THE IMPACT OF CORPORATE ENVIRONMENTAL RESPONSIBILITY ON FINANCIAL PERFORMANCE: PERSPECTIVE FROM THE MULTINATIONAL EXTRACTIVE SECTOR

A thesis submitted for the degree of Doctor of Philosophy

by

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DEDICATION

To my darling wife, Modesola and my cute boys, Anjola, Subomi and Funbi for their love and supports. God bless you all

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ABSTRACT

The research into the relationship between social-environmental responsibility and financial performance continues to draw the attention of both scholars and practitioners. This is because previous studies have not presented an unequivocal outcome as to the direction of causation between the two constructs. To address this obvious gap, this study explores the relationship between corporate environmental responsibility and financial performance with a focus on the extractive sector where previous studies least investigated empirically and one of the worst culprits in environmental degradation.

The study explores the impact of corporate environmental responsibility on the financial performance in the extractive sector using a pooled secondary data of 101 multinational extractive companies for the period of 2008-2010 and primary data from a survey of 275 extractive sector managers. The results of this study show that there is no relationship between corporate environmental responsibility and financial performance while the environmental attitude of managers is positively related to the perceived corporate reputation of their companies.

A further investigation shows that sector unique characteristics are responsible for the neutral relationship between corporate environmental responsibility and financial performance. However, some results show statistically insignificant positive relation and this points to the fact that in the long-term, poor sensitivity to the environment may not be sustainable.

Table of contents

Table of Figures

Table of Tables

CHAPTER ONE: INTRODUCTION

1.1.Introduction

This thesis seeks to explore the impact of corporate environmental responsibility on financial performance in the extractive sector. Specifically, the research population is Standard & Poor's (S&P) 500 (the most capitalised 500 firms trading on the USA stock market companies, NYSE Euronext and NASDAQ OMX) while the sample comprises 101 companies classified by this study as extractive companies by use of the World Bank definition of extractive industries (i.e. the industries which include oil, gas, mining of mineral resources and metal). The thesis aims to achieve five main objectives. First, the thesis attempts to empirically explore the impact of corporate environmental responsibility on the firm's profit in the extractive sector. Second, the study seeks to ascertain the impact of corporate environmental responsibility on the firm value within the extractive sector. Third, the thesis aims to establish if the extractive sector exhibits a stronger relationship between corporate environmental responsibility and financial performance than the S&P 500. Fourth, the study intends to examine whether the environmental attitudes of managers in the extractive sector affect their companies' perceived corporate reputation. Finally, the study seeks to know if the top level managers exhibit better environmental attitudes than the lower level managers within the extractive sector.

The remaining part of this chapter will explain the background to the choice of the thesis topic, the problem that gave rise to the study, the study main objectives and its

significance and likely contributions. The chapter will equally explain the study's conceptual framework and finally the organisation of the entire thesis.

1.2. Background to the study

Environmental sustainability is an issue that has captured the attention of national and international, political and business leaders across the globe and the developed world. The creation of wealth has led to various environmental impacts such as depletion of non-renewable resources, global warming, diminution of land resources, acidification, reduction of water resources and potential threats to health and safety of employees (Singh et al., 2007). The issue of environmental abuses and degradation has led various sectors, governments and NGOs to engage with environmental sustainability debates and initiate strategies for responding to the challenges of sustainable development. It is also in response to this that the academic world has dedicated various groups to the issues of environment and sustainable development, including Brunel Research in Enterprise, Innovation Sustainability and Ethics (BRESE), Royal Holloway's Centre for Research into Sustainability and the International Centre for Corporate Social Responsibility at Nottingham University in the United Kingdom.

A broad range of corporate stakeholders have regarded environmental issues as important, these include consumers, shareholders, potential investors, creditors, regulators, employees and the general public (Duckitt et al., 2010; Marshall et al., 2009; Lopez et al., 2007; Cottrell, 2003; Bringer and Benforado, 1994; Makower,

1993). From an investment standpoint, shareholder value suffers when companies pay millions of dollars in fines, clean-up fees, and court costs to keep corporate officers out of jail (Coleman, 2011; Minow and Deal, 1991). From a consumer perspective, growing numbers of customers are showing preference for greener companies and products. For example, approximately a third of all adults in the UK pay premium of 15-50% for organically-sourced foods (Oliff and Vandermerwe, 1990). From an employment perspective, it is becoming more difficult to attract top executives and other key employees to positions in industries with high environmental risk (Clark, 1990). From the general public's standpoint, surveys conducted in the aftermath of the Exxon Valdez spill reported that approximately 60% of Americans named pollution as a very serious threat to their health and the environment, and approximately 75% believe that business should be responsible for the clean-up (Smith, 1990). The recent BP Plc. (April 2010) deep water rig explosion in the Gulf of Mexico resulted in loss of employee lives and biodiversity (all living things) in the ocean, further, the collapse of goldmine fields in both Chile and Ecuador in August and October 2010 respectively led to the loss of employees and permanent impairment to the landscape, which have been greeted with public outcry and expressions of dismay.

The environment has a long history of being regarded as unrelated to the economic system (Diaz, 1996; Ludevid, 2000). Businesses for many decades have ignored the impact of their activities on the natural and social environment in which they operated, unless it had direct repercussions on the profit and loss account. Friedman (1970) famously supported this classical view of business objectives by stating that the sole reason for a firm’s existence is to maximise the wealth of the shareholders,

and that any act of philanthropy equates to stealing from the shareholders' wealth. Failure of a business to meet this fiduciary obligation was not only reprehensible but would result in sanctions such as a drop in share price or an enforced change of management (Friedman, 1970).

However, the neglect by business of the negative externalities arising from the pursuit of economic objectives along with various environmental abuses by companies (e.g. Royal Dutch/Shell Brent Spar dumping and Ogoni crises in 1995 and BP's Gulf of Mexico rig explosion in 2010) have created less than positive attitudes amongst stakeholders towards business. Rodriguez and Cruz (2007) argued that customers are gradually altering their purchasing attitudes towards behaviours that are more sensitive to the natural and social environment. This then risks a tarnished image for those firms not taking environmental issues seriously. The politico-legal system has also undergone drastic transformation, directed at limiting the environmental degradation caused by business activities. For example, many world leaders have made specific commitments towards a phased reduction in carbon dioxide emissions. The United States is committed to cutting emission by 17 per cent in 2020, 30 per cent by 2025, 42 per cent by 2030 and 83 per cent by 2050. The United Kingdom is on course to meet its pledge to cut carbon dioxide levels by 34 per cent by 2020 and by 2050 to fulfil the target of an 80 per cent cut in greenhouse gases (Worthington, 2009). The United Nations conferences held in Copenhagen, Denmark in December 2009 and Durban, South Africa December 2011are the most recent of the environmental summits reflecting this growing concern (Goldenberg, 2009; Jacobs, 2011).

Despite the rising interest in environmental issues, there have been divergent views regarding the nature of the relationship between corporate environmental responsibility and financial performance. The findings from research to date are equivocal. Some studies purport to find a positive relationship (Coleman, 2011; Orlitzky, 2008; Rodriguez and Cruz, 2007; Salama, 2005; Judge and Douglas, 1998; Russo and Fouts, 1997; Klassen and McLaughlin, 1996; Hart and Ahuja, 1996). Similar studies find a negative relationship (Thornton et al., 2003; Cordeiro and Sarkis, 1997; Worrell et al., 1995; Williams et al., 1993). While others show either inconclusive results or no (neutral) effect (Makni et al., 2009; King et al., 2001; Khanna and Damon, 1999; Levy 1995; Rockness et al., 1986). A synthesis of previous studies using meta-analysis concluded that there is a positive and highly variable relationship between social-environmental responsibility and corporate financial performance (Orlitzky, 2003; Allouch and Laroche, 2005b; Wu, 2006; Margolis et al., 2007; Su and Song, 2010).

1.3. Defining corporate environmental responsibility

In a comprehensive literature review, Metcalf et al. (1995) found few articles which described environmental performance measurement systems and the articles they identified focused more on attributes of effective systems rather than on defining and measuring environmental performance. Lober (1996) notes that where judgments are frequently made about which companies are most green, no clear or agreed upon definition of greenness exists. Wood (1991) and Lober (1996) developed complementary theoretical approaches to defining corporate social and

environmental performance dimensions. Wood (1991) offers a comprehensive view of social performance measurement, of which environmental performance might be considered an important component. Wood (1991) argues that four general factors comprise a company's corporate social performance, including “the degree to which principles of corporate social responsibility motivate actions taken on behalf of the company; the degree to which the firm makes use of socially responsive processes; the existence and nature of policies and programs designed to manage the firm's social relationship, and the social impacts (i.e. observable outcomes) of the firm's action, program and policies” (p.63). Focusing on both internal motivations and external consequences of a company's actions, Wood (1991) proposes that corporate social performance consists of both process- and outcome-oriented dimensions.

Lober (1996) offers an approach which complements and augments Wood's model but which explicitly addresses environmental performance. Drawing on the organisational effectiveness literature, Lober (1996) opined that organisations should consider four dimensions of environmental effectiveness, including: how well an organisation meets its stated goals (output-based approach); how organisations capture resources to gain competitive advantage (system resource-based approach); information flows and employee communication (internal processes-based approach); and the degree to which stakeholder needs are met (strategic constituency-based approach).

Corporate environmental responsibility (CER) can be classified within a broader field of corporate social responsibility (CSR), which can be as diverse as child labour, the security and quality of products and the environmental impact of firms

(Rodriguez and Cruz, 2007). Similarly, Gray, Owen and Adam (1996) identified seven viewpoints of social responsibility and two of the viewpoints are arguments in support of corporate environmental responsibility, the two viewpoints include social ecologists and deep ecologists. The social ecologist is of the view that businesses leave a social and environmental footprint through the economic processes that result in resource exhaustion, waste and pollution. Therefore, organisations must adopt socially responsible positions by ensuring that the environment is restored to habitable position. The deep ecologist is of the view that human beings have no greater rights to resources or life than other species and do not have the right to subjugate social and environmental systems. Therefore the economic system that trade-off threat to the existence of species against economic objectives is immoral.

Corporate social responsibility (CSR) is a base point for complementary themes like corporate social performance (CSP), social-environmental responsibility (SER), corporate environmental performance (CEP), corporate environmental responsibility (CER) and corporate citizenship (CC) (Carrol, 2008; Crane and Matten, 2010). In view of the imprecise meaning of CER, and the absence of generally accepted definition, this study defines CER as obligation of an organisation to conduct its business in such a way that environmental consequences of its activities (negative externalities) are managed with a view of neutral impact on human and biodiversity through voluntary actions and regulatory compliance. This definition implies ethical conduct (ethical organisations do right things voluntarily) and rising up to institutional pressures. Throughout this research, CER, SER and CSR will be used interchangeably and these constructs are operationally considered as same.

1.4. Why the extractive sector?

The World Bank has defined the extractive industries to include oil, gas, and the mining of minerals and metals (World Bank, 2005). These industries tend to have a heavy "foot-print''- large, wide-ranging, and long-term environmental and social impacts on society with few social and environmental credentials (World Bank, 2005).

The depletion of non-renewable resources and environmental impacts as a result of air emissions, discharges of liquid effluents and the generation of large volumes of solid waste are the most important environmental issues for the extractive industries. Energy use and contribution to global warming are also considered to be significant. Some estimates show that the mining and minerals industry consume 4–7% of the energy used globally (World Bank, 2005). In addition to these, extraction activities have a visual impact on the landscape and lead to the destruction or disturbance of natural habitats, resulting in a loss of human lives and damage to the extended chain of biodiversity. Mining of some types of minerals (e.g. some metals and cement) is also associated with acid drainage problems that can cause long-term acidification of waterways and negatively impact biodiversity. Furthermore, some effluents generated by the extractive industries can also contain large quantities of toxic substances, such as cyanides and heavy metals, methane (1 tonne of methane is equivalent of 23 tonnes of carbon dioxide) which can pose significant human health and ecological risks. In general, the environmental impacts of metals mining, oil, gas and mineral mining are likely to be greater than other sectors because of toxic

chemicals that are often used in minerals separation (Azapagic, 2004), and obnoxious gaseous substances like carbon dioxide, methane and several others.

A number of environmental issues can also arise across the whole life cycle of extractive sector products including the use and disposal stages. For instance, the use of some minerals can have toxic effects on humans and the environment. The most drastic examples here are asbestos, lead and uranium. Other issues include generation of solid waste and loss of valuable resources at the end of the product's useful life (Azapagic, 2004). Some minerals can be recovered and recycled to increase minerals eco-efficiency. The major hazards of the production process to employees and the immediate environment cannot be quantified. Recent examples include goldmine fields caving in and trapping miners in both Chile and Ecuador, both events happening in August 2010 and October 2010 respectively. While the Chilean miners were salvaged by a rescue operation, the Ecuadorean miners buried alive when the rescue operation failed. Another example is the British Petroleum (BP) explosion on the drilling rig (underwater well) on April 20, 2010 which then gushed oil into the Gulf of Mexico in the United States of America (US). This led to loss of workers' lives, loss of biodiversity in the water and surrounding land and loss of business by tourism companies and fish farmers.

The extractive industries' production facilities can also pose several environmental problems at the end of their useful life. These include water contamination due to acid mine drainage and other toxic leachates, irreversible loss of biodiversity, loss of land and visual impact (Azapagic, 2004). A number of abandoned mine sites and unrestored quarries are a testimony to the unsatisfactory environmental performance

of the industries in the past (European Commission, 2000). A well celebrated experience was the decision of Shell Petroleum Plc to dispose of the Brent Spar oil storage buoy in 1995 after it was considered that it had no more economic value. The decision was criticised by many environmental pressure groups and later Shell decided to back out of the decision and created an alternative use for the facility.

There are several reasons for studying corporate environmental performance in the extractive sector context. First, the extractive sector tends to be a very large producer of pollution due to its size and predominance in pollution-intensive industries such as oil, gas, mining of minerals and metal. Second, because of their relatively high expenditure on research and development and their technological competencies, the extractive industries can potentially create and/or transfer pollution reducing technologies to their globally dispersed operations. Finally, the behaviour of multinational extractive companies is expected to differ from that of purely national firms. Multinational extractive companies are faced with regulations and enforcement practices that vary across countries and have to make choices between a standardised or differentiated response. Moreover, extractive industries are subject to international conventions, but are arguably more powerful and less subject to control by national governments and agencies than purely national firms and perfectly competitive companies (Gleckman, 1995; Bruno, 1996). This obviously arises as a result of role conflict when national governments are both a co-investor with multinational companies (i.e. Joint venture partner) and a regulator.

1.5. Problem statement and motivation for the study

The motivation for the study arises out of the questions posed by alleged environmental abuses of multinational extractive companies who are charged with depleting non-renewable resources, and further harming the environment through air emission, discharge of liquid effluents and generation of large volume solid waste (Azapagic, 2004). Beyond the adverse environmental impacts of the extractive companies, they are also accused of elevating the unethical business conduct and social ills of modern society in the form of bribery (giving or receiving something of value after a transaction is completed), extortion (demanding a sum of money or goods with threat of harms), conflict of interest (employee has an economic or personal interest in a transaction), kickbacks (portion of the value of the contract demanded as a bribe by an official for securing contract), corporate espionage (theft of trade secrets, theft of intellectual property or copyright) and commission/fee (paid to an agent for assistance in securing a commercial contract) (CIMA, 2010; World Bank, 2005).

In such a context, it becomes pertinent to empirically find out if negative or positive corporate environmental behaviour impact on financial performance. For instance it is expected that a company with poor environmental credentials is punished in the form of dwindling financial fortune by strategic stakeholders like consumers ceteris paribus. But this may not be the same always judging from previous research evidences that have shown inconsistent results when the relationship between corporate environmental responsibility and financial performance is investigated. The typical conclusion, based on narrative reviews of literature is that the empirical

evidence is too mixed to allow for any firm conclusion (e.g. Orlitzky, 2008; Cordeiro and Sarkis, 1997; Ullmann, 1985). In most of the previous reviews, poor measures, methodological shortcomings, difficulties in obtaining data and weak theory construction are often mentioned as causes of this apparent variability in findings (Coleman, 2011; Griffin and Mahon, 1997; Wood and Jones, 1995).

In view of the inconclusiveness in study outcomes in this area and paucity of studies focusing on the extractive sector (arguably one of the worst culprits in environmental degradation), this study investigates the impact of corporate environmental responsibility on the financial performance in the extractive sector. More importantly, the focus of this study on the extractive sector will fill a gap in knowledge on how environmental degradation and unethical behaviours impact on the corporate financial performance of the companies within the sector. According to Transparency International, the oil and gas sector is perceived as third most likely to involve bribes, following only public works contracts and arms deals; while mining ranks seventh (World Bank, 2005). The extractive sector (comprising oil and gas, mining and metal industries) is equally likely to have greater environmental impacts than other sectors because of toxic chemicals that are often used in minerals separation and obnoxious gaseous substances like carbon dioxide, methane and several others (Azapagic, 2004). These views point to the sector as being responsible for unethical behaviours and yet presenting some of the highest risks to the environmental integrity of the planet

The study approach is distinct from previous studies by focusing on the extractive sector comprising four industries (oil, gas, mining of minerals and metal), generating

two different data sets and deploying two different research methods to test five hypotheses. Previous research of this nature have used singular dataset and methods to investigate the same central theme of the relationship between environmental performance and financial performance.

1.6. Objective of the study

The purpose of this study is to investigate the impact of corporate environmental responsibility on the financial performance in the extractive sector using both causal and survey research designs. The aim is to resolve the obvious research gap left by the literature in terms of inconclusive outcomes from previous similar studies, to uncover specific and novel evidence that may account for the variability in earlier study outcomes. Furthermore, the study focuses on the extractive sector to ensure that the impact of recent environmental performance of the sector is evaluated on the financial performance. In addition, the study will investigate if the environmental attitude of managers in the sector is related to the perceived corporate reputation of their companies. Finally, the study will like to know the environmental attitude intensity across the managers in different managerial cadres in the extractive sector. This will, of course, gauge the level of managers' sensitivity to environmental issues.

1.7. Research significance and contribution

The study provides new evidence on the reasons behind the variability in results of the relationship between corporate environmental responsibility (CER) and financial

performance (FP). The study's investigation reveals a neutral relationship between CER and FP in extractive sector. The findings reveal that sector characteristics account for the neutrality observable in the relationship between environmental responsibility and financial performance in the extractive sector. The characteristics of the extractive sector which include the essential nature of the product, scarcity or limited supply of the product alongside the politico-economic nature of the commodities may be the factors contributing to its financial performance and also shielding the sector from the consequences of its environmental conducts. The sector idiosyncrasy is further explained from its competitive strength, the weak power of stakeholders and the management attitudinal factors.

Competitive strength: The imperfect competitive structure of the extractive sector is a major mediating factor in the CER-FP link. The products offered by the sector which include oil, gas, cement, metal and other minerals often enjoy demand well above supply, therefore forcing the consumers and the society at large to a state of Hobson's choice (i.e. a state of taking the one option available or nothing).

Weak power of stakeholders: The study found that the power of stakeholders in the extractive sector is weakened by the sector's exclusivity and imperfect competitive structure. Highly strategic stakeholders like consumers become powerless in a state of little or no substitute for the products supplied by the sector. The major tool of boycott often exercised by consumers in other sectors and which may operate effectively in a state of perfect competition may not be effective if applied to the extractive sector because of insufficient or unavailable close substitutes for the sector's products, and a situation where demand often outweighs supply.

Management attitudinal factors: The top management level does not display a better environmental attitude than the lower level management cadre and the top management level does not see their commitment to environmental responsibility beyond the commitments or attentions lower level managers pay to environmental responsibility. This attitudinal factor cannot be totally divorced from the fact that the sector is not operating in a perfectly competitive market couple with over pampering by government and regulatory authorities.

Further contributions are made to theory by demonstrating that there is a relationship between environmental attitudes and corporate reputation. This is the first study to combine the two constructs (i.e. environmental attitude and corporate reputation) and provide verifiable evidence within the extractive sector. Another significant contribution is made by the development of a new measurement scale for "environmental attitude" and a broader perspective is given in measurement of corporate environmental responsibility. The study applies a variety of research methods to investigate the relationship between corporate environmental responsibility and financial performance, which include ex-post-facto and survey research designs, and a variety of data analysis techniques varying from multiple regression, general linear model (GLM), Pearson Product Moment correlation and analysis of variance (ANOVA).

Practising managers in the extractive sector are expected to benefit immensely from the study findings and the future outlook provided in the area of environmental responsibility in the extractive sector. The study demonstrates how regulatory bias

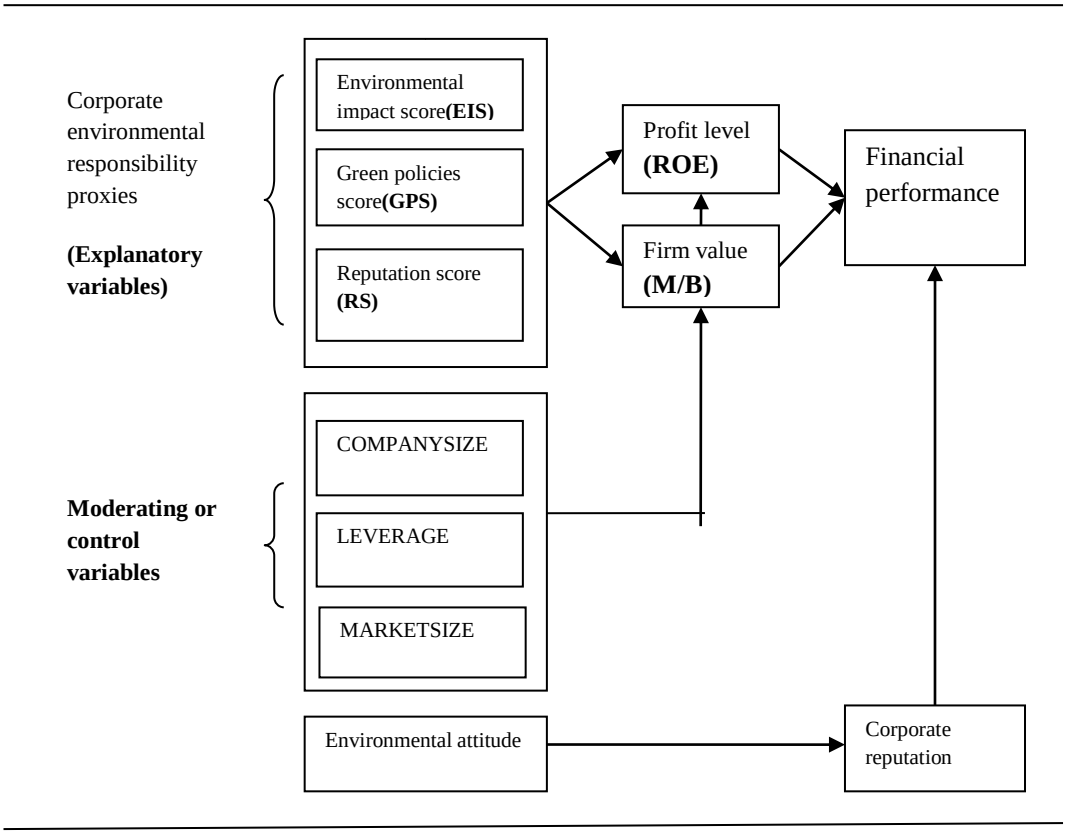
and government intervention in the affairs of the sector (as both investor and regulator)maybe likely to weaken the environmental protection drive and provides some insight to the roles regulators and government can play in bringing sanity to environmental practices in the extractive sector.

1.8. Conceptual model

The study's conceptual framework set out the relationship between corporate environmental responsibility and financial performance as demonstrated in figure1.1 below. In the study, corporate environmental responsibility is regarded as the independent variable which is represented by a series of scores- environmental impact score (EIS), green policies score (GPS), and environmental reputation score (RS). These variables are expected to influence the financial performance of companies within the extractive sector. The financial performance indices in the study include, return on investment (ROE) and ratio of market to book value (M/B ratio). Also, in previous studies of this nature the moderating variables are often considered as a third variable moderating the relationship between the corporate environmental responsibility (CER) and financial performance (FP) (Orlitzky, 2003). In order to capture the full impact of corporate environmental responsibility on financial performance, the study controls for market size effect (MARKETSIZE), company size effect (COMPANYSIZE) and leverage (LEVERAGE). In addition to the central conceptual model, a sub-model has been added to examine the correlation between environmental attitude and corporate reputation. All the study's variables

have been well defined and methods of measurement have been described in sections 4.7 to 4.8.

Figure 1.1. Shows the conceptual model of the study



Source: Developed by the author for the current study

The conceptual model assumes that a rational firm chooses to increase its 'implicit' costs (for example, incurring more social and environmental cost) in order to reduce its 'explicit' costs (for example clean-up cost, fines, payment to creditors) and competitive disadvantage (Cornell and Shapiro, 1987).

The study hypothesises that a firm's profit level (i.e. ROE) is determined by observed exogenous firm-specific variables (which include environmental impact score, green policies score and reputation survey score, company size, leverage ratio,

market size and other factor that cannot be quantified, known as residual error term). The outcome model is specified thus:

$$\text{Log } (1+ROE)_{itj} = \alpha + \beta_1 EIS_{itj-1} + \beta_2 GPS_{itj-1} + \beta_3 RS_{itj-1} + \beta_4 \text{logCOMPANYSIZE}_{itj} + \beta_5 LEVERAGE_{itj} + \beta_6 MARKET_{itj} + \mu$$

The above mathematical model is equally replicated by considering the measurement of financial performance in terms of market valuation (i.e. M/B ratio) rather than the accounting measure represented by return on investment (ROE) in model 1. Orlitzky (1999) opined that financial performance (FP) is a construct operationalised in terms of market and accounting measures. Therefore, the outcome model using market measure as the dependent variable is specified as:

$$\text{Log } (1+M/B)_{itj} = \alpha + \beta_1 EIS_{itj-1} + \beta_2 GPS_{itj-1} + \beta_3 RS_{itj-1} + \beta_4 \text{logCOMPANYSIZE}_{itj} + \beta_5 LEVERAGE_{itj} + \beta_6 MARKET_{itj} + \mu$$

The thesis takes a further step beyond the impact of corporate environmental responsibility (CER) on the financial performance (FP) of companies in the extractive sector. But within the context of CER, the thesis equally set out to investigate the relationship between environmental attitudes of managers and perceived corporate reputation of their respective companies. This complementarity is necessary in order to have broader perspective of CER as both corporate affair function (i.e. shareholders and Board of Directors' prerogative) and individual manager's behaviour (Cremer, et al., 2011; Marshall, et al., 2010). It has been supported theoretically that certain aspect of leadership attitudes can affect the propensity of firms to engage in CER (Marshall, et al., 2010; Waldman, et al., 2004).

Companies run by intellectual CEOs do more CER than comparable firms (Waldman, et al., 2004). Also, companies where the managers actively seek to achieve a positive corporate reputation and address the concerns of environmental stakeholders adopt best environmental practices (Marshall, et al., 2010).

In the same manner it is hypothesised that CER is a predictor of FP, also individual manager's environmental attitude is predicted to positively influence the perceived corporate reputation and financial performance of their companies. Barraquier (2011), states that corporate irresponsibility can be attributed to individuals and not corporate entities. An irresponsible environmental behaviour may be traced to a corporate organisation and the company may be fined for such, but the act is perpetrated by the managers responsible for the day-to-day affairs of the corporation (Barraquier, 2011). Therefore, it has become pertinent to not only explore the impact of CER on FP but move a step further to consider the impact of individual manager's environmental attitude on the perceived corporate reputation of their companies.

It is in view of this that the study further hypothesizes that a manager's environmental attitude is positively correlated to his/her firm's perceived corporate reputation. The study did not test the link between corporate reputation and financial performance in the conceptual framework because the extant literatures are unequivocal on the positive relationship that exists between corporate reputation and financial performance (Highhouse et al, 2009; Davies et al, 2003; Roberts and Dowling, 2002). Equally, some studies have used corporate reputation as a proxy to mention financial performance, hence, the researcher's decline to test the link

between corporate reputation and FP in the conceptual model (Highhouse et al 2009; Robert and Dowing, 2002)

Where*:

Log	Natural logarithm
ROE	Return on Equity
M/B	Ratio of Market to Book value
α	Intercept
β_1 to B_6	Coefficient of independent variables
GPS	Green Policies Score
EIS	Environmental Impact Score
RS	Environmental Reputational Survey Score
COMPANYSIZE	Total Asset
LEVERAGE	Debt-to-asset ratio
MARKET	Average monthly Standard & Poor's (S&P) 500 index
μ	Residual or error term
itj	For firm i in period t of industry j

*****All these variables have been properly defined in sections 4.7 to 4.8.

1.9. Structure of the thesis

This section gives a brief picture of the structure of the thesis. The research is presented in seven chapters. Chapter one introduces the study with a brief discussion of the research problem and objective, the research significance and the conceptual model. Chapter two presents contextual literature review by giving a detailed account of previous similar studies and the thesis related developments. Chapter three is an extension of the literature review but focuses on the theoretical background for the study, in particular the theory of the firm, stakeholder theory, and triple bottom line. In chapter four, the research methodologies applied to empirically examine the proposed conceptual model and hypotheses are discussed. In chapter five, the hypotheses are tested and detailed accounts of various analysis techniques are presented, and thesis continued in chapter six which provides detailed discussions of the results and findings. Lastly, chapter seven presents the

contribution of the study to theory and further recommendations to both practising managers and policy makers.

The next chapter provides a detailed review of the social- environmental responsibility (i.e. combination of corporate environmental responsibility and corporate social responsibility) literature. A detailed account of both early and contemporary studies on relationship between social-environmental responsibility and financial performance will be provided.

CHAPTER TWO: LITERATURE REVIEW

2.1. Introduction

This chapter provides a detailed review of the relationship between social-environmental responsibility (SER) and financial performance (FP) reported in previous studies. The second section summarises the differing outcomes of the empirical enquiries in to the SER-FP link and different classifications of hypotheses tested in establishing the relationship between SER and FP. The third section provides a historical overview of the early studies establishing the relationship between SER and FP. The fourth section gives an account of contemporary studies and different databases relied upon for measuring SER and the research outcomes arising from the use of these databases. The fifth section briefly describes financial performance in the context of the study. Section six reviews the use of third variables in studies of this nature. The seventh section explains the concept of environmental attitude and its measurement, while section eight provides an explanation of corporate reputation and its measurements and lastly conclusions are drawn on how the chapter two provides an understanding to the thesis' conceptual framework. Throughout this chapter, the constructs such as corporate social responsibility (CSR), corporate social performance (CSP), corporate environmental responsibility have been operationally taken as having the same meaning; hence, they are referred to as social-environmental responsibility (SER).

2.2. Social-environmental responsibility and financial performance

The question of the relationship between social-environmental responsibility (SER) and financial performance has been a subject of investigation by the community of business and society scholars for over 30 years (Orlitzky, 2008). The typical conclusion, based on a review of literature, is that the empirical evidence is too mixed to allow for any firm conclusions (Orlitzky, 2008; Waddock and Graves, 1997; Ullmann, 1985). Waddock and Graves (1997) opined that any review of different theoretical proposals on the relationship between SER and FP offers arguments for all the possibilities, negative, neutral or positive, among which the most relevant are as summarised below:

– Negative: Premised on the fact that companies that behave responsibly are at a competitive disadvantage as they incur costs that they could otherwise avoid, or would pass on to other agents (for example, employees, customers or government). On the basis of this reasoning, there are few economic benefits for socially responsible behaviour, but there are many costs, thus leading to the expectation of a fall in the financial performance of the company (Friedman, 1970).

– Neutral: This is a denial of the existence of any kind of relationship, either positive or negative, between social-environmental behaviour and financial performance. The authors that belong to this school (Makni et al, 2009; Ullman, 1985) argue that there are so many factors or variables that intervene between social-environment and financial performance that there is no reason to assume the existence of any relationship between the two variables, except possibly by chance, which, together

with the measurement problems that have plagued SER research, may have masked any such relationship.

– Positive: This third perspective is of the view that there is a tension between the explicit costs of the company (for example, payments to creditors) and their implicit costs to other agents (for example, product quality costs or environmental costs). So, a company that tries to reduce its implicit costs by means of socially irresponsible acts will incur greater explicit costs, the result of a competitive disadvantage (Cornell and Shapiro, 1987).

Preston and O'Bannon (1997) differentiated between the directions of the SER-FP relationship (positive, negative or neutral) and the causal sequence by asking the following questions: does SER influence financial performance? Does financial performance influences SER? Or is there a synergistic relationship between the two? In order to resolve this they developed six possible causal and directional hypotheses which include social impact hypothesis, slack resources hypothesis, trade-off hypothesis, managerial opportunism hypothesis, positive synergy hypothesis and negative synergy hypothesis.

The social impact hypothesis is on the premise of stakeholder theory which suggests that satisfaction of the needs of various corporate stakeholders leads to favourable financial performance (Freeman, 1984). This hypothesis means that serving the implicit claims of stakeholders enhances a company's reputation in a way that has a positive impact on its financial performance (Makni et al, 2009). Therefore,

disappointing these groups of stakeholders may have a negative financial impact (Preston and O'Bannon, 1997).

The slack resource hypothesis proposes that better financial performance potentially results in the availability of slack resources that may increase a firm's ability to invest in socially responsible domains such as community and society, employee relations or the environment (Waddock and Graves, 1997). This is a reverse causation that considers financial performance as the precursor of SER. This suggests that a previously high level of financial performance may provide the slack resources necessary for a company to engage in corporate environmental responsibility and responsiveness (Ullman, 1985).

The trade-off hypothesis proposes a negative impact of SER on financial performance. This hypothesis is a neoclassical economists' position which holds the view that socially responsible behaviour will net few economic benefits while its numerous costs will reduce profits and shareholder wealth (Waddock and Graves, 1997). This is a classical view of business objectives popularly supported by Friedman (1970). Friedman states that the sole reason for a firm's existence is to maximise the wealth of the shareholders while any act of philanthropy was equated to stealing from the shareholders' wealth. This is equally supported by the well-known early finding of Vance (1975) who stated that corporations that demonstrate strong social credentials experience a decline in stock prices when relatively compared to the market average (Preston and O'Bannon, 1997).

The managerial opportunism hypothesis proposes that corporate managers may pursue their own individual objectives to the detriment of all stakeholders (i.e. both shareholders and other stakeholders) (Weidenbaum and Sheldon, 1987; Williamson, 1967). It is possible that when financial performance is strong, managers may reduce social expenditures in order to maximise their own short term private gains. On the other hand, when financial performance weakens, managers may engage in conspicuous social programmes in order to offset their disappointing results (Preston and O'Bannon, 1997).

The positive synergy hypothesis proposes that higher levels of SER lead to an improvement in financial position; this provides the possibility of reinvestment in environmentally responsible activities (Allouche and Laroche, 2005a). The synergy is that a positive environmental gesture or behaviour leads to improvement in profitability which is reallocated, in part, to both shareholders and different stakeholders. There may then be a simultaneous and interactive positive relation between SER and FP, forming a virtuous circle (Waddock and Graves, 1997). Equally, Orlitzky et al. (2003) meta-analytic evidence supports Waddock and Graves's (1997) by stating that SER and FP may reinforce each other in a virtuous cycle because good managers are capable of taking positive strategic action in both economic and social facets. The astute managers are able to identify and implement specific SER activities capable of enhancing their company's reputation in social or environmental domains and they ensure that slack resources are invested wisely to promote and exploit the opportunities.

However, the negative synergy hypothesis proposes that higher levels of SER lead to a decrease in financial performance, which conversely reduces the level of social-environmental activities of the company. Just like the positive synergy hypothesis, there may then be a simultaneous and interactive negative relation between SER and FP, forming a vicious circle.

At the point in time of this study many empirical results concerning the nature of the relationship between SER and FP, corporate environmental responsibility (CER) and FP and other related studies continue to be mixed in outcome. There is a celebrated meta-analysis outcome from Orlitzky et al (2003) which supports positive relationship between SER and FP and this was subsequently supported by Allouche and Laroche, (2005b) and Wu, (2006). Nelling and Webb (2006) examine the causal relationship between SER and FP by introducing a new econometric technique, the Granger causality approach. Their findings suggest that, using ordinary least square (OLS) regression models, SER and FP are related. In disagreement with prior empirical research, they find a lower relationship between SER and FP when employing a time series fixed effects approach. The same result is found when introducing Granger causality models. Furthermore, by focusing on different measures of SER, they find causality running from stock market performance to SER ratings regarding employee relationships.

Mahoney and Roberts (2007) examined the relationship between SER and FP in the Canadian context. Contrary to Waddock and Graves (1997), Mahoney and Roberts (2007) found no significant relationship between a composite measure of a firm's SER and FP. However, using a one-year lag, their findings indicate a significant

positive relationship between environmental and international activities as measures of SER and financial performance.

This doctoral study examines one direction of causality from corporate environmental responsibility to financial performance in the extractive sector.

2.3. Early research studies

For decades scholars have been engaged in the seemingly endless and largely frustrating task of identifying the relationship between the SER and FP of the corporation (Waddock and Graves, 1997b). One of the first attempts to assess the relationship between social variables and financial performance was reported in 1972. In the first issue of Business & Society Review, the editor Milton Moskowitz (1972) suggested that socially responsible firms represent a good investment option. In addition, he recommended fourteen firms as potential investments because of their social performance. The next publication of Business & Society Review observed that the fourteen socially responsible firms identified by Moskowitz had recorded a stock price increase of 7.28% over the previous six months, in contrast to 4.4% rise for the Dow-Jones, 5.1% increase for the New York Stock Exchange and 6.4% gain for S&P Industrials during this period. This finding was used to support the notion that responsible firms were good investment risks (Aupperle et al., 1985).

However, some scholars tested the relationship between SER and FP and observed a methodological flaw in the first study in this area (Vance, 1975). The validity of

independent experts' rating rests on their expertise and the accuracy of the information available to them. In addition, Moskowitz's (1972) announcement that these firms are good investment options is likely to have increased demand for these stocks thus increasing their share price. Vance (1975) challenged the findings and claims of Moskowitz (1972). He reported that, from January 1, 1972 to January 1, 1975, all but one of Moskowitz's (1972) fourteen firms had performance records considerably worse than that of the Dow Jones Industrials, the New York Stock Exchange and the S&P Industrials.

Cochran and Wood (1984) assessed the financial performance of Moskowitz's classifications of companies by criteria which include 'best', 'honourable mention' and 'worst' firms. Assessing each firm's accounting measures of Return On Assets (ROA) and Return On Sales (ROS), excess market valuation, asset turnover and asset age from 1970 to 1979, Cochran and Wood (1984) found weak support for the positive relationship between SER and FP. Sturdivant and Ginter (1977) derived a smaller sample containing twenty eight of Moskowitz's (1972) sample and classified these as high, moderate or low in social responsibility. The authors subdivided the firms into four industrial groups. A comparison of each firm's ten year Earnings per Share (EPS) growth highlights that the best and honourable mention firms out-performed their worst industry counterpart. However, Sturdivant and Ginter (1977) failed to draw attention to the fact that the honourable mention firms (middle level of SER) performed best, in fact illustrating an inverted U shape relationship. This highlights that the relationship between SER and FP may be more complex than initially thought, and other unknown variables might be moderating the SER and financial performance relationship.

The early studies attempting to identify the relationship between SER and FP have focused on subjective techniques to measure SER. Bowman and Haire (1975) reported the results of a content analysis of the annual reports of eighty-two food processing firms listed in the 1973 Moody's Industrial Manual. The authors identified firms as low, medium or high in social responsibility on the basis of the number of lines devoted to the topic of SER in their annual reports. The authors themselves criticise that one could immediately mock such a measurement device, in that, it is at least a popular belief that not everybody that talks about heaven will end up there (Bowman and Haire, 1975). Thus, the authors cross validated this line-count method by applying the method to Moskowitz's fourteen firms having high levels of social responsibility and found them to have much more space devoted to SER than the fourteen randomly chosen firms. An assessment of each category's five-year Return on Equity (ROE) highlighted that the category devoting a moderate level of lines to SER reported highest ROE, again indicating an inverted U shape relationship between SER and FP.

Just like previous attempts, Bowman and Haire's (1975) study exhibits numerous methodological problems. As noted by the authors, reporting SER is not an accurate predictor of its occurrence. The study included more (51) firms having low social responsibility than firms having high (13) or moderate (18) levels. Aupperle et al (1985) point out that reliance on ROE as a measure of firm performance could be misleading since ROE is a function not only of profitability, but also of a firm's financial leverage (a variable which many later studies control for). Bowman (1978) also used the number of lines devoted to SER in firms' annual reports as a measure of SER. Assessing the annual reports of forty-six firms in the microcomputer/

peripheral industry, Bowman (1978) found that the firms mentioning SER outperformed those failing to mention SER on the basis of Return on Sales (ROS) to the ratio of 8%:5.6%, however the difference was not statistically significant.

Considering the flaws in the previous measures, Abbott and Monsen (1979) used a slightly more sophisticated method of content analysis of annual reports. The authors use Ernst & Ernst's (now Ernst & Young) 1973 and 1974 analysis of annual reports to assess how many of twenty-eight socially responsible activities were disclosed in the company's annual report. A comparison was then made to each firm's ten-year yield. When the effects of firm size are taken into consideration, any relationship between SER and FP diminished. The authors conclude that social responsibility activities do not appear to increase investor's total rate of return and most likely that being socially involved is dysfunctional for the investor (Abbott and Monsen, 1979).

Using another subjective method, Vance (1975) based his study on two surveys previously undertaken by Business & Society Review, reporting businessmen and students rating of forty-five leading firms in relation to their SER. Vance (1975) used these survey results to rank the firms on their perceived degree of social responsibility and observed a negative correlation between the firms' SER rank and stock market performance. Abbott and Monsen (1979) reporting on the shortcomings of Vance (1975) argue that he reports the regression coefficients but not the correlation coefficients, thus, the strength of the negative correlation is not known. More so, the year 1974, being a disastrous year for stock markets may not be a representative year, it is therefore not appropriate to generalise from that year alone. Based on the work of Vance (1975), Alexander and Buchholz (1978) re-examined

the relationship between SER using the same survey results and FP, but this time accounting for risk. A low significant positive relationship was found between risk adjusted stock market performance and social performance.

Using a forced choice survey instrument to measure SER, Aupperle et al (1985) reported no significant relationship between a firm's social and financial performance as measured by ROA for the year ended 1981. Parket and Eilbirt (1975) took quite a novel approach to measuring SER. The authors had previously conducted survey research on the topic of SER. They argued that the eighty firms responding to their study were more socially responsible than the market in general based on the fact that these firms responded to a survey on SER. They compared the eighty "socially responsible" firms to the Fortune 500 (minus these eighty firms) on the financial criteria of net income, ROE, profit margin and EPS and concluded that, on all four financial measures, the eighty socially responsible firms were more profitable. While there are clear methodological issues in their study, Parket and Eilbirt (1975) as early as the mid-1970s touched upon the business case for SER, which is regarded as one of the major areas of SER (Hopkins, 2003; Roberts and Dowing, 2002). They argued that some of the benefits of SER include higher morale among workers, a larger labour pool from which to select employees, improved public relations and the creation of a better corporate image.

2.4. Contemporary research studies

This section reviews contemporary empirical research and associated methods used in measuring SER and the impact on financial performance. The most popular of the approaches include using the Fortune database, KLD (now MSCI ESG) database, Socially Responsible Investing (SRI) index, and the recent Metal Analyses.

2.4.1. Use of the Fortune Database

In January 1983, Fortune Magazine published its first annual survey of corporate reputations. This soon became a common tool for measuring SER, and according to Margolis and Walsh (2001) is the most popular measure of SER in studies testing the relationship between SER and FP. The annual survey conducted by Fortune ranks the most admired American corporations by asking over 8,000 executives, outside directors and corporate analysts to evaluate the companies they admire the most along eight attributes: financial soundness, long-term investment value, use of corporate assets, quality of management, innovativeness, quality of products and services, use of corporate talent and community and environmental responsibility.

Szwajkowski and Figlewicz (1999) expressed surprise on how quickly the scholars adapted to the Fortune reputation indices as a measure of SER when one considers the previous measures available to them. Prior to this database, the researchers either undertook the tedious task of constructing large scale samples of regulatory violations, content analysis of annual reports, used Milton Moskowitz ratings or an environmental measure such as the pollution control measure provided by the

Council on Economic Priorities. The Fortune database has many advantages over other measures; it is readily available and conducted on an annual basis allowing for longitudinal research. According to McGuire et al (1988) the number of respondents is comparable or superior to those of other ratings. Testing its validity and reliability, Herremans et al (1993) concluded that the Fortune Survey provides not only an authorative rating of SER, but also one that is valid compared with other ratings.

Using Fortune database as a measure of SER, McGuire et al (1988) investigated the effect of SER on past, concurrent and subsequent financial performance. Assessing operating performance, market performance and risk, the authors failed to find a relationship between SER and subsequent FP. Also adopting the Fortune database as a measure of SER, Simerly (1994) assessed one hundred and ten firms from 1986 to 1988 and from 1988 to 1990. Firms ranking high on this measure of SER reported positive significant market measures, however, financial measures report mixed results. While the results were positive, Return On Investment (ROI), Profit/Equity and Sales/Equity only achieved significance in one time period. Simerly (1995) returned to the relationship between SER and FP a year later, again using the Fortune database as a measure of SER, this time however measuring ROE and debt to equity. Taking forty-two pairs of companies, each representing the best and worst in their industry, the authors concluded that within each industry those with the best SER rating achieved greater FP than their worst counterparts.

Preston and O'Bannon (1997) assessing the firms rated on the Fortune database chose to focus on just three attributes: responsibility to the community and the environment, selection and retention of good staff, and the quality of products and

services. The authors analysed sixty-seven firms from 1982 to 1992 and report a strong positive link between these three measures of SER and FP denoted by return on assets (ROA), return on equity (ROE) and return on investment (ROI). Herremans et al (1993) focused exclusively on the criteria of responsibility toward the community and environment, and again a positive correlation was reported between SER and firms' accounting measures of FP and stock price, while SER was negatively correlated with risk.

Despite the encouraging results, the Fortune measure of SER has received much criticism. It must firstly be noted that the database was not originally developed as a measure of social performance (Szwajkowski and Figlewicz, 1999). Fombrum and Shanley (1990) were the first to cast doubt over the database. Their factor analysis showed that of the eight dimensions used to measure SER, one factor accounts for 84% of common variance. They interpreted this common variance as a general reputation factor.

Questioning the validity of studies that find a positive relationship between SER as measured by Fortune ratings and FP, Fryxell and Wang (1994) argue the Fortune database is a measure of FP not SER. Fortune attempted a rather ineffective defence of the virtue of their survey, proclaiming that 'roughly half' of the overall reputation index can be explained by a company's FP (Fryxell and Wang, 1994). Preston and Sapienza (1990) reported high correlations between measures of FP within the survey and the single criteria of responsibility to community and environment. Using the single social responsibility item out of the eight factors, McGuire et al (1988) reported a positive correlation (0.45) between a subset of 58 firms in their sample

and independent ratings by the Council on Economic Priorities. Subsequently, McGuire et al (1990) reported that the pattern of correlations between the eight items in the Fortune Survey and ten financial measures is strikingly similar. Stanwick and Stanwick (1998) found a positive relationship between the Fortune rating and both a firm's level of profitability and size as measured by sales volume for all years studied (1987-1992). A positive relationship between the Fortune rating and environmental performance measured by level of pollution emissions released by the organisation was found in two years of the study only (1987 and 1990).

Wood and Jones (1995) are of the opinion that there is no theoretical basis for using the Fortune scale as a measure of SER, questioning whether it is a firm's social responsibility or (more likely) their FP and a strong public affairs focus that gets a company to the top of the list. If the Fortune ranking of social responsibility reflects a firm's FP, studies that use this rating may be using financial performance in the guise of social performance, to predict financial performance (Margolis and Walsh, 2001). Wood (1995) argues that the Fortune Magazine data cannot and should not be used as a true measure of SER

In view of the barrage of criticism Fortune has received, and bearing in mind that financial performance is a part of CSR; financial performance appeared at the base of the pyramid of social responsibility provided by Carroll (1991) to illustrate its fundamental importance. Brown and Perry (1995) removed the financial bias from the Fortune database; their methodology, according to Wood and Jones (1995) provides a more reliable indicator of a firm's non-financial reputation. Taking this revised measure of SER, Brown (1998) assessed its relationship to stock market

performance for one hundred and ninety-seven firms from 1982 to 1992; findings suggest that firm's with positive SER reputations outperform less reputed companies.

2.4.2. Use of MSCI ESG Database

Partly due to the criticism of the Fortune database, many academics turned to the Kinder, Lyndenberg and Domini (KLD) database (now called MSCI ESG with effect from July 2010) as a measure of SER. MSCI ESG is an independent rating service that focuses exclusively on assessment of SER. The areas of SER include: community relations, employee relations, environmental performance, product characteristics, treatment of women and minorities, military contracting, production of alcohol and tobacco, involvement in the gambling industry, involvement in nuclear energy and investment in areas involved with human rights controversies (Hillman and Keim, 2001). Highlighting the main differentiating characteristics of the MSCI ESG and Fortune, Szwajkowski and Figlewicz (1999) point out that the Fortune database is created by a number of industry 'insider experts' while MSCI ESG relies on a panel of 'outside experts' in social investing. In addition the panel of experts employed by MSCI ESG evaluate firms within a framework of rather specific criteria in each category whereas the Fortune respondents interpret the attributes individually as they see fit. Fortune has been criticised for leaning too heavily on the economic element of SER, MSCI ESG has taken the other extreme and eliminates it completely from its analysis.

Wood (1995) regarded MSCI ESG as the best available measure of SER. Highlighting some of the advantages of the database over other measures of SER, Waddock and Graves (1997a) state firstly, that all companies in the S&P 500 are rated. Second, each company is rated on multiple attributes considered relevant to SER. Third; a single group of researchers apply the same set of criteria to related companies. Fourth and final, the criteria are applied consistently across a wide range of companies, with data gathered from a range of sources, both internal and external to the firm.

The evaluation of construct validity of MSCI ESG measures by Sharfman (1996) concluded that researchers interested in studying SER can have confidence in the MSCI ESG measures and feel secure in the idea that this data taps into the core of the social performance construct. One may be surprised to find that the reason behind such a bold statement is that Sharfman (1996) study found moderate levels of correlations between MSCI ESG and Fortune ratings; it was then argued that MSCI ESG data could be a better measure of SER than Fortune but no justification for this was provided. Additionally, the MSCI ESG database has been criticized for using 'numerically crude' scores (Wood and Jones, 2005). However, it has been argued that the benefits derived from the database far outweigh any problems associated with it (Ruf et al, 1998).

Waddock and Graves (1997a) analysed four hundred and sixty-nine companies from 1989 to 1991 based on KLD rating alongside its ROA, ROE and ROS. The study reported that SER is positively related to both prior and post financial performance. Tsoutsoura (2004) analysed the relationship between a firm's SER and FP using the

same financial and social performance measures for 422 firms from 1996 to 2000 and concluded that improved SER is related to better financial performance. Similar findings were reported by Berman and Wicks (1999) and Hillman and Keim (2001). Ruf et al (1998) found that change in SER, measured by firms MSCI ESG rating lead to increased short and long term FP. However, McWilliams and Siegel (2000) found that controlling for the advertising intensity of the firms, industry and R&D intensity diminishes any statistical relationship between SER (as measured by MSCI ESG) and firm market performance.

Despite the merit and comprehensiveness of the MSCI ESG database, the central issue of inconsistent outcomes of empirical studies in respect of the SER-FP link and methodological flaws has not been put to rest. While many empirical enquiries still investigate the link between SER and FP, many authors currently focus on the stock market reaction to socially responsible behaviour and ethical investment using the indices of SER. This is espoused in section 2.4.3.

2.4.3. Use of Socially Responsible Investing (SRI)

The social and environmental considerations to be made before committing to an investment decision have become new decision criteria amongst fund managers. Research into social investing has attracted widespread interest among academics who have been struggling for years to find reliable and objective ways to measure SER (Entine, 2003). Socially Responsible Investing (SRI) is defined as an investment process that integrates social, environmental and ethical considerations

into investment decision making (Renneboog et al, 2008). SRI generally refers to the selection of investments based both on traditional financial criteria and on key dimensions of social and environmental performance indices. The most commonly used indicators of social and environmental performance include: producing safe and useful products, minimising adverse environmental impacts; implementing workforce practices that favour workers' wellbeing and contributing positively to surrounding communities (Starr, 2008). A socially conscious investor considers the financial and social performance of potential investments in order to ensure that the securities selected are consistent with their personal value system and beliefs (Sauer, 1997; Hutton et al., 1998). Considering the stigma associated with antisocial practices, thousands of investors are believed to be placing ethics and SER on par with personal gain in choosing where to invest their money (Hopkins, 2003).

Investments in social and environmental funds have increased dramatically over the years (Tschopp, 2005; Mill, 2006) reflecting the increasing awareness of investors in social and environmental issues (Renneboog et al., 2008). SRI has been described as one of the most dynamic and rapidly growing areas in the financial world (CSR Europe, 2005). In the US, the professionally managed assets of SRI portfolios reached $2.3 trillion in 2008 (representing 10% of total assets) growing by 1200% from $162 billion a decade earlier. SRI in Europe amounted to $1.4 trillion, representing 10-15% of European funds under management. Renneboog et al. (2008) argue that the growth of SRI is likely to continue in the foreseeable future as issues like global warming continue to gain attention by governments and investors around the world.

SER and SRI represent very closely related topics. According to Mill (2006), for many investors SRI involves the selection of holdings of company shares from a subset of publicly listed companies that are seen as meeting SER criteria. Each concept basically asserts that business should generate wealth for society but within certain social and environmental frameworks. SER looks at this from the viewpoint of companies, SRI from the viewpoint of investors in those companies. The relationship between SER and FP is particularly closely related to SRI. A positive relationship between SER and FP would imply superior performance of socially responsible investing (Sweeney, 2009). However, Mill (2006) cautions that it must be kept in mind that non-SRI investors have the same options as SRI investors and can invest in socially responsible firms if they see them as profitable. This opens one of the major issues surrounding SRI; the economic performance of such investing.

There is constant debate as to whether SRI outperforms or underperforms conventional investing. Historically, SRI has fought the perception that it may be better for the soul than the bottom line (Asmundson and Foerster, 2001). The prevailing assumption in the institutional investment industry held that investors could not invest in a socially responsible manner without giving up the opportunity to achieve higher rates of return. The critics of SRI highlight the potential adverse side effects that might result from using social criteria. Major concerns include the potential increase in volatility, lower returns, additional screening and monitoring costs and reduced diversification (Sauer, 1997).SRI criteria will shift the mean-variance frontier of conventional investment criteria towards less favourable risk-return trade-offs(Renneboog et al, 2008). Hopkins (2003) highlights that the Friends Provident Stewardship Fund in the UK can only invest in 15 or so of the 100 biggest

UK companies and in about 40% of the wider All-Share index of stocks. Aslaksen and Synnestvedt (2003) argue that diversification can be obtained with relatively few stocks. The improvement, they argue, is only very slight when the number of stocks in a portfolio is increased beyond twenty or thirty. SRI constrains diversification and this is a disadvantage to socially screening investments.

Moreover, there is a growing body of evidence that dispels the myth of underperformance of social investments and there is no reason to separate good fortune from goodwill. Proponents of SRI claim that it achieves greater returns due to the additional selection criteria imposed. There are two arguments supporting the 'outperformance' hypothesis. Firstly, sound social and environmental performance signals good managerial quality which translates into favourable FP. Secondly, social and environmental screening reduces the possibility of incurring high costs during corporate social crises or environmental disasters, which financial markets tend to undervalue (Renneboog et al., 2008).

Frooman (1997), Davidson and Worrell (1988) and Wokutch and Spencer (1987) all found socially irresponsible behaviour to have a negative impact on companies' share price. Providing an explanation Brown (1998) argues that companies perceived to be socially irresponsible could be more susceptible to adverse government action (fines and lawsuits) or to drastic reductions in sales due to disclosure of corporate wrongdoing. This implies that companies with strong reputations in relation to SER are perceived as less risky investments because they are less likely to fall foul of regulations or the market place. Mallin et al., (1995) and Boutin-Dufrnse and Savaria

(2004) found a negative relationship between a firm's level of SER and their level of specific risk.

Brown (1998) stated that in case a responsible company develops a problem, the reservoir of goodwill it has built up would lessen the damage to its income because regulators or customers would be more willing to accept the company's explanation or believe in the sincerity of its proposed remedial action. This may be supported with the surprisingly positive customer reaction to Johnson & Johnson's Tylenol disaster in which seven people died as a result of ingesting Tylenol laced with cyanide (Fombrun and Shanley, 1990).

Hamilton et al (1993) investigated the risk adjusted returns of socially responsible portfolios and conventional portfolios. Testing the investment performance of 32 SRI mutual funds from 1981 to 1990 the study reported that SRI mutual funds did not earn statistically significant excess returns. Mill (2006), Aslaksen and Synnestvedt (2003), Waddock (2000), Cummings (2000), Sauer (1997), Guerard (1997) and Goldreyer and Diltz (1999), similarly failed to find a significant difference in returns of socially screened and unscreened universes.

Asmundson and Foerster (2001) report similar financial returns for social and conventional funds. These results provide support for Kurtz's (1997) argument that over time, the performance of screened and unscreened portfolios does not differ materially. Mill (2006) adopted a novel approach to the area; the study involved a longitudinal assessment of stock market returns of a fund during the transition from a conventional fund to a socially responsible fund. Another four conventional funds

over a similar time period were also assessed for comparative purposes. No difference was reported between mean returns before and after SRI adoption.

To this end, research into social investing has produced little evidence of SRI funds over or under performing relative to the market. Another form of effort to uncover the nature of the relationship between SER and FP is to conduct meta-analysis on the previous studies and assess the relationship between the SER-FP. This is investigated in section 2.4.4 in detail below.

2.4.4. Meta-analysis Studies

Schmidt (1992) argued that meta-analysis is a type of literature review that goes beyond the outcomes of statistical significance tests. Instead, it focuses on effect sizes, such as the correlation coefficient or effect size (Rosenthal, 1984; Rosenthal and DiMatteo, 2001). On the surface, a literature review looks like an easy task. A researcher tabulates the empirical evidence regarding the pros and cons of a particular research hypothesis. In this type of research review, the real difficulty, it is assumed, lies in including all relevant studies, not so much in the actual technique of reviewing the literature (Orlitzky, 2008). In the end, it is argued, all we need to do is count the vote tally that supports, or fails to support, the research question that motivated review. This classic solution of vote counting of statistically significant and non-significant results sounds reasonable but comes with a host of pitfalls and weaknesses (Hunt, 1997; Chalmers and Lau, 1994; Hedges and Olkin, 1980). Despite these weaknesses some researchers still rely on vote counting. Some

statisticians and psychologists argued that a rigorous literature review requires a quantitatively more sophisticated underpinning than that afforded by the typical narrative literature review (Hunter and Schmidt, 2004; MCcloskey, 1998; Cohen 1994). The meta-analysis avoids these methodological mistakes by undertaking a rigorous research synthesis of past literature reviews.

Pava and Krausz (1996) reviewed twenty-one empirical studies which explicitly addressed the relationship between SER and FP. Of these, twelve studies reported a positive association between SER and FP, one reported a negative relationship and eight reported no measurable relationship. In support of SER, the authors concluded that nearly all the empirical studies to date have concluded that firms which are perceived as having met social responsibility criteria have either outperformed or have at least performed on par with other non-socially responsible firms (Pava and Krausz, 1996). In Ullman's (1985) meta-analysis of thirty studies he found that seventeen reported a positive relationship, six reported a negative, and seven reported a neutral relationship.

Griffin and Mahon's (1997) analysis identified thirty-three research results finding a positive relationship, twenty which found a negative relationship and nine failed to find any relationship. However, Roman et al (1999) felt that Griffin and Mahon (1997) did not adequately report the findings of their study. For instance, when research found that socially irresponsible behaviour negatively impacted FP, Griffin and Mahon (1997) coded this as a negative relationship, when in fact, it highlights a positive relationship. Roman et al (1999) re-evaluated Griffin and Mahon's (1997) study by ensuring that studies with methodological flaws were removed. In total

twenty six studies were reclassified or removed. Roman et al (1999) concluded that thirty-three studies suggest a positive relationship; fourteen suggest no relationship and only five suggest the presence of a negative relationship.

Pava and Krausz (1995) and Ullman (1985) relied on narrative reviews, while Griffin and Mahon (1997) and Roman et al (1999) utilised the vote-counting method of aggregation. Narrative reviews are literature reviews that attempt to make sense of past findings verbally or conceptually. The vote-counting method refers to the accumulation of significance levels or, in the simplest case, to the tabulation of significant and non-significant findings. Both methods could pose a danger because the errors could be grave (Orlitzky, 2002). Techniques tend to draw false inferences because they do not correct for sampling and measurement error. For this reason, most authors reference two award-winning meta-analyses (Orlitzky and Benjamin, 2001; Orlitzky et al 2003). Both studies utilised effect-size meta-analysis and corrected for sampling and measurement errors in their analyses of fifty-two studies in which the majority point at seemingly 'positive' relationship between SER and FP. Subsequent meta-analyses of SER and FP link followed similar techniques used in Orlitzky et al (2003) and found a positive relationship between SER and FP (Allouch and Laroche, 2005b; Wu, 2006; Margolis et al., 2007; Su and Song, 2010).

The sections 2.3 and 2.4 have provided detailed accounts of SER, its measurement criteria and databases often relied upon for information relating to SER of corporate organisations. A complementary account of SER-FP link requires understanding the meaning of FP in this thesis' context, the previous research definition of FP and its measurement.

2.5. Financial performance

In the world of finance, financial performance is measured to give the account of stewardship by the management team to the shareholders. The key aspect of this involves measuring the profitability, market value and growth prospect of a company. In SER-FP research, most previous studies used both accounting-based and financial market-based measures of financial performance (FP).

Accounting-based measures: This examines the nature of the relationship between some indicator of the social performance (reputation, revelation of social information, environmental behaviour etc.), with the company's FP obtained from the accounting information such as the historical audited financial statements of the respective companies. The accounting-based measures such as return on equity (ROE), return on total assets (ROA), and earnings per share (EPS) represent a company's internal efficiency (Cochran and Wood, 1984). ROE is the most widely used measure in SER-FP empirical studies and is the measure of greatest interest to the shareholders, because it shows the earning capacity per share of a company.

The results obtained in use of accounting-based measures studies have been varied, although most of the research carried out confirms the existence of a positive relationship between SER and FP (Aupperle et al., 1985; Griffin and Mahon, 1997; McWilliams and Siegel, 2000; Simpson and Kohers, 2002, Salama, 2005; Rodriguez and Cruz, 2007; Coleman, 2011). The explanation of the process by which social performance affects financial performance (SER-FP) and the different empirical

results obtained to date point to the need to find a unified theory and a solvent empirical verification. To do so, two problems must be overcome: that of the measurement and that of the development of models of greater internal validity that integrate the variables that have been found to have the most incidences in the process.

Financial market-based measure: This consists of an analysis of events that checks the short-term financial impact (abnormal yields in the market value of the company) produced by the socially responsible or irresponsible acts of companies. The abnormal yield in the market value of the company reflects the volatility in stock price. Most of the results obtained confirm both a positive and negative relationship between social and financial performance (Blacconiere and Patten, 1994; Johnson et al., 1992; Jones and Murrell, 2001; Klassen and McLaughlin, 1996; Kumar et al., 2002; Little et al., 1995; Wright and Ferris, 1997; Shane and Spicer, 1983; Stevens, 1984; Verona and De´niz, 2001; Yoshikawa and Phan, 2003; Becchetti et al., 2009).

In view of the thesis further enquiry in investigating the relationship between environmental attitude of managers and the perceived corporate reputation of their companies, it is pertinent to provide a clearer understanding of both environmental attitude and corporate reputation as provided in the succeeding sections 2.6 and 2.7.

2.6. Environmental attitude

Environmental attitudes have been defined as "the collection of beliefs, affect, and behavioural intentions a person holds regarding environmentally related activities or issues" (Schultz, et al., 2004, p. 31). Milfont (2007a) defined environmental attitudes (EA) as a psychological tendency expressed by evaluating the natural environment with some degree of favour or disfavour. Attitudes are a latent construct and as such cannot be observed directly (Milfont and Duckitt, 2010). Rather than being measured directly, attitudes have to be inferred from overt responses (Himmelfarb, 1993). Basically, the techniques of attitude measurement can be broadly organised into direct self-report methods and implicit measurement techniques (Krosnick et al, 2005). Studies measuring EA have generally used direct self-report methods (e.g., interviews and questionnaires), and much less frequently implicit techniques (e.g., observation, priming and response competition measures). It should equally be noted that a few studies have used implicit techniques such as observations and priming for measuring EA and/or ecological behaviour (Milfont and Duckitt, 2010). For instance, Corral-Verdugo (1997) used self-report and unobtrusive observation to measure re-use and recycling behaviour. He found a low correlation between the reported and observed re-use/recycling behaviour, which indicates that self-reports are not completely reliable measures of actual behaviours. In another study, Van Vugt and Samuelson (1999) in Study 2 used scenarios priming the severity of water shortage to study the effect of individual water metering on conservation intention. They found that willingness to conserve was higher when a water shortage seemed severe and when water use was known to be metered. The studies using an implicit EA measure were conducted by Schultz et al, (2004) and Schultz and Tabanico

(2007). They used the Implicit Association Test (Greenwald et al 1998) to measure participants' connection with nature by using two target concepts (i.e. Nature and Built) and two attribute dimensions (i.e. Me and Not me). Participants were asked to match an item with the appropriate category in each of ten specific trials. It was found that participants tended to associate themselves more easily with nature than with built environments, and that this implicit measure of connectedness with nature correlated with self-reported explicit measures of EA.

When comparing the two methods, a greater number of studies have used direct self-report techniques for measuring EA (Corral-Verdugo, 1997). In an attempt to organise the field, Dunlap and Jones (2002) proposed a four-fold typology of measures based on environmental issues (e.g., water pollution, population growth) and expression of concern (i.e., beliefs, attitudes, intentions, and behaviours related to environmental issues). Their typology identified: (1) multiple-topic, multiple-expression instruments that focus on both multiple environmental issues and multiple expressions of concern; (2) multiple-topic, single-expression instruments that focus on multiple environmental issues and a single expression of concern; (3) single-topic, multiple-expression instruments that focus on a single environmental issue and multiple expressions of concern; and (4) single-topic, single-expression instruments that focus on a single environmental issue and a single expression of concern.

Despite the large number of EA measures, only three have been widely used and had their validity and reliability assessed (Dunlap and Jones, 2003; Fransson and Garling, 1999). These include the Ecology Scale (Maloney et al., 1975; Maloney and

Ward, 1973), the Environmental Concern Scale (Weigel and Weigel, 1978), and the New Environmental Paradigm (NEP) Scale (Dunlap and Van Liere, 1978; Dunlap et al., 2000). These three scales examine multiple phenomena or expressions of concern, such as beliefs, attitudes, intentions and behaviours, and they also examine concerns about various environmental topics, such as pollution and natural resources. All these measures are multiple-topic/multiple-expression assessment techniques (Dunlap and Jones, 2002).

Both the Ecology Scale and the Environmental Concern Scale are widely used; however, they include items tapping specific environmental topics that have become out-dated as new issues emerge (Dunlap and Jones, 2002, 2003). The NEP Scale avoids this issue by using only general environmental topics that do not become dated, and measuring the overall relationship between humans and the environment. The NEP Scale measures an ecocentric system of beliefs (i.e., humans as just one component of nature) as opposed to an anthropocentric system of beliefs (i.e., humans as independent from, and superior to, other organisms in nature) (Bechtel et al., 2006; Dunlap et al., 2000), and is the most widely used measure to investigate environmental issues (Hawcroft and Milfont, 2011).

Managers' environmental attitude is a function of their environmental orientation which equally depends on importance a manager attached to various environmental issues in his/her company. The level of environmental orientation of different manager accounts for the difference in response to environmental challenges. This is further explained in section 2.6.1.

2.6.1. Managers and environmental attitude

Banerjee et al. (2003) argued that there are two facets of corporate environmentalism: environmental orientation and environmental strategy. Environmental orientation refers to the recognition by managers of the importance of environmental issues facing their companies while environmental strategy is the extent to which environmental issues are integrated with the company's strategic plans. Environmental orientation is therefore a crucial part of corporate environmentalism, establishing motivations to go green as well as determining a level of organisational commitment. Therefore, it is important that environmental orientation is established by the managers whose views on the environment are reflected in the environmental issues considered relevant to the company (Banerjee, 1998).

Many studies have examined how upper level managers perceive environmental issues in an effort to identify corporate environmentalism (e.g. Tzschentke et al., 2004; Catasus et al., 1997; Sharma, 2000; Banerjee, 2001; 1998; Hoffman, 1993). Top management's commitment to environmental management has been one of the main indicators of corporate environmental orientation. Banerjee (2002) found that the degree of top management commitment varies depending on managerial perceptions of environmental issues: top managers tend to be more involved in environmental issues when perceiving regulatory forces to be threats, their customers to be environmentally conscious or seeing environmental initiatives as opportunities to save costs or improve product quality. Zutshi and Sohal (2004) examined the key success factors for adopting environmental management and suggested that top

management leadership and support is one of essential elements in raising company-wide awareness and understanding of environmental issues.

Banerjee et al. (2003) examined the relationship between top management commitment and some external and internal forces, and their impact on firms' environment strategies in various business sectors. They reported top management commitment has a positive impact on both environmental orientation and strategy. Top management commitment was also found to have a mediating effect on the relationship between regulatory forces, public concern and need for competitive advantage, and environmental strategy. In addition to this, socio-demographic variables are consistently used as predictors of both environmental behaviour and attitude. Age, income, education, and political ideology have shown to be predictors or correlates of responsible environmental behaviour (Cottrell 2003; McGuire, 1992; Scot and Willits 1991; Ostman and Parker, 1987; Hines, 1985).

Age: Honnold (1984) studied cohort group differences in environmental concern, and found decreased levels of environmental concern in almost all age groups since the 1970s. ***Education***: using education as an entry-level variable, education has good use as a predictor of environmental knowledge and subsequent behaviour (Ostman and Parker, 1987). From the examination of the effect of education on environmental knowledge, Ostman and Parker (1987) established significant relationships between education and environmental awareness, environmental knowledge, and subsequent behaviours. To support this, Van Liere and Dunlap (1980) stated that education is positively related to environmental knowledge. Scott and Willits (1991) found that respondents with more years of formal schooling have a higher incidence of pro-

environmental behaviour than did less educated and lower income respondents. ***Income***: in a study of predictors of responsible environmental behaviour, Hines (1985) found that the relationship between income and responsible environmental behaviour was slightly weaker than between education and responsible environmental behaviour. Scott and Willits (1991) found that income was positively related to pro-environmental behaviour reported among Pennsylvania residents, showing that the more well-to-do financially were more disposed to participate in pro-environmental behaviour. Van Liere and Dunlap (1980) argued that concern for environmental quality is something of a luxury which can be encouraged only after more basic material needs (adequate food, shelter, and economic security) are met. Therefore, income level is a good predictor of responsible environmental attitude. ***Political ideology:*** many previous studies have found political ideology (e.g. political stand e.g. liberalism or conservatism) to be significantly related to environmental concern. Some studies have reported that liberals have higher environmental concern than conservatives (Dunlap and Van Liere, 1984; McGuire and Walsh, 1992; Samdahl and Robertson, 1989; Scott & Willits, 1991). Samdahl and Robertson (1989) found that pro-regulatory liberalism significantly predicted personal ecological behaviours, perception of environmental problems, and support for environmental regulations.

The study's H_4 proposed a relationship between a manager's environmental attitude and corporate reputation; therefore, there is a need to dwell on the definitions of corporate reputation as a concept and in the context of this thesis. Therefore section 2.7 provides a detailed perspective on corporate reputation.

2.7. Corporate reputation

Many academics perceive corporate reputation as a source of competitive advantage (Balmer and Gray, 2003; Deephouse, 2000). Kay (1993) is of the opinion that corporate reputation creates distinctive value for the company alongside corporate architecture and innovation, and enables the company to enjoy competitive superiority in the market. Corporate reputation is an intangible asset (Aaker 1996; Fombrun 1996; Mahon 2002; Davies et al 2003) and difficult to value or evaluate in comparison with other, tangible assets such as cash, land, equipment and buildings. Unlike other intangible assets such as trademarks, patents, goodwill and copyrights which can be achieved through trading, corporate reputation can be achieved through its differentiation (fame and esteem) in the market – for example, through earning fame by advertising for a short time or esteem over a longer time (Hall 1992). With such characteristics, corporate reputation cannot be perfectly imitated by other competitors (Balmer, 2003).

The unique advantages of corporate reputation permeate all aspects of corporate activities. Positive corporate reputation attracts investors by enhancing the competitive advantage of the company (Caruana, 1997). It helps in managing favourable relationships (satisfaction and loyalty) with customers (Helm 2007). It is persuasive and influences customers' purchase decisions as a proxy for service and product quality (Fombrun 1996). Furthermore, it encourages a positive relationship with employees, and enhances workforce loyalty by enabling a favourable identity for themselves, while simultaneously attracting high-quality applicants (van Riel and Balmer, 1997; Balmer, 1995; van Riel 1995; Fombrun and Shanley, 1990).

In addition to such unquantifiable and non-financial benefits, corporate reputation is also closely related to superior corporate financial performance. Roberts and Dowling (2002) identified that superior companies have relatively good reputations and that these reputations are improved by increased corporate performance. Davies et al. (2003) also found a positive relationship between corporate reputation and financial performance. As discussed above, corporate reputation contributes to the company offering various benefits.

Corporate reputation is distinguished from identity and image in terms of meaning, although many authors do use the terms interchangeably. In the marketing context, corporate reputation is defined as the outside stakeholders' evaluation, beliefs and feelings about the company, comprising both cognitive and affective dimensions. There are a number of measurements available to assess corporate reputation, ranging from general surveys for commercial purposes to specific measuring tools developed to focus on certain attributes of corporate reputation. However, these can also be categorised mainly by focusing on two main attributes such as corporate role and character. Among them, two measurements, the Reputation Quotient and Corporate Character Scale, are the most representative of the two main streams. Fombrun (1997) stated that the measurement of reputation should comprise components of various roles/functions which society expects from companies, including an emotional component. The Reputation Quotient (Fombrun et al. 2000b) is the most well-known measurement for corporate reputation from the viewpoint of the corporate social role perspective. The Corporate Character Scale was developed by Davies et al. (2003), the approach assumes that a company is a person and can have a personality just like a human being; and that like personal reputation, corporate reputation can be described using personality adjectives.

Corporate reputation has been empirically investigated over time and used as either an exogenous variable in determining another construct or an endogenous variable determined by other variables. In this thesis H_4 intends to determine if environmental attitude of managers can be a good predictor of a perceived corporate reputation, therefore, in this context it is an endogenous (dependent) variable. Employees' role in creating a corporate asset has been emphasised in the literature on internal brand building which has been defined as a process to align employees' brand-relevant behaviour and the brand promise given to stakeholders (Vallaster and de Chernatony, 2006).

The firm's conduct becomes apparent in its employees' behaviour, a view expressed in some literature as internal marketing (Helm, 2010; Harris and de Chernatony, 2001). The internal marketing builds on the notion that marketing principles can be employed in managing the firm's human resources (George, 1990). In order to create satisfied customers, managers first need to create satisfied employees because they represent the firm in each interaction with customers and other stakeholders. As Davies et al. (2003, p. 23) highlight, the reputation of many firms ‘is driven by the way customer facing employees perceive the organisation’. Employees as ‘part-time marketers’ need to adopt certain attitudes and behaviours in order to become a corporate ambassador (Fisher- Buttinger and Vallaster, 2008) who safeguards corporate reputation and spreads goodwill in support of the firm.

The findings from different literature analyse the roles employees play in reputation building. To begin with, corporate reputation as perceived by an employee can be

defined as a global, temporally stable, evaluative judgment about the employing firm that is shared by the firm's multiple stakeholders (Highhouse et al., 2009). The internal reputation building encompasses all activities or behaviours employees exhibit in order to contribute to the formation of corporate reputation (Helm, 2010). Employees can directly or indirectly, voluntarily or involuntarily, affect reputation by any act that is transmitted to, and communicated by, external audiences who evaluate corporate conduct (Helm, 2010). Despite the widespread agreement that employees are very important for reputation building (Dowling, 2001; Harris and de Chernatony, 2001), the literature remains imprecise about how employees perceive this role. This study's H4 evaluates how managers in extractive sector perceived the importance of corporate reputation from their environmental attitudes standpoint.

Many environmental abuses (e.g. BP 2010 rig explosion and Shell Petroleum 1995 Ogoni crises in Nigeria Niger Delta) and unethical business practices (e.g. Halliburton 2009 bribery scandal and Enron 2002 financial scandal) had led to bad reputation for some big multinational companies within the extractive sector. The consequences of this include huge fines, dwindling stock prices and compulsory winding up of some of the affected companies. In view of this, it is important to clarify if managers perceived that their responsible or irresponsible environmental attitude and behaviour can impact positively or negatively on their companies' reputation. For the purpose of this study, the reputation quotient (RQ) developed by Fombrun (1997) has been adapted as a measuring scale for measuring corporate reputation because of its viewpoint of measuring reputation from the social role perspective (see appendix 4.7 for a complete questionnaire).

2.8. Conclusion

The chapter was set out to provide both early and contemporary literature on all the components of the study's conceptual framework. The essence of this was to provide clear understanding of all the constructs/variables that connect the study's framework. The study conceptual framework in figure 1.1 shows direction of causation from corporate environmental responsibility and environmental attitude to both reputation and financial performance. All these constructs and their interrelationships have been explained in terms of previous studies and the current investigation.

Having provided detailed literature on the link between corporate environmental responsibility and financial performance, and environmental attitude and corporate reputation, there is a need to complement this with the theoretical perspectives in corporate environmental responsibility, which is the central theme of this thesis. The entire chapter 3 has been dedicated to providing the theoretical underpinnings for this thesis.

CHAPTER THREE: THEORETICAL REVIEW

3.1. Introduction

The unavailability of a recognised definition of corporate environmental responsibility (CER) or corporate social responsibility (CSR) often make theoretical development and construct measurement difficult (McWilliams et al., 2006). The review of theoretical perspectives on this subject area reveals that most researchers apply different theories in a pragmatic manner and as it suits the study under consideration. Another factor accounting for different theoretical views is that the theories underlying social-environmental responsibility (SER) have been drawn from a variety of disciplines, such as accounting, economics, management, finance, psychology and law, amongst others.

The development of SER as both academic and business areas was shaped by various authors applying theories ranging from agency theory, the theory of the firm, stakeholder theory, resource-based view of the firm, institutional theory, triple bottom line, theory of reasoned action, ethical theory and strategic leadership theory.

The rest of this chapter is divided into six sections. Section 3.2 provides a summary of theoretical perspectives on social-environmental responsibility research. Sections 3.3 provides a link between the theoretical perspectives and the thesis, while sections 3.4 to 3.6 will give detailed review of the theory of the firm, stakeholder theory and triple bottom line. Section 3.7 summarises the entire chapter three.

3.2. Theoretical perspective on CER

Levitt (1958) could be credited with setting the agenda for the debate about the social responsibility of business in his *Harvard Business Review* article 'The Dangers of Social Responsibility', in which he cautions that 'government's job is not business, and business's job is not government' (1958, p. 47). Friedman (1970) expressed similar sentiment and added that the mere existence of CSR was a signal of an agency problem within the firm. An agency theory perspective implies that CSR is a misuse of corporate resources by business agents (i.e. appointed executive management); that would be better spent on valued-added internal projects or returned to shareholders. It also suggests that CSR is an executive perk, in the sense that managers use CSR to advance their careers or other personal agendas.

Freeman (1984), building on Chester Barnard's (1938) 'inducement-contribution' framework, presented a more positive view of managers' support of CSR. Freeman's stakeholder theory declares that managers must satisfy a variety of constituents (e.g. workers, customers, suppliers, local community organizations) who can influence firm results. According to this view, it is not sufficient for managers to focus exclusively on the needs of shareholders, or the owners of the corporation. Stakeholder theory implies that it can be beneficial for the firm to engage in certain CSR activities that non-financial stakeholders perceive to be important, because, absent this, these groups might withdraw their support for the firm. Stakeholder theory was expanded by Donaldson and Preston (1995) who stressed the moral and ethical dimensions of CSR; this however, might have contributed to the introduction of ethical theory in studies of social-environmental responsibility. It was later

expanded (Donaldson and Davis, 1991) and based on the idea that there is a moral imperative for managers to 'do the right thing', without regard to how such decisions affect firm financial performance.

Institutional theory has also been applied to CSR in a paper by Jones (1995). The author concludes that companies involved in repeated transactions with stakeholders on the basis of trust and cooperation are motivated to be honest, trustworthy, and ethical because the returns to such behaviour are high. Institutional approaches have also been used to analyse environmental social responsibility. More specifically, Jennings and Zandbergen (1995) analyse the role of institutions in shaping the consensus within a firm regarding the establishment of an 'ecologically sustainable' organisation. Institutional theory emphasises the role of social and cultural pressures imposed on organisations that influence organisational practices and structure (Scott, 1992)

The first theoretical paper to apply the resource-based-view-of-the-firm (RBV) framework to corporate environmental responsibility was Hart (1995), who focused exclusively on environmental social responsibility. Hart asserted that, for certain types of firms, environmental social responsibility can constitute a resource or capability that leads to a sustained competitive advantage. Russo and Fouts (1997) tested this theory empirically using firm-level data on environmental and accounting profitability and found that firms with higher levels of environmental performance had superior financial performance, which they interpreted to be consistent with the RBV theory.

Using the RBV framework, a more formal theory-of-the-firm model of 'profit maximizing' CSR was posited in McWilliams and Siegel (2001). These authors outlined a simple model in which two companies produce identical products, except that one firm adds an additional 'social' attribute or feature to the product, which is valued by some consumers or, potentially, by other stakeholders. In this model, managers conduct a cost/benefit analysis to determine the level of resources to devote to CSR activities/attributes. That is, they assess the demand for CSR and also evaluate the cost of satisfying this demand.

The theory of the firm perspective on SER has several strategic implications. The first is that SER can be an integral element of a firm's business and corporate-level differentiation strategies. Therefore, it should be considered as a form of strategic investment. Even when it is not directly tied to a product feature or production process, SER can be viewed as a form of reputation building or maintenance.

Elkington (2004) propounded triple bottom line reporting for organisations. It is expected that every organisation gives a stewardship account beyond economic activities, but must concurrently report on the social and environmental aspect of the business. Cheney (2004) argues that it is a method for the organisation to show its engagement in legitimate environmentally and socially responsible events.

Waldman et al. (2004) applies strategic leadership theory to CSR. These authors conjecture that certain aspects of transformational leadership will be positively correlated with the propensity of firms to engage in CSR and that these leaders will employ CSR activities strategically. Similarly, Marshall et al., (2010) applies theory

of reasoned action (TRA) and stakeholder theory to study of environmental practice in the wine industry and the authors concluded that subjective norms and internal stakeholder pressure are drivers of adoption of good environmental practices.

This study draws on three theories which include the theory of the firm, stakeholder theory and triple bottom line (TBL). These theories have been properly linked and further justified in section 3.3 below.

Table 3.1. Summary of previous studies' theoretical perspectives

Author	Nature of theoretical perspective	Key argument
Friedman (1970)	Agency theory	CSR is indicative of self-serving behaviour on the part of managers, and thus, reduces shareholder wealth.
Freeman (1984)	Stakeholder theory	Managers should tailor their policies to satisfy numerous constituents, not just shareholders. These stakeholders include workers, customers, suppliers, and community organisations.
Donaldson and Davis (1991)	Ethical theory	There is a moral imperative for managers to 'do the right thing', without regard to how such decisions affect firm performance.
Donaldson and Preston (1995)	Moral and ethics	Stressed the moral and ethical dimensions of stakeholder theory, as well as the business case for engaging in CSR.
Jones (1995)	Stakeholder theory	Firms involved in repeated transactions with stakeholders on the basis of trust and cooperation have an incentive to be honest and ethical, since such behaviour is beneficial to the firm.
Hart (1995)	Resource-based view of the firm	For certain companies, environmental social responsibility can constitute a resource or capability that leads to a sustained firm competitive advantage.
Jennings and Zandbergen (1995)	Institutional theory	Institutions play an important role in shaping the consensus within a firm regarding the establishment of an 'ecologically sustainable' organisation
Baron (2001)	Theory of the firm	The use of CSR to attract socially responsible consumers is referred to as strategic CSR, in the sense that firms provide a public good in conjunction with their marketing/business strategy.
McWilliams and Siegel (2001)	Theory of the firm	Presents a supply/demand perspective on CSR, which implies that the firm's ideal level of CSR can be determined by cost-benefit analysis.
Elkington (2004)	Triple bottom line	Need for social and environmental reporting along with the economic activities reporting.
Waldman et al. (2004)	Strategic leadership theory/Theory of the firm	Certain aspects of CEO leadership can affect the propensity of firms to engage in CSR. Companies run by intellectually stimulating CEOs do more strategic CSR than comparable firms.
Marshall et al. (2010)	Theory of reasoned action	Subjective norms and internal stakeholder pressure are drivers of adoption of good environmental practices.

Source: Developed by the author for the current study

3.3. Link between the selected theories and the current study

This thesis' objective is to establish the relationship between the CER of companies and the effect on FP in the extractive sector. In order to establish a base and theoretically justify the CER of organisations, the study critically reviews three theories that offer explanation to behaviour and decision making in areas of the CER, CSR and environmental decisions. These theories include the theory of the firm stakeholder theory and triple bottom line (TBL). This thesis is of the view that the commitment of company and its managers to CER can be influenced by their views of these theories. For instance, an organisation or manager that looks beyond the shareholders' concern by considering all the business stakeholders who have different claims on the organisation would most likely demonstrate a positive CER. The same goes for TBL, a strong and almost equal attention for economic, social and environmental bottom lines (performance indices) would likely influence the conduct of a manager towards the environment. And the theory of the firm is of the view that social-environmental responsibility can only be justified by increase in financial performance. The thesis relies on the theory of the firm, stakeholder theory, and TBL as drivers of CER. Therefore, the researcher proposes that the theory of the firm, stakeholder theory and TBL influence CER and CER is positively related to FP in the extractive sector.

At this juncture, it must be restated that this research is a deductive study; therefore an in-depth critical analysis of the theories is not of interest, since this thesis has no intention of evolving a new theory (i.e. not an inductive research) but only testing

hypotheses for the purpose of generalisation. The theories have been reviewed to support this thesis as much as possible.

3.4. The theory of the firm

The dominant perspective in social-environmental responsibility (SER) research and practice is the business case, which has its roots in agency theory, especially the theory of the firm. The business case is that firms 'do well' (financially) by 'doing good' (acting responsibly) (Kurucz, et al., 2008, p.84). The need to be socially and environmentally responsible is justified by increase in financial performance. Kurucz et al. (2008) states that the mechanism by which 'doing good' is translated into 'doing well' has been open to discussions, both from theoretical perspective and based on a critique of the empirical evidence. In business term, a 'business case' is a demonstration that investment in a project or initiative guarantees to yield a relatively significant return to justify the expenditure. This is an area well researched both theoretically and empirically with a primary focus on conceptualising, specifying and testing the relationship between social-environmental performance and financial performance which ended differently in positive, negative and neutral results. The studies purport to find a positive relationship (Coleman, 2011; Orlitzky, 2008; Rodriguez and Cruz, 2007; Salama, 2005; Judge and Douglas, 1998; Russo and Fouts, 1997). Similar studies find a negative relationship (Thornton et al., 2003; Cordeiro and Sarkis, 1997; Worrell et al., 1995). While others show either inconclusive results or no (neutral) effect (Makni et al., 2009; King et al., 2001; Khanna and Damon, 1999). A synthesis of previous studies using meta-analysis

concluded that there is a positive and highly variable relationship between social-environmental responsibility and corporate financial performance (Orlitzky, 2003; Allouch and Laroche, 2005b; Wu, 2006; Margolis et al., 2007; Su and Song, 2010).

The theory of the firm is built on the notion that the management of publicly held firms attempts to maximise profits and based on this perspective, SER can be viewed as a form of investment. The review of the literature focusing on the business case for SER normally have research proposition for value creations in such areas as cost and risk reduction, profit maximisation and competitive advantage, reputation and legitimacy, and synergistic value creation (Kurucz, et al., 2008).

Cost and risk Reduction: The focus of this approach is that the firm choose to engage, or not, in SER related activities in order to reduce costs and risks to the firm. In building a business case for SER some of the hypotheses tested include the trade-off hypothesis and slack resources theory. The trade-off hypothesis proposes a negative impact of SER on financial performance. This hypothesis is a neoclassical economists' position which holds the view that socially responsible behaviour will net few economic benefits while its numerous costs will reduce profits and shareholder wealth (Waddock and Graves, 1997). This is a classical view of business objectives popularly supported by Friedman (1970) and Vance (1975). Friedman's view set a dichotomy between fulfilling fiduciary duties and social responsibility, and establishes a benchmark statement on the negative trade-off view of SER and cost to the firm. Some studies under this approach have identified an inverted U shape relationship which suggests that there is an optimal level of environmental and social performance, beyond which the company is incurring unnecessary cost and

reduction in profitability (Salzmann et al., 2005). The slack resource hypothesis proposes that better financial performance potentially results in the availability of slack resources that may increase a firm's ability to invest in socially responsible domains such as community and society, employee relations or the environment (Waddock and Graves, 1997). The implication of this approach is that firms perceive SER as an additional cost and thus can only afford to pursue these activities when they are not in a situation where they need to minimise costs.

Profit maximisation and competitive Advantage: Social-environmental activities are conceived strategically as conferring competitive advantage on the firm over industry rivals. McWilliams and Siegel (2001) are of the view that SER can be leveraged on as a competitive tool if a company considers both demand for SER and supply of SER. The major sources of demand for SER include consumers and other stakeholders such as investors, employees, and the community. These groups' demands can be met by investment in SER which entails embodying the product with socially responsible attributes, such as pesticide-free, non-animal-tested ingredients or 100% natural. This may also involve intangible attributes, such as reputation for quality or reliability. There is strong evidence that many consumers value SER attributes, the presumption is that firms that actively support SER are more reliable and, therefore their products are of higher quality. For the supply-side perspective, a company takes an adaptation perspective toward the external environment by suggesting that a firm will supply only the level of environmental and social performance that is demanded of them, with a view to profit maximisation (Crane, et al., 2008). Similarly, to create a competitive advantage the adaptation of the resource-based view of the firm, which begins with the realisation that firm must

devote resources to satisfy SER (McWilliams and Siegel, 2001). This can be achieved by investing in sustainable resources and adding SER-related resources to main resources like capital, materials and labour. For instance, a firm can surpass environmental standards by the acquisition of more environmentally friendly equipment, purchase of more green materials and hiring additional staff to advance SER through affirmative action and improved labour relation (McWilliams and Siegel, 2001). These social, sustainable and environmentally friendly resources are conceived as internal organisational resources that build competitive advantage (McWilliams and Siegel, 2001; Aupperle et al., 1985; Freedman and Jaggi, 1982).

Reputation and branding: The business case built in this domain is focused on exploiting SER activities as a powerful signalling tool in communicating brand values to consumers. This is premised on the social impact hypothesis which suggests that satisfaction of the needs of various corporate stakeholders leads to favourable financial performance (Freeman, 1984). This hypothesis means that serving the implicit claims of stakeholders enhances a company's reputation in a way that has a positive impact on its financial performance and disappointing those groups of stakeholders may have a negative financial impact (Preston and O'Bannon, 1997; Pava and Krauz, 1996; Cornell and Shapiro, 1987). Other studies focus on the positive link between a firm's corporate social performance and reputation (Turban and Greening, 1997; Fombrun and Shanley, 1990). Social cause-related marketing highlights the alignment of stakeholder and firm interests by linking corporate philanthropy and marketing, showcasing the socially and environmentally responsible behaviour of the firm in order to generate reputational gains. Bhattacharya and Sen (2004) argue that strong product brand or reputation act as

marketing differentiation strategy for firms that can impact financial performance through enhancing reputation.

Synergistic value creation: The business focus under this domain is premised on a positive synergy or virtuous circle hypothesis. The synergy is that a positive environmental gesture or behaviour leads to an improvement in profitability which is reallocated, in part, to both shareholders and different stakeholders. There may then be a simultaneous and interactive positive relation between SER and FP, forming a virtuous circle (Stanwick and Stanwick, 1998; Waddock and Graves, 1997, Preston and O'Bannon, 1997). Equally, Orlitzky et al. (2003) states that social-environmental responsibility and financial performance may reinforce each other in a virtuous cycle because good managers are capable of taking positive strategic action in both economic and social facets. Astute managers are able to identify and implement specific SER activities capable of enhancing their company's reputation in social or environmental domains and they ensure that slack resources are invested wisely to promote and exploit the opportunities.

Building a business case for SER is not without flaws. The proposition that SER-related initiatives can be used to drive financial performance has yielded inconclusive results (Coleman, 2011; Griffin and Mahon, 1997). Some have argued that the search is pointless because logically there may not be a consistently positive relationship between these two constructs. It is an extreme, untenable proposition to assert that any management initiative is always positively correlated with financial results under any condition (Rowley and Berman, 2000).

There is a problem with the logic of justifying SER on economic grounds. The problem is most characterised as a schism between economic considerations and ethical justifications; the implication being that economic consideration is not normative, morally deficient and value free (Kurucz, et al., 2008). To predicate environmental responsibility on economic gains is to tamper with the essence of normative ethics. One of the consequences of production in the extractive sector is negative externalities, which must be attended to as a matter of consequentialist ethical theory (Griffin, 1995), and beyond this, there is a deontological ethical issue, whose position is that the moral agent is bound to follow specific laid down duties, rules and policies (Crisp, 1995). The duty to clean-up pollution created by a company is entrenched in various Pollution Authorities' codes and other supranational institutions such as the United Nations Environment Programme (UNEP) and the World Bank. In addition, making SER activities dependent on economic gains does fall short on moral virtues. A morally upright company or moral agent must strive to be a friend of the stakeholders and the society at large without any strings attached. The theory of the firm lacks universal application across diverse institutions. The organisations that are not-for-profit like NGOs cannot embrace a profit maximisation view of business; therefore the theory of firm is not applicable.

The theory of the firm is based on single constituency of business. The thesis reviews other theories based on multiple constituencies these include stakeholder theory and TBL. The next section deals with stakeholder theory comprehensively, this because stakeholder management has continued to be topical and sensitive issue in day-to-day activities of the extractive sector.

3.5. Stakeholder theory

Stakeholder theory emerged as an alternative to shareholder theory (Spence and Lozano, 2001). Stakeholder theory provides a good theoretical platform for various studies varying from CSR (Wheeler et al., 2002), sustainability (Singh et al., 2007), environmental studies (Marshall et al, 2009), ethics (Wijnberg, 2000), and environmental decision making (Cordano and Frieze, 2000) among others. Although the basic premise of stakeholding is simple and readily understood, there are numerous different definitions as to who or what constitutes a stakeholder, some of which are shown in Table 3.2 below. This range of definitions makes it difficult to get a generally accepted idea of what a stakeholder actually is. The question of to whom business should be socially responsible has made CSR and stakeholder theory two sides of a coin. Pearse (1980) opined that successful implementation of the CSR programme of a company requires incorporation of stakeholders' interest in the company's mission, identifying the stakeholders, and determining and understanding the stakeholders' specific demands. Wheeler et al (2002) are of the view that a key tenet of stakeholder-responsive practice and thus CSR requires that companies define who they believe their stakeholders to be. Equally, environmentally sustainable practices in the extractive sector requires a careful identification of all the parties (stakeholders) affected by the negative externalities of the companies in the sector (Singh et al., 2007).

Table 3.2. Some early definitions of stakeholders

Author	Definition
Stanford 1963 (cited in Freeman 1984)	'those groups without whose support the organisation would cease to exist'.
Freeman 1984	'can affect or is affected by the achievement of the organisation's objectives'.
Evans and Freeman 1993	'benefit from or are harmed by, and whose rights are violated or respected by, corporate actions'.
Hill and Jones 1992	'constitutes who have a legitimate claim on the firm, established through the existence of an exchange relationship' who supply 'the firm with critical resources (contributions) and in exchange each expects its interests to be satisfied'.
Clarkson 1995	'have or claim, ownership, rights, or interests in a corporation and its activities'.

Source: adapted from Crane and Matten (2010) pg.61

3.5.1. History of stakeholder analysis

Stakeholder theory arose to challenge a dominant economic model of the firm and an overriding financial management objective of shareholders' wealth maximisation. The theory offers an alternative explanation on the basis of the organisation's relationship with its external environment. Stakeholder approaches are relatively current additions to the management literature (Friedman and Miles, 2002), although their focus on the relationship that exists between the organisation and its environment featured in Mary Parker Follett's writing some 60 years earlier (Schilling, 2000). Today stakeholder theory is found across disciplines as diverse as economics, ethics, marketing and systems science; and has entered political debate via references to "the stakeholder society" and "the Third Way" (Newell and Scarbrough, 2002).

The theory aligns with multiple constituency models of organisations (Ahmed, 1999), every organisation has different transactions with multiple parties varying

from employees, customers, shareholders to creditors just to mention a few. Also political theorists view this wider organisational accountability as a form of democratic representation (Middlewood and Cardno, 2001). According to Weiss (1998) the popularity of stakeholder theory is derived from debates on the governance of organisations, their increased sensitivity to legal and consumerism, greater governmental regulation, and investors and managers including corporate social responsibility as a factor in investment decisions. Freeman's descriptive definition of stakeholders is the most widely quoted: “any group or individual who can affect or is affected by the achievement of the organisation's objectives” (Freeman, 1984, p. 46), and applications of the theory acknowledge this socio-political perspective in their identification, classification and management of disparate stakeholder interests (Burgoyne, 1995).

Haberberg and Rieple (2001) argued that a stakeholder approach involves three related premises: organisations have a number of stakeholder constituencies that affect and are affected by them; the process and outcome of these interactions impact on stakeholders and the organisation; and stakeholder perceptions influence the viability of strategic options. However, the interest in stakeholder perspectives by strategists and politicians has led some to claim these represent “new rules” of socially responsible corporate governance (Wilson, 2000). Nevertheless, most applications of stakeholder theory constitute forms of stakeholder management that are undertaken primarily for instrumental reasons (Frooman, 1999).

The need for a wider umbrella to accommodate the interests of various interest groups in business is a recent phenomenon. Historically organisations gave

overriding importance to profit maximisation and financial stakeholders over other stakeholder constituencies (Smith, 1776; Spencer, 1851). Friedman (1970) equally acceded to the classical view of business objectives by stating that the sole reason for a firm's existence is to maximise the wealth of the shareholders while any act of philanthropy was equated to stealing from the shareholders' wealth. Failure to meet this fiduciary obligation was not only reprehensible but would result in sanctions such as a drop in share price or an enforced change of management. While responsiveness to shareholders' interests is still vital to contemporary organisations, they are subject to the influence of far wider disparate stakeholders. Government influences through legislation or lobbying, customers through expectations of improved standards of service or product safety, employees through demands for due reward and equitable treatment, and pressure groups through campaigns for issues such as fair trade and environmental protection (Stoney and Winstanley, 2001). All are potential sources of influence on corporate strategy and have led to debates on new approaches to corporate governance and stakeholder management.

There are two aspects of the business environment that have had significance in popularising stakeholder approaches - the advent of a "network society" and corporate social responsibility concerns (Wilson, 2000). The network society is a consequence of globalisation, interdependence, and flexibility of organisational forms and relationships. The global scale of most business activities makes it far harder for individual governments or organisations to control events. Interdependence is the result of goods and services being produced by networks that span organisational, sectoral and national boundaries – and which exist within an increasingly managerialist paradigm (Klijn, 2002). Paradoxically this fluid,

negotiated and pluralistic set of relationships with stakeholders require more integrated solutions (Klijn, 2002). Strong et al. (2002) classify stakeholders on the basis of the markets in which they are located: shareholders in capital markets, customers in product or service markets and employees in labour markets. Other critics make an ethical case for adding diffuse and non-human stakeholders such as "the community" and "the environment" to this list (Greenwood, 2002). Organisations are now faced with an increasing weight of evidence that they are stakeholder-accountable bodies that need the consent of a range of constituencies for effective operation and that demonstrating socially responsible governance is a way to attain this (Handy, 2002; Key and Popkin, 1998). Their old style command structures are giving way to negotiated relationships with stakeholders (Butcher and Clarke, 2002) as organisations search for legitimacy in a society with increasingly holey boundaries (Soloman, 2001).

In order to adequately address the business concern for its multiple constituency and wider accountability beyond shareholders, it is has become necessary to have a comprehensive distinction and broad classification of stakeholders which is the subject-matter of section 3.5.2.

3.5.2. Classification of stakeholders

Many studies in the areas of ethics, business and society are underpinned by the concept of stakeholder analysis to address the interests of various individuals and groups that have stake in a business. Stakeholder analysis has been widely applied,

among others, to describing and explaining the factors that encourage managers to identify certain groups as stakeholders, describing and explaining the effects of management decisions on different groups of affected actors, identifying which actors have valid claims upon the firm, explaining how employing stakeholder analysis can help firms to achieve traditional goals and so on (Donaldson and Preston, 1995; Mitchell et al., 1997; Wheeler and Sillanpaa, 1998). A key question arises as to how the stakeholder approach is to be identified and managed by business. Equally there is the issue of how the different uses of stakeholder analysis link to one another and whether some uses of stakeholder analysis should take precedence over others (Reed, 1999).

In addressing the foregoing, Donaldson and Preston (1995) differentiated between descriptive, instrumental and normative uses of stakeholder analysis. Descriptive stakeholders comprise groups who can affect the firm and could be affected by the firm; instrumental stakeholders can be defined in terms of groups that can affect the ability of management to achieve their goals and normative stakeholders comprise groups that have valid normative claims on the firm. Normative stakeholder theory looks at business obligations from the perspective of ethics, morality and legitimacy (Reed, 1999). Donaldson and Preston phrased the normative approach as follows ". . . managers should acknowledge the validity of diverse stakeholder interests and should attempt to respond to them within a mutually supportive framework, because that is a moral requirement for the managerial function" (Donaldson and Preston, 1995, p. 87)

Freeman (1984) distinguished between strategic and normative stakeholders, defining strategic stakeholders as limited groups that affect the strategic aims of the organisation. The strategic groups such as shareholders and customers are those that are critical and can affect the very survival or existence of the organisation with legitimate claims. According to Freeman, normative stakeholders encompass more claims and include a wider range of entities or interest groups.

In further classifications of stakeholders, Evans and Freeman (1988) classified stakeholders into narrow and wider stakeholders. According to them, narrow stakeholders are those that are the most affected by the organisation's policies and will usually include shareholders, management, employees, suppliers, and customers who are dependent upon the organisation's output. Wider stakeholders are those less affected and may typically include government, less-dependent customers, the wider community (as opposed to the local community) and other peripheral groups. Clarkson (1995) classified stakeholder into primary and secondary stakeholder groups. A primary stakeholder is one without whose continued existence of a firm as going concern is threatened while the secondary stakeholders are those that the organisation does not directly depend upon for its immediate survival.

Freeman (1984) pointed out that the continued participation of primary stakeholders is necessary for the survival of the corporation, and secondary stakeholders are not essential to the survival of the corporation although their actions can significantly damage (or benefit) the corporation. Clarkson's (1995) study on primary stakeholders and the relationships between the satisfaction of these primary stakeholders and corporate performance revealed that two problems are evident.

First, there is no clear cut boundary between primary and secondary stakeholders and second, if one defines primary stakeholders in terms of their importance to the corporation, one should not be surprised if the satisfaction levels of exactly those primary stakeholders can be correlated with corporate performance. The obvious distinction between primary and secondary stakeholders is closely connected with the instrumental approach which seems out of place in a normative approach. However, the distinction between primary and secondary stakeholders had disappeared in Evan and Freeman (1988) and Freeman (1994), in both submissions, the normative approach should be allowed to dominate. Evan and Freeman (1988) draw from Kantian ethical theory (respect for others' freedom and dignity) by stating that every stakeholder has a right to be treated as an end, not a means. They took this argument one significant step further when they proposed that pursuing the interests of the stakeholders is the true purpose of a business organisation.

Mitchell, Agle and Woods (1997) opined that there is a need to systematically identify stakeholders by paying attention to the dimensions of power, legitimacy and urgency, and therefore explicitly aimed to serve an instrumental approach, in order to increase managers' ability to handle stakeholders' claims in the interest of the organisation. In Mitchell et al. (1997), a stakeholder has power to the extent that it can impose its will in its relationship with the firm. That stakeholder has legitimacy when its actions towards the firm are widely seen as desirable, proper, or appropriate within the norms, values, and beliefs of the larger society. The urgency exists when a relationship or claim is of time-sensitive nature and when that relationship or claim is important or critical to the stakeholder.

Mahoney (1994) classified stakeholders into active and passive groups. Active stakeholders are those who seek to participate in the organisation's activities. These stakeholders may or may not be a part of the organisation's formal structure. Management and employees fall into this active category, including some parties from outside an organisation, such as regulators and environmental pressure groups. Passive stakeholders, in contrast, are those who do not normally seek to participate in an organisation's policy and decision making. This is not to say that passive stakeholders are any less interested or less powerful, but they do not seek to take an active part in the organisation's strategy. This will normally include most shareholders, government, and local communities.

Having dwelt on all major known classes of stakeholders, this thesis finds it compelling to elaborate more on the normative stakeholder class in view of its dominance and general acceptability as the panacea that can resolve the major question of 'to whom should business be socially responsible?'(Reed, 2002; Donaldson and Preston, 1995). In the succeeding section 3.4.3, normative stakeholder theory is given a broader perspective.

3.5.3. Normative Stakeholder Theory

This research has found normative stakeholder theory more relevant in the context of its all-inclusive proposition of stakeholder management. The thesis has found it desirable to dwell more on this theory because of its recognition of all stakeholders as equal and important in relation to the achievement of business objectives. This

thesis posits that a company that promptly recognises all its stakeholders and treats them with high importance and equality may likely be in good records of the stakeholders. More importantly, some level of fluidity has been observed in the classification of stakeholders and this suggests that a strategic or primary stakeholder today may have its position changed tomorrow in view of the changing business environment and internal strategies of a company.

As earlier mentioned, Donaldson and Preston (1995) distinguish between descriptive, instrumental and normative aspects of stakeholder analysis. They argued that stakeholder management is better when based on the normative theory. Significantly, Donaldson and Preston phrase their normative approach as follows: "managers *should* acknowledge the validity of diverse stakeholder interests and *should* attempt to respond to them within a mutually supportive framework, because that is a moral requirement for the managerial function" (Donaldson and Preston, 1995, p. 87). They ground the normative basis of stakeholder theory in property rights theory (and twentieth-century legal practice in most developed countries) in which the extent of property rights is limited by restrictions against using the property in a manner that causes harm to others. This is a potentially problematical suggestion. Legal limitations to the rights of property owners mostly concern the negative duty of not harming others while normative stakeholder theory, as formulated by Donaldson and Preston, implies a positive duty which seldom, if ever, appears in the context of property ownership. "One should not bore or irritate one's neighbours by playing the violin all night long. However, if one is a first-class player and owns a Stradivarius, one is allowed not to play or to build a sound-proof wall so that no others can derive enjoyment from one's playing. One may even burn the

Stradivarius" (Wijnberg, 2000, p. 331). Stakeholder theorists, and certainly Donaldson and Preston, expect more from corporations than the law expects of individual property owners. And precisely from the point of view of legal theory, this seems eminently reasonable because by making incorporation possible, the law extends the rights individual persons can have and allows them collectively to acquire more power than they would have otherwise. The law usually asks for more responsibility where there is more power, and seen from the legal point of view Donaldson and Preston advocate, stakeholder theory could be considered the logical complement of corporation law.

Corporations by their very essence as entities (who are more than the sum of the people involved in them) raise problems with respect to the distinction between the legal and moral responsibilities of the corporation and those of natural persons acting on behalf of the corporation. Quinn and Jones criticized both Freeman's stakeholder approach and Donaldson and Dunfee's (1994) implicit social contract approach on the grounds that these approaches regard the firm and not the manager as the "relevant unit of moral analysis" (Quinn and Jones, 1995, p. 32). Against the widely held opinion that corporations have legal responsibilities but only persons can have moral responsibilities, French (1984) argued that corporations can be treated as moral persons when the "corporations internal decision structure" allows one to re-describe the actions of individuals as intentional actions of the corporation. French explicitly argued that even when the formal organisation chart does not accurately represent the internal decision structure, no problem ensues because all that is needed is to construct a map of the non-formalised real structure. The way organisational politics is viewed makes it hard to agree that the real internal decision

structure of a corporation is sufficiently stable and visible to be mapped for this purpose. And even if it were that moral responsibilities could be ascribed to corporations, these would scarcely detract, as legal responsibilities often do, from the personal responsibilities of the persons concerned with making the relevant decisions.

The difference noted by Donaldson and Preston (1995) in different forms of analysis has been followed by a number of theorists in an attempt to develop more specific types of stakeholder theory. Descriptive (Jawahar and McLaughlin, 2001), instrumental (Jones, 1995), and normative (Donaldson and Preston, 1995). This distinction would also seem to imply that one should distinguish between definitions of stakeholders on similar lines. If one follows this line of logic, it would be possible to differentiate between (a) descriptive stakeholders, who could be defined in terms of whether they are affected by the firm and/or can potentially affect the firm (depending on whether the object of the empirical investigation is the effects of the firm's activities or the decision-making process of the firm); (b) instrumental stakeholders, who can be defined in terms of the need of management to take them into consideration when trying to achieve their goals (either because they can affect the ability of management to achieve their goals or because they have valid normative claims that should be taken into account); and (c) normative stakeholders, who can be defined in terms of having valid normative claims on the firm (Reed, 2002).

This may look potentially helpful, one weakness of the argument put forth by Donaldson and Preston (1995) is that they did not provide a strong epistemological

basis for their distinction of different uses of stakeholder analysis. This failure means that they are not really acknowledging major controversies in contemporary philosophy (and, more specifically, in ethics) between traditional defenders of enlightenment thought and their challengers (e.g.post moderns, communitarians).This obvious gap leaves them subject to critique. Their critics (see, e.g., Freeman, 1999, 2000; Treviño and Weaver, 1999) typically hold that the distinction they make is not tenable and, as a result, leads to confusion with respect to stakeholder theory rather than increased clarity (e.g., generating unnecessary discussions about convergence in stakeholder theory).

Reed (2002) argued that the critical theory approach to stakeholder analysis and some of their works are grounded in the work of Jürgen Habermas and other second-generation critical theorists (Reed, 1999a). Such an approach agrees with the basic distinction of different forms of analysis put forward by Donaldson and Preston (1995), although it prefers the terms Positive, Strategic and Normative analysis (Reed, 2002). The critical theory approach provides a strong epistemological basis for the distinction between these different forms of analysis. The key here is the use of discourse theory, especially as this is elaborated in Habermas's (1987). The Theory of Communicative Action, in his discourse theory, Habermas distinguished different types of speech acts (and discourses), which make different types of validity claims (and involve different modes of justification). These include constative speech acts (which make claims to truth), moral speech acts (which make claims to rightness/procedural justice), ethical speech acts (which make claims to goodness), pragmatic speech acts (which make claims to effectiveness), aesthetic speech acts (which make claims to beauty), and so forth.

From a critical theory perspective, the rationale for the uses of three different stakeholder theories is explained by the fact that they make different types of claims and involve different forms of reasoning for their justification. Positive (or descriptive) uses of stakeholder theory make claims to truth and are justified through constative discourses, strategic (or instrumental) uses make claims of effectiveness and employ pragmatic discourses, and normative uses of stakeholder theory can involve different types of claims (rightness, goodness) and be justified through different types of discourses (moral, ethical). This distinction between three different forms of analysis provides the basis for the critical theory resolution of the long-standing controversy in ethics about the relationships between normative and descriptive analysis. Although the distinction between different uses of stakeholder analysis is helpful, it does not necessarily resolve the issue of the relationship between different uses of stakeholder analysis.

According to Reed (2002) one approach to addressing this question is to limit the use of stakeholder analysis to its positive and strategic functions. Such an approach would view stakeholder analysis as a (traditional) form of management theory. In the sense that it is concerned with investigating how management can improve firm performance, an understanding from the standard criterion of profit maximisation. For the fields of business ethics and business and society, which advocate the incorporation of normative analysis, this approach is generally thought to be unacceptable. Within these fields, it is commonly, although far from universally, held that normative analysis must not only be incorporated but must somehow play a central or guiding role (Jones and Wicks, 1999), with the caveat that the different

forms of analysis must maintain their autonomy (Donaldson and Preston, 1995). According to Reed (2002) critical theory approach is in general agreement with this understanding that normative stakeholder analysis must somehow take priority and guide managerial behaviour and that the autonomy of the different forms of analysis needs to be recognised.

However, the use of normative stakeholder analysis in the fields of business ethics and business and society, can vary with respect to the scope of what is to be investigated. One can, for example, limit one's focus to the responsibilities of management in the "context of existing laws or institutions," or one can ask broader questions about the possible need for change to existing laws and institutions (Hendry, 2001). One possible way to conceptualize this difference is between employing stakeholder analysis as a (narrowly understood) form of professional ethics (which assumes the basic legitimacy of not only the profession but how it is currently regulated) or as a (more broadly understood) form of practical ethics (which is willing to question the legitimacy of the profession and/or how it is currently regulated).

Stakeholder theory is best understood in the latter sense, as a form of practical ethics that investigates not only the responsibilities of management in the context of existing laws or institutions but also the broader institutional and structural context of business practices (Reed, 1999a). As such, it is primarily guided by normative concerns, but it has a practical intent of helping managers to make decisions that will bring corporate performance into line with their normative obligations.

The distinction between primary and secondary stakeholders had disappeared in Evan and Freeman (1988) and Freeman (1994). In both texts, the normative approach dominated. Evan and Freeman (1988) made the Kantian recommendation that every stakeholder has a right to be treated as an end, not a means. They took this argument one significant step further when they proposed that pursuing the interests of the stakeholders is the true purpose of the business organisation. Freeman (1994) proposed three principles to be incorporated in corporate constitutions or even corporation law, the first of which, the *Stakeholder Enabling Principle*, reads: "Corporations shall be managed in the interests of its stakeholders, defined as employees, financiers, customers, employees, and communities" (Freeman, 1994, p. 417). This is a general prescription in need of specification. Freeman suggested that the rights of stakeholders should be considered to be equal and ". . . that inequalities among stakeholders are only justified if they raise the level of the least well-off stakeholder" (Freeman, 1994, p. 415). However, to balance interest in this fashion implies that it is possible to quantify accurately the benefits accruing to different stakeholders and that these benefits can be expressed in terms of a common unity of measurement.

Table 3.3. Summary of stakeholder classifications

Author	Stakeholder classification	Key argument	Who are the extractive sector stakeholders?
Freeman (1984)	Strategic and normative stakeholders	A strategic stakeholder is a group that affect the very survival or existence of the organisation with legitimate claims. The normative stakeholder's concept prescribes that it is normal for every company to recognise all the stakeholders irrespective of their activities, either strategic or non-strategic to the corporate existence of a company. Normative stakeholder theory is prescriptive and prescribes that all stakeholders should be recognised as equal and important in relations to the business objectives	The strategic stakeholders in the extractive sector include the government/regulatory authorities, shareholders, financiers and creditors who provide the huge loan to fund a high-risk industry. Also of strategic stakes are the host communities who sometimes are not given such recognition, but the industries only become aware of their strategic stakes when crises erupt. The consumers in an imperfect market structure like extractive sector may not have that power to influence the survival of the company. The normative stakeholders include all the individuals and groups within the sectors that have normative claims arising from ethical, moral and legal considerations. These vary from shareholders, customers, contractors, employees, suppliers, creditors, local communities, citizen, government, regulators, competitors, NGOs and so on.
Evans and Freeman (1988)	Narrow and wider stakeholders	Narrow stakeholders are those that are the most affected by the organisation's policies, while wider stakeholders are those less affected.	The narrow stakeholder would usually include shareholders, management, employees, suppliers, local communities and customers. While the wider stakeholders may include, government, wider communities or society at large, and pressure groups.
Mahoney (1994)	Active and passive stakeholders	Active stakeholders are those who seek to participate in the organisation's activities. They may or may not be a part of the organisation's formal structure. The passive stakeholders are not any less interested or less powerful, but they do not seek to take an active part in the organisation's strategy.	Examples of active stakeholders include Management, employees, regulators and environmental pressure groups while the passive stakeholders include shareholders, government and local communities.

Donaldson and Preston(1995), Jones (1995)	Descriptive, instrumental and normative stakeholders	Descriptive stakeholder's theory is about how a manager acts, prioritises and ascribes value or salience to competing stakeholder claims. Instrumental stakeholder theory is about giving considerations to stakeholder whose activities will affect the achievement of the business financial goals. While normative approach is the view that all stakeholder interests have intrinsic value. In normative, all identified stakeholders' claims must be given attention	Identification of descriptive stakeholders requires comprehensive stakeholder mapping in order of priority. This may include shareholders, employees, creditors, contractors, suppliers, regulatory authorities, host communities, customers and citizens. Obviously, in this sector customers may not be of priority since demand most times exceed supply. Descriptive stakeholder classification is similar to instrumental or strategic classification. Under this, only the instrumental stakeholders, such as shareholders, financiers or creditors, regulators/government and host communities are given audience. The normative stakeholders will definitely be an endless list, since the classification considers all identified stakeholders without a perking order or order of importance.
Clarkson (1995)	Primary and secondary stakeholders	A primary stakeholder is one without whose continued existence of a firm as going concern is threatened while the secondary stakeholders are those that the organisation does not directly depend upon for its immediate survival.	The primary stakeholder has the same features as the strategic stakeholders while the secondary may be said to have indirect stake in the business. The primary stakeholder in the extractive sector may include shareholders, financiers, suppliers, employees and host communities while the secondary include government, activist groups/NGOs, media, and the society at large. The consumers or customers may not necessarily be primary stakeholder in extractive sector, because of the imperfect market structure, which is a near monopoly. Equally, because of the nature of the extractive sector, the host communities will most likely be primary stakeholders while in other industries, they may not be classified as such.

Mitchell, Agle and Woods (1997)	Stakeholder identification by the dimension of power, legitimacy and urgency	This is classification of stakeholders based on power to influence, the legitimacy of each stakeholder's relationship with the organisation, and the urgency of the stakeholder's claim on the organization. The results of this classification may assess the fundamental question of "which groups are stakeholders deserving or requiring manager's attention, and which are not?" This is salience - "the degree to which managers give priority to competing stakeholder claims	A stakeholder has power to the extent that it can impose its will in its relationship with the firm (e.g. shareholders, financiers, and regulators/government). That stakeholder has legitimacy when its actions towards the firm are widely seen as desirable, proper, or appropriate within the norms, values, and beliefs of the larger society (e.g. citizens, especially when the human right is trampled upon) communities). The urgency exists when a relationship or claim is of time-sensitive nature and when that relationship or claim is important or critical to the stakeholder (e.g. host communities' claims often come with ultimatum and are time bound)
Reed (1999b)	Stakeholder recognition by claims of fair economic activities, claims of authenticity and claims in terms of legitimacy	Some groups necessarily interact with firms on the basis of some form of business affiliation. Such groups can make claims of fair economic activity against firms on the basis of whether the firm's activities contribute to a common good. Equally, there are actors that may make claims against the firm primarily on the basis of shared values and non-business relationships e.g. Local communities; they make claims of authenticity against the firm. Other stakeholders, however, may associate with firms primarily on a different basis and make different claims. Citizens, for example, associate with firms primarily in terms of their (political) rights and make claims against firms in terms of legitimacy	The claims of fair economic activities can arise from owners, consumers, contractors, employees and creditors. Also, government can make economic claims in form of taxation. Authenticity claims can come from the host communities, NGOs, media etc. Host communities can also make economic claims in form of fines and penalties. The citizens generally can make a claim of legitimacy at any time. Where a company violates the right of a citizen, a legitimate claim may arise
Reed (2002)	Positive (descriptive), strategic (instrumental) and normative stakeholders	Same as Donaldson and Preston's (1995) classification	See Donaldson and Preston (1995) above.

Source: Prepared by the author for the current study

3.5.4. What is the stake of a stakeholder?

The question of whom should business be socially responsible has been answered by acceptance of multiple constituency models of organisation (Ahmed, 1999) and various classes of stakeholders ranging from narrow, wider, primary, secondary, descriptive, strategic, normative, active, passive, direct and indirect earlier explained in 3.4.2. The question now is how to describe the stakes various stakeholders have in a business. Once able to do this, organisations and their managers will be able to do proper stake holding mapping by clear identification of who has a stake and why the interest of these stakeholders must be protected.

This thesis posits that various crises between the multinational extractive companies and their stakeholders arise from inability to identify clearly the genuine stakeholders and definition of their stakes in the companies' affairs. For instance, there have been endless communal agitations between multinational oil and gas companies and people of the Niger Delta (oil-producing areas in Nigeria) because of claims of neglect by the host communities and the inability of the oil companies to delineate various stake and stakeholders. The case study of Shell and the Ogoni reveals that host communities have continued to agitate for more and more supports from the oil companies. In addition, the level of the demand and the methods adopted to achieve these changed, with violence and kidnapping appearing to be the key weapon which often result in a lot of damage to properties, casualties and withdrawal of operations by oil companies from some locations. In the past, the oil companies' approach was to help or appease the communities through the communities' chiefs and elders. More, recently, a comprehensive stakeholder

management and engagement effort by both government and multinationals have brought about some level of stability in the region. The influential model of the stake and how stakeholders influence organisations is based on the attributes of power, legitimacy and urgency (Mitchell et al., 1997). Here stakeholders vary in their perceived *power* to influence the organisation, the extent to which their claims are regarded as *legitimate*, and the *timeframe* (i.e. urgency) available to respond to their demands (Frooman, 1999).

Hilman and Keim (2001) were of the view that effective management of "true" stakeholder issues, such as employee relations and environmental protection, can lead to improved financial performance, as measured by market-value added. In contrast, they found that merely participating in social issues without a focus on the needs of specific stakeholder group leads to diminished financial outcomes. Azapagic (2003) similarly stated that identifying relevant stakeholders and their interests is a prerequisite for the development of meaningful sustainability indicators. He categorised stakeholders in mining and the mineral industry to include employees, trade union, contractors and suppliers, customers, shareholders, creditors, insurers, local communities and authorities, government and NGOs.

Reed (1999b) recognises different stakeholders and their stakes by stating that some groups, necessarily interact with firms on the basis of some form of business affiliation (e.g., as owners, customers, contractors, employees, suppliers, creditors etc.) with the firm. All such groups can make claims of fair economic activity against firms on the basis of whether the firm's activities contribute to a common good.

Equally, there are actors that may make claims against the firm primarily on the basis of shared values and non-business relationships. Local communities, for example, may operate with firms primarily on the basis of community norms and values and relationships that they have developed with firms. As a result, they primarily make claims of authenticity against firms (although they can also make claims of fair economic activity to the extent that the firm's activities adversely affect them in this area).

Other stakeholders, however, may associate with firms primarily on a different basis and make different claims. Citizens, for example, associate with firms primarily in terms of their (political) rights and make claims against firms in terms of legitimacy. The claims of each group are now elaborated as follow:

With respect to the first of these groups, shareholders have one basic stake in the company, that of fair economic opportunity. This stake is generally understood in terms of shareholder rights (see Table 3.2). There are two competing conceptions of the rights that shareholders (should) have. The more widely acknowledged view is that shareholders have ownership rights (which includes both the basic rights to control the corporation and to appropriate the residual surplus as well as a range of supplementary rights designed to ensure that they can effectively exercise these two primary rights, e.g., rights to disclosure, etc.). A competing view is that shareholders (should) only have investor rights (i.e., the basic right to appropriate the residual profit and supplemental rights that help them to ensure that management runs the corporation in their interests, but no right to control the corporation). In the literature, upholding these rights is generally conceived of in terms of fiduciary obligations.

From a factual standpoint, claims made in the literature about fiduciary obligations as legal responsibilities are generally true. The key normative question, however, with respect to corporate responsibilities to shareholders is why society imposes such fiduciary obligations. Libertarians will claim that the ultimate basis for these obligations lies in a strong notion of property (ownership) rights (Friedman, 1970; Nozick, 1974). The more general approach in the literature to grounding such responsibilities, however, is some form of utilitarian calculus or conception of a common good. Granting shareholders these rights is understood to contribute to greater total utility or a larger common good (which is specified in the economic literature in terms of consumer sovereignty, full employment, etc.). This latter approach implies that corporate responsibilities to shareholders (viz., to maximize their interests) are always subject to employing only practices compatible with a common good.

With respect to employees (and organizations that represent their interests, such as labour unions), they have an economic stake in having the corporation provide them a safe, humane, non-discriminatory working environment with a living wage (Reed, 1999a). Depending on their relationship with the corporation (e.g., length and quality of service) and the corporation's espoused values (e.g., as expressed in management strategies, mission statements, company codes, etc.), they may also be able to make claims of authenticity on the corporation. This involves the notion that over time, they have had a relationship with the corporation that creates some sense of special obligation on the corporation's (and their) part. For example, if the corporation has consistently proclaimed that its employees are its most important asset and have tried to generate some sense of community (often to encourage the employees to be more

efficient), then such employees might expect some special treatment (e.g., retention of jobs in times of economic downturn).

Consumers, for their part, have an economic stake in having access to a wide range of competitively priced, safe, reliable products and services. Again, the basis for this stake derives from a basic justification for capitalist business, namely, the notion of consumer sovereignty. Consumers, however, might also be able to claim some stake of authenticity. Consumers may have preferences to have goods produced in certain ways (e.g., without child labour, in an environmentally friendly fashion, etc.). If a corporation advertises or promotes itself in a certain way (e.g., as caring for the environment), then consumers are entitled to expect that the corporation act accordingly (viz., produce in an environmentally friendly fashion). Although the offending corporation might not be breaking any laws (and we might not want to impose laws in such cases), it might still be ethically condemned as being hypocritical and opportunistic.

Contractors (suppliers, distributors, financiers, creditors, subcontractors, partners in joint ventures, etc.) are also stakeholders in the activity of the firm. Their primary stake is an economic one involving corporations' living up to their contracts- the effective upholding of contracts being a fundamental condition for an efficient market economy. Such business stakeholders like consumers, may also have some claim to a stake of authenticity. If over time they have had a close relationship with the corporation in which they have gone beyond mere contractual agreements (e.g., by providing special services or considerations not required by the contract), then they may be able to make claims on the corporation that go beyond its contractual

obligations (again, although not necessarily legally binding, the existence of such obligations may be clear to most observers). The competitors too are stakeholders in the corporation. Their claim involves a stake in fair economic opportunity and consists of the basic demand that rival corporations compete fairly. In line with standard economic theory, this implies that they pursue profits purely on the basis of innovation (in products and production techniques) rather than by trying to undermine the basic logic of the market through anti-competitive practices in the marketplace (e.g., by imposing barriers to entry, by dumping, etc.). It would also prohibit the use of political influence (including bribery of public officials) to produce competitive advantages. Although competitors, qua competitors, only have a stake based on fair economic opportunity (requiring fair competition) to the extent that competitors may at the same time be contractors to other firms, they may also be able to make other claims on their rivals and/ or partners.

For the local communities, media, NGOs etc. they have a stake of authenticity with respect to corporations. As far as corporations identify with local (or even national) communities, then there is some sense in which they have an obligation to respect and support local community values. Corporations identify, explicitly and tacitly, with local communities in a variety of ways (e.g., in public relations campaigns, in advertising, in soliciting and accepting special consideration from local communities in the form of subsidies, tax breaks, and other concessions, etc.). This may have a range of implications from marketing and advertising strategies to product selection support for local community initiatives, and decisions to relocate production. Local communities may also have a basic economic stake in corporations not imposing costs on it through the generation of (negative) externalities (e.g., pollution). The

basis for this again comes from standard economic theory whose justification of capitalist firms implies that the costs of any (negative) externalities should be internalized by the producers. To the extent that such costs are not internalized, then capitalist business may fail to represent a common good, unless there is some social consensus around the amounts of pollution generated (as established through the legislative process) and the distribution of its effects. Citizens (and citizen organizations such as public interest groups, political parties, etc.) have a basic political stake in maintaining their political equality.

The fundamental understanding of democracy is that citizens not only have equal rights but should have a relatively equal opportunity to exercise those rights in processes of societal discourses that provide the basis for legislation. Corporations, however, by their very nature tend to accrue large amounts of material and human resources and can mobilize these resources to exert influence on the political process in ways that undermine the political equality of individuals. This can occur in a variety of ways, namely, through lobbying practices, campaign contributions, control over the media, threats of non-cooperation (capital strike), and so forth. Corporations have a basic obligation to citizens to limit their participation in the political process to being a discussant in public discourses and to refrain from using their resources to exert undue influence (Mokhiber and Weissman, 1999; Parenti, 1995). A typical example here is the case of Shell Petroleum which was accused of collaboration with Nigerian government in the execution of nine environmental activists and leaders of Ogoni tribe (a part of oil rich Niger Delta in Nigeria) in 1995. On June 2009, a federal court in New York awarded $15.5million in compensation to the families of the deceased. Shell Petroleum failed to accept that the Ogoni leaders have stakes in

whatever happens on their land in terms of fair economic opportunity and political equality and that its obligation is to respect the civil and political right of the citizenry.

The Table 3.4 below summarises the foregoing analysis by stating the different stakeholders, their basic stakes and obligations on part of the companies.

Table 3.4. The stakeholders and their stakes and obligations

Stakeholder	**Basic Stake(s)**	**Particular Obligations**
Shareholders	Fair economic opportunity	Respect for ownership (or investor) rights
Employees	-Fair economic opportunity -Authenticity	-Safe, humane, non-discriminatory working environment with a living wage. -Consideration based on the espoused value of the corporation.
Consumers	-Fair economic opportunity -Authenticity	-Competitively priced, safe, reliable goods and services. -Production in line with espoused values of the corporation.
Contractors Suppliers	-Fair economic opportunity	-Upholding (the spirit of) contracts
Creditors Financiers Contractors Joint venture patners	-Authenticity	-Consideration based on the espoused values of the corporation.
Competitors,	-Fair economic opportunity	-Fair competition
Local Communities Media NGOs	-Authenticity	-Respect of and support for community values
Citizens	-Fair economic opportunity	-Respect for civil and political rights
	-Political equality	-Respect for institution of political democracy

Source: Adapted from Reed (2003) pg. 179

The next section 3.5.5 further provides empirical evidence in strengthening the importance of stakeholder management in relation to the corporate financial performance. The section reinforces the earlier SER-FP link argued earlier in Chapter two.

3.5.5. Stakeholder management and financial performance

Hillman and Keim (2001) argue that a new approach to study the relationship between SER and FP is necessary and this requires a focus on the relationship between stakeholder management and FP, which according to Berman and Wicks (1999) and Preston and Sapienza (1990) is an area neglected in the literature. Evaluating the financial impact of improved relations with primary stakeholders, Hillman and Keim (2001) discover that stakeholder management leads to improved FP; measured by firms' Market Value Added (MVA) which captures the relative success of firms in maximising shareholder value through efficient allocation and management of scare resources. This supports the instrumental basis of stakeholder theory. Instrumental theory is a hypothesis of what will happen if certain courses of action are taken. It has been argued that collaborative working relations with stakeholders will lead to enhanced profitability (Jones, 1995; Clarkson, 1995).

Preston and Sapienza (1990) found a positive relationship between stakeholder management measured by a company's Fortune rating on employee relations, customer service, community and environmental issues, the quality of management and firm profitability and growth. Assessing the same measures of stakeholder management but utilising KLD ratings, Berman and Wicks (1999) found stakeholder management enhances FP as measured by a company's Return on Assets (ROA). Ogden and Watson (1999) specifically assessed the effect of increased customer service as a result of privatisation of the UK water industry and found that increasing the satisfaction of this particular class of stakeholder (customers) increased future profitability and shareholder return.

These studies provide support for Wheeler and Sillanpaa's (1998) argument that all the available evidence suggests that companies which are run with a view to the long-term interests of their key stakeholders are more likely to prosper than those which take a short-term 'shareholder first' approach. Providing additional support for this argument, Collins and Porras (1997) researched the common characteristics of outstanding businesses against less successful counterparts of the same age and industry over a fifty year period. The core argument is based on the premise that managers who reflect a genuine concern for the interests of all stakeholders are those who produce superior results for their shareholders over the long term. Collins and Porras (1997) also found the main distinguishing factor between visionary companies and their non-visionary counterparts was their core values. Core value examples include innovation, improving standards of living for others, community enrichment and making people happy. These companies existed for reasons far beyond profit maximisation and value each of their stakeholders. However, the visionary companies were more profitable.

The authors compared investment return in visionary companies to non-visionary companies and the general market. Findings suggest that although $1 invested in the general market on January 1, 1926 grew to $415 on December 31, 1990 that same $1 grew to $955 if invested in a non-visionary company and $6,356 in a visionary company. Thus visionary companies yielded returns over six times greater than their counterparts and over fifteen times greater than the general market.

Waddock and Graves (2000) conducted an empirical study and found that visionary companies outperformed their counterparts in relation to return on equity, assets and sales from 1989 to 1996. They also found that these firms relate better to their primary stakeholders. In a study conducted by Harvard academics Kotter and Heskett (1992) it was found that over an eleven year period, large established US firms which gave equal priority to employees, customers and shareholders delivered sales growth four times and employment growth eight time that of 'shareholder first' firms.

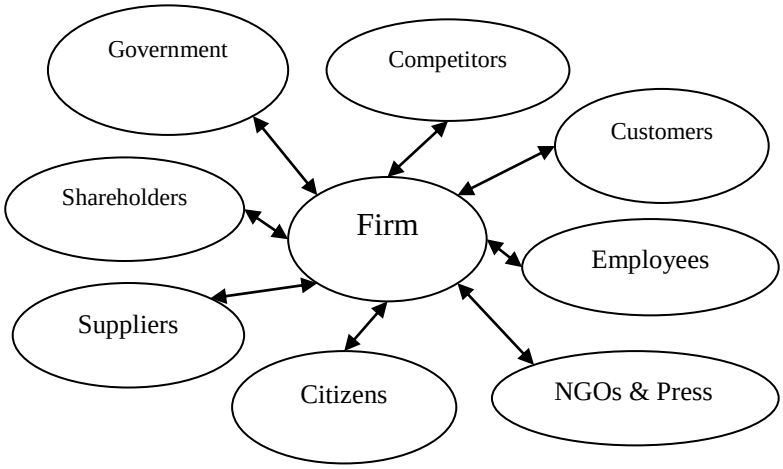
Lorca and Garcia-Diez (2004) argue that the business climate has changed remarkably over the past number of years, such that, today success is beyond dependent on customer satisfaction but on the satisfaction of all the stakeholders of the company. It is argued that failure to take the interests of all stakeholders into account results in shareholders unwilling to invest in the firm, customers refusing to buy the firm's products and services, employees withdrawing their loyalty, suppliers who are unwilling to provide their knowledge, capabilities and resources and lastly, communities not tolerating the company (Lorca and Garcia-Diez, 2004). Therefore, the long term survival and success of a firm is determined by its ability to establish and maintain relationships with its entire network of stakeholders (Post et al, 2002).

A survey of global companies by Ernst & Young (2002) found that most companies now explicitly recognised that the value of their organisation is dependent on the quality of relationships with key stakeholder groups. According to Ernst& Young, there is motivation to develop a CSR strategy for most companies (94%) came from awareness that such a strategy can deliver real benefits. Although, many critics have

questioned the causality of such relationship, it is possible that FP allows for CSR rather than representing a result of CSR.

From the review of stakeholder theory, it is simply not true to say that the only group with a legitimate interest in the corporation are shareholders. From a legal perspective, there are far more groups apart from shareholders that appear to hold a legitimate 'stake' in the corporation. There are not only legally binding contracts to suppliers, employees, or customers, but also an increasing dense network of laws and regulations enforced by society. It is simply a matter of fact that a large spectrum of different stakeholders has certain rights and claims on the corporation as stated in Table 3.3 above. However, beyond Figure 3.2there other chains of stakeholders, who can be referred to as sub-stakeholders interacting with the first line stakeholders. For instance, beyond employees, there many employees trade and labour unions, beyond primary suppliers there other secondary suppliers (i.e. suppliers to a supplier). This network of stakeholders continues to expand and companies have to keep updating their stakeholder network; the network in Figure 3.2 below is not static but highly dynamic because the business process and environment are dynamic. Effective stakeholder management requires some level of pro-activeness and continuous updating of the company's stakeholder network.

Figure 3.2. Stakeholder network



Source: Developed by the author for current study

Beyond stakeholder theory the next section 3.6, will look in detail at triple bottom line (TBL) reporting. This thesis posits that TBL reporting provides some level of motivation for organisations to be environmentally responsible, since the reporting will enable most organisations show case what they are doing about environment and social issues. On the part of stakeholders, TBL can be an official medium of communication and provide some level of transparency to what organisations are doing beyond their economic objectives. In view of this section 3.6 will elaborate on TBL and its current adoption in terms of a balanced presentation of economic, social and environmental activities of corporate organisations.

3.6. Triple Bottom Line reporting (TBL)

Gray and Milne (2004) noted that business' engagement with the sustainability agenda is firmly rooted in a history of practice of corporate reporting, and more particularly, with the reporting of impacts beyond an organisation's traditional financial transactions. Before the emergence of TBL thinking, organisations confined themselves to the voluntary reporting of supplementary narrative discussion on selected environmental and some employee matters and this appeared in the conventional annual audited financial statements to shareholders. From the 1990s in Europe, the UK, Canada and the USA, however, separate voluntary reports on organisations' selected environmental, social, and/or health and safety impacts were increasingly issued by larger organisations (see, for example, KPMG, 1993, 1996, 1999; UNEP/SustainAbility, 1994, 1996, 1997; Lober *et al*., 1997; Kolk, 2003). The KPMG surveys provide a blueprint because of the company's global coverage in tracking trends in reporting, and have generally shown increasing take-up of such reporting in most countries, although as at 1993 such reporting took place primarily amongst the world's largest organisations in Europe and the US, and among those in the high impact industries such as chemicals and synthetics; forestry, pulp and paper; utilities; oil and gas, etc, a finding consistent with numerous academic studies (e.g. Hackston & Milne, 1996; Gray et al., 1995).

The latest (2011) KPMG International Survey of Corporate Responsibility Reporting covered 3,400 companies representing the national leaders from 34 countries around the world, including the largest 250 global companies based on Fortune Global 500 ranking (KPMG, 2011). This survey showed major improvement in corporate

responsibility reporting around the world. Ninety-five per cent of the 250 largest companies in the world (G250 companies) now report on their corporate responsibility, the traditional corporate responsibility nations in Europe continue to see highest reporting rate, while Americas, Middle East and Africa region are quickly gaining ground and half of Asia Pacific companies report on their corporate responsibility.

Different names and terminologies have been ascribed to social and environmental reporting initiatives, this varies greatly from 'corporate reporting', 'sustainability', 'CSR', to 'social and environmental' as the preferred report title. Though, the initiatives do have broadly two themes in common. First, some attempt is made to address the environmental, social, and (usually) economic dimension within the confines of one report, a process which Elkington (1997) memorably coined as 'triple bottom line reporting'. Second, a commitment is expressed to employ stakeholder engagement and dialogue procedures in order to inform the reporting process (Crane, et al., 2008). Cheney (2004) argues that it is a method for the organisation to show its engagement in legitimate environmentally and socially responsible events. Another application is an acknowledgement and representation of trade-offs made among the three components- social, environment and economic (CICR, 2004). The methods of reporting vary from providing a "dashboard" of measures (Epstein and Weiser, 1997) to attempts to monetise all three perspectives (Richardson, 2004). Schilizzi (2002), however, points out the difficulties in attempting to quantify the environmental and social dimensions of organisational performance.

Many professionals, consultants, accountancy firms, organisations, and researchers are working to develop universal yardsticks that can, in some way, capture the relevant values of the components of the triple bottom line in a way that can allow users of reports to understand the usefulness of the organisation across the social, environmental and profit yardsticks (Emerson 2003, Lingane and Olsen 2004). For example, Howes (2004 pg. 143) presents a statement of "environmentally sustainable adjusted profit." While the final determination of what the triple bottom line may look like is not yet completed, Richardson (2004) notes the most commonly held conception presumes that each of the three components can be calculated in monetary terms. On the same note, Aeron-Thomas, Bent and Taplin (2005) developed a framework for sustainability accounting, under this framework, traditional financial accounting is considered narrow: it only considers internal economic activities of a business. Financial sustainability accounting expands to not only include environmental and social impacts but also considers the externalities created plus how much cost the company needs to incur to avoid or restore those impact (or shadow cost).

The advocates of the triple bottom line argue that since an organisation's long-term viability is dependent on sustaining "profitability" over all three dimensions, they should be measured, reported, and assessed on a defined periodic basis, in a manner conceptually similar to the current financial reporting model. In addition, the stakeholder groups, such as socially responsible investors, non-governmental organisations, green consumers, and governmental regulators and agencies are increasingly calling for information related to the social and environmental dimensions. In response to the increasing desire for both financial and nonfinancial

information related to a broader conceptualisation of corporate responsibilities, all of the major accounting firms, along with a host of other consultancy outfits, offer dedicated services to assist companies in developing triple bottom line reporting tools (Tschopp 2003). The proponents allege that these tools assist in enhancing the organisation's reputation as well as reducing the risk profile and aligning managerial and stakeholder needs. Despite the advances and awareness created about social and environmental accounting as espoused by TBL reporting, no universally accepted method of preparing companies' accounts on the basis of the three yardsticks is in use. However, there is more social and environmental consciousness and this has led to companies now preparing a new set of reports called sustainability reports, CSR reports and other similar reports issued alongside the audited financial statements at the end of companies financial year end.

3.6.1. Social and environmental Accounting

Between the 1960's and 1970's there was a widespread, although by no means dominant, recognition that human activities, including corporate activities, had great and potentially dangerous impacts on the natural environment. Although the root of the world's sustainability problems may well be cultural and political (Hart 1997), corporations and their activities have a significant impact on the environment. By the end of the 1990s, as society began to demand cleaner air, cleaner water, fewer toxics and the other benefits of environmentally thoughtful stewardship, corporations, however, reluctantly, initiated improvements in their environmental behaviour (Hoffman 2000).

In the early and mid-1990's it became increasingly apparent to a variety of thinkers and organisations that environmental sustainability was unlikely to be achievable without addressing issues of social sustainability as well. For example, The Natural Step(a non-profit organisation working globally with business and government to create a sustainable future) introduced social awareness as an integral component, identifying four system conditions required to achieve a sustainable society: 1) nature must not be subjected to systematically increasing concentrations of substances extracted from the Earth's crust, 2) nature must not be subjected to systematically increasing concentrations of substances produced by society, 3) nature must not be subjected to systematically increasing degradation by physical means, and 4) the ability of humans to meet their needs worldwide must not be systematically undermined (Robèrt 2003). A reading of the four conditions presents a picture of three well-conceived (although not necessarily rigorously implementable) environmentally related conditions and one vague condition relating to social issues. The first three state that "nature must not be subjected to…" followed by specific, if complex, requirements. It is possible, from the conditions themselves, to determine whether an action, if sufficiently understood, violates the condition. The fourth condition for attaining sustainable society was not clear, to know whether an action violates the condition, we must not only understand the action but also must come to some common agreement about what it means to impair the ability of humans to "meet their needs." This prompts the concern that the issue of social sustainability is either weakly conceived or has been attached to the framework as an afterthought. Alternatively, perhaps the social systems are so fundamentally different from environmental systems such that we cannot create

social system conditions analogous to the environmental system conditions (Dillard, Brown and Marshall, 2006).

The centrality of the company's public interest responsibility is reflected in the legitimating arguments for their initial chartering (Bakan, 2004). In the eighteenth and nineteenth centuries, companies were chartered to undertake public works projects such as building bridges, roads, and canals and had an explicit duty to operate in and for the public's interest (Champlin and Knoedler 2003). As companies grew and as absentee owners (shareholders) became the primary corporate stakeholders, the public interest dimension became subordinate to the goal of maximizing shareholders' wealth. Ultimately, in most capitalist societies, not only did the companies abdicate any pretext of acting in the broader public's interest, but also their responsibility to shareholders has been effectively outsourced to regulators and auditors, not the least of which were certified and chartered accountants. This explicit assignment of protection of the public (at least protection of shareholders) to entities completely outside the organisation represents the lowest point of corporate social responsibility. It may be argued that any organization that relies on regulations and verifiers/enforcers of the public interest cannot be thought of as a "socially responsible" business.

Social sustainability represents the social dimension of the public interest. For businesses, the idea of social sustainability, if recognised at all, is narrowly and conveniently conceived and likely to be interpreted as the ability to continue to stay in business through good relations with supply-chain partners, employees, and unions, an interpretation that is rather limited, and possibly destructive. Rather than

expanding the scope of their public interest responsibilities, managers focus on reducing social resources to monetary terms, measuring, and maximizing it. Hawkins, et al. (1999) attempt to broaden this perspective they refer to as human or social capital by including it as one of four primary "types" of capital: natural, manufactured, financial, and human. When the stocks and flows of these objectified concepts are managed effectively, organizations become sustainable. Social capital, by implication at least, represents another factor of production and a profit generator for the organisation.

Elkington, in some respects prophetically, articulates the subordinate position of the social dimension in his initial conceptualisation of the triple bottom line. "We felt that the social and economic dimensions of the (environmental) agenda…would have to be addressed in a more integral way if real environmental progress was to be made" (Elkington 2004: p1). The interesting issue here is that the social (and economic) issues are subordinate to the environmental agenda. Not surprisingly, researchers find that issues relating to reporting social aspects of corporate responsibility generally lag behind the reporting of environmental issues, in terms of both timing and quality (Kolk 2003, Adams 2002, and KPMG 2002).

However, one might conclude that the road to social sustainability reflects more of a meandering and awkward afterthought (e.g. The Natural Step Framework), an objectification through mechanistic management (e.g., social capital), and a subordinated and imprecise objective within an enhanced reporting initiative (e.g. triple bottom line). We now consider more explicitly how the accounting and

reporting dimensions of social sustainability have culminated in the current rendering of the triple bottom line.

3.6.2. The Road to Accounting for Social Sustainability

Using the history of social and environmental accounting in section 3.6.1 as a guide, we can see that as business organisations were conceived, developed, and matured they required and created new ways to address the issues of concern to their stakeholders. Initially, accounting was developed to meet the needs of business owner-managers to address the day to day concerns of running a business by making the processes and their effects more transparent (Frankwood, 2006). As the owners delegated the tasks of managing to others, accounting methods were developed to communicate the important business characteristics, predominantly the effects of operations and the status of the business, to the owners. Though the scope of concern, and the concerned, has changed, the process continues to evolve along the same trajectory. The needs of affected constituencies continually develop and change, and accounting methods, rules, and regulations evolve to meet these ever-changing information needs (Crane et al., 2008).

Information needs regarding organisations' environmental and social impacts are an example of the expanding scope of concern. Unlike the efforts associated with the conception of triple bottom line reporting described above, relatively early on accounting recognised the importance of human capital and attempted to measure and report its attributes previous to and separate from environmental capital. Social

accounting arose in the 1970s but never gained prominence, partly due to the inability of relevant stakeholders to agree on an acceptable method for quantifying and reporting the relevant attributes (Guthrie and Parker, 1989). Social accounting, to most businesses, was an attempt to capitalise the "value" of the employees, management skills, and business acumen that generated wealth for shareholders. For some social activists, social accounting was an attempt to expand the recognised benefits and costs that businesses created for society. The significant measurement problems coupled with the financial community's scepticism thwarted the attempt to recognise the previously ignored (unrecorded) social and human capital Crane, 2008). Insufficient political will and waning public demand thwarted the move toward enhanced social impact reporting by corporations. At the time, acceptable measurement systems were not available to companies for achieving their goals of recognising unrecorded assets, and there was insufficient public demand for reporting the social impacts of companies (Gray, 2001). Thus, the concept of social accounting faded away (Gray 2001), only to be resurrected in the waning of the 1990s. Next, we consider this resurrection as it has culminated in the metaphorical bottom line manifested in triple bottom line reporting (Gray, 2001).

3.6.3. Institutionalising the TBL

Businesses have not been acting alone in taking up the sustainability agenda. Indeed, increasing support for the TBL and a 'business case' for sustainable development is now contained within an institutional context that surrounds business. Support for the TBL comes from (at least) four fairly distinctive, but inter-related sources: multi-

agency initiatives; consultancies, including the benchmarking industry; accounting professions, through services, pronouncements and reports, and reporting awards; and business associations.

Arguably, among the initiatives to evolve in support of non-financial reporting, the Global Reporting Initiative (GRI) represents the predominant development; the GRI is both an independent institution and what is claimed to be the world's first standardised approach to sustainability reporting. Notably, the GRI sustainability reporting guidelines (GRI, 2000, 2002, 2006) were recognized in the World Summit on Sustainable Development Plan of Implementation. 'The development of the GRI indicates the inter-connectedness of organisations in the field of social, environmental or sustainability reporting' (Morhardt *et al*. 2002, p.220). GRI is promoted by Centre for Education & Research in Environmental Strategies (CERES) and the United Nations Environment Programme (UNEP), which jointly convened the GRI at the end of the 1990s.

The influential UNEP/SustainAbility benchmarking report equally provides a strong base for institutionalising TBL by providing a benchmark for improved reporting and may act as a spur for companies to improve their performance and extend their accountability (UNEP/Sustainability, 1996). Beyond the GRI and benchmarking, it is notable that an increasing number of accountancy bodies and business associations are now engaging with notions of environmental and sustainable development. The UK-based Association of Chartered Certified Accountants (ACCA), for example, has had a long running involvement with issues of firstly corporate environmental reporting, then social reporting, but more recently 'sustainability' reporting through

its reporting awards schemes, sponsoring of research reports, seminars, and engagement with other organisations like the Institute of Social and Ethical Accountability (ISEA) and the GRI. The major challenge here is that some of these bodies (e.g., ICAEW, CPA Australia, Business Councils for Sustainable Development) have now entered the fray through a number of initiatives and pronouncements, despite some skirmishes between them, all these are towards a better society. Beyond different initiatives and research conducted by some of these accounting bodies, it is expected that if their initiatives come under their universal umbrella, International Federation of Accountants (IFAC) better impact could be made in terms of a more coordinated focus and a reduction in the variability inherent in current sustainability practice.

There are growing databases of corporate non-financial reports. As at January 2012, CorporateRegister.com, a renowned global corporate responsibility resources website and host to the world's most comprehensive directory of corporate non-financial reporting now profiles 35,100 reports across 172 countries (CorporateRegister.com, 2012). Similarly, KPMG survey coverage has increased to 3,400 companies (KPMG, 2011) since 1993 it published first reports of Corporate Responsibility, indeed professional accounting bodies in Europe, Americas and Asia are carrying out similar activities (Crane et al., 2008). It would appear that the key driving force for companies to be willing to report their corporate responsibility lies in an objective to let their stakeholders know what they are doing. Also, they seek for external assurance of such reports for credibility of their sustainability or responsibility reports.

However, the extent to which the provision of such an assurance statement by independent parties (e.g. KPMG) does enhance the credibility of reporting has been called into question by a number of academic studies in the past years (Kamp-Roelands, 2002; Ball et al., 2000). They raised fundamental concerns about the rigor and usefulness of the assurance statement. Kamp-Roelands (2002), for example, highlighted major inconsistencies in terms of subject matter addressed, scope of the exercise carried out, objectives, assurance criteria and procedures adopted, and level of assurance provided. Ball et al. (2000) raised concern over the issues of assuror independence and degree of thoroughness with which their work was carried out.

Some of these weaknesses are addressed by CPA Australia (O'Dwyer and Owen, 2007) through the issuing of sustainability assurance practice guidelines by influential bodies like Foundation for Environmental Education-FEE (2002, 2006, 2010) and Global Reporting Initiative -GRI (G1, G2, G3, G3.1).Despite the introduction of more authoritative guidance stated for carrying out sustainability assurance engagement, empirical research still points to a continued ambiguity and variability (O'Dwyer and Owen, 2005).

Despite the shortcomings in TBL or sustainability reporting, it has provided some level of motivation for organisations to be environmentally responsible, since they know that stakeholders now expect such reports, and that they must tell a new story every year. It is equally a medium of communication and provides some level of transparency in terms of what organisations do with their resources beyond stockholders' wealth maximisation.

3.7. Conclusion

The theory of the firm is rooted in an economic justification for SER activities. Any SER activity that would not result in either financial (e.g. profit increase and cost reduction) or non-financial (e.g. reputation boost, brand expansion and competitive advantage) gain is not worth pursuing. This is a significant theory in this study considering the thesis' earlier propositions in CER-FP link. Also, many companies in the extractive sector have been accused of poor management of their negative externalities. The companies only respond to environmental practices that result in immediate cost minimisation and profit maximisation. This is well manifested in the politics of gas flaring in the oil and gas industry. These gases flared into the air can actually be converted into both domestic and industrial gases by additional investment, but these companies prefer to pay a penalty on each cubic meter of gas flared rather than commit long-term investment in gas production (GGFRP and World Bank, 2008). Investment in the conversion of gases flared is considered risky and possibly leads to loss of funds; however, the impact of these gaseous releases on biodiversity is not a priority. This approach to the implementation of SER activities has received barrage of criticism from multiple constituencies' theorists and ethics philosophers. After the review of the theory of the firm which is based on a single constituency of business, the thesis reviewed stakeholder theory modelled after a multiple business constituency.

Stakeholder theory is of the view that beyond shareholders' interests, there are groups with genuine claims on a business. These groups not only have legally

binding contracts with a business organisation but also an increasingly dense network of laws and regulations enforced by society. Despite the various classifications of stakeholders, the question 'to whom business is responsible' is yet to be adequately answered. In Reed's (2003) normative approach to stakeholder management, different shareholders are identified with their stakes; these include fair economic opportunity, authenticity and political equality stakes. Similarly Mitchell, et al. (1997) stated that there is a need to systematically identify stakeholders by paying attention to the dimensions of power, legitimacy and urgency, explicitly aimed to serve an instrumental approach. The major challenge in the extractive sector still remains the identification of all the business stakeholders at different point in time and how quickly (urgency) these stakeholders are recognised. A classic example of this manifested in the conflict between the Movement for the Survival of the Ogoni People (MOSOP) and Shell Petroleum in Nigeria Niger Delta in 1995. The MOSOP came in to being under the headship of Ken Saro-Wiwa (a leader of the Ogoni people and renowned environmental activist) in 1990. The MOSOP agitation against the degradation of their lands by Shell reared its ugly head in 1992 but little or no attention was paid to the group's plight by neither the Federal Government of Nigeria nor Shell Petroleum. The attention was rather focused on spending of millions of Pounds Sterling on public relations and image laundry by both Federal Government of Nigeria and Shell (Frynas, 2001). The agitation led to the State execution of Ken Saro-Wiwa and eight other leaders of MOSOP in 1995 and Shell was implicated in the execution. This generated world-wide condemnation, suspension of Nigeria from the Commonwealth, and human rights groups' call for boycott of Shell products across the world. This also resulted in payment of out of court settlement of $15.5million by Shell to the families of the executed Ogoni

leaders in 2009 (Pilkington, 2009). In a recent independent assessment of the environmental and public health impacts of oil contamination in Ogoniland by the United Nations Environment Program (UNEP) it is stated that it will take up to three decades and over a billion dollars ($1 billion for just the first five years) to restore the Ogoni environments to any kind of healthy condition (UNEP, 2011). The timely recognition of MOSOP as a stakeholder with genuine stakes would have saved Shell from the reputational damage staged by human right organisations such as Greenpeace and the rest, to say nothing of the heavy financial cost.

Many empirical studies have found a relationship between stakeholder management and financial performance. Hillman and Keim (2001) discovered that stakeholder management leads to improved financial performance; measured by firms' Market Value Added (MVA) which captures the relative success of firms in maximising shareholder value through efficient allocation and management of scare resources. A survey of global companies by Ernst & Young (2002) found that most companies explicitly recognised that the value of their organisation is dependent on the quality of relationships with key stakeholder groups. In the current business environment the chain of stakeholders' network continues to expand. It is very important that organisations keep updating its stakeholder network because business processes and environment are not static rather becoming more complex and dynamic. An effective stakeholder management requires some level of pro-activeness and continuous update of the corporate stakeholder network. After the review of stakeholder theory, the thesis reviewed another related theory which emphasises corporate reporting on three major headlines which include planet, people and profit -TBL

The triple bottom line (TBL) reporting is now popular amongst the multinationals and companies trading on the floor of stock exchange markets. The KPMG (2011) survey of corporate responsibility reporting reveals that companies are increasingly realising that corporate social and environmental reporting is more than just being a good corporate citizen, it drives innovation, and promotes learning, which helps companies grow their business and increase their organisation's value. It is also evident that companies not yet reporting on their social-environmental activities are under significant pressure to start. This will be increasingly critical; not only to stay competitive in a societal context, but also to gain a better understanding of how social-environmental activities impact and benefit the business in areas such as cost savings and new business opportunities (KPMG, 2011; Crane et al., 2008).

Table 3.5. Corporate responsibility reporting in extractive sector 2008-2011

Industry	2008	2011
Mining	67%	84%
Metal and utilities	62%	71%
Oil & gas	59%	69%

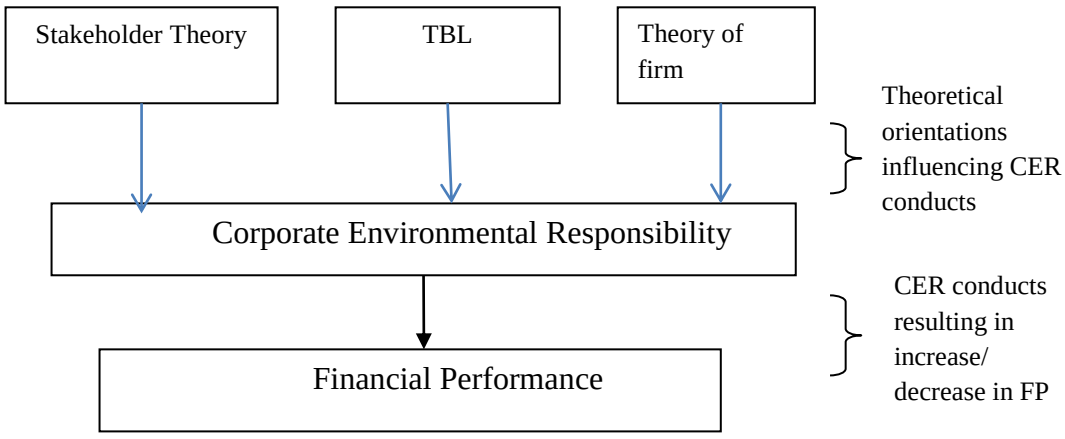
Source: KPMG International Corporate Responsibility Reporting Survey, 2011

Table 3.5 above corroborates the view of an improvement in TBL reporting. All the industries that make up the extractive sector in this thesis have witnessed steady an increase in the level of social-environmental responsibility reporting. However, some criticisms have been raised in terms of inconsistencies in the subject matter addressed, scope of the exercise carried out, objectives, assurance criteria and procedure adopted and level of assurance provided (O'Dwyer and Owen, 2007; Ball, et al., 2000). Despite these shortcomings, TBL reporting has provided some level of motivation for organisations to be environmentally responsible, since they know that

stakeholders are now more than before expectant of the reports. The companies are challenged to carry out more social and environmental activities in order to tell new stories each year. It is equally a medium of communication and provides some level of transparency to what organisations do with their resources beyond stockholders' wealth maximisation. TBL reporting has been empirically supported by some studies that found a relationship between TBL reporting and improved market performance (KPMG, 2011).

There is no doubt from the forgoing that the theory of the firm, stakeholder theory, and TBL offer veritable ground for corporate environmental responsibility and its impact on financial performance. This flow of relationship is represented in the Figure 3.4 below:

Figure 3.4. Theoretical grounds, CER and FP



Source: Developed by the author for the current study

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1. Introduction

This chapter states clearly the research hypotheses and their justifications. It discusses the methodological considerations and debates that guided the present research. It justifies why a quantitative approach is chosen and further describes the two quantitative methods adopted in the study. The epistemological paradigm link between the research objectives, theories and research methods is illustrated. The research methods, variables, data sources, measurements and research instrument are explained.

4.2. Statement of research hypotheses

A research statement can be stated either in a question form (i.e. research question) or a tentative statement (i.e. research hypothesis) (Vincent et al., 2007). Walliman (2005) defined a hypothesis as a theoretical statement which has not yet been tested against data collected in a concrete situation, but which it is possible to test by providing clear evidence for support or rejection. A research hypothesis is a tentative or predictive statement about the relationship between variables (Leech, Barret and Morgan, 2008). This thesis establishes the impact of corporate environmental responsibility on financial performance in the extractive sector. The relationship is empirically established by proposing the following hypotheses for testing.

Hypothesis 1 (H_1): Corporate environmental responsibility will be positively related to profit level in the extractive sector.

Hypothesis 2 (H_2): Corporate environmental responsibility will be positively related to firm value in the extractive sector.

Hypothesis 3 (H_3): The extractive sector exhibits a stronger relationship between corporate environmental responsibility and financial performance than the entire S&P 500.

Hypothesis 4 (H_4): A manager's attitude towards the environment is related to his/her firm's corporate reputation.

The H_4 is premised on the notion that employees can directly or indirectly, voluntarily or involuntarily, affect reputation by any act that is transmitted to, and communicated by, external audiences who evaluate corporate conduct (Helm, 2010). Despite the widespread agreement that employees are very important for reputation building (Dowling, 2001; Harris and de Chernatony, 2001), the literature remains imprecise about how employees perceive this role. This study's H4 evaluates how managers in the extractive sector perceive the importance of corporate reputation from their environmental attitudes standpoint. It is important to note that H_4 has not been tested before; however, this thesis considers it novel and important to know if environmental attitude of managers can be considered to be a predictor of corporate reputation in the extractive sector. Corporate reputation is a good non-financial performance indicator and also found to have a positive relationship with financial performance (Davies et al., 2003). The result emanating from testing H_4 would let us know if a manager is 'conscious' of his environmental attitude and the consequences of this on his/her company's perceived corporate reputation. Although, a negative or

positive environmental attitude may not necessarily be interpreted as positive or negative environmental behaviour, this is because behavioural intention which precedes behaviour is a function of both attitude and subjective norm (Ajzen, 1991). However, the H_4 result will at least let us know how environmentally conscious (i.e. degree of environmental awareness) a manager within the extractive sector may be.

Hypothesis 5 (H_5): Top level managers exhibit better environmental attitudes than lower level managers.

H_5 arises from the notion that managers in the extractive sector may be conscious of the impact of their environmental attitudes on the corporate reputation of their companies but the level of intensity of these attitudes is expected to vary across the managerial hierarchy (i.e. from the top to the lower level). Previous studies have found differences in environmental concerns when mapped against certain socio-demographic variables like managerial hierarchy (Cottrell, 2003), age (Honnold, 1984), education (Scott and Willits, 1991), income (Scott and Willits, 1991; Van Liere and Dunlap, 1980), and political ideology (Samdahl and Robertson, 1989; McGuire and Walsh, 1992). Generally, previous research provided evidence that the higher the managerial hierarchy, income and level of education the more the environmental concern. Also differences were recorded across different age groups and political ideologies. The H_5 is novel in this study because is being considered in the context of extractive sector and the thesis will be able to conclude if top level managers' environmental attitude is more intensive than that of lower level managers. The H_5 result will be crucial in interpreting attitudes of top managers to environmental issues in extractive sector.

4.3. Methodological issues and research implications

The debates on research methodology have led to long-standing disagreements between advocates of qualitative and quantitative methods (Sayer, 2000). The debates initially portrayed both approaches as irreconcilable, and in terms of the superiority of one method over the other (Sayer, 2000; Bryman and Bell, 2011). Conceptual differences at the level of data, method and theory were highlighted and strongly emphasised by those who advocated a clear distinction and separation between the two (Zelditch, 1962). These differences were considered so fundamental to research that any choice of a particular research method was seen as a reflection of the epistemological and ontological orientations of the researcher towards research (Bryman and Bell, 2011).

While acknowledging the different epistemological and ontological paradigms underpinning the two approaches, some researchers have downplayed their alleged differences (Bryman and Bell, 2011). They argue that existing differences are subtle, rather than major distinctions (Hammersley, 1992), and that suggested linkages between research methods and philosophy are not deterministic, but based on associations (Ibid.). Shared properties between quantitative and qualitative methods (Bryman and Bell, 2011) can be highlighted, indicating their possible combination in research. Indeed in an early discussion it was argued that the distinction between quantitative and qualitative research limits the armouries at the researchers' disposal, and as such, the idea of incommensurability (Kuhn, 1970) of research methods can

be questioned along with the supposedly inherent relationship between research methods and philosophical orientation.

Hammersley (1992) pointed out that since the connection between method and epistemology has not been demonstrated in the social sciences, there is no reason to believe that there was a necessary connection between research methods and epistemological position. Sayer (2000) further suggested a shift towards a research strategy that combines both approaches, arguing that the emergence of critical realism as a philosophy of social sciences and a methodology that draws on epistemological and ontological orientations of positivism and interpretivism strongly supports arguments for combining different research perspectives in research. However, others have warned that although quantitative and qualitative methods can be integrated technically, this does not presuppose that the epistemological issues pertaining to the two approaches are readily reconciled (Bryman, 2004).

According to Orlikowski and Baroudi (1991) following Chua's (1986) classification of research epistemologies, a piece of research can be positivist, interpretive or critical. Chua (1986) explained that research can be classified as positivist when there is evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from a representative sample to a stated population. Research can be classified as interpretive when there is evidence of a non-deterministic perspective where the intent of the study is to enhance understanding of the phenomenon within cultural and contextual situations; where the phenomenon of interest was examined in its

natural setting and from the perspective of the participants; and where researchers did not impose their outsiders' a priori understanding of the situation. Finally, research can be qualified as critical, if there is evidence of a critical stance towards taken-for-granted assumptions about organisations and information systems, and a dialectical analysis that attempts to reveal the historical, ideological, and contradictory nature of existing social practices.

To further explain the philosophical stances that researchers adopt as classified by Chua (1986), Orlikowski and Baroudi (1991) argue that these are beliefs about physical and social reality, beliefs about knowledge and beliefs about the relationship between knowledge and the empirical world. These beliefs include:

- Beliefs about physical and social reality: Ontological beliefs have to do with the essence of the phenomena under investigation; that is whether the empirical world is assumed to be objective and thus independent of humans in creating and recreating. Human rationality has to do with the intentions ascribed by researchers to the humans they study. Finally, beliefs about social relations deal with how people interact in organisations, groups and society.

- Beliefs about knowledge: Epistemological assumptions concern the criteria by which valid knowledge about a phenomenon may be constructed and evaluated. Methodological assumptions indicate which research methods and techniques are considered appropriate for gathering valid empirical evidence.

- Beliefs about the relationship between knowledge and the empirical world: These beliefs concern the role of theory in the world of practice and reflect the values and intentions researchers bring to their work. More precisely, what researchers believe is appropriate to accomplish with their research and what they intend to achieve within a specific study.

The underlying assumptions guiding the three research philosophies, which include positivist, interpretive and critical philosophies are further explored as presented by Orlikowski and Baroudi (1991) in Table 4.1.

Table 4.1. Summary of assumptions guiding research philosophies

Belief	Positivist	Interpretive	Critical
Beliefs about physical and social reality	Physical and social world that exists independent of humans and whose nature can be relatively unproblematically apprehended, characterised and measured	Emphasises the importance of subjective meanings and social-political as well as symbolic action in the processes through which humans construct and reconstruct their reality	Social reality is historically constituted, and hence human beings, organisations, and societies are not confined to existence in a particular state.
Beliefs about knowledge	Concerned with empirical testability of theories, whether this requires theories to be "verified" or "falsified", this belief is hypothetic-deductive account of scientific explanation	Understanding social reality requires understanding how practices and meanings are formed and informed by language and norms shared by humans working towards the same goal. The researcher's constructs interpretations or explanations that account for how subjective meanings are created and sustained in a particular setting.	Long-term historical studies and ethnographic studies of organisational processes and structures.
Belief about the relationship between knowledge and the empirical world	As impartial observers, researchers can objectively evaluate or predict actions or processes, but cannot get involved in moral judgement or subjective opinion.	The researcher never assumes a value-neutral stance, and is always implicated in the phenomena being studied.	The role of the researcher is to bring to consciousness the restrictive conditions of the status quo, thereby initiating change in the social relations and practices helping to eliminate the basis of alienation and domination.

Source: Orlikowski and Baroudi, (1991), p.79

Interpretivism adopts the stance that our knowledge of reality is a social construction by human actors (Walsham, 1995). In this situation the researcher uses his/her preconceptions to guide the process of research, as such; value free data cannot be

obtained. This is in contrast to positivism, where the assumption is that the objective data collected by the researcher can be used to test prior hypotheses or theories.

Orlikowski and Baroudi (1991) distinguish between positivist and interpretive articles in their study of information technology in organisations. They identified positivist research methods as methods that encourage deterministic explanations of phenomena where these explanations emerge from interactions between the researcher and his/her subjects. Here, the researcher dominates the relationship. The positivist approach is focused on the validity and control of the research procedures thereby adopting a predetermined and restricted stance towards the phenomenon under investigation. Interpretive research in contrast, provides evidence of a non-deterministic perspective with intent to increase understanding of the phenomena within a specific cultural and contextual setting and an examination of the phenomena and the setting from the perspective of the participants.

The epistemological foundation for this thesis is a positivist research philosophy. The thesis seeks to establish if corporate environmental responsibility (CER) can be positively related to financial performance (FP) in the extractive sector. Therefore, the thesis is testing hypotheses by use of secondary and primary data relating to both the independent variable (CER) and the dependent variable (FP) by use of parametric statistical tools and with the aim of making generalisable conclusions.

4.4. Quantitative versus qualitative methodology

Quantitative research methodology is a deductive approach founded on the formulation and verification of hypotheses using a scientifically accepted procedure (Franfort-Nachmias and Nachmias, 1992). It is drawn to test and establish the validity of theoretical propositions formulated in previous studies (Blumberg et al., 2011) and it relies heavily on experimentation measures, which are hypothetically tested (Patton, 1990). Quantitative research methodology attempts to uncover numerically the relevance of data to a problem by quantifying results from the study. This methodology concerns the collection and analysis of numerical data and the application of statistical test (Collins and Hussey, 2009). It relates to investigations carried out on business problems and addresses the testing of theories, which is composed of variables. By adopting a quantitative research methodology, data are mostly measured numerically and analysed using well established statistical methods. Quantitative research is often drawn on to establish the validity of theoretical generalisations or propositions as they exist in the social science and or business studies literature (Creswell, 1994). The use of a quantitative research methodology allows the researcher to develop hypotheses, which are tested and interpreted numerically. Quantitative methodology is well rooted in natural science researches; however, social science researchers use it, because of its ability to predict the cause and effect of a given problem (Cassell and Symon, 1994). It is used by researchers given the belief that the procedure uses mostly objective data (i.e. secondary data) and produces objective results which can be quantified and generalised.

Cresswell (1994) defined qualitative study as an inquiry process of understanding a social or human problem, based on building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting. Denzin and Lincoln (1994) approached the phenomenon as multi-method involving an interpretive, naturalistic approach to its subject matter. This means that qualitative researchers study things in their natural settings and attempt to make sense of or interpret phenomena in terms of the meaning people bring to them. Qualitative research involves the study, use and collection of a variety of empirical materials such as case study, personal experience, introspective, life story interview, observational, historical analysis, interactional techniques, visual texts that describe routine and problematic moments and meaning in individuals' lives. Qualitative research aims at discovering patterns after a close observation and serious analysis of the research topic. It is based on contextual findings against making an easy generalisation. It emphasis discovery and understanding through close observation of actions (action research), records and words of people by looking for the patterns of meaning in the data. Qualitative research is good because of its mode of data collection, with emerging themes and idiographic descriptions (Cassell and Symon, 1994). It provides a holistic view of the phenomena under investigation (Mayer 2009; Patton, 1980) and provides researchers a unique opportunity to interact with the subject under investigation in their own language and on their terms (Kirk and Miller, 1986). It allows flexible ways of data collection and analysis based on primary data. Such data procedures have been criticised and described by Cresswell (1994) as 'eclectic' with no 'right way' of conducting it. Further, qualitative research method is often criticised in social sciences as subjective and weak in generalisation. The research instruments used (e.g. interview) cannot be measured as reliable and

valid, the control of intervening variables in the process of the research is not under any check and overall generalisation of the study is weak (Alasuutari et al., 2008).

This thesis relies on the use of quantitative methods considering its suitability in testing hypotheses raised in this study and its robustness in analyses of both secondary and primary data. In addition, previous studies of this nature rely mostly on quantitative as shown in Table 4.2.

4.5. Justifying the use of quantitative methodology

Determining the appropriate research method is such a challenging task but the joy is that a researcher is more enlightened in research methodology and methods. While adopting a quantitative research strategy, the research is based on two methods which include causal method equally known as ex-post facto design and survey design. The choice of the two quantitative approaches is essentially motivated by the inherent features of the study that involves hypotheses testing. Galliers and Land (1987) argued that research methods must take account of the nature of the subject matter and the complexity of the real world. On the same note Weber (2004) suggested that different research methods and different data analysis method have their strengths and weaknesses; however, excellent researchers choose research methods that fit their purposes.

The following factors are therefore responsible for the researcher's consideration of quantitative methods for the study:

1. A review of previous relevant studies published in reputable journals was conducted. From 25 studies reviewed 20 embraced the use of quantitative methods (i.e. causal=14, event study=4 and survey =2) and remaining five applied qualitative design (case study = 4 and interview = 1). See Table 4.2.
2. This study has clearly identified variables which can be classified as independent, dependent and control or intervening variables. This shows that one can clearly conduct an experiment or ex-post facto study.
3. The research relies on independently sourced scaled data that are amenable to statistical tests.
4. The study raises five empirically testable hypotheses that can lead to hypothetic-deductions.

In contrast, Marshall and Rossman (1999) described the types of research for which qualitative research methods would be appropriate. They are as follows:

1. Research that delve in depth into complexities and processes;
2. Research on little-known phenomena or innovative systems;
3. Research that seeks to explore where and why policy and local knowledge and practice are at odds;
4. Research on informal and unstructured linkages and processes in organisations;
5. Research on real, as opposed to stated, organisational goals;
6. Research that cannot be carried out experimentally for practical or ethical reasons;
7. Research for which relevant variables are yet to be identified.

There is a tendency for the reader of this thesis to be tempted to classify the methods as mixed methods or a triangulation. This may not be appropriate; Tashakkori and Teddle (2003) refer to mixed methods research as combination of quantitative and qualitative research methods. Alasuutari et al., (2008) are of the opinion that it is possible to mix quantitative research methods and it is possible to mix qualitative research methods, so that the mixing is within a quantitative or qualitative strategy. However, the term 'mixed method research' tends to be used to represent the mixing of research methods that cross the quantitative-qualitative divide. The use of the causal research method and survey design is necessitated by the research hypotheses in the study. Five hypotheses are raised in this thesis, three of which can be addressed by the use of causal research method while the remaining two are best tested by survey design.

Table 4.2. List of selected previous studies and their respective methods

Year	Subject Title	Author	Data Type	Research Instrument	Method/ Data analyses technique	Main findings
2011	Losses from Failure of Stakeholder Sensitive Processes: Financial Consequences for large US Companies from Breakdowns in Product, Environment, and Accounting Standards.	Coleman, L. (2011), Journal of Business Ethics, 98, pp. 247-258	Secondary	Published data	Causal design by multiple regression analysis.	EPA penalties and product return are associated with negative impacts on margin and ROE
2010	A corporate model of sustainable business practices: An ethical perspective	Svensson, G., Wood, G. and Callaghan, M. Journal of World Business, 45, 336-345.	Literature	Literature review	Literature review	Creation of corporate model of sustainable business from ethical perspective.
2010	Environmental Practices in the wine industry: An empirical application of the theory of reasoned action and stakeholder theory in the United States and New Zealand.	Marshall, R.S; Akoore, M.E.M; Hamann, R and Sinha, P. (2010). Journal of World Business, 45, 405-414	Primary	Questionnaire	Quantitative: Causal design by multiple regression	Subjective norms and internal stakeholder pressure are common drivers of adoption of environmental practices
2009	Voluntary Pollution Reduction Programs, Environmental Management, and Environmental Performance: Empirical Study	Sam, A. G; Khanna, M; and Innes, R. (2009). Land Economics, 85(4), 692-711	Primary	Questionnaire	Quantitative: Causal design by multiple regression	Voluntary pollution reduction programme has positive effect on environmental performance.
2008	Do environmental management systems improve business performance in an international	Darnall, N., Henriques, I. and Sardorsky, P. (2008). Journal of International	Secondary and primary	Questionnaire and published data	Quantitative: Causal design by multiple regression	Positive relationship between environmental management and business

	setting?	Management, 14, 364-376.				performance.
2008	Sustainability of nations by indices: Comparative study between environmental sustainability index, ecological footprint and the emergy performance indices	Siche, J. R; Agostinho, F; Ortega, E. and Romeiro, A. (2007). Ecological Economics 66, 628-633.	Secondary	Published data	Quantitative: Causal design by correlation.	Not yet a satisfactory index
2007	Environmental management and firm performance: A case study	Claver, E; Lopez, M.D; Molina, J. F. and Tari, J.J. (2007). Journal of Environmental Management 84, p. 606-619.	Primary	Primary and secondary	Qualitative: case study by interview, observation and review of internal documents	Relationship between proactive environmental strategy and firm performance.
2007	Development of composite sustainability performance index for steel industry	Singh, K.R; Murty, H. R; Gupta, S. K. and Dikshit, A. K, Ecological Indicators, 7, 565-588.	Secondary	Published data	Quantitative by analytical hierarchy process (AHP).	Composite index is validated to be appropriate for achieving sustainability objective
2007	Relation between social-environmental responsibility and performance in hotels firms	Rodriguez, F.J.G. and Cruz, Y.M.A. (2007) Hospitality Management, 26, 824-839.	Secondary and primary	Questionnaire and published data	Quantitative: Causal design by multiple regression	Strong and positive relationship between social-environmental responsibility and performance.
2006	Environmental management and firm performance: A case study	Claver, E., Lopez, M.D., Molina, J.F. and Tarı, J.J.	Primary	Review of published data.	Qualitative by case study	Positive correlation between environmental management and firm

						performance.
2005	Is private social, ethical and environmental reporting mythicizing or demythologizing reality?	Solomon, J. F. and Darby, L. (2005). Accounting Forum 29, p. 27-47	Primary	Interview	Qualitative : survey design by interview	SEER reporting is real and contributes to better understanding of companies.
2004	The Effect of Corporate Environmental Strategy Choice and Environmental Performance on Competitiveness and Economic Performance: An Empirical Study of EU Manufacturing.	Wagner, M and Schaltegger, S. (2004). European Management Journal. 22(5), p557-572	Primary	Questionnaire	Quantitative: Survey design by multiple regression	Positive relationship
2001	An empirical evaluation of environmental efficiencies and firm performance: Pollution prevention versus end-of-pipe-practice	Sarkis J; and Cordeiro, J. J. (2001). European Journal of Operational Research, 135, p102-113	Secondary	Published data	Quantitative by multiple regression **cross sectional data	Negative relationship
1999	EPA's voluntary 33/50 program: impact on toxic releases and economic performance of firms.	Khanna, M. and Damon, L.A. (1999). Journal of Environmental Economics, 37(1), 1-25.	Secondary	published	Quantitative by multiple regression	Negative impact on ROI and positive impact on long-run profitability
1998	Measuring corporate environmental performance	Ilinitch, A. Y; Soderstrom, N. S; and Thomas, T.E. (1998). Journal of Accounting and Public Policy 17, p. 383-408	Primary and secondary	Questionnaire	Quantitative by multiple regression	Need for explicit environmental performance metrics
1998	Performance implications of incorporating natural	Judge, W.Q. and	Primary data	Questionnaire	Quantitative by structural equation	Integration of environmental issues into

	environmental issues into the strategic planning process: an empirical assessment.	Douglas, Y.T.J., (1998). Journal of Management Studies, 35(2), 242-261			modeling	strategic planning is positively related to financial and environmental performance
1997	Environmental Proactivism and Firm Performance: Evidence from security Analyst Earning Forecasts	Cordeiro, J. J. and Sarkis, J. (1997). Business Strategy and the Environment 6, p. 104-114	Secondary	Published data	Quantitative by multiple regression	Negative relationship between environmental proactivism and firm performance
1997	A resource-based perspective on corporate environmental performance and profitability.	Russo, M.V. and Fouts, P.A. (1997). Academy of Management, 40(3), 534-559	Secondary	Published data	Quantitative by multiple regression **environmental record for just 2years.	Negative relationship
1997	The effect of Announcement of Bribery, Scandal, White Collar Crime, and Illegal Payment on Return to Shareholders	Rao, S. M. (1997). Journal of Financial and Strategic Decision, 10(3), 55-62.	Secondary	Published data	Quantitative by event studies	Positive connection between ethics and profitability.
1996	The Effect of Published Reports of Environmental Pollution on Stock Price	Rao, S. M. (1997). Journal of Financial and Strategic Decision, 9(1), 25-32	Secondary	Published data	Quantitative by Event Studies	Positive connection between ethics and profitability
1996	Does it pay to be green? An empirical examination of the relationship between emission reduction and firm performance.	Hart, S. and Ahuja, G. (1996). Business Strategy and the Environment, 5(1), 30-37	Secondary	Published data	Quantitative by multiple regression	It does pay to be green
1996	The impact of environmental	Klassen, R.D. and McLaughlin, C.P.	Secondary	Published data	Quantitative by event	Significant positive relationship between

	management on firm performance.	(1996). Management Science, 42(8), 1196-1214.			study	environmental management and return on investment
1995	The environmental practices and performance of transnational corporations.	Levy, D.L. 1995. Transnational corporation 4(1) p44-67	Secondary	Published data	Quantitative by multiple regression	No relationship between environmental performance and financial performance
1995	When green turns to red: stock market reaction to announced greening activities. Paper presented at the academy of management meeting, Vancouver, Canada	Worrell, D., Gilley, K.M., Davidson III, W.D. and El-jely, A. (1995). Academy of Management Meeting held in Vancouver, Canada	Secondary	Published data	Quantitative by event study	Stock market reaction to greening activities is negative.
1994	Stock Market Reaction to Announced Corporate Illegalities	Davidson III, W.N; Worrell, D. L. and Lee, C. I. (1994). Journal of Business Ethics, 13, 979-987	Secondary	Published data	Quantitative by regression and Mean cumulative prediction error (MCPE)	Market reaction does react negatively to the news of illegality.
1993	The impact of corporate pollution on market valuation: some empirical evidence.	Cormier, D., Magnan, M. and Morard, B. (1993) Ecological Economics, 8(2), 135-155.	Secondary	Published data	Quantitative by multiple regression	The corporate pollution impact negatively on market value

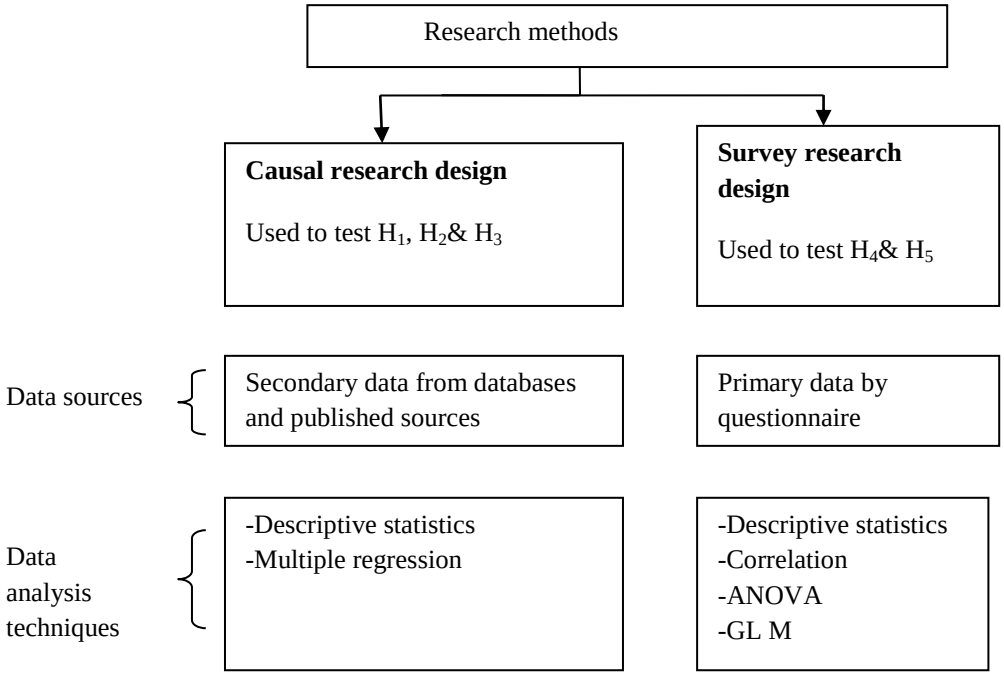
Source: Prepared by the author for the current study

4.6. Research methods

The use of quantitative methodology has been justified in the foregoing section 4.4, but of major importance is selecting the research quantitative methods that best test the study hypotheses stated in section 1.8. The review of research methodology literatures suggests that the nature of research questions or hypotheses determine the choice of the research design in any study (Weber, 2004; Fishman, 1991; Galliers and Land, 1987). Also, the pragmatic epistemological paradigm is of the view that a conceptual coherent programme is designed to address a significant social or psychological problem within a naturalistic real-world setting, in a manner that is feasible, effective, and efficient (Fishman, 1991). To make a research design pragmatic, is to search for feasible, workable method of solving research problem (Fishman, 1991)

In order to contribute meaningfully to knowledge and reflect reality, this thesis uses two methods as illustrated in figure 4.1 below. These methods have been used in previous similar studies stated in Table 4.2.

Figure 4.1: Shows the research methods used in the study



Source: Developed by the author for the current study

4.7. Causal research design

Other names this approach often called include causal-comparative design, ex-post facto experimental design, and causal modelling or regression design as fondly called in the field of economics.

Leary (2001) described causal method as an advanced correlation strategy that is used to explore how and why variables are related to one another. This method allows researchers to develop an equation that describes how variables are related and that allows the prediction of one variable from one or more other variables. Black (1999) described the causal method as a design that looks beyond establishing the relationship and strength of relationship between variables, and would rather

allow predictions by extrapolation and interpolation based upon a best-fit line. It is a research method that establishes causality (i.e. cause-effect) through manipulation of one of the variables, having controlled all other extraneous variables (Black, 1999).

The design is aimed at investigating possible cause and effect relationships. The researcher starts by observing some effects and then attempts to establish some causal connections by searching back through the data for plausible causal factors. In causal design, the researcher finds that the subjects are already assigned to or classified into the various levels of the variables whose effects are being investigated and he cannot alter this (Vincent et al., 2006).

This design is called ex-post facto because data are collected after the event or phenomenon under investigation has taken place, hence, the name "ex-post facto". This means that the causes are studied after they have presumably exerted their effect on another variable before the research. In the same manner, the name causal-comparative is derived from the fact that groups differentiated in terms of some independent variables in the study are compared on a given dependent variable.

The causal research design must not be confused with the correlation study which is similar but different. Correlation design is concerned with measuring the association or strength of the relationship between two variables (Leech, et al, 2008). It should be made clear that correlation studies do not establish causation and prediction. In correlation design, one cannot say variable X causes Y or that Y causes X. The study only leads us to the direction and magnitude of the relationship between the variables. For instance, H4 proposes that a manager's attitude to environment will affect his/her firm's corporate reputation. The correlation design can let us know if

there is relationship between a manager's attitude to CER and his/ her firm's corporate reputation and equally show the magnitude of the relationship in percentage terms. The design cannot lead us to the conclusion, for instance, whether CER causes FP to increase or decrease. It is only the causal method that has the capacity for this; and this is the reason why causal design is more robust in comparison to correlation design.

A group of inferential statistics known as parametric statistics are used for data analysis. In causal method, ordinary least square (OLS) regression analysis, multiple regression analysis and structural equation analysis are often used while correlation design uses mostly Pearson's Product Moment Correlation and Spearman Rank Order Correlation (rho).

This research design has been found as most appropriate in testing the first three hypotheses raised in the study by establishing causation between CER and FP in the extractive sector. Simply put, this research seeks to determine if the CER of firms affects FP and whether a linear equation to predict and establish the relationship between the two constructs can be created.

4.7.1. Data sources and measurement of Variables

All the variables for execution of causal study which include the independent variables, dependent variables and control variables have been properly defined for the purpose of H_1, H_2 and H_3.

4.7.2. Measurement of financial performance (FP) (Dependent Variable)

A dependent variable is the variable that relies on one or more independent variables (Black, 2003). It is the consequence or outcome of the manipulation of independent variables (Leary, 2001). This study's dependent variable is FP which examines performance by employing accounting number-based profitability and market- based firm value. Some previous studies used accounting data to measure FP. For example, Waddock and Graves (1997) used three accounting variables. These were return on assets (ROA), return on equity (ROE), and return on sales (ROS). Simpson and Kohres (2002) used return on assets (ROA) and loan losses, whereas Berman, Wicks, Kotha, and Jones (1999) only used return on assets (ROA). Prior studies by Cochran and Wood (1984) also used accounting data to measure FP. Three accounting return measures were employed initially: the ratio of operating earnings to assets, the ratio of operating earnings to sales, and excess market valuation. Accounting variables were also used by Tsoutsoura (2004) to measure CER. These were return on assets (ROA), return on equity (ROE), and return on sales (ROS).

Alexander and Buchholz (1978) and Abbort and Mosen (1979) used forms of investors returns as proxies for FP. Abbort and Mosen, however, failed to account properly for risk. Alexander and Buchholz who did properly account for risk did not employ an event study. In other studies that used market-based form of FP measurement (Pauh et al. 2008; Han and Suk, 1998; Rao, 1997; Davidson et al, 1994) used stock returns as a dependent variable to measure FP and their model adopted the asset pricing framework. This study uses return on equity (ROE) to

proxy profit level and the ratio of Market-to-book value (M/B Ratio) as a proxy for firm value. In this thesis, the information relating to ROE and M/B are sourced from the audited financial statements of the sampled companies obtained from the Osiris database.

- ROE: It is the ratio of net income or net profit (after interest and taxes) to shareholders' fund (Ross, Westerfield and Jaffe, 2005). This was obtained for 2009 and 2010 and subsequently the average was determined for the purpose of the analysis.

- M/B: According to Ross, Westerfield and Jaffe (2005) market-to-book value is a ratio comparing the market value per share of a company's stock with the book value per share. The book value is total equity or shareholders' fund. This is a market based method of firm valuation. The M/B was obtained for 2009 and 2010 and subsequently the average was determined for the purpose of the analysis.

4.7.3. Measurement of CER (independent or interest variable)

In the previous studies, comprehensive measures of CSR and environmental sustainability have been based on disclosure-scoring methodology. Examples include The Fortune reputation survey (Brown and Perry, 1994); The KLD index (Kang et al., 2009, Waddock and Graves, 1997), and the Toxics Release Inventory-TRI (Cordero and Sarkis, 1997). Every measurement has advantages and disadvantages;

to overcome the limitations, the researchers must use measures consistently based on their research objectives and local conditions.

The measurement of CER in this study uses the combination of both disclosure-scoring methodology and green reputation survey ranking of S&P 500 by top environmental experts which are summarised into three broad scales that include environmental impact score (EIS), green policies score (GPS), and reputation score (RS). The three scores are scaled variables covering the major aspects of CER expected of a company. Each has a scoring scale of zero to 100 which gives balance comparability between dependent and independent variables. Equally, the study uses S&P 500 environmental performance ranking reported in 2008 and 2009. The use of two years panel data was informed by the researcher's willingness to prioritise 'relevance' of the datasets over longitudinality, and indeed this is a reflection of works of Rodriguez and Cruz, 2007; Sarkis and Cordeiro, 2001; Ruso and Fouts, 1997 published in high-ranked journals. One of the major shortcomings in previous studies is the use of inappropriate proxies and datasets in measuring CER (Coleman, 2011; Orlitzky, 2008) (see section 2.3 and 2.4 for a comprehensive account of the shortcomings associated with different databases). For the purpose of this study the researcher decided to use three world renowned complementary datasets (MSCI ESG, Trucost and CorporateRegister.com) tracking different aspects of environmental activities of S&P 500 for a yearly environmental ranking event coordinated by the Newsweek magazine since 2008. Although, the three databases providing yearly joint environmental ranking of the S&P 500, they are yet to have a long history, and as shown in Section 2.3 and 2.4 have evolved from earlier more crude attempts at such measurement, however, they provided the most

comprehensive account of the environmental performance of the S&P 500. The longitudinality of the dataset may not necessarily be a material shortcoming considering that similar studies by top scholars in reputable journals had relied on two years and cross-sectional datasets in determining CER-FP link (Rodriguez and Cruz, 2007, Sarkis and Cordeiro, 2001; Ruso and Fouts, 1997). MSCI ESG Research (formerly known as KLD Research Analytics) specialises in tracking green policies (GPS), Trucost tracks environmental impact (EIS) while CorporateRegister.com specialises in tracking and scoring environmental reputation (RS). MSCI ESG tracks environmental, social and governance data on companies worldwide; Trucost, specialises in quantitative environmental performance measurement, and Corporate Register.com, is the world's largest online directory of social responsibility and environmental reporting. The independent variable (CER) therefore, was proxied by the following three environmental ranking components: environmental impact score (EIS), green policies score (GPS), and environmental reputation score (RS) in the area of environmental protection among the S&P 500.

For the purpose of our analysis, EIS, GPS and RS are used in lag form, by averaging each firm's performances for 2008 and 2009 as against dependent and control variables average scores for 2009 and 2010. This is in line with the previous studies (Makni et al. 2009; Salama, 2005) where CSR and environmental variables are lagged to take care of time lag effect; time between which environmental conduct of a firm reflects on its financial performance. Gujurati (2006) states that when relationship between dependent and independent variable is non-contemporaneous (i.e. not at the same time), it is better to lag the variables.

In combining datasets of this nature, it is important to ensure that the independent variables (EIS, GPS, and RS) are complementary but not materially correlated or interdependent in order to avoid multi-collinearity problem (Gujarati, 2006). In view of this the datasets where checked to ensure that each independent variable measures different aspects of environmental activities. EIS measures greenhouse gas emissions, water consumption, solid waste disposal, and acid rain emissions. GPS covers the climate change policies and performance, pollution performance, product impact, environmental stewardship and management while RS covers the environmental reputation scoring of companies which this involved rating companies as a 'leader' or 'laggard' in five key green areas which include communication, green performance, commitment, track record and ambassador. Therefore, the independent variables complement one another and as a result provide a wider coverage of environmental activities.

- EIS**:** is the total score taken from key elements which include greenhouse gas emissions (including nine gases in total, with carbon dioxide the most important in many cases), water consumption (including direct, purchased and cooling), solid waste disposed, and acid rain emission (sulphur dioxide, nitrogen oxide and ammonia), all normalised by revenue. The data were compiled by Trucost, it is a comprehensive, quantitative, and standardized measurement of the total environmental impacts of a corporation's global operations (90 per cent) and disclosure of those impacts (10 per cent). More than 700 metrics - including emissions of nine key greenhouse gases, water use, solid-waste disposal, and emissions that contribute to acid rain and smog-figure into the Environmental Impact Score. Trucost uses publicly disclosed environmental data to evaluate company

performance for each impact metric whenever possible, and uses a proprietary economic input-output model to calculate direct-company and supply-chain impacts in cases where data are unavailable. To fairly assess the impacts of companies operating in more than one industry, Trucost uses a benchmarking system. First, Trucost calculates the total environmental impacts per total economic output (usually in dollars of revenue) for 464 industry sectors. Then, it evaluates the proportion of a company's revenue that is derived from each sector in which it does business. This research is fed into the model, which uses the benchmarks for each of those sectors (for example, total water use of the oil industry per its total economic output) to estimate the company's impacts (in this case, its water consumption use). Trucost draws on any relevant data that is available, such as the Environmental Pollution Agency's (EPA) Toxics Release Inventory, to further refine the model. Any outside data that Trucost draws on is first scrutinized to ensure it is of good quality, and then standardized before being used. Once the specific impacts of a company have been quantitatively assessed, Trucost calculates an environmental damage cost for each- a dollar value representing the potential cost to society of resulting damage to the environment-based on a standardized cost per quantity of each environmental input or output that Trucost has developed from valuation studies and other academic literature. The costs for each individual metric are added up to produce a dollar estimate of the company's total environmental impact. Finally, this figure is normalized by company fiscal-year revenue (this allows companies of all sizes to be compared) and factored in as 90 per cent of the company's raw EIS.

- GPS: defines the main elements here to include climate change policies and performance, pollution and performance, product impact, environmental stewardship

and environmental management. Derived from data and the analysis provided by MSCI ESG Research (formerly known as KLD Analytics), the Green Policies Score is an assessment of how a company manages its environmental footprint. The MSCI ESG Research scoring model measures the quality of each company's environmental reporting, policies, programs, and initiatives. More than 70 individual indicators are incorporated into the GPS categorized into the following five issues: climate-change policies and performance; pollution policies and performance; product impact; environmental stewardship; and management of environmental issues. These address, respectively, how well each company manages its carbon emissions; how well each company manages its non-carbon emissions to air, water, and land; the life-cycle impacts of each company's products and services; how well each company manages and uses its local resources; and the quality of each company's track record of managing environmental risks. Data on regulatory compliance, lawsuits, controversies, and community impacts are also among the indicators taken into account within each category. MSCI ESG Research draws its data from a variety of sources, including company-disclosed information; dialogues with companies; media coverage; and government, NGO, and third-party research. The initial data is used to rate companies on a scale of zero to 100 for specific indicators, and then those factors, weighted according to their importance, are rolled up into scores for each of the five key environmental issues, and then into the overall raw GPS.

- RS: this is a survey asking respondents (CEOs and high ranking officials) to rate companies as "leader" or "laggard" in five key "green" areas: green performance, commitment, communications, track record and ambassadors. This score is based on an opinion survey of corporate social-responsibility professionals,

academics, and other environmental experts who subscribe to CorporateRegister.com. The survey went out to 14,921 validated individuals and asked each respondent to rate a random sample of 15 companies on a sliding scale (100 to one) from "leader" to "laggard" in three key green areas: environmental performance, commitment, and communications. Of those surveyed, 2,480 participants were identified as "sector specialists" - those having a specific working knowledge of environmental issues within their industry were asked to only score companies in their sector of expertise. Additionally, the CEOs from all companies on the S&P 500 and Global 100 lists were invited to participate in the survey, 90 of whom responded and either took the survey themselves or designated a senior-level representative to do so on their behalf. CorporateRegister.com only accepted responses from individuals whose identity and details had been verified, and any scores given to a company by its own employees or its hired consultants were disregarded. In addition to increasing the reliability, any responses with suspicious scoring patterns were disregarded. The survey's response rate was 12 per cent; this is far higher than is typical of most public-opinion polls reported in the media. Chief-executive scores were given a weight of three, sector specialists a weight of two, and other participants a weight of one. Each company's performance, commitment, and communications scores were then averaged to produce its raw Reputation Survey Score.

From the conceptual framework, the overall theme of this thesis is the impact of corporate environmental responsibility on financial performance. In studies of this nature and previous SER-FP link research, the impacts of other variables that are not social and environmental by nature are accommodated in the conceptual model. Such

variables are regarded as third variables, they are equally independent or predictor variables but not as focal or of interest as the SER variables. This therefore, set out section 4.7.4 on the use of third variable.

4.7.4. The use of third variables in SER-FP link

A third variable can adversely affect the relationship between the independent variable and dependent variable because of its ability to cause the researcher to analyse the results incorrectly. The results may show a false association between the dependent and independent variables, leading to an incorrect rejection of the null hypothesis (Aiken and West, 1991). A third variable can manifest in a study as a moderating variable, mediating variable or confounding variable. There has been a surge of interest in third variable analyses because they offer the potential to unpack the "black box" and provide a more sophisticated understanding of interdependencies between independent and dependent variables (MacKinnon, 2008).

Mediation can be simply defined as a relation such that an independent variable causes a mediating variable, which then causes a dependent variable (MacKinnon, 2008). For mediation to exist, the following conditions must be met. First there must be a substantial relation between an independent variable and the mediating variable, and there must be a relation between the mediating variable and the dependent variable when accounting for the independent variable. Second, by definition, mediation requires a causal precedence such that the independent variable precedes

and is a cause of the mediator, and the mediator must precede and be a cause of the dependent variable. Ideally, repeated measures of the mediator and dependent variable are available to investigate temporal relations, but often these causal relations must be inferred based on theory or prior research (Baron and Kenny, 1986). For instance, Orlitzky (2008) stated that the association between social-environmental responsibility and corporate financial performance might be zero or statistically not significant if innovative activities were mediating the relationship between the two constructs.

In contrast, a moderator variable is one in which the relation between the independent variable and dependent variable changes across levels of the moderator (Mackinnon, 2008). According to Baron and Kenny (1986), a moderator is a qualitative or quantitative variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable. Often times a moderator is confused with mediation, a moderator is not intermediate in the causal sequence from the independent variable to the dependent variable. Moderators are included in a linear or statistical model as an interaction term. For the purpose of assessment of moderation effects, the relation between the independent and dependent variable must be different at different levels of a third variable. The distinguishing characteristics of a moderator variable are that it is desirable that the moderator variable is uncorrelated with both the focal independent variables and the dependent variable to provide clearly interpretable interaction term (Baron and Kenny, 1986). Another property of the moderating variable is that, unlike mediator-predictor relations (where the predictor or independent variable is causally antecedent to the mediator), moderators and predictors are at the same level

in regard to their role as causal variables or exogenous to certain dependent variables (Baron and Kenny, 1986). In most studies relating to the link between social-environmental responsibility and financial performance, the moderating variables are often regarded as control variables and these variables often include company size, market size and leverage. Russo and Fouts (1997) found that industry growth, as a moderator, strengthened the relationship between corporate environmental performance and profitability. One of the theoretically most compelling arguments for moderator effects was presented by McWilliams and Siegel (2001) in their supply and demand model of CSR. In their model, the proposed moderators include organisation's size, level of diversification, research and development, advertising, government sales, consumer income, labour market conditions, and stage in the industry life cycle. Waddock and Graves (1997) controlled for the effect of industry size, managerial attitude towards risk, and industry type when examining the link between corporate social performance and financial performance. In a similar study, Kang et al. (2009) used company size, leverage and market size as control variables.

There is another variable relevant to discussion of third-variable effects, and that is often confused with mediators or moderators: confounding variable. A confounding variable is one that changes the relationship between independent and dependent variables because it has a relationship with both variables, but is not theoretically in a causal sequence between the independent and dependent variable (MacKinnon, 2008). When considering whether a variable is a mediator or confounding, the presumed presence or lack of a causal mediation relationship should be taken into account. Confounders explain a significant relation between the independent and dependent variable by a third variable that predicts both variables, whereas a

mediator explains a relation between variables because it is intermediate in a causal sequence. Age, gender and income are often included in statistical models because of their potential to act as confounding variables (MacKinnon). Orlitzky (2008) argues that the empirical impact of confounding variables must be differentiated from mediator and moderating effects. The mediator interacts with the independent variable to affect the dependent variable, while a confounding variable interacts with both independent and dependent variables at the same time. In multiple regression, the variance explained (R^2) is often considered as a pretty good indicator of the impact of potential unmeasured confounds (Orlitzky, 2008). The higher R^2, the lower the probability that important confounds have been ignored. Orlitzky (2008) states that organisational size is another variable which may confound the relationship between social-environmental responsibility and FP. Large firms may both exhibit greater financial performance and engage in more socially responsible activities as they tend to have more slack resources.

4.7.5. Measurement of moderating variables (Control Variables)

In most causal modelling studies, the impact of other non-interest variables are often referred to as, moderating, intervening or control variables. They must be expressed in the model in order to capture the full impact of independent variables on the dependent variable. Orlitzky (2008) is of the view that any primary study on corporate citizenship that attempt to measure only one specific dimension of corporate citizenship may not capture its full economic impact. In Orlitzky et al (2003) meta- analysis on corporate citizenship and FP, they found that most of the

studies had moderators like size effect and several other contingency factors that are likely to affect the relationship as well. Russo and Fouts (1997) found that industry growth, as a moderator, strengthened the relationship between corporate environmental performance and profitability. One of the theoretically most compelling arguments for moderator effects was presented by McWilliams and Siegel (2001) in their supply and demand model of CSR. In their model, the proposed moderators include organisation's size, level of diversification, research and development, advertising, government sales, consumer income, labour market condition, and stage in the industry life cycle. Waddock and Graves (1997) controlled for the effect of industry size, managerial attitude towards risk, and industry type when examining the link between corporate social performance and CER. In a similar study, Kang et al. (2009) used size, leverage and market size as control variables.

This study uses three control or confounding variables in the multiple linear regression model, these include company size (COMPANYSIZE), leverage (LEVERAGE) and market (MARKETSIZE). These have been included in the model to take care of all other factors that can affect the dependent variables. The information relating to these variables are sourced from 2009 and 2010 audited financial statements of sampled companies and obtained from the Osiris database.

- COMPANYSIZE, estimated by the log of total assets, controls for any systematic effect generated by different sizes of firms in relationship to their CERs. Banz (1981) investigated the small firm effect which suggested that smaller firms, on average, yield more expected common stock return than larger firms. In contrast,

according to Coleman (2011), small firms are riskier than larger firms that tend to provide more information to the financial community. Less information asymmetry between investors and managers in larger firms leads to decreases in the cost of capital, which in turn increases firm value. Also, based on the economy of scale, large firms perform better than small ones, thereby proposing a positive relationship between firm size and profitability (Chauvin and Hirschey, 1993).

- LEVERAGE: this represents the debt-to-assets ratio (total debt divided by total assets) which controls for the effect of capital structure on company profitability. For instance a firm can leverage on debt finance in order to take tax advantages while dividends paid on equity are not allowed (McConnell and Servaes, 1990). On the other hand, when a firm increases its debt excessively, the firm's equity value may dwindle, because the market perceives the firm as too risky (Brealey and Myers, 2003).

- MARKET: this represents the average monthly S&P500 index per respective year. This is included to control for the effect of general economic conditions in a specific year. It is a universal concept that during different economic conditions (boom or recession) a company either performs better or worse. Such a correlation may cofound the relationship between firm FP and environmental sustainability activities, so it is therefore controlled in the model (Kang, et al., 2009).

- μ: is meant to represent the host of factors that help determine the dependent variable, including the effect of unconsidered independent variables and possible error in measurement of dependent variable (Mirer, 1995).

4.7.6. Population and Sample Size

The research population for testing H_1, H_2 and H_3 comprises the extractive industries within S&P 500, while the sample for the purpose of this study comprises of the 101 largest extractive companies within S&P 500 (see appendix 4.2 to 4.7). Liebental, Michelitsch and Tarazona (2005), in their review of the extractive industry for sustainable development for the World Bank defined the extractive sector to include oil, gas, and mining of minerals and metals. This definition served as the guideline in defining the companies that fall within the extractive industry for the purpose of this study. S&P 500 is a free-float capitalisation- weighted index published since 1957 on the prices of 500 large-capital common stock activity traded in the United States. The stocks included in the S&P 500 are those of large publicly held companies that trade on either of the two largest USA stock market companies; the NYSE Euronext and the NASDAQ OMX.

Although the sample frame is clearly biased towards the largest firms, this was not deemed to be a problem for this research, as there is ample evidence that CER varied considerably among the largest firms (Rice, 1993). Second, the operations of these large firms are under scrutiny and so ethical breaches would likely be detected and reported most comprehensively (Coleman, 2011).

In summary, companies selected as sample to test H_1, H_2 and H_3 in this study had to meet four criteria: (1) they had to be companies in extractive sector, which include oil, gas, mining of minerals and metal, (2) they had to be included in green ranking jointly conducted by the KLD Analytics Inc. (now MSCI ESG), Trucost and

CorporateRegister.com over the period from 2008 through 2009; (3) they had to be listed on the S&P 500 through over the period from 2008 through 2010, and (4) they had to have in Osiris database information relating to Audited Financial Statements for the periods 2009 through 2010.

4.8. Survey research design

In order to test H_4 and H_5, a research questionnaire was designed to elicit information on the attitude of managers towards environment and if this impacted on their firm's perceived corporate reputation. Survey research design is found most relevant and suitable in testing H_4 and H_5 because according to Leary (2001), surveys inquire about people's attitude, lifestyles, behaviours, and problems. In addition, some of the previous researches in area of CSR, environmental performance and corporate citizenship relied on survey research design after the 'most preferred' causal design (Khanna, et al, 2009, Marshall, et al., 2009, and Wagner and Schaltegger, 2004).

In survey research, respondents provide information about themselves by completing a questionnaire or answering an interviewer's questions. This study uses a cross-sectional survey design, aimed at managers in multinational extractive companies. According to Leary (2001), most surveys involve a cross-sectional design in which a single group of respondents- a "cross section" of the population- is surveyed.

The survey method has become a widely used and acknowledged research method worldwide. It consists of asking structured questions (Malhotra and Birks, 2000) of a supposedly representative cross section of the population at a single point in time (Bailey, 1982). The survey may be mailed to respondents, conducted over the phone, electronically or involve a face-to-face meeting with the respondent. The mailed survey is the most prominent type (Bryman, 2011). Birn (2000) argues that despite the growth in telephone research, mail surveys remain a very important data collection method, adding that it is a cost effective method and the method preferred by the general public. This study has found electronic-mail (i.e. internet) survey and self-administered more relevant in administration of the study questionnaire to the managers that work in the extractive sector.

The Internet's potential for academic and applied research has recently begun to be acknowledged and assessed (Couper, 2000). The Internet (or the Web) is increasingly looked at as a means of surveying the public (Couper, 2000). The likely advantages of using the Internet include cost savings associated with eliminating the printing and mailing of survey instruments (Cobanoglu et al., 2001) as well as time and cost savings of having returned survey data already in an electronic format.

4.8.1. Survey instrument design and measures

This study uses on-line survey platform known as Kwik survey to collect data needed to test both H_5 and H_4. The questionnaire is divided into three sections. Section A comprises of statements that determine respondents' environmental

attitudes while Section B is designed to measure managers' perceived importance of corporate reputation. In section C, respondents' demographic information is collected. The survey uses Five-point Likert scale in the order of strongly disagree (SD), disagree (D), Neither (N), agree (A), strongly agree (SA).

It was observed that there is no universally accepted measure or scale for measuring a manager's environmental attitude. The techniques of attitude measurement can be broadly classified into direct self-report methods and implicit measurement techniques (Krosnick et al, 2005). Because of the difficulties in use of implicit measurement methods, the direct self-report methods are more popular (Corral-Verdugo, 1997). There are three widely used and had their validity and reliability assessed (Dunlap and Jones, 2003), these include Ecological scale (Maloney et al., 1975), the Environmental Concerns Scale (Weigel and Weigel, 1978) and the New Environmental Paradigm (NEP) Scale (Dunlap, 2000).

For the purpose of this study, the existing scales have been found inappropriate for adoption or adaption because the scales are old and not up to date in terms of new environmental developments in a contemporary business environment, therefore a new scale for measuring environmental attitude is developed with inputs from the extant literatures and the existing scales. The Section A (i.e. environmental attitude scale) has four sub-constructs: corporate environmental action, environmental buying attitude, environmental results and consequences, and economic trade-off actions. Both corporate environmental action and environmental buying attitude scales are based on Cottrell's (2003) study on what he terms 'general responsible environmental behaviour' (GREB). The corporate environmental action scale has

five statements designed to elicit information on a manager's attitude towards environmental policies and decisions, while environmental buying attitude has three statements for the purpose of determining the extent of green and ecological considerations in an individual manager's buying behaviour. Both environmental results and consequences and economic trade-off decisions have seven and six statements respectively. The environmental results and consequences scale is to evaluate the attitude of a manager to good or poor environmental results while economic trade-off decisions scale gauges a manager's preference for economic benefits or good environmental records. Both scales are based on Ilinitch et al (1998) environmental performance factors which include environmental internal systems, external stakeholder relations, external impact and internal compliance (Ilinitch, et al, 1998). According to Ilinitch et al, internal systems refer to organisational processes designed to enhance environmental performance, including environmental audit programs, environmental mission statements, appointing prominent and influential environmental officers, offering environmental compensation incentives to employees and managers, and dedicating staff to environmental activities. The stakeholder relations refer to the interaction between the company and its various external constituencies, including its shareholders, the local communities, government, customers, suppliers, and industry. Ilinitch et al, state that the external impacts include the negative externalities generated in the conduct of business while internal compliance refers to the degree to which companies meet minimum standards required by laws and regulations.

Section B of the questionnaire consists of Likert-type scale questions requiring respondents to choose the answer that best describes their perceptions of corporate

reputation of their respective firms. The study adopts Reputation Quotient (RQ) developed by Fombrun (1997). In deciding measurement in a survey research design, researchers tend to choose one of three options, which are: adopt exactly the same questions developed by other researchers, modify the questions, or develop their own questions (Bourque and Clark). Bourque and Clark, (1994) suggested that existing scales has advantages over developing a new scale in terms of the reliability and validity of the questions.

Fombrun (1997) stated that the measurement of reputation should comprise components of various roles/functions which society expects from companies, including an emotional component. The Reputation Quotient (Fombrun et al 2000b) is the most well-known measurement for corporate reputation from the viewpoint of the corporate social role perspective, overcoming many disadvantages of existing reputation measurements focusing on corporate role (Shamma and Hassan, 2009).

4.8.2. Data collection procedure and sample frame

The research population for the purpose of testing H_4 and H_5 comprised all staff at the managerial level of extractive companies listed on S&P500. The research sample comprised 275 managers working within the extractive companies listed on S&P 500. The selection of a sampling method depends on the nature of the research question, time and money, desired accuracy level, and the data gathering method (de Vaus, 2002). For this study, a simple random sampling approach is used to collect the data, since this is the most common method and is regarded to provide a

relatively accurate and easily accessible sampling frame (Saunders et al. 2003). Equally, the advantage of this method is that the characteristics of the entire population can be estimated from the selected sample without bias (Saunders et al., 2003). Thus, it is ideal for survey data collection because it can establish the validity and generalisability of the survey findings better than the other methods (Fowler, 2002; Nardi, 2003).

The questionnaire was mailed randomly to the respondent with the aid of an online facility known as Kwik Survey. However, for the purpose of pilot study, the questionnaire was distributed by use of the convenience method of non-probability sampling to managers in extractive industries (oil, gas, mining of minerals and metal). A pilot testing of the survey instrument is crucial in determining whether the design, layout and question wording are effective (Blumberg, et al., 2011).

4.8.3. Pilot Survey

Piloting refers to the preliminary testing of various aspect of a research study such as the questionnaire, sample design, research method, and research hypotheses that have been proposed (Blumberg, 2011).Previous literature states that pilot study is conducted to test the adequacy of questionnaire, check if the range of responses provided in questions are adequate, check if questions are understood correctly by respondents, check for the presence of duplicate questions, which may allow for some questions to be removed and thus shorten the questionnaire, provide an indication of the expected response rate of the study and provide an indication of the

probable cost and duration of the study (de Vaus, 1993; Oppenheum, 1999; Saunders et al, 1997).

The need to conduct a pilot study became imperative in view of the fact that the section A of the questionnaire (see appendix 4.2) which set out to measure managers' environmental attitude used a new scale developed by the researcher. This scale, however, needs to be tested for reliability and validity before administering the questionnaire to a larger group. For the purpose of pilot study, one hundred and thirty five questionnaires were sent out and a response rate of forty-four per cent was achieved (i.e. 60 questionnaires were returned with responses). However, five questionnaires were excluded due to the large cases of missing data. As a result, pilot test sample size came to 55 questionnaires. Conducting a pilot test on 55 questionnaires is still a reasonable size because the general rule for statistical computation is that the number of observation or respondent should be greater than thirty (i.e. $n \geq 30$) and also greater than the numbers of constructs being measured (Leech, 2008).

4.8.4. Social Desirability Bias (SDB)

A significant problem with CSR, environmental responsibility and corporate citizenship research is Social Desirability Bias (SDB). This represents the tendency of individuals to present themselves favourably with respect to current social norms and standards (Zerbe and Paulhus, 1987). Considered to be one of the most common and pervasive sources of bias affecting the validity of survey research (King and

Bruner, 2000; Sharfman, 1996), this is of particular importance to studies which involve self-reports of socially sensitive issues (King and Bruner, 2000). Respondents may under report socially undesirable characteristics and over report socially desirable characteristics putting themselves in a more socially acceptable position (Myung-Soo, 2000). For example, Louie and Obermiller (2000) argue that people tend to overstate the amount of money they donate to charity. Ganster (1983) developed three models for the effects of SDB. Firstly, SDB can act as an unmeasured variable that produces spurious correlations between study variables. This could occur, for example, if SDB was correlated with both the independent and dependent variables of interest. An observed correlation between the independent and dependent variables might be due to their shared variance to SDB and not due to shared variance in the constructs.

Secondly, SDB can act as a superior variable that hides relationships. That is, a real correlation between independent and dependent variables may go undetected because of SDB contamination in one or both measures. Lastly, SDB can act as a moderator variable that influences the relationship between two variables. To the extent that the SDB represents a source of influence which obscures measurement of the primary relationship under investigation, validity may be compromised (Malhotra, 1988). Accordingly, the possibility of SDB should be evaluated in all studies that include socially sensitive constructs (Myung-Soo, 2000).

SDB has not been adequately accounted for in ethical research. Randall and Gibson (1990) revealed that only one of ninety-six studies from 1960 to 1990 studying ethics through survey research attempted to assess the impact of SDB. According to Fisher

(2000) the most significant barrier to both testing and evaluating SDB effects is the complexity of the phenomenon. Saunders (2009) describes SDB as a multidimensional construct comprising of two components: self-deception and impression management. Self-deception refers to the unconscious tendency to see oneself in a favourable light. It is manifested in socially desirable, positively biased self-deception that the individual actually believes to be true. In contrast, impression management represents conscious mispresentation of data, such as deliberately falsifying test responses to create a favourable impression (Saunders, 2009) According to Saunders (2009) self-deception is a relatively invariant personality trait and thus should not be considered a contamination per se, whereas impression management is the culprit in confounding research data.

Various methods have been employed in an attempt to eliminate SDB. Firstly, some of the questions are stated indirectly. The indirect questioning has been employed to reduce systematic errors associated with the survey of this nature. Fisher (1993) opined that indirect (i.e. structured projective) questioning has been employed frequently in social sciences to reduce SDA, that is, systematic error in self-report measures resulting from the desire of respondents to avoid embarrassment and project a favourable image to others. Nederhof (1985) has suggested that scale items may individually contain elements of social desirability and hence elicit a socially desirable response regardless of whether the respondent has a prevailing tendency to respond in such a fashion. In other words, the phrasing of a questionnaire item may cue subjects to the expectations of the researcher, creating a demand effect (King and Bruner, 2000). Avoidance of this may reduce SDB.

Previous research has convincingly demonstrated that observed levels of socially desirable responding vary with level of anonymity (Randall and Fernanches, 1991). The more anonymity, the less socially desirability responding is detected (Saunders, 2009). Electronic mail surveys contain more anonymity than telephone or face to face interviews and therefore less SDB (Nerderhof, 1985; Bryman, 2011). In this researcher, the main survey was administered with the aid of online facility known as Kwik Survey.

It has also been argued that computer administration of questionnaires containing sensitive items may reduce SDB as it might offer greater anonymity and might be perceived as impersonal and non-judgemental (Martin and Nagao, 1989). Online questionnaires can control the respondent's ability to preview, review or skip items (Lautenschlager and Flaherty, 1989). Martin and Nagao (1989) assessing different data collection methods report that SDB is most prevalent in face to face interviews and least prevalent in computer administered questionnaires. However, Lautenschlager and Flaherty (1989) found greater levels of impression management in computer administered questionnaires rather than mail surveys. Each of these techniques has been employed in the current research study in order to minimise social desirability bias.

4.9. Summary

The objective of this chapter was to describe and discuss the philosophy as well as the methodology used to test the hypotheses presented in the study. In the chapter,

the use of quantitative methodology was justified. The chapter forge ahead to describe the causal and survey research methods used in testing the research hypotheses. The data collection methods and measurement approaches for all the constructs/variables have been discussed. It also discussed the reliability and validity of the measuring scales used.

CHAPTER FIVE: DATA ANALYSES AND RESULTS

5.1. Introduction

This chapter discusses the methods of data analyses and the empirical results. It seeks to achieve five main objectives. First, to investigate whether corporate environmental responsibility is positively related to profit level, as measured by return on equity (ROE). In this regard, estimated Ordinary Least Square (OLS) multiple regression is carried out to investigate if corporate environmental responsibility variables (i.e. environmental impact score-EIS, green policies scores-GPS and environmental reputation-RS) are predictors of profit. Second, to investigate whether corporate environmental responsibility is positively related to firm value, this is measured by market-to-book value (MB). Also, the estimated multiple regression is used to determine whether corporate environmental responsibility variables are predictors of firm value in the extractive sector. Third, to compare the strength of the relationship between corporate environmental responsibility and financial performance indicators (i.e. ROE and M/B) in both S&P 500 and extractive sector. This is achieved by carrying out another multiple regression analysis for S&P 500, and thereafter compares the results for both extractive sector and S&P 500. Fourth, the chapter looks at the correlation between environmental attitude of managers in extractive sector and the corporate reputation of their companies; this is investigated with the aid of Pearson's correlation coefficient and general linear model (GLM). Finally, an attempt is made to know if environmental attitude varies along with management position in the extractive

sector with the aid of one-way analysis of variances (ANOVA). The rest of the chapter describes the data analysis techniques which include multiple regression, Pearson correlation, ANOVA, GLM and descriptive statistics. The underlying assumptions for the parametric statistics (i.e. OLS, Pearson correlation GLM and ANOVA) are equally explained.

5.2. Data analysis technique and results for H_1, H_2 and H_3

The method of data analysis used to test H_1 H_2 and H_3 is a parametric statistical tool called ordinary least square (OLS) or multiple regression. In a simple explanation, regression analysis involves finding the best straight line relationship to explain how the variation in an outcome (or dependent) variable, Y, depends on the variation in a predictor (or independent or explanatory) variable, X (Gujarati, 2003). In many situations an outcome will depend on more than one explanatory variable. This, however, leads to multiple regression, in which the dependent variable is predicted by a linear combination of the possible explanatory variables (Leech et al, 2008). In H_1, H_2 and H_3 there are multiple independent variables, hence, the use of multiple regression for data analysis. Effective use of multiple regression requires satisfaction of basic OLS assumptions that have been set out in sections 5.2.1 and 5.2.2.

5.2.1. Test of OLS Assumptions

For the regression equations stated in the study to be regarded as unbiased, consistent, and efficient, the OLS assumptions must be satisfied. The assumption checks include normality, homoscedasticity and independence of dependent variable, linearity between dependent variable and explanatory variables, multicollinearity among independent variables, and autocorrelation between residuals.

In using the regression, it is assumed that the variables are normally distributed. This means that the sample size is large enough and representative of the population with most observations having value in the midrange with smaller observations with high and low scores (i.e. smaller outliers). Normality is the most fundamental assumption in multivariate statistics (Tabachnick and Fidell, 2000; Berry and Feldman, 1985). If the variation from the normal distribution is sufficiently large, all resulting statistical tests are invalid. In the current study, normality variables were assessed by both descriptive diagram (histogram and normal probability plot) and descriptive statistics (skewness and kurtosis). The normality plot (or so called Q-Q plot) is a statistical technique that makes assessing the normality easier than others (Field, 2009). It shows observed values and the values that are expected if the data are normally distributed. The points should cluster around a straight line if the data are normally distributed. It is recommended that visual assessment of normal probability plots is more appropriate for larger sample sizes (Hair et al., 2006). Through visual inspection, the distribution of values clustered around the straight line becomes more visible, but no adjustment such as transformation of the data was done at this stage.

The other methods used included skewness and kurtosis. Kurtosis is the 'peakedness' or the 'flatness' measure of the distribution compared to the normal distribution (Hair et al., 2006). For a normal distribution, the value of the kurtosis statistic is zero. Distributions that are taller or more peaked than the normal distribution are termed leptokurtic, while a distribution that is flatter is termed platykurtic (Hair et al., 2006). Skewness is a measure of the asymmetry of a distribution that is used to describe the balance of the distribution. The normal distribution is symmetrical and has a skewness value of zero (Curran et al., 1996). A positive skewness denotes a distribution shifted to the left, whereas a negative skewness indicates a shift to the right (Hair et al., 2006). To test for normality, the study employed the use of skewness which shows that all our interest variables are normally distributed (Table 5.2). The rule in measure of normality is skewness and kurtosis value at below the threshold of 3 and 10 respectively (Kline, 1998).

It is important to confirm that variables are related in a linear fashion. A linear relationship exists between two variables if, when you plot their values on a coordinate system, you get a straight line, or values that would "average out" to be a straight line (Field, 2009). For instance, in this study, the researcher assumes that environmental responsibility causes financial performance to change; therefore there is a linear relationship. The multiple regression can only accurately estimate the relationship between dependent and independent variables if the relationships are linear in nature (Leech et al., 2008). In a situation whereby the relationship between independent variables and the dependent variable is not linear, the results of the regression analysis will under-estimate the true relationship (Berry and Feldman, 1985). The risk associated with underestimation is that null hypothesis can be

accepted instead of being rejected and vice versa (i.e. risk of either Type I or Type II error) (Cohen and Cohen, 1983). A type I error, also known as a false positive, occurs when a statistical test rejects a true null hypothesis (H_0), while a type II error, also known as a false negative, occurs when the test fails to reject a false null hypothesis (Bowerman et al., 2009). The linearity assumption was checked and both equations satisfied the assumption considering F statistic significant at 5% and 1% level respectively (see Table 5.5).

Homoscedasticity means that the variance of errors or residuals is the same across all levels of the independent variables. When the variance of errors differs at different values of the independent variable, heteroscedasticity is indicated. The presence of unequal variances (heteroscedasticity) can also create problems for multivariate analysis (Hair et al., 2006). Berry and Feldman (1985) and Tabachnick and Fidell (1996) are of the opinion that slight heteroscedasticity has little effect on significance tests; however, when heteroscedasticity is marked it can lead to serious distortion of findings and seriously weaken the analysis thus increasing the possibility of a Type I error. The study did not detect any sign of homoscedasticity and autocorrelation in both model 1 and 2 after conducting Durbin–Watson d test with reported value close to 2 in models 1 and 2 (see Table 5.5)

Collinearity or multicollinearity is an undesirable situation where the correlations among the independent variables are strong. In some cases the model may fit the data well (high F-Test), even though none of the independent or explanatory variables has a statistically significant impact on explaining the dependent variable (Gujarati, 2006). This may be possible when two independent variables are highly

correlated; they both convey essentially the same information. Both GPS and RS are positively correlated and statistically significant at 1% level for both equations (see Table 5.3). This is a sign of multicollinearity, but the tolerance statistic was close to 1 and VIF statistic below the value of 10 (Table 5.4) across all the variables which implies non-existence of severe multicollinearity problem (Gujarati, 2003). According to Gujarati (2003), a tolerance statistic close to one means that there is little multicollinearity, where as a value close to zero suggests that multicollinearity may be a threat. Also, VIF statistics below value of 10 imply the non-existence of severe multicollinearity problem. The significant correlation between control variables and some of the interest variables (Table 5.3) may suggest collinearity but this cannot create model misspecification since this is not between the interest variables, despite that the control variables have tolerance statistics close to 1 (Table 5.4) which is an indication that there is no multicollinearity problem.

Table 5.1: OLS Assumption Check summary

Criteria	Approach
Normality	The normality in the equations is achieved with the aid of skewness test which shows values below 3.
Heteroscedasticity	Use of Durbin-Watson (DW) statistic with reported value close to 2 in both regression equations. Therefore disturbance term have consistent standard error and covariance (i.e. the two regression equations are homoscedastic).
Autocorrelation	Use of Durbin-Watson (DW) statistic with reported value close to 2 in both regression equations.
Multicollinearity	The use of collinearity diagnostic in the linear regression statistics show that the tolerance value for all the independent variables are greater than 0.1 and less than 1; while VIF values are below value of 10 in both equations being estimated. This suggests absence of multicollinearity problem.
Linearity	The linearity in the equations was checked with the aid of F statistic significant at 5% and 1% level for both model s1 and 2

Source: Developed by the author for current study

5.2.2. Descriptive statistics and Pearson's correlation matrix

In this section, descriptive statistics are used to test the bivariate relationships by comparing the mean for each variable. The results of descriptive statistics and Pearson's correlation matrix are reported in Tables 5.2 and 5.3 respectively. Table 5.2 illustrates the findings of the descriptive statistics of minimum, maximum, mean and standard deviation. The test of normality by measure of skewness on column six in Table 5.2 shows that nearly all our interest variables are normal. The exception is RS which is a little above the threshold of +/- 1. Also one of the control variables – MARKET is considered skewed; this is understandably due to wide disparity in the stock index across the S&P 500.

In Table 5.3, both GPS and RS are positively correlated and statistically significant at 1% level. This is a sign of collinearity, but tolerance statistic in Table 5.4 is close to 1 therefore the level of multicollinearity is acceptable. According to Gujarati (2003), tolerance statistic close to one means that there is little multicollinearity, therefore this will not give rise to dropping of either of the two variables from our model.

Equally, all the intervening variables (COMPANYSIZE, LEVERAGE and MARKET) are significantly correlated to EIS and RS. This does not create model misspecification since the variables are not our interest variables and their tolerance statistics are close to the value of 1, as shown in Table 5.4.

Table 5.2. Summary of descriptive statistics

Independent & control variables	Minimum	Maximum	Mean	Standard Deviation	Skewness
EIS	0.2	78.9	22.991	16.598	0.837
GPS	4.59	72.35	39.298	14.911	0.296
RS	8.86	94.30	36.630	11.14	1.254
COY.SIZE	3.00	6.19	4.185	0.624	0.632
LEVERAGE	0.00	0.748	0.369	0.153	0.0290
MARKET	0.0172	4.550	0.652	1.212	2.092

Table 5.3: Summary of Pearson's correlation matrix for the variables

Variables	EIS	GPS	RS	COY. SIZE	LEVERAGE	MARKET
EIS	1					
GPS	-0.076	1				
RS	-0.128	0.338***	1			
COY.SIZE	0.341***	-0.093	-0.237**	1		
LEVERAGE	0.358***	-0.148	-0.30***	0.116	1	
MARKET	-0.251***	0.048	0.292***	-0.156	-0.136	1

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

Table 5.4. Summary of collinearity statistics

Independent & control variables	Tolerance Statistic	VIF Statistics
EIS	0.729	1.372
GPS	0.853	1.172
RS	0.704	1.420
COY.SIZE	0.762	1.313
LEVERAGE	0.775	1.290
MARKET	0.853	1.172

5.2.3. Estimation results of H_1 H_2 and H_3

The results of H_1, H_2 and H_3 are as stated below:

H_1: corporate environmental responsibility will be positively related to profit level in the extractive sector.

The result for H_1 as stated in Table 5.5 below shows a goodness of fit of the model considering F-value which is statistically significant at the 10% level. The result shows that COMPANYSIZE and MARKET significantly account for profit with an insignificant impact created by one of our interest variables (i.e. EIS). The insignificant positive relationship exhibited by EIS is a promising sign that good CER may be one of the determinants of profit in the extractive sector in the near future. Therefore, H_1 is rejected on the ground that there is no relationship between our interest variables (EIS, GPS and RS) and profit level (ROE). Corporate environmental responsibility is not positively related to profit level

H_2: corporate environmental responsibility will be positively related to firm value in the extractive sector.

The H_2 result in Table 5.5 below shows a more robust form, considering F-value is statistically significant at the 1% level and R Square of 0.354 which demonstrates a stronger expression of measure of the fitness of model 2 when compared to model 1. The multiple regression results show that all our interest variables which include EIS, GPS and RS are not the determinant of firm value. Although, RS shows a right sign considering its positive coefficient but not in the right magnitude, however, this is an indication that an extractive firm's environmental reputation may likely be one

of the determinants of its market value in the nearest future. The determinants of firm value are COMPANYSIZE and LEVERAGE, which are statistically significant at 5% and 1% levels respectively. Therefore, H_2 is rejected on account of there being no relationship between our interest variables and the firm value (M/B) in the extractive sector. Corporate environmental responsibility is not positively related to firm value.

Table 5.5: Summary of multiple regression results for H_1 and H_2

	H_1 (ROE)		**H_2 (M/B)**	
Variable	**Regression Coefficient**	**t-ratio**	**Regression Coefficient**	**t-ratio**
Constant (α)	0.002	0.013	-2.783	-5.023
EIS	0.186	1.616	-0.016	-0.165
GPS	-0.172	-1.620	-0.217	-0.611
RS	-0.107	-0.917	0.014	0.137
COMPANYSIZE	0.208	1.847*****	0.304	3.183******
LEVERAGE	0.076	-0.683	0.506	5.349*******
MARKET	0.271	2.556******	0.074	0.817
R- Square	0.405		0.629	
Adjusted R Sq	0.164		0.396	
F statistic	2.844******		9.490*******	
Durbin-Watson	1.912		1.532	
No of observations	101		101	

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

H_3: The extractive sector exhibits a stronger CER-FP link than the entire S&P 500.

The results in Table 5.6 below show that in S&P 500, RS (one of the three interest variables) is a good predictor of profit considering its significance at 5% level and both COMPANYSIZE and LEVERAGE are statistically significant at 1% level. Therefore, CER partly accounted for profit in S&P 500 while this is not the case in the extractive sector. Also, the results in Table 5.6 depicts that both EIS and RS are good predictors of firm value at 10% level for both in S&P 500. As a consequence, CER significantly accounts for firm value in S&P 500, while none of the interest variables is a predictor of firm value in the extractive sector. The entire S&P 500 exhibits a stronger relationship between corporate environmental responsibility and financial performance than the extractive companies. Therefore, H_3 is rejected, considering that green reputation score (RS) is a significant variable that accounted for profit level (ROE) while both environmental impact score (EIS) and green reputation score (RS) are significant determinants of firm value (M/B) in S&P 500 as against a neutral relationship shown by extractive sector.

Table 5.6: Summary of the multiple regression results for the entire S&P 500

	ROE		M/B	
Variable	**Regression Coefficient**	**t-ratio**	**Regression Coefficient**	**t-ratio**
Constant (α)	1.377	9.457***	3.604	5.660***
EIS	-0.049	-0.976	0.083	1.771*
GPS	0.036	0.643	0.055	1.054
RS	0.125	2.116**	0.143	2.612*
COMPANYSIZE	0.370	6.865***	-0.331	-6.042***
LEVERAGE	0.250	6.771***	0.380	7.474***
MARKET	-0.405	-5.074***	0.049	1.059

R- Square	0.243	0.345
Adjusted R Square	0.229	0.333
F statistic	16.914***	27.782***
No of observations	498	498

* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level. Note:

Note: The regression results summarised in Table 5.6 is for S&P 500 and this is for the purpose of comparison with the study results for H_1 and H_2 in Table 5.4. Precisely, the study is trying to compare the results between the sample (which is constituted by 101 extractive companies in S&P 500) and the study population (which is 500 companies on S&P 500).

5.3. Data analysis techniques and results for H_4 and H_5

This section provides a description of the data analysis techniques, along with details of the reliability and validity tests. The estimation results for both hypotheses four and five are equally explained.

5.3.1. Data analysis Techniques

To testH_4 andH_5, the study relies on use of another set of parametric statistical tools, these include, Pearson correlation coefficient, general linear model (GLM) and one-way analysis of variance (ANOVA). Pearson Product Moment Correlation [r], is also known as Pearson correlation, is a bi-variate parametric statistic used when both variables are approximately normally distributed. Correlation is a statistic used to assess the association or relationship between two variables; it answers the question of whether there is relationship and magnitude but does not give information relating to causality. Pearson correlation can easily be used to test H_4 which proposes that

there is a relationship between environmental attitude and corporate reputation. This test will confirm if environmental attitude is a predictor of corporate reputation and vice versa.

GLM is one of the most appropriate parametric statistical tools when the dependent variable is a continuous or scale data and the independent variable is a scale or categorical data (Leech et al., 2008). GLM predicts one variable (called the dependent variable) from one or more other variables (usually called independent or explanatory variables). The GLM is one of the most important tools in the statistical analysis of data. It represents a major achievement in the advancement of social research in the twentieth century (Williams, 2006). It is the foundation for the t-test, Analysis of Variance (ANOVA), Analysis of Covariance (ANCOVA), regression analysis, and many of the multivariate methods including factor analysis, cluster analysis, multidimensional scaling, discriminant function analysis, canonical correlation, and others (Williams, 2006). For the purpose of this study, GLM is used to complement Pearson Correlation in testing H_4.

The analysis of variance (ANOVA) is a type of inferential statistic that answers many research questions focusing on whether there is a significant difference between two or more groups or conditions (Leech et al., 2008). When a group comparison or difference question is asked, the independent variable and design can be classified as between-groups or within-subjects (Leech et al., 2008). For instance, application of ANOVA fits perfectly into this study's H_5 which proposes that there is a difference in environmental attitude between three managerial cadres in the extractive sector (i.e. manager, senior manager and executive management). This is

called one-way or singe-factor ANOVA designs; the independent variable 'managerial position' has three levels; therefore, it is a one-way between-group design with three levels. Basically one-way ANOVA looks at differences between the groups and this is the simplest version of ANOVA. Other types include one-way repeated measures, two-way ANOVA, two-way repeated measures. ANOVA can either be parametric or non-parametric statistics depending if the data it is used on are either scale or ordinal. Where the data are scale data, ANOVA is a parametric tool when the data are ordinal or ranked; they become non-parametric statistics (Leech et al., 2008).

The use of parametric statistics like correlation, GLM and ANOVA requires that a normality assumption must be tested; which means both variables (i.e. environmental attitude and corporate reputation) must be approximately normally distributed. A univariate normality test was conducted with the aid of descriptive statistics summarised in Table 5.7 below. This reported a skewness of 0.14 and 0.88 for both environmental attitude and corporate reputation respectively and kurtosis of 0.6 and 1.4 for both respectively. According to Hair et al (2006) and Tabachnick and Fidell (1996) univariate normality can be detected by investigating the skewness and kurtosis of each variable. Kline (1998) believes that if skewness is greater than 3, it indicates that it is 'extremely skewed' and if the kurtosis is greater than 10.0 then it indicates a problem. Therefore both variables are normally distributed and fit for application of correlation analysis.

Table 5.8: Descriptive statistics for measuring scale items for EA and CP

Scale items	N Statistic	Mean	Std Deviation	Skewness		Kurtosis	
				Statistic	Std Error	statistics	Std Error
EA01	275	4.2000	.58572	-.066	.147	-.343	.293
EA02	275	4.3091	.73675	-1.664	.147	5.463	.293
EA03	275	4.2000	.84144	-1.133	.147	1.915	.293
EA04	275	3.9091	.88112	-.789	.147	.872	.293
EA05	275	3.7636	1.08007	-.831	.147	.305	.293
EA06	270	3.6481	.94765	-.564	.148	.506	.295
EA07	275	3.9455	.75014	-.694	.147	.676	.293
EA08	275	3.6909	.99033	-.824	.147	.416	.293
EA09	275	3.8182	.85630	-.695	.147	.877	.293
EA10	275	3.4182	1.14131	-.427	.147	-.502	.293
EA11	270	3.2963	1.25887	-.293	.148	-.872	.295
EA12	275	4.4182	.80353	-1.326	.147	1.118	.293
EA13	270	3.6296	.88977	-.477	.148	.222	.295
EA14	270	3.8889	.93798	-.457	.148	-.688	.295
EA15	275	3.3818	.94543	-.569	.147	-.116	.293
EA16	275	3.9091	.88112	-.789	.147	.872	.293
EA17	275	3.7636	1.08007	-.831	.147	.305	.293
EA18	270	3.6481	.94765	-.564	.148	.506	.295
EA19	275	3.9455	.75014	-.694	.147	.676	.293
EA20	275	3.6909	.99033	-.824	.147	.416	.293
EA21	275	3.8182	.85630	-.695	.147	.877	.293
CR01	275	4.2182	.75674	-1.405	.147	4.123	.293
CR02	275	4.2545	.72036	-.719	.147	.264	.293
CR03	275	4.2182	.78049	-1.331	.147	3.420	.293
CR04	275	4.2000	.88375	-1.202	.147	1.698	.293
CR05	270	4.0370	.90359	-.987	.148	1.112	.295
CR06	275	4.3273	.76546	-1.125	.147	1.132	.293
CR07	275	4.1455	.64554	-.146	.147	-.636	.293
CR08	270	4.0556	.73208	-.373	.148	-.241	.295

CR09	275	4.1818	.83471	-.922	.147	.408	.293
CR10	270	4.1667	.71495	-.564	.148	.146	.295
CR11	275	4.2000	.74970	-.869	.147	.832	.293
CR12	275	4.0364	.71388	-1.266	.147	4.394	.293
CR13	275	4.0909	.92161	-1.450	.147	2.736	.293
CR14	275	3.8727	.91728	-.745	.147	.513	.293
CR15	270	4.1667	.71495	-.564	.148	.146	.295
CR16	265	3.5283	1.11130	-.572	.150	-.371	.298
CR17	265	3.9245	.66995	-.293	.150	.216	.298
CR18	275	4.3818	.58854	-.343	.147	-.695	.293
CR19	275	4.2000	.61609	-.151	.147	-.514	.293
CR20	275	4.0182	.72723	-.315	.147	-.271	.293
Valid N =	245						

Table 5.7: Summary of descriptive statistics for both EA and CR

Statistics	Environmental attitude	Corporate reputation
Mean	3.8200	4.1055
Median	3.8000	4.1000
Std. Deviation	.44369	.49354
Variance	.197	.244
Skewness	.144	-.880
Std. Error of Skewness	.147	.147
Kurtosis	-.613	1.432
Std. Error of Kurtosis	.293	.293
Minimum	2.90	2.50
Maximum	4.80	5.00

Valid No= 275, missing No. =0

5.3.2. Questionnaire reliability test

Reliability concerns the internal consistency of the research instrument (i.e. questionnaire) used in the measurement of the variables (Kline, 1998).Internal consistency means the indicators or items of the scale should all be measuring the same construct and highly correlated to each other (Hair et al, 2006). Cronbach's alpha coefficient is most widely used to measure the reliability of a measurement scale. A Cronbach's alpha value of 0.7 is generally agreed to be the lower limit (Hair et al, 2006)although some authors suggest an even lower limit of 0.6 (Garson 2008). A very high alpha (e.g. greater than 0.90) probably means that the items are repetitious or that there are more items in the scale than are really necessary for an internally reliable measure of the construct or concept, while lower alphas (e.g. in the 0.60-0.50 range) may mean that the items could not reasonably form a scale that could be used to measure a particular construct or concept (Leech et al., 2008).

In testing H_4 and H_5, the questionnaire was designed to measure two constructs, thus, manager's environmental attitude and corporate reputation in the extractive sector. In deciding measurement scale in a survey research design, researchers tend to choose one of three options, which are: adopt exactly the same questions developed by other researchers, modify the questions, or develop their own questions (Bourque and Clark). Bourque and Clark, (1994) suggested that existing scales has advantages over developing a new scale in terms of the reliability and validity of the questions. For the purpose of this study, the researcher developed a new scale for measuring environmental attitude while an existing measurement scale is adopted for corporate reputation.

Reliability tests were conducted on the two constructs – environmental attitude and corporate reputation and both recorded Cronbach's alpha value of 0.748 and 0.914 respectively (See Table 5.9). It was observed that corporate reputation's Cronbach's alpha of 0.914 is beyond the recommended upper limit of 0.9 (Hair et al., 2006). Leech (2008) states that a very high alpha (e.g. greater than 0.90) probably means that the items are repetitious or that there are more items in the scale than are really necessary for an internally reliable measure of the construct or concept, while lower alphas (e.g. in the 0.60-0.50 range) may mean that the items could not reasonably form a scale that could be used to measure a particular construct or concept.

In order to address this problem, a review of inter-item correlation matrix results generated by SPSS 15.0 was carried out and found that items 5 and 6, and 9 and 10, under corporate reputation are highly correlated and showing indications of repetition. Find below the items:

Item 5: My Company has excellent leadership.

Item 6: My Company has a clear vision for its future.

Item 9: My Company is a good organisation to work for.

Item 10: My Company is an organisation that would have good employees

Therefore, items 5 and 9 in section B of the questionnaire were deleted in view of the statistically observed repetition and the results subsequently show a Cronbach's alpha of 0.893 (see Table 5.10), which confirms the scale reliable and free from repetition. Furthermore, the researcher equally carried out a face reassessment of the repetitive items and found that the probability of the respondent interpreting the

questions/items as same is very high. In view of this, items 5 and 9 have been deleted from the questionnaire before final survey was carried out.

Table 5.9: Results of the reliability tests for the pilot study

Construct	Items	Correlation	Cronbach's Alpha if Item Deleted	Cronbach's alpha	Sample size N*
Environmental	EA01	.435	.731	0.748	52
attitude	EA02	.505	.740		
	EA03	.601	.729		
	EA04	.461	.757		
	EA05	.320	.748		
	EA06	.350	.756		
	EA07	.483	.724		
	EA08	.658	.718		
	EA09	.683	.710		
	EA10	.716	.709		
	EA11	.746	.722		
	EA12	.452	.754		
	EA13	.375	.744		
	EA14	.467	.727		
	EA15	.489	.737		
	EA16	.350	.736		
	EA17	.483	.724		
	EA18	.658	.718		
	EA19	.683	.710		
	EA20	.716	.709		
	EA21	.746	.722		
Corporate	CR01	.646	.912		

reputation				0.914	51
	CR02	.744	.912		
	CR03	.680	.913		
	CR04	.548	.913		
	CR05	.773	.906		
	CR06	.727	.906		
	CR07	.664	.906		
	CR08	.707	.906		
	CR09	.754	.904		
	CR10	.638	.908		
	CR11	.783	.906		
	CR12	.626	.910		
	CR13	.715	.906		
	CR14	.684	.904		
	CR15	.642	.909		
	CR16	.365	.932		
	CR17	.655	.910		
	CR18	.519	.909		
	CR19	.666	.908		
	CR20	.581	.912		

*The missing data account for difference between pilot study size (55) and N

5.3.3. Validity test

In order to confirm the validity of the research instrument, both face and construct validity tests were conducted on measurement scales for both environmental attitude and corporate reputation. Face validity refers to the extent to which a measurement scale appears to measure what it is supposed to measure (Leary, 2001). This involves

the judgment of the researcher and experienced academics which for the purpose of this study were carried out by the researcher's supervisors and senior colleagues. Construct validity is a statistical test that measures the level of correlation between items in a measurement scale (Leary, 2001).

To carry out the construct validity test for both scales, exploratory factor analysis (EFA) was conducted. The EFA was conducted with varimax rotation, aiming to reduce the set of observed variables to a smaller more parsimonious set of variables. Eigenvalues and variance explained were used to identify the number of factors to extract (Bearden et al., 1989; and Hair, et al., 2006). Items exhibiting low factor loading (< 0.30), high cross-loading (> 0.30), or low communalities (< 0.50) were candidates for deletion (Hair, et al., 2006). The remaining items were submitted to further exploratory factor analysis. In addition, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of Sphericity were conducted to see if the distribution of values was adequate for conducting factor analysis. The data were subjected to exploratory factor analysis using principal axis factoring and varimax rotation which resulted in scales items demonstrating different features (e.g. low loadings, multiple loadings, low communalities) with hypothesised factor structure or that weakened items were considered for deletion from the entire scale. After trimming items, the overall scale met the minimum acceptable standard for both reliability and validity (see Table 5.10). For each scale, factors demonstrating an Eigenvalue greater than one was extracted, as the number of factors to be extracted was set using Eigene value ≥ 1 as the main criterion (Leech, 2008).

The resultant factor analysis was examined and items that showed substantial and similar loadings on more than one factor were excluded (Hair et al., 2006). Similarly, items that demonstrated a factor loading below 0.30 were deleted unless there was a specific theoretical reason for retention. Before exploratory factor analysis, the measurements were divided into two groups, this based on the hypothesis 4. The first and second groups consisted of environmental attitude and corporate reputation respectively.

In summary the validity test procedure reported that each item of the scale for the two constructs record high loading factors (≥0.3), this shows that each item has high loadings on the same factor (i.e. each scale item is highly correlated to the constructs under consideration- Table 5.10). In addition Kaiser-Meyer-Olkin (KMO) statistics are greater than 0.70 for the two scales, indicating sufficient items or questions for each scale. The Bartlett's statistics are statistically significant at 1% level for the two scales, it means that a fairly large set of items "hang together", that is, the items that constitute the measurement scales are correlated and measuring the same construct (Leech, 2008).

Table 5.10: Results of the exploratory factor analysis of the pilot study

Construct	Item	Final Loading		Communality	Cronbach's alpha	Items deleted
		1	2			
Envir. attitude	EA01	0.432		0.700	0.756	E6
	EA02	0.391		0.807		
	EA03	0.413		0.779		
	EA04	0.305		0.764		
	EA05	0.305		0.607		

	EA07		0.628	0.716		
	EA08		0.679	0.875		
	EA09		0.735	0.890		
	EA10		0.646	0.849		
	EA11		0.550	0.838		
	EA12		0.307	0.748		
	EA13		0.300	0.619		
	EA14		0.468	0.741		
	EA15		0.445	0.800		
	EA16		0.305	0.736		
	EA17		0.628	0.716		
	EA18		0.679	0.875		
	EA19		0.735	0.890		
	EA20		0.646	0.849		
	EA21		0.550	0.838		
Corp. reputation	CR01	0.621		0.848	0.893	CR5
	CR02	0.421		0.855		CR9
	CR03	0.590		0.896		
	CR04	0.608		0.753		
	CR06	0.680		0.767		
	CR07	0.647		0.727		
	CR08	0.630		0.732		
	CR10	0.748		0.789		
	CR11	0.694		0.838		
	CR12	0.695		0.851		
	CR13	0.794		0.900		
	CR14	0.787		0.779		
	CR15	0.494		0.718		
	CR16	0.305		0.708		
	CR17	0.552		0.814		

	CR18	0.724	0.781
	CR19	0.700	0.793
	CR20	0.420	0.706
Eigenvalues		7.621	3.539
% of variance		23.81	11.06
KMO = 0.721			
Barlettstest	p<0.05		

Table 5.11: Summary of item purification process

Construct	**Item dropped**	**Reasons for dropping item**
Corporate reputation	CP05	Highly correlated to CP06, which implies repetition
	CP09	Highly correlated to CP10, which implies repetition
Environmental attitude	EA06	Highly cross loaded on CR factor and this cannot be justified conceptually.

5.3.4. Demographic characteristics of the sample

The sample demographics are summarised in Table 5.12. The number of male respondents was higher than for females (75% versus 25%). This suggests that the management cadre in the extractive sector is male dominated and may not be a surprise outcome considering male dominance in the technical and engineering fields. In terms of the age profile the respondents across different age brackets are not evenly spread across 16-24 (4%), 25-34 (48%), 35-44 (35%), 45-55 (13%) and over 55 age groups (0%). All respondents are from the extractive sector which is made up of the oil, gas, mining and metal industries. All the respondents are of managerial grades with managers (64%), senior managers (18%) and executive managements (18%). In most surveys of this nature the senior managers and

executive personnel often delegate to the junior managers to provide the responses to questionnaires, and this might account for the high number of managers compared with other cadres. Another factor is that an organisation's hierarchical structure is like a triangle; the higher you go the lower the number of employees. The respondents' level of education which includes secondary (2%), tertiary (51%) and post graduate (48%) does not pose any surprise because the recruitment entry point for the level below manager in the extractive sector is higher institution degrees ranging from Diploma, first degree and post-graduate.

Table 5.12: Summary of respondents' demographic variables

Variable	Value Label	Freq. (%)	Total
Gender	Male	207(75)	275(100%)
	Female	68(25)	
Age	16-24 years	11(4)	275(100%)
	25-34 years	133(48)	
	35-44 years	95(35)	
	45-55 years	36(13)	
	Over 55 years	nil	
Industry	Oil, gas, mining or metal	275(100)	275(100%)
	Others	nil	
Position	Manager	173(64)	270(100%)
	Senior manager	48(18)	
	Executive management	49(18)	
Education	Secondary	5(2)	275(100%)
	Tertiary	139(51)	
	Post-graduate	131(48)	

5.3.5. Estimation of result for H_4

H_4: A manager's attitude towards the environment is related to his/her firm's corporate reputation

The results of correlation in Table 5.13 indicate that there is a correlation between environmental attitude of managers and the perceived corporate reputation of their respective organisations in the extractive sector considering Pearson correlation coefficient of 0.211 which is statistically significant at 1% level. In order to confirm further the relationship between the two variables, a general linear model (GLM) procedure was conducted (see Table 5.14) and found that managers' environmental attitude is a good predictor of corporate reputation considering a significant linear relationship at 1% level and R squared and adjusted R squared of 0.519 and 0.489 respectively. The H_4 is therefore accepted

Table 5.13: Result of Pearson Correlation for H4

	Correlation	Environmental attitude	Corporate Reputation
EA	Pearson Correlation	1	.211(**)
	Sig. (2-tailed)		.000
	N	275	275
CR	Pearson Correlation	.211(**)	1
	Sig. (2-tailed)	.000	
	N	275	275

** Correlation is significant at 1% level (2-tailed).

Table 5.14: Summary of general linear model (GLM) result for H_4

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	34.643(a)	16	2.165	17.403	.000
Intercept	2696.329	1	2696.329	21672.275	.000
EA	34.643	16	2.165	17.403	.000
Error	32.099	258	.124		
Total	4701.800	275			
Corrected Total	66.742	274			

R Squared = .519 (Adjusted R Squared = .489), Dependent Variable: CR

5.3.6. Estimation of results for H_5

H_5: Top level managers exhibit better environmental attitudes than the lower level managers.

The results show that there is no difference in environmental attitude irrespective of the managerial position considering statistically insignificant differences in the mean score between the three managerial levels, F (2, 267) = 0.716, p=.0.490 (see Table 5.15). In the study there are three levels of managerial position, manager, senior manager, and executive management; further review of the descriptive statistics shows that the mean score for the three different managerial levels are almost the same; the managerial position (top, middle or low) has no impact on the expected environmental attitude of a manager in the extractive sector. Therefore, H_5 is rejected because the top level managers do not exhibit better environmental attitude than other managerial levels.

Table 5.15: ANOVA results for mean difference between EA and managerial positions

Groups	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	.285	2	.142	.716	.490
Within Groups	53.134	267	.199		
Total	53.419	269			

Dependent variable= Environmental attitude (EA)

Table 5.16: Summary of results of the hypotheses tested

Hypothesis	Research method	Data analysis technique	Data source	Test result
H_1: corporate environmental responsibility will be positively related to profit level in the extractive sector.	Causal design	Multiple regression	Secondary	Rejected
H_2: corporate environmental responsibility will be positively related to firm value in the extractive sector.	Causal design	Multiple regression	Secondary	Rejected
H_3: The extractive sector exhibits a stronger CER-FP link than the entire S&P 500	Causal design	Multiple regression	Secondary	Rejected
H_4: A manager's attitude towards the environment is related to his/her firm's corporate reputation.	Survey design	Correlation and GLM	Primary: questionnaire	Accepted
H_5: Top level managers exhibit better environmental attitudes than lower level managers.	Survey design	ANOVA	Primary: questionnaire	Rejected

Source: Developed by the author for the current study

5.4. Conclusion

The results show no relationship between corporate environmental responsibility and financial performance using 101 companies classified as extractive sector companies within the S&P 500. All the environmental variables (EIS, GPS and RS) are not good predictors of financial performance (ROE and M/B). An additional step was taken to determine the link between corporate environmental responsibility and financial performance using the entire S&P 500 companies. Surprisingly, a positive relationship was reported between some variables of corporate environmental

responsibility and financial performance indicators. This immediately points to sector idiosyncrasy and other factors not considered in the thesis' model.

Within the central theme of CER, the thesis equally set out to investigate the relationship between the environmental attitudes of managers and the corporate reputation of their respective companies. The test reported a significant correlation between environmental attitude and corporate reputation of the companies in the extractive sector. The environmental attitude of managers was taken further by determining if the environmental attitude of managers at top management level is better than among the lower management cadre; the results show that there is no difference in environmental attitudes of managers irrespective of their position in the managerial cadre.

The next chapter provides detailed discussions of the study in the context of the existing literatures.

CHAPTER SIX: DISCUSSION AND FINDINGS

6.1. Introduction

The purpose of this thesis was to investigate the relationship between the corporate environmental responsibility and financial performance in the extractive sector; and results of this study were presented in the previous chapter. In this chapter, the research scenario is revisited first in order to assist the reader in contextualising the discussion. Thereafter, an in-depth discussion of the main findings of the study is conducted in accordance with the proposed hypotheses and existing studies in the area.

6.2. Research Context

The question of a possible relationship between social-environmental responsibility (SER) and financial performance (FP) has been a subject of investigation by scholars for several decades without a common conclusion (Orlitzky, 2008). Some studies purport to find a positive relationship (Coleman, 2011; Orlitzky, 2008; Rodriguez and Cruz, 2007; Salama, 2003; Judge and Douglas, 1998; Russo and Fouts, 1997; Klassen and McLaughlin, 1996; Hart and Ahuja, 1996). Similar studies find a negative relationship (Thornton et al., 2003; Cordeiro and Sarkis, 1997; Worrell et al., 1995; Williams et al., 1993). While other studies either show inconclusive results or no (neutral) effect (Makni et al., 2009; King et al., 2001; Khanna and Damon, 1999; Levy 1995; Rockness et al., 1986).

However, the review of the literature points to the factors that may be responsible for such inconclusiveness and these include, methodological shortcomings, difficulties in obtaining data and weak theory construction (Coleman, 2011, Griffin and Mahon, 1997; Wood and Jones, 1995). These shortcomings permitted the creation of a research gap for this current study which seeks to establish what, if any, relationship exists between corporate environmental responsibility and financial performance, and unravel clearly the specific causes of variability in previous studies' findings.

To embark on the empirical evaluation of the CER-FP link, the researcher sought to do things differently compared to earlier studies. Firstly, the precise measurement of corporate environmental responsibility was identified as key and was resolved by obtaining data from three renowned database organisations (MSCI formerly KLD, Trucost, and CorporateRegister.com) that provide data for the purpose of 'green ranking' of S&P500 published by the Newsweek magazine since 2009. Interestingly, no known study has ever combined data for measurement of CER or CSR /CSP from more than one source. Irrespective of the numbers of variables used to measure or proxy CER, the practice in previous studies was to obtain data from one source, e.g. KLD, Toxic Inventory Report (TRI) and so on. Secondly, the study departed from using a known larger sample sizes like S&P 500, FTSE 200 opting instead for a specific sector (i.e. the extractive sector). A specific sector became the focus in order to give the researcher the opportunity to compare the CER-FP link between the extractive sector and the entire market. It is intended by using this approach; the study is more likely to create a greater evidence base regarding the causes of variability in previous research results, and the actual relationship between corporate

environmental responsibility and financial performance. Thirdly, in order to seek corroborative evidence, further research questions were raised on the relationship between the environmental attitude of managers and corporate reputations of their companies, and to assess further whether environmental attitudes change along with the hierarchical position of managers in multinational extractive companies.

Therefore, the research investigated the following statements:

1. Corporate environmental behaviour will be positively related to the profit level in the extractive sector (Hypothesis 1).

2. Corporate environmental behaviour will be positively related to firm value in the extractive sector (Hypothesis 2).

3. The extractive sector exhibits a stronger positive relationship between corporate environmental responsibility and financial performance than the entire S&P 500 (Hypothesis 3).

4. A manager's attitude towards the environment is positively related to his/her firm's corporate reputation (Hypothesis 4).

5. Top level managers exhibit better environmental attitudes than those lower down the managerial hierarchy (Hypothesis 5).

These five hypotheses which were drawn through identifying the gaps indicated above from the literature were tested with via panel data from renowned databases and primary data gathered via a questionnaire survey instrument. The subsequent sections discuss the results and findings in-depth.

6.3. Discussion of results

All the results of the hypotheses tested will now be fully discussed with necessary reference to the literature.

6.3.1. Discussion of research hypotheses (i.e. H_1, H_2 and H_3)

The results show that there is no relationship between corporate environmental responsibility and financial performance indicators (i.e. profit level and firm value) in the extractive sector. All the interest variables (EIS, GPS, and RS) are statistically insignificant. However, the test of both H_1 and H_2 show that both EIS and RS have an insignificant positive relationship with return on investment (ROE) and market-to-book value (M/B) respectively. The insignificant positive sign shown by EIS can most likely be explained by recent efforts by the extractive companies in the area of environmental protection, while the insignificant positive sign from RS could be an indication that environmental reputation may soon be one of the determinants of firm value in the extractive sector.

The H_3 results are a major breakthrough in this study; the results show that there is a positive relationship between CER and FP in S&P 500. The first regression result for S&P 500 shows that reputation score (RS) is a strong determinant of profit (ROE) and the second regression result shows that both RS and environmental impact score (EIS) are strong determinants of firm value. This is a significant revelation considering that the study used the same data set for both the extractive sector and

S&P500 showing that environmental responsibility is positively related to profit and firm value, while in the extractive sector, corporate environmental responsibility variables are predictors of neither profit nor firm value. Previous empirical studies have provided evidence to support these outcomes

Waddock and Graves (1997) argue that different theoretical proposals on the relationship between social-environmental responsibility and financial performance offer arguments for all possibilities which include a negative, neutral or positive relationship. A negative relationship is premised on the notion that companies that behave responsibly are at a competitive disadvantage as they incur costs that they could otherwise avoid, or would pass on to other agents (for example, employees, customers or government). On the basis of this reasoning, there are few economic benefits to be gained from socially responsible behaviour, at the same time as there are many costs, thus leading to the expectation of a fall in the FP of the company (Friedman, 1970). Previous studies that find a negative relationship include Thornton et al., (2003); Cordeiro and Sarkis, (1997); Worrell et al., (1995); and Williams et al., (1993). A neutral relationship is a denial of the existence of any kind of relationship, either positive or negative, between social-environmental behaviour and FP. The authors that belong to this school (e.g. Ullman, 1985) argue that there are so many factors or variables that intervene between social-environmental behaviour and FP, that there is no reason for the existence of any relationship between the two variables, except possibly by chance, which, together with the measurement problems that have plagued SER research, may have masked any such relationship. The examples of studies that show either inconclusive results or no (neutral) effect include Makni et al., (2009); King et al., (2001); Khanna and Damon, (1999); Levy,

(1995); Rockness et al., (1986). A positive relationship, the third perspective, takes the view that there is a tension between the explicit costs of the company (for example, payments to creditors) and their costs implicit to other agents (for example, product quality costs or environmental costs). So, a company that tries to reduce its implicit costs by means of socially irresponsible acts will incur greater explicit costs, the result of a competitive disadvantage (Cornell and Shapiro, 1987). Some studies purport to find a positive relationship including, Orlitzky, (2008); Rodriguez and Cruz, (2007); Salama, (2003); Judge and Douglas, (1998); Russo and Fouts, (1997); Klassen and McLaughlin, (1996); and Hart and Ahuja, (1996).

The H_1 and H_2 results can further be supported by a review of the financial statements of the companies involved in environmental pollution events, which still showed better profit performance after the publication of environmental pollution events (Exxon 1989 audited financial statements, Occidental 1990 audited financial statements and Murphy 2005 audited financial statements), although the value of their stocks sometimes suffer a momentary slump within the few days following the announcement of the environmental pollution.

A current case in hand is the case of British Petroleum (BP) that experienced an explosion on the drilling rig (underwater well) on April 20, 2010 which then gushed oil into the Gulf of Mexico in the United States of America (US). This incident immediately resulted in BP losing about one-third of its market value approximated to be around $67 billion and consequently facing criminal investigation. It is also interesting to note that immediately BP was able to partially contain the leakage on June 3, 2010 the market responded by day-on-day increase of a small amount from

June 4, 2010 (Bloomberg.com). The clean-up costs and compensation amounts are monumental in the history of environmental degradation, leading to BP Plc recording a loss of $4.9Billion for the financial year ended 2010 (BP Plc, 2010). This is a one-off case and may likely be the turning point from where CER-FP link may be positive in the nearest future. As at the time of writing up this thesis, BP has paid close to $10 billion to individuals and businesses as compensation amount and clean-up cost. The total cost of the spill is estimated to be in region of $40 billion (Rowley, 2012).

6.3.2. Discussion of research statements four and five (i.e. H_4 and H_5)

In H_4, the strength of the relationship between a manager's environmental attitudes and perceived corporate reputation of his/her company was positive with a correlation of 0.211 and statistically significant at 1% level. In addition to other known variables that determine corporate reputation (such as belief, feelings and stakeholders' impression), environmental attitude has emerged in this study as a significant predictor of corporate reputation. The H_4 outcome can be supported by Davies et al. (2003); they state that the reputation of many firms is driven by the way customer facing employees perceive the organisation. Employees need to adopt certain attitudes and behaviours in order to become a corporate ambassador who safeguards corporate reputation and spreads goodwill in support of the firm (Fisher-Buttinger and Vallaster, 2008). In furtherance to how employees contribute to corporate reputation, Helm (2010) states that employees can directly or indirectly,

voluntarily or involuntarily, affect reputation by any act that is transmitted to, and communicated by, external audiences who evaluate corporate conduct.

This result has broken a new ground in academia, because to the best of researcher's knowledge, it is the first time environmental attitude as a construct will be correlated to corporate reputation. This claim can be supported with the concerns expressed by some authors who remarked that despite the widespread agreement that employees are very important for reputation building the literature remains imprecise about how employees perceive this role (Helm, 2010, Dowling, 2001; Harris and de Chernatony, 2001). In recent study conducted by Helm (2010), he found a positive relationship between employees' pride and perceived corporate reputation, and employees' job satisfaction and perceived corporate reputation. The employees' are both normative and strategic stakeholders and their perception of a link between their environmental attitudes and the corporate reputation of their companies is crucial for the direction of corporate environmental and reputation management.

Although, H_4 shows that there is relationship between environmental attitude and corporate reputation in the extractive sector, the study advanced to test (H_5) top managers' personal ecological world view by investigating differences in the level of environmental attitudes displayed across three managerial hierarchies (which were proposed to be 'manager', 'senior manager' and 'executive management') and to the researcher's surprise there was no difference in environmental attitude across the three managerial levels. This result is a deviation from previous studies that have found that responsible environmental attitude and behaviour improves along with movement up the income and managerial hierarchy (Cottrell 2003; Scot and Willits

1991; Hines, 1985). In addition to this, many literatures have indicated that socio-demographic variables are consistently used as predictors of both environmental behaviour and attitude. Age, income, education, and political ideology have shown to be predictors or correlates of responsible environmental behaviour (Cottrell 2003; McGuire, 1992; Scot and Willits 1991; Ostman and Parker, 1987; Hines, 1985).

Age: Honnold (1984) studied cohort group differences in environmental concern, and found decreased levels of environmental concern in almost all age groups since the 1970s. ***Education***: using education as an entry-level variable, education has been put to a good use as a predictor of environmental knowledge and subsequent behaviour (Ostman and Parker, 1987). From the examination of the effect of education on environmental knowledge, Ostman and Parker (1987) established significant relationships between education and environmental awareness, environmental knowledge, and subsequent behaviours. To support this, Van Liere and Dunlap (1980) stated that education is positively related to environmental knowledge. Scott and Willits (1991) found that respondents with more years of formal schooling have a higher incidence of pro-environmental behaviour than did less educated and lower income respondents. ***Income***: in a study of predictors of responsible environmental behaviour, Hines (1985) found that the relationship between income and responsible environmental behaviour was slightly weaker than between education and responsible environmental behaviour. Scott and Willits (1991) found that income was positively related to pro-environmental behaviour reported among Pennsylvania residents, showing that the more well-to-do financially were more disposed to participate in pro-environmental behaviour. Van Liere and Dunlap (1980) argued that concern for environmental quality is something of a

luxury which can be encouraged only after more basic material needs (adequate food, shelter, and economic security) are met. Therefore, income level is a good predictor of responsible environmental attitude. ***Political ideology:*** many previous studies have found political ideology (e.g. political stand e.g. liberalism or conservatism) to be significantly related to environmental concern. Some studies have reported that liberals have higher environmental concern than conservatives (Dunlap and Van Liere, 1984; McGuire and Walsh, 1992; Samdahl and Robertson, 1989; Scott & Willits, 1991). Samdahl and Robertson (1989) found that pro-regulatory liberalism significantly predicted personal ecological behaviours, perception of environmental problems, and support for environmental regulations.

The H_5 result is a complete departure from the extant literatures which state that there is positive relationship between socio-demographic variables (such as age, income, gender, education, income and political ideology) and environmental attitude. In reflection, the researcher is of the view that there is fluidity in demarcation between manager, senior manager and executive manager positions. This may likely suggest inaccurate classification by respondents when responding to the questionnaire. Therefore, it is the researcher's conclusion that H_5 is not viable in this thesis and may not necessarily be a true reflection of the real life situation. The validation of the hypothesis may need further supportive evidence from hypothesis based on income, age and a semi-structured interview which this study did not envisage from the onset

6.4. Findings

The study's findings can be ascribed two interpretations; these include theoretical interpretations and the sector characteristics. The theoretical interpretation is based on the theoretical review in chapter three of this study and is subsequently refined to provide a more macro-economic interpretation in the form of extractive sector's market structure and characteristics.

6.4.1. Theoretical interpretation

The study's theoretical interpretations have been based on three theoretical grounds critically reviewed in chapter three. These theories include the theory of the firm, stakeholder theory and triple bottom line (TBL).

The study shows that there is no relationship between CER and FP in the extractive sector. Firstly, this result can be justified using the theory of the firm which has been critically presented in chapter 3 section 3.4. The theory of the firm states that every CER activity must have an economic motive. Any CER activity that would not result in either financial (e.g. profit increase and cost reduction) or non-financial (e.g. reputation boost, brand expansion and competitive advantage) gain is not worth pursuing. Considering the nature and characteristics of the extractive sector which is a near monopoly, the motivation to embark on CER is mostly not present. Under a monopoly condition, there is no need to strive for a competitive advantage since competition is non-existent, branding is not necessary since there are few companies

with aggregate supply less than demand. Almost all the attractions for CER are not in demand by the sector; owing to the unique nature of the sector. Therefore, CER may be seen as not adding any financial gain to the sector. The companies in the sector only respond to environmental practices that result in immediate cost minimisation and profit maximisation. This is well manifested in the politics of gas flaring in the oil and gas industry. These gases flared into the air can actually be converted into both domestic and industrial gases by additional investment, but these companies prefer to pay a penalty on each cubic meter of gas flared rather than commit long-term investment in gas production (GGFRP and World Bank, 2008). The sector considers investment in conversion of gases flared as risky and possibly leading to loss of funds; therefore, the impact of these gaseous releases on biodiversity is not a priority. The prevalence of unethical behaviours ranging from financial scandals to environmental abuses in the extractive sector may compromise CER activities and yet financial performance may not necessarily be affected. According to Transparency International, the oil and gas sector is perceived as third most likely to involve bribes, following only public works contracts and arms deals; while mining ranks seventh (World Bank, 2005). The extractive sector is equally likely to have greater environmental impacts than other sectors because of toxic chemicals that are often used in minerals separation and noxious gaseous substances like carbon dioxide, methane and several others (Azapagic, 2004). This means the sector is inevitably beset with ethical grey areas and presents some of the highest risks to the environmental integrity of the planet. One of this manifested in the case of the Movement for the Survival of Ogoni People (MOSOP) agitation against the degradation of their lands by Shell. The agitation led to state execution of Ken Saro-Wiwa and eight other leaders of MOSOP in 1995 and Shell was implicated in the

execution. This generated world-wide condemnation and calls for boycott of Shell products across the world. This has been seen as is a major infringement on the company's host community; when a tenant surreptitiously influences the execution of its landlords. This resulted in payment of out of court settlement of $15.5million by Shell to the families of the executed Ogoni leaders in 2009 (Pilkington, 2009). Despite, the protests in 1995, these actions never affected the post-event growth in profits trend of Shell in 1996 and 1997. The theory of the firm has its root in Friedman's (1970) famous classical view of business objectives which states that the sole reason for a firm's existence is to maximise the wealth of the shareholders, and that any act of philanthropy equates to stealing from the shareholders' wealth; this philosophy is well embraced in the extractive sector. The extractive sector is considered a very high risk sector in terms of operation and investment (World Bank, 2005). Therefore, the exploration and exploitation of natural resources in the sector is often geared towards recovery of the investors' huge investment and to post the highest possible profit. This is often linked to the finance philosophy of 'the higher the risk, the higher the return'.

Why CER is not a predictor of financial performance in the sector can also be understood from stakeholder theory which is presented in section 3.5 of Chapter 3. Stakeholder theory takes the view that beyond shareholders' interest, there are other groups with different genuine claims on the business (Freeman, 1984). Many studies have shown that stakeholder management has a positive relationship with the financial success of the corporation (Hillman and Keim, 2001; Jones, 1995; Clarkson, 1995). The results of this study reveal that concern for stakeholders may be of low priority since so called strategic or instrumental stakeholders such as

consumers have little or no power under such a near monopoly market structure. Under a monopoly, the seller or supplier has the market power. The major tool of boycott often exercised by consumers in other sectors and which may operate effectively in a state of perfect competition might not be effective if applied to the extractive sector, because of insufficient or unavailable close substitutes for the sector's products, and a situation where demand often outweighs supply. Stakeholders can also become disempowered through unethical conduct by strategic stakeholders e.g. governments in host countries who engage in bribe taking from multinational companies. One of such cases is Halliburton's subsidiary- KBR, major oil and gas servicing company that had perfected the act of bribing the governments of many of the countries in which it does business. This unethical practice came to the knowledge of the entire world in 2010 when the US Securities and Exchange Commission brought allegations of bribery and corruption against the company, who accepted to pay a fine of $177 million along with a plea bargain requiring the payment of compensation in the amount of $250milion to the Nigerian government (Gold, 2010).

Triple bottom line (TBL) reporting (explained in section 3.6 Chapter 3) can be used to support the positive correlation between manager's attitude towards the environment and perceived corporate reputation. TBL reporting involves disclosure of a company's activities across the social, environmental and economic activities. KPMG's (2011) survey of corporate responsibility reporting reveals that high impact industries such as oil and gas, mining, metal, chemicals and forestry are increasingly realising that corporate social and environmental reporting is more than just being a good corporate citizen, it drives innovation, and promotes learning,

which helps companies grow their business and increase their organisation's reputation. In view of several scandals that have made the sector a focus for unethical business concerns, in recent times the managers in the sector now strive at building a good reputation with stakeholders by publishing separate reports from their audited financial statements which are branded sustainability or corporate responsibility reports to bridge the communication gap between the sector and the legion of stakeholders. The extractive sector managers see such reporting as a medium of communication and provide some level of transparency to what organisations do with their resources beyond stockholders' wealth maximisation. The major challenge here is that propaganda about how well a company and its managers are disposed to environmental protection may be what some people term "green-wash". Therefore, the correlation between environmental attitude and perceived corporate reputation, in the context of this study, can only be interpreted as the extent to which a manager is conscious that his/her negative or positive environmental attitude may affect his/her company's reputation either negatively or positively.

The positive relationship between environmental attitude and the perceived corporate reputation in H_4 can as well be justified by the Theory of the firm which states that reputation is one of the incentives for being environmentally responsible. Corporate reputation has been empirically linked to profit maximisation; therefore, a rational manager who wants to impress the shareholders by good financial performance would likely exhibit a positive environmental attitude which would most likely reflect on the corporate image, hence, good financial performance. It has however been stated in section 6.3.2 that H_5 result is a complete departure from the extant

literatures which state that there is positive relationship between socio-demographic variables (such as age, income, gender, education, income and political ideology) and environmental attitude. Therefore, it is the researcher's conclusion that H_5 is not viable in this thesis and may not necessarily be a true reflection of the real life situation. The validation of the hypothesis may need further qualitative information inform of a semi-structured interview which this study has not covered

After the findings have been interpreted from the point of view of the study's theoretical foundation in Chapter three, this can further be strengthened by interpreting from the lenses of the sector's idiosyncrasy. This understandably will give the study wider acceptance and a migration from an epistemological paradigm (i.e. knowledge) to an ontological paradigm (i.e. reality).

6.4.2. Sector characteristics

The nature of the extractive sector is such that is characterised by chains of cartels that mostly operate like monopolists with little or no substitute for their products. The results presented here have given an insight into the fact that most companies within the extractive sector may choose to be reckless in their environmental behaviour, yet profit and market value might not be significantly affected. The differences in the existing economic indicators across sectors may mask any relationship of social-environmental responsibility with financial performance. Fundamentally, the characteristics of the extractive sector which include the essential nature of the product, scarcity or limited supply of the product alongside the politico-

economic nature of the commodities may be the factors contributing to its financial performance and also shielding the sector from the consequences of its environmental conducts. For instance, the greenhouse gases from oil and gas exploration (e.g. gas flaring and carbon dioxide) are dangerous pollutants that are believed to be partly responsible for increases in the earth's temperature (GGFRP and World Bank, 2008), yet various governments in oil-producing nations continue to tolerate the oil companies by politicising the deadline when gas flaring must be stopped. These gases flared into the air can actually be converted into both domestic and industrial gases by additional investment, but these companies prefer to pay a penalty on each cubic meter of gas flared rather than commit long-term investment in gas production (GGFRP and World Bank, 2008). Such tacit support by governments and regulatory authorities who are keen to attract and retain these companies close within their midst has been a major discriminatory factor when comparing the extractive sector to other sectors of the economy. The sector is often treated as "a goose that laid the golden egg" especially in the majority countries that depend on royalties and income from this sector.

The sector idiosyncrasy is further deepened by understanding the nature of competition and the power of stakeholder in the extractive sector. The lack of competitive intensity of the extractive sector could be a factor moderating the relationship between CER and FP. The shallow competitive level, may force the company's stakeholders to destine their resources to organisations with a poor reputation. All companies within an economy operate under either perfect or imperfect market structures. Under a perfect structure, no single supplier can influence prices, there are no barriers to entry and exit, no barrier to the movement of

buyers from one seller to another and since suppliers offer the same goods, there are a large number of suppliers and buyers, and information on pricing and processes is readily available, and most importantly all suppliers or producers are price takers (Mankiw et al., 2008). However, the extractive sector has features of both the oligopoly and monopoly forms of imperfect market. In both monopoly and oligopoly structures, the companies are the price setters and prices will always adjust to reflect the quantity they are willing to sell. Monopoly power has been defined as the ability to earn long-run supernormal or abnormal profits (Stanlake and Grant, 1995). There are strong barriers to entry into this market, which manifest themselves in the form of (i) limited resources, the extractive sector resources or materials (e,g. oil and gas) are natural endowments not evenly distributed across all countries but only a few, (ii) legal barriers, where the laws of the land operate to prevent the emergence of competing firms, and (iii) technical barriers, where the market is dominated by few large companies that have the resources to acquire technical competencies and capabilities (Mankiw et al., 2008).

The imperfect competitive structure of the extractive sector is a major mediating factor in the CER-FP link. The products offered by the sector which include oil, gas, cement, metal and other minerals often enjoy demand well above supply, therefore forcing the consumers and society at large to a state of Hobson's choice (i.e. a state of taking the one option available or nothing). To corroborate this assertion, Royal Dutch/Shell suffered a considerable dent on its corporate reputation arising from the Brent Spar controversy and the Ogoni crisis, both in 1995. Yet, the emotive environmental protests conducted by the environmental pressure group such as Greenpeace, international journalists, and other groups against the disposal of the

redundant Brent Spar oil buoy deep in Atlantic water, alongside the Ogoni case in Nigeria, had little or no impact on the financial performance of the company (Royal Dutch/Shell Annual Results 1995, 1996, 1997 and 1998).

The study found that the power of stakeholders in the extractive sector is weakened by the sector's exclusivity and imperfect competitive structure. Highly strategic stakeholders like consumers become powerless in a state of little or no substitute for the products supplied by the sector. The major tool of boycott often exercised by consumers in other sectors and which may operate effectively in a state of perfect competition may not be effective if applied to the extractive sector. This is due to insufficient or unavailable close substitutes for the sector's products, and a situation where demand often outweighs the supply. Neville et al. (2005) cite the example of a consumer buying a product from a highly contaminating company. Consumers buy the product despite contamination being an important issue for the consumer, due to the higher quality of the product or, perhaps, due to the absence of alternative products. It is equally important to note that some stakeholders have a greater ability to influence the financial yield of companies than others. From the standpoint of resources and capabilities, the dependence of an organisation on the stakeholder for critical resources places the organisation in a relatively weak or dependent position (Neville, 2005), therefore the potential excesses of a company are moderated. In the case of the extractive sector, the critical resources are natural factor endowments often controlled by the national government in return for royalties, taxes and revenue. National governments will generally hold the conflicting roles of both the regulator and shareholder (i.e. joint venture partner with multinational companies). Stakeholders can also become disempowered through unethical conduct by strategic

stakeholders e.g. governments in host countries who engage in bribe taking from multinational companies as earlier explained in the case of Halliburton's subsidiary-KBR.

6.5. Summary

The question of inconsistent or equivocal results in the investigation of the relationship between corporate environmental responsibility and financial performance might have been put to rest. The findings from the study suggest that the sector characteristics are other strong moderating factors in establishing the CER-FP link. These factors are quite potent in shielding the true relationship between CER and FP.

CHAPTER SEVEN: CONCLUSION

7.1. Introduction

This chapter highlights the key contributions of this study to theory, management practice and policy. In addition, the limitations of the research and some suggestions for the future research focus are provided. Finally, the chapter ends with a summary account of the conclusions

7.2. Theoretical contributions

This study has a major aim of resolving the inconclusive findings regarding the nature of the relationship between corporate environmental responsibility and financial performance. Previous studies have been classified into three on the basis of their conclusions, i.e. that there is a positive, negative or neutral/inconsistent relationship. This current study's outcome shows a neutral relationship between corporate environmental responsibility and financial performance in the extractive sector, arising from the rigorous manipulation of variables by use of robust parametric statistical tools. This study breaks new ground in the area of the CER-FP link by showing evidence that that CER-FP relationship is moderated by sector characteristic factors not identified in previous studies. By testing H_3, it is possible to compare the CER-FP link between S&P 500 and the extractive sector (a segment of S&P 500) using the same dataset and the results show clearly that the CER-FP link in S&P 500 is positive. However, further enquiries reveal the influence of sector

uniqueness and market structure (imperfect market). This outcome suggests that there may never be a specific direction of causation between corporate environmental performance and financial performance, but the nature of the relationship will depend largely on the moderating variables uncovered by this study.

Secondly, this research has given the construct of CER a wider definition. The measurement of the 'immeasurable' construct of CER (Gjolberg, 2009, pg. 10) has been measured from two different approaches, thus, disclosure-scoring methodology and survey approach. This is an improvement from previous studies' measures of corporate environmental responsibility employing a mostly disclosure-scoring methodology. In addition, two different research designs, causal (ex-post facto) and survey research designs were carried out in this study. This is an improvement to a single research design in research of this nature.

Thirdly, this study for the first time provides evidence that environmental attitude is a good predictor of corporate reputation. This permits academics researching corporate reputation in the extractive sector to consider the inclusion of environmental attitude and behaviour as an explanatory variable or as potential predictors of corporate reputation. Equally, of important note, is the current study's newly developed environmental attitude scale which can now be added to the limited measurement scales already in existence (Corral-Verdugo, 1997; Dunlap and VanLiere, 1978) for future researchers.

7.3. Management implication

Although the study shows that there is no relationship between corporate environmental responsibility and financial performance in the extractive sector, there are some salient parts of the results that are not statistