholders but with the management of its relationship with the stakeholders as a whole. Ullman proposed that a stakeholder's power in relation to the firm is a factor influencing disclosure. The proposition arising from this states that:

Proposition 1: The power of the firm's stakeholders is positively associated with the quantity and quality of a firm's environmental disclosure.

From this proposition, it is necessary to identify who are 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, regulators 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 the environmental lobby groups, the media and consumer advocacy groups (Chan, 1996). 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 choose representative stakeholders from the primary stakeholder group 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 legislations and regulations. In line with the first dimension and consistent with Proposition 1, the following hypotheses are developed:

Shareholder Power (SP)

The power of the shareholders may be measured in a number of ways. It is suggested (e.g. Mckinnon and Dalimunthe, 1993; Malone, Fries and Jones, 1993) that there is a positive relationship between the number of shareholders and disclosure practices in the annual report. Another aspect of shareholder power which may influence the level of disclosure is the level of ownership concentration. Prior studies (Christopher and Hassan, 1996; Craswell and Taylor, 1992; Frost, 1999) suggested that the less the influence of the top 20 shareholders, the greater the likelihood that firms disclose more information, hence a negative association.

H1: The degree of shareholder concentration is associated to the quality and quantity of environmental disclosures of the firm.

Creditor Power (CP)

The creditors' power as a stakeholder depends upon the degree to which the firm relies on debt financing (Roberts, 1992). The more the company rely on debt financing, the more likely it is to provide more environmental disclosure in order to be seen as a company with lower risk. This suggests that:

H2: Firms with high leverage (i.e. debt/equity ratio) are more likely to provide more and better quality environmental disclosures than less leveraged firms.

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 need 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 hazardous substances and/or discharge hazardous wastes and effluents. As such, firms belonging to environmentally sensitive industries are predicted to provide more environmental disclosures in order to minimize government sanctions. The following hypothesis is therefore tested:

H3: Firms that belong to environmentally sensitive industries are more likely to provide more and better quality environmental disclosures.

3.2.2 Strategic Posture

Strategic posture, the second dimension in Ullman'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 disclose more social and environmental information in their annual reports. Following this line of thought, it is proposed that:

Proposition 2: The strategic posture adopted by the firm is positively associated with the quantity and quality of environmental disclosures.

To generate testable hypotheses from this proposition, Chan (1996) 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.

It is argued that whilst some companies may disclose their mission or vision statement in their annual reports, some may not do so. Others may disclose the existence of environmental committee while others do not. Hence, it was decided that a better measure for environmental concern would be either or both. Likewise, the presence of concern and environmental committee may not be sufficient to imply better strategic posture. For example, some firms may outsource environmentally responsive activities. A common certification process that recognizes environmental compliance is the ISO 14001: Environmental Management System. There is no specific requirement to get this certification but some companies choose to go through the rigorous process of getting certified in order to be seen as environmentally compliant which thus signifies the strategic posture adopted by the firm. Therefore, the two proxies for strategic posture chosen for this study are: (1) presence/absence of environmental committees and/or inclusion/exclusion of environmental concern in the corporate vision/mission statement; (2) presence/absence of ISO 14001 certification. Using these proxies, the following hypotheses are stated:

Environmental Concern (EC)

H4: Firms with environmental committees and/or environmental concern in their vision/mission statement are more likely to provide more and better quality environmental disclosures than those firms without such committees or concern.

ISO 14001 Certification (ISO)

H5: Firms that are awarded ISO 14001 certification are more likely to provide more and better quality environmental disclosures than those firms that do not have such certification.

3.3.3 Economic Performance

The final dimension in Ullman's model pertains to the economic performance of the firm. Given the substantial costs involved in becoming environmentally responsible, the economic performance of the firm is obviously 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 disclosures. Thus it is proposed that:

Proposition 3: *The economic performance of the firm is positively associated with the quantity and quality of environmental disclosures.*

Both accounting-based and market-based performance measure are used in this study.

Average Return on Assets (AROA)

The use of accounting-based performance measure 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 average Return on Assets (ROA). Ullman's third dimension is based on past and current economic performance of the firm, thus the average Return on Assets is used to test the following hypothesis.

H6: Firms with higher average ROA are more likely to provide more and/or better quality environmental disclosure.

Change in Firm Value (CFV)

The advantage of using market-based performance is that is less susceptible to managerial manipulation. In order to capture past and current market-based economic performance, the change in firm value, i.e. the difference between share price from the beginning of balance date to 3 months after balance date is used to test the hypothesis:

H7: Firms with higher change in firm value are more likely to provide more and/or better quality environmental disclosures.

4.0 RESEARCH METHOD

4.1 Sample and Data Collection

In 2002, the Association of Chartered Certified Accountants (ACCA) engaged the Environmental Resources Management Malaysia (ERMM) to conduct a study on the current status of environmental reporting in Malaysia. The study covering the period 1999 to 2001 surveyed all the companies listed in the Kuala Lumpur Stock Exchange (KLSE) main board. It was found that the number of main board listed companies providing environmental disclosures "grew from 25 in 1999, to 35 in 2000 reaching 40 companies by 2001." (ERMM, 2002, p. 8). As this study aims to uncover the determinants of environmental disclosure in a developing country like Malaysia, the ERMM Report provided a springboard for this study. Hence, in order to uncover the possible motivations for providing environmental disclosures, all the 40 companies identified in the ERMM Report is used as its sample (see Appendix A for the list).

The CEO's/CFO's of the 40 companies were contacted by mail in February 2003 to request for copies of annual reports for the periods 1999, 2000, 2001 and 2002 (if already available). Only eight of the 40 disclosing companies provided hard copies of their annual reports. The rest of the annual reports were downloaded from the KLSE website. As nearly half of the

companies' annual reports in 1999 are not available from the KLSE website, the 1999 data were excluded as the number of zero quality and quantity of disclosure increased not necessarily because of the actual zero disclosure but because of the inavailability of the annual report. Therefore, the actual pooled data consists of the 40 disclosing companies in the year 2000 (40 observations) and 2001 (39 observations-one company was delisted).

4.2 Regression Model

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

$$QLENDIS/QTENDIS = \beta_0 + \beta_1 SP_i + \beta_2 CP_i + \beta_3 GP_i + \beta_4 EC_i + \beta_5 ISO_i + \beta_6 AROA_i + \beta_7 FIVAL_i + \beta_8 LSIZ_i + \beta_9 AGE_i + e_i$$

Where:

QLENDIS	=	total score for quality of environmental disclosure for firm <i>i</i> at period <i>t</i> ;
QTENDIS	=	total quantity of environmental disclosure for firm <i>i</i> at period <i>t</i>
β_0	=	intercept
β_1	=	percentage of ownership of firm <i>i</i> held by shareholders holding 5% or more of total shareholding at period <i>t</i> ;
β_2	=	average debt to asset ratio of firm <i>i</i> ;
β_3	=	1 for firms in environmentally sensitive industry; 0 otherwise;
β_4	=	1 for firms with environmental committee and/or includes environmental concern in Mission/Vision statement; 0 otherwise at period <i>t</i> ;
β_5	=	1 for firms with ISO 14001 certification as of 2001; 0 otherwise
β_6	=	average return on assets of firm <i>i</i> at period <i>t</i> ;
β_7	=	change in share price from beginning of period to 3 months after balance date for firm <i>i</i> at period <i>t</i> ;
β_8	=	average sales revenues of firm <i>i</i> at period <i>t</i> ;
β_9	=	age since incorporation of firm <i>i</i> at period <i>t</i> ; and
<i>e</i>	=	error term

4.3 Variable Specification

4.3.1 Dependent Variables

The environmental disclosure variable is operationalized by the two dependent variables, the quality (QLENDIS) and the quantity (QTENDIS) of environmental disclosure.

Quality of Environmental Disclosure (QLENDIS)

The quality of environmental disclosures (QLENDIS) is examined using content analysis. Using this technique, the environmental disclosure is analysed according to an environmental disclosure index (EDI) introduced by Wiseman (1982) and later adopted by Hughes, et. al. (2001).

Prior studies (Hughes, et. al, 2001; Al-Tuwaijri, Christensen and Hughes, forthcoming) assigned higher scores to specific quantitative disclosures hence suggesting better quality of environmental disclosure. This study conforms to this suggestion. To capture the differences provided in the disclosures, the content of the narrative is evaluated giving the greatest score of 3 to quantitative disclosures related to any of the items in the EDI. The next highest score of 2 is assigned to non-quantitative but specific information related to EDI items. Finally, a score of 1 is given to general qualitative or vague comments on EDI items (in line with prior

studies e.g. Zeghal and Ahmed, 1990; Hughes, et. al. 2001; Al-Tuwaijri, et. al. forthcoming). The weighted scores for all the EDI items for each company are summed up to reach the final score for the quality of environmental disclosure for each firm. Consequently, the higher the score, the higher the QLENDIS.

It is acknowledged that this scoring system maybe criticized for its subjectivity. In order to reduce the level of subjectivity, the author together with an able research assistant initially did the coding independently. The results were then compared later. Any discrepancies between the index scores awarded were discussed, reanalyzed and resolved before data analysis.

Quantity of Environmental Disclosure (QTENDIS)

As to the quantity of disclosure, previous studies suggest varying use of the unit of measurement, e.g. number of pages, words or lines (Gray, et. al., 1995). The number of pages may have the advantage of being able to include figures charts or graphs into the analysis. However, noise is introduced when ambiguous pictures and/or different font, column or page sizes are used in the annual reports. On the other hand, the number of words has the advantage of being more objective in the quantification of disclosure. However, this too introduces the problem of making the decision as to which words are considered to be environmental disclosure and which are not (Hackston and Milne, 1996).

Consequently, the number of sentences is chosen in this study as it is easily identified and allows for a more refined examination of disclosure. Sentences are natural units of narratives which are clearly separated by punctuation marks. Whilst sentences as a unit of measurement can be easily identified (Ingram and Frazier, 1980; Hackston and Milne, 1996), it has the disadvantage of excluding figures, graphs or charts which may be as equally important as the narratives. In cases where tables or figures are provided, each of the figures together with its description is counted as one sentence. This way, the problem of using sentence as unit of measurement is minimized.

4.3.2 Independent Variables

Shareholder Power (SP)

The level of ownership concentration is measured by the percentage of shareholders who owns 5% or more of the total shareholding. This information is taken from the analysis of shareholding section of the annual reports. This is predicted to have negative sign.

Creditor Power (CP)

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. It is predicted that creditor power is positively related to the quality and quantity of the environmental disclosures.

Government Power (GP)

The third proxy for stakeholder power (GP) is operationalised as a dummy variable representing the level of sensitivity of the industry to which the firm belongs, i.e. 1 for firms

belonging to environmentally sensitive industries and 0 for companies belonging to non-sensitive industries. The industries considered to be environmentally sensitive are those in the plantation, industrial products, construction, infrastructure and certain companies in the consumer products and trading services (i.e. those involved in the metals, heavy equipment, power generation, chemicals and paper and forest timber products). All others are considered to be in a non-environmentally sensitive industry. The sign for GP is predicted to be positive.

Environmental Concern (EC)

Environmental concern (EC) is operationalised using a dummy variable. 1 is given to companies which disclosed the existence of an environmental committee or department and/or if the company includes environmental concern in their mission or vision statement (in the annual report), zero otherwise. EC is expected to have a positive sign.

ISO 14001 Certification (ISO)

A dummy variable of 1 is given to all companies with ISO 14001 certification as of 2001, 0 otherwise. Companies that were awarded ISO 14001 in 2001 are given also a score of 1 in 2000 even if the certification happened in 2001. This is because the process through which ISO 14001 certification is awarded must have started a year before or even earlier. This information was taken from the ERMM Report (2002). ISO is predicted to be positively related to environmental disclosures.

Average Return on Assets (AROA)

The average return on assets (AROA) is simply last year's ROA plus current year's ROA divided by 2. AROA data are again taken from the annual reports. This is expected to be positive.

Change in Firm Value (CFV)

The change in firm value is the difference between the share market price at the beginning of the period and share market price three months after the balance data. This information was taken from *Compustat*. CFV is predicted to have a positive sign.

4.3.3 Control Variables

Size (LSIZ)

The literature suggests that the larger the firms are, the more likely these firms will be under public scrutiny. To control for possible size effects, this variable is defined as the natural log value of the firm's average revenues (current year plus previous year's sales revenue divided by two).

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 incorporated and is expected to be positively associated to the quality and quantity of disclosure. This information was taken from the KLSE website.

5.0 RESULTS AND DISCUSSION

5.1 Quality of Disclosures

Table 2 contains the summary of the category of related disclosures made in 2000 and 2001 tabulated by the number of companies disclosing in different parts of the annual report. Only one company made a disclosure in the Financial Statement/Notes to the Accounts (FS/N). The Chairman's Statement (CSTAT) is where a considerable number of companies provide environmental disclosures. However, the most common place to find environmental disclosures is in the Operations Review section or in other sections (OR/O) like the calendar of activities, vision/mission statement or as a separate section. Table 2 shows clearly that majority of the companies provide general qualitative disclosures (score of 1) with only 3 (at most) providing quantitative information (awarded a score of 3).

It is also noticeable that the category that is most commonly mentioned is the firm's policies or concern for the environment whilst none provided any information on *accrued liabilities/deferred tax provision relating to environmental expenditures* (category 5) as well as on *present and potential litigation and estimated litigation cost / contingent liability* (categories 7, 8 & 9). This is likely to change once the Listing Requirement requiring disclosure of any litigation takes effect. Overall, however, it appears that the quality of environmental disclosures in Malaysian companies still has a lot of room for improvement.

[insert Table 2 about here]

5.2 Descriptive Statistics

Descriptive statistics is shown in Table 3. The quantity ranged from 0 to 95 sentences with a mean (median) of 16.37 (9) sentences. The quality of disclosures, on the other hand, ranged from 0 to a maximum of 22 with a mean (median) of 6.58 (5). Shareholder power (SP) has a minimum of 14.87%, maximum of 87% and a mean (median) of 58.88% (59.16%) indicating that majority of the firms in the sample have high ownership concentration. The creditor power (CP) has a wide range from a low of 2.47% to a high of 1031%. The median of 72.43% is probably a better representation rather than the mean of 127.83% which was too high because of an outlier, i.e. a company in the financial sector with more than 1000% debt to equity ratio. Despite this, it is still clear that majority of the Malaysian companies are highly geared. The average return on assets (AROA) shows that half the companies in the sample have AROA of 5.72% and above with a mean return of 6.22%. The change in firm value range from a decrease of \$1.35 to an increase of \$2.00 with a mean of \$0.04. This is not surprising given that Malaysia has suffered dramatically from the Asian crisis in 1997 and is probably still in the process of recovering in the years 2000 to 2001.

[insert Table 3 about here]

The Pearson product moment correlation matrix shown in the bottom left side of Table 4 indicates that the quality and quantity of disclosures are highly correlated with a correlation coefficient of 0.901 at a significance level of $p < 0.0001$. Hence it is reasonable to suggest that the counting of sentences represent a good estimate of the quality of disclosures. There is no indication that an unacceptable level of multicollinearity is present between independent variables as the highest correlation coefficient is 0.381 for environmental concern (EC) and ISO 14001. 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 4.

[insert Table 4 about here]

5.3 Univariate Analysis

Table 5 shows the univariate results using ordinary least squares (OLS) regression. Univariate analysis showed that EC is significantly positively associated with both QLENDIS and QTENDIS ($p < .00001$). This is consistent with multivariate findings and is highly expected as those companies portraying a great concern for the environment are the ones likely to provide environmental disclosure.

[insert Table 5 about here]

GP and ISO are also positively related to QLENDIS (at 5% significant level) but only marginally related to QTENDIS (at 10% significant level). All the other variables are not significant except for AROA which is marginally negatively associated with QLENDIS at 10% significance level. Most of the independent variables have the expected sign with the exception of SP, AROA and LSIZ (for QLENDIS only).

5.4 Multivariate Analysis and Discussion

The results for the multivariate analysis using multiple ordinary least squares (OLS) regressions is shown in Tables 6. Two OLS regressions were performed: one for each of the dependent variables QLENDIS and QTENDIS.

The first model with quality of environmental disclosures (QLENDIS) as the dependent variable explains 23% of the variation in quality and is significant at $p = .001$ whilst the second model with quantity of environmental disclosures (QTENDIS) as the dependent variable explains 19% and is significant at $p = 0.004$. Only Hypothesis 3 and 4 are supported for both models. Consistent with the univariate results findings, both the Government Power (GP) and Environmental Concern (EC) are significantly positively associated with the quality and quantity of disclosures at $p < .05$ and $p < .01$ respectively.

Of the three stakeholders represented, only GP showed a significant association. Both the shareholder power (SP) and creditor power (CP) are showing the expected sign but are not significant. This may sound a bit out of the ordinary as both the shareholders and the creditors represent the two strongest groups of stakeholders in a firm. The insignificant association between the dependent variables and the SP is consistent with Roberts' (1992) findings. Arguably, it's not the level of ownership dispersion that corresponds to the level of disclosure but perhaps more the concern for the environment by the top management or the majority shareholders.

[insert Table 6 about here]

Despite the fact that majority of the companies are highly levered, CP was not significantly associated with disclosure. Whilst previous studies (Roberts, 1992; Chan, 1996) found CP to be significant, a possible explanation would be that given the current regulatory framework in Malaysia (i.e. where no publicly available environmental performance measure is available),

the creditors may not necessarily demand this type of disclosure from the companies. Hence, there is no pressure to provide environmental disclosures to creditors.

GP has consistently shown significant association both in the univariate and multivariate analysis. Whilst there is still no mandatory requirement to provide environmental disclosure in Malaysia, companies in the highly environmentally-sensitive industries are the ones most likely to face government sanction and as such, they are the ones most likely to provide environmental disclosures. This implies that government sanctions can play a vital role in improving the level of disclosure.

Of the two measures of strategic posture, Environmental Concern (EC) consistently showed significantly positive relationship with the level of disclosure at $p < .0001$. This reinforces the significance of the top management's philosophy as manifested in their strategic posture. This is consistent with Teoh and Thong's 1984 findings.

Whilst ISO 14001 certification (ISO) appeared to be significant in the univariate results, this was not the case in the multivariate analysis and this needs to be investigated further.

All the coefficients of the independent variables have the expected sign except for the AROA which has a negative sign but is not significant. The change in firm value (CFV), the other measure of economic performance, has the expected sign but is also not significant. This seems to suggest that economic performance is not significantly associated with the level of environmental disclosure consistent with previous findings in other countries (e.g. Patten, 1991; Hackston and Milne, 1996).

Both the control variables have the expected signs but are not significant. Hence, suggestions that the age and size may act as intervening variables on the level of environmental disclosures are not supported in the findings of this study.

5.5 Sensitivity Analysis

Previous studies tend to exclude firms in the financial sector because it has certain characteristic that stand out from other industries. Also, in this study, the financial sector includes the firm with the outlier D/E%. In order to check the robustness of the results, OLS regressions were recalculated excluding the firms in the financial sector. The results (not shown) are similar to the multivariate results shown earlier implying that the findings hold true with or without the firms in the financial sector.

6.0 CONCLUSIONS AND RECOMMENDATIONS FOR FUTURE RESEARCH

This study uses the stakeholder framework to uncover the determinants of environmental disclosures in Malaysian listed companies. The stakeholder theory is operationalised using Ullman's (1985) three-dimensional framework that includes stakeholder power, strategic posture and economic performance. The findings in this study seems to suggest that the main determinant in providing environmental disclosures is the level of conviction to environmental issues (EC) by the top management (a measure of strategic posture) and the government's power (GP) to sanction companies (a measure of stakeholder power). This is not surprising given that the current regulatory framework in Malaysia has no mandatory requirement to provide environmental disclosures and the companies' environmental performance is kept confidential by the Department of Environment.

Measures of economic performance, which include both accounting-based and market-based measure, showed no significant relation with the level of environmental disclosure.

This study also found that whilst currently, the number of companies providing voluntary environmental disclosure may have increased, the majority of environmental disclosures are still confined to the provision of general or vague descriptions. Hence, there is a lot of room for improvement as to the quality of disclosure. Disclosures on environmentally-related litigation is one category that has not been disclosed by any of the companies included in the study. Whilst the Listing Requirements of the Kuala Lumpur Stock Exchange (KLSE) may help alleviate this situation, the findings of this study could be seen as a starting point for a more thorough public discussion of the social and environmental responsibilities of the companies particularly those which are directly involved in environmentally sensitive industries.

For future research, it would be interesting and insightful to know if the quality and quantity of environmental disclosures in the annual report increase as the KLSE Listing Requirement takes effect.

It is also worth investigating further whether the top management concern for the environment not only have positive association with the level of disclosure but also with the level of environmental performance, that is, whether EC translates to actual care for the environment.

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Appendix A:
LIST OF DISCLOSING COMPANIES INCLUDED IN THIS STUDY
AS IDENTIFIED BY THE ERM REPORT, 2002

	COMPANY NAME	COMPANY CODE
1	Aluminium Company Malaysia Berhad	ALCOM
2	Cement Industries of Malaysia Berhad	CIMA
3	Chemical Company of Malaysia Berhad	CCM
4	DRB-Hicom Berhad	DRB HICOM
5	Fraser and Neave Holdings Berhad	F&N
6	Golden Hope Plantations Berhad	GHOPE
7	Golden Pharos Berhad	GPHAROS
8	Guinness Anchor Berhad	GUINNESS
9	Guthrie Ropel Berhad	GROPEL
10	Highlands and Lowlands Berhad	H/L LAND
11	IOI Corporation Berhad	IOI CORP
12	IJM Corporation Berhad	IJM CORP
13	Intan Utilities Berhad	INTAN UTIL
14	Kim Hin Industry Berhad	KIM HIN
15	Kulim (Malaysia) Berhad	KULIM
16	Kumpulan Guthrie Berhad	GUTHRIE
17	Lingui Developments Berhad	LINGUI
18	Malayan Cement Berhad	MCEMENT
19	Malaysia International Shipping Corporation Berhad	MISC
20	Matsushita Electric Company (Malaysia) Berhad	M'SHITA
21	Negara Properties (Malaysia) Berhad	NEGARA
22	Perusahaan Otomobil Nasional Berhad	PROTON
23	Petronas Dagangan Berhad	PDB/PETDAG
24	Petronas Gas Berhad	PGAS/PETGAS
25	Powertek Berhad	POWERTK
26	Projek Penyelenggaraan Lebuhraya Berhad	PROPEL
27	Public Bank Berhad	PBB/PBBANK
28	Public Finance Berhad	PFB/PBFIN
29	Puncak Niaga Holdings Berhad	PUNCAK
30	Road Builders (M) Holdings Berhad	ROADBLD
31	Shell Refining Company (Federation of Malaysia) Berhad	SHELL
32	Star Publications (Malaysia) Berhad	STAR
33	Ta Ann Holdings Berhad	TAANN
34	Tenaga Nasional Berhad	TENAGA
35	TH Group Berhad	THGROUP
36	Tractors Malaysia Holdings Berhad	TRACTOR
37	Tradewinds (Malaysia) Berhad	T'WINDS/TWS
38	UMW Holdings Berhad	UMW
39	United Engineers (Malaysia) Berhad	UE(M)
40	Worldwide Holdings Berhad	WHB/WLDWIDE

TABLE 1

SUMMARY OF STUDIES ADOPTING ULLMAN'S FRAMEWORK

ROBERTS (1992)	ROBERTS (1992)	ROBERTS'	CHAN (1996)	CHAN (1996)	CHAN'S	THIS STUDY
<i>Sample => US</i>	HOW MEASURED	FINDINGS	<i>Sample => Australia</i>	HOW MEASURED	FINDINGS	<i>Sample =>Malaysia</i>
<i>130 cos. investigated</i>			<i>102 largest listed firms</i>			<i>all 40 disclosing companies in</i>
<i>in 1984-86 by the CEP</i>	p. 601		<i>(BRW, 1995)</i>	p. 58		<i>the ERMM Report 2000-2001</i>
Dependent Variables			Dependent Variables			Dependent Variables
SOCIAL DISCLOSURE	CEP ratings		QUALITY	Questionnaire rated		QLENDIS - content analysis
			QUANTITY	No. of sentences		QTENDIS - sentence count
Independent Variables (expected sign)			Independent Variables (expected sign)			IVs (expected sign)
1ST DIMENSION			1ST DIMENSION			1ST DIMENSION
Stakeholder Power			Stakeholder Power			Stakeholder Power
Stockholders (-)	% ownership - 5%+	not sig. / -	Shareholder (+/-)	% ownership - 5%+	sig. / +	SP (-)=> % ownership - 5%+
Gov'/Regulators (+)	Political contributions	sig. @ .05 / +	Creditor (+)	Ave. D/E	not sig.	CP(+)=> Ave. D/E%
Ceditor (+)	Ave. D/E => '81-84	sig. @ .10 / +	Regulator (+)	1=prosecuted; 0=not	sig. / +	GP (+) =>
			Lobby Group (+)	1=high ind. Sensitivity	sig. / +	1= high industry sensitivity
				0 = low sensitivity		0 = low industry sensitivity
2ND DIMENSION			2ND DIMENSION			2ND DIMENSION
Strategic Posture			Strategic Posture			Strategic Posture
Public Affairs (+)	Ave. size of public affairs staff - '83-'84	sig. @ .10 / +	Mission Statement (+)	1 = acknowledgment	sig. / +	EC(+)=> 1=committee and/or
				0 = no acknowledgment		Msn stmt env'l concern
Philanthropic foundation (+)	1 = PF; 0 = nil	sig. @ .01 / +	Env'tl Committee (+)	1 = committee exist	sig. / +	0 = none
				0 = no committee		ISO(+)=>1=ISO14001; 0=none
3RD DIMENSION			3RD DIMENSION			3RD DIMENSION
Econ. Performance			Econ. Performance			Econ. Performance
MGRROE (+)	Ave. change in ROE 1981-84	sig. @ .05 / +	ROE '94 (+)	1994 Return on Assets	not sig.	AROA(+)=> Ave. Ret.on Assets
			ROE '95 (+)	1995 Return on Assets	not sig.	CFV(+)=>Change in Firm Value
BETA (-)	1984 beta mrkt model with 60 month prd	sig. @ .10 / -	Average ROE (+)	Ave ROE	not sig.	
Control Variables			Control Variables			Control Variables
AGE (+)	age in 1984	sig. @ .01 / +	SIZE (+)	log market capitalisation	sig. / +	LSIZ(+)=>log of average revenues
IND (+)	1 = auto, airline, oil; 0 = others	sig. @ .05 / +	RISK (+)	age since inception	sig. / +	AGE(+)=> years since inception
SIZE (+/-)	Ave. revenues '81-84	not sig. / -				

Table 2: Environmental Disclosure Ratings Summary According to Location of Disclosures in Annual Report for 2000-2001

Categories and Items of Information	NUMBER OF COMPANIES DISCLOSING WITH THE																		
	SCORE=3						SCORE=2						SCORE=1						
	FS/N		CSTAT		OR/O		FS/N		CSTAT		OR/O		FS/N		CSTAT		OR/O		
	'00	'01	'00	'01	'00	'01	'00	'01	'00	'01	'00	'01	'00	'01	'00	'01	'00	'01	
<i>ECONOMIC FACTORS</i>																			
1.Past/current expenditures: environmental equipment, facilities and remediation					1	2						4	1			4	3	5	8
2.Past/current operating costs: environmental equipment, facilities and remediation	1	1	1		1	2						2	2			4	2	5	9
3.Future expenditures: environmental equipment, facilities and remediation					2	1										2	3	3	6
4.Future operating costs: environmental equipment, facilities and remediation																2		5	2
5.Accrued liabilities/ Deferred tax provision relating to environmental expenditures																			
6.Restructuring, shutdown and/or plant closing due to environmental concerns																			1
<i>LITIGATION</i>																			
7.Present litigation																			
8.Potential litigation																			
9.Estimated cost / Contingent liability																			
<i>POLLUTION ABATEMENT</i>																			
10.Pollution abatement												5	5			4	2	6	9
11.Emission and discharge information					2	2			1				1				1	4	2
12.Compliance status of facilities					1	1						4	5			9	8	11	15
<i>OTHER ENVIRONMENTALLY-RELATED INFORMATION</i>																			
13.Discussion of regulations and requirements												2	2			2	1	2	3
14.Policies or concern for the environment									1	1	9	10	1		15	12	14	18	
15.Conservation of natural resources					3	2			1		4	5			8	3	7	9	
16.Awards for environmental protection																	1	2	5
17.Recycling					2	1			1		3	3			1	1	5	13	
18.Department/committee/offices for pollution control															2	2	5	6	
19.Other environmentally friendly products and/or activities									1		4	4			2	2		3	

Table 3: Descriptive Statistics

VARIABLE	MINIMUM	MAXIMUM	MEAN	MEDIAN	STD DEV
QLENDIS	0	22	6.58	5.00	0.67
QTENDIS	0	95	16.37	9.00	2.29
SP	14.87	87	58.88	59.16	2.09
CP	2.47	1031	127.83	72.43	21.50
AROA	-10.32	21	6.22	5.72	0.59
FIVAL	-1.35	2	0.04	0.00	0.07
LSIZ	7.50	10	8.86	8.77	0.07
AGE	3	51	25.46	28.00	1.37

Table 4: Correlation Matrix*

		QLENDIS	QTENDIS	SP	CP	GP	EC	ISO	AROA	CFV	LSIZ	AGE
QLENDIS	Correlation	1	0.923	0.036	0.029	0.174	0.518	0.171	-0.205	0.097	-0.005	0.016
	Sig. (2-tailed)		0.000	0.755	0.801	0.125	0.000	0.132	0.070	0.394	0.968	0.888
QTENDIS	Correlation	0.901	1	0.032	0.057	0.148	0.504	0.130	-0.137	0.047	-0.013	0.040
	Sig. (2-tailed)	0.000		0.779	0.616	0.193	0.000	0.255	0.229	0.682	0.910	0.729
SP	Correlation	0.015	0.006	1	0.146	0.021	0.193	0.351	-0.007	-0.145	0.253	0.100
	Sig. (2-tailed)	0.893	0.955		0.199	0.852	0.088	0.002	0.950	0.201	0.025	0.379
CP	Correlation	0.042	0.115	-0.156	1	-0.070	-0.073	0.067	-0.267	0.093	0.473	0.039
	Sig. (2-tailed)	0.713	0.315	0.169		0.542	0.522	0.559	0.017	0.415	0.000	0.732
GP	Correlation	0.224	0.206	0.081	-0.249	1	0.051	0.051	-0.155	-0.191	-0.169	-0.128
	Sig. (2-tailed)	0.047	0.069	0.478	0.027		0.658	0.658	0.172	0.091	0.137	0.259
EC	Correlation	0.487	0.440	0.166	-0.065	0.051	1	0.381	-0.037	0.036	-0.074	-0.074
	Sig. (2-tailed)	0.000	0.000	0.145	0.567	0.658		0.001	0.747	0.751	0.518	0.518
ISO	Correlation	0.242	0.210	0.316	-0.050	0.051	0.381	1	-0.070	0.234	0.268	0.236
	Sig. (2-tailed)	0.032	0.064	0.005	0.664	0.658	0.001		0.542	0.038	0.017	0.036
AROA	Correlation	-0.201	-0.117	0.030	-0.191	-0.173	-0.069	-0.014	1	0.023	0.038	-0.246
	Sig. (2-tailed)	0.076	0.304	0.795	0.091	0.128	0.544	0.905		0.842	0.741	0.029
FIVAL	Correlation	0.004	0.005	-0.183	0.091	-0.191	0.029	0.156	0.086	1	0.042	0.026
	Sig. (2-tailed)	0.971	0.966	0.106	0.425	0.091	0.800	0.169	0.449		0.711	0.817
LSIZ	Correlation	-0.010	0.057	0.185	0.311	-0.145	-0.090	0.254	0.004	-0.012	1	0.106
	Sig. (2-tailed)	0.928	0.616	0.102	0.005	0.203	0.430	0.024	0.974	0.916		0.355
AGE	Correlation	0.028	0.032	0.067	0.131	-0.105	-0.102	0.246	-0.104	0.032	0.061	1
	Sig. (2-tailed)	0.808	0.781	0.560	0.250	0.358	0.371	0.029	0.361	0.778	0.595	

Note: *Pearson Product Moment Correlation is in the bottom left matrix while Spearman's Correlation is in the top right matrix.

Table 5: Univariate Results for Quality and Quantity of Disclosures

	QLENDIS			QTENDIS		
	COEFF	T-STAT	PVALUE	COEFF	T-STAT	PVALUE
SP	0.005	0.135	0.893	0.007	0.057	0.955
CP	0.001	0.370	0.713	0.012	1.012	0.315
GP	2.907	2.021	0.047	9.166	1.844	0.069
EC	6.036	4.887	0.000	18.798	4.305	0.000
ISO	2.998	2.185	0.032	8.952	1.882	0.064
AROA	-0.226	-1.799	0.076	-0.454	-1.035	0.304
FV	0.043	0.037	0.971	0.174	0.043	0.966
LSIZ (ARev)	-0.096	-0.084	0.933	2.017	0.511	0.611
AGE	0.013	0.243	0.808	0.053	0.279	0.781

Table 6: OLS Results for Quality and Quantity of Disclosure

	QLENDIS			QTENDIS		
	COEFF	T-STAT	PVALUE	COEFF	T-STAT	PVALUE
Intercept	-0.225	-0.022	0.983	-28.369	-0.775	0.441
SP	-0.030	-0.854	0.396	-0.102	-0.821	0.415
CP	0.002	0.633	0.529	0.016	1.288	0.202
GP	2.853	2.034	0.046	11.163	2.256	0.027
EC	5.959	4.216	0.000	19.903	3.991	0.000
ISO	0.619	0.392	0.696	0.422	0.076	0.940
AROA	-0.119	-1.002	0.320	-0.007	-0.017	0.986
FV	0.082	0.075	0.940	0.196	0.051	0.959
LSIZ (ARev)	0.439	0.378	0.707	3.424	0.836	0.406
AGE	0.034	0.652	0.517	0.139	0.751	0.455
	N= 79	Adj. R ² =.231	Std. Error =5.19	N=79	Adj. R ² =.191	Std. Error =18.32
		F= 3.601	Sig. 0.001		F = 3.406	Sig. 0.004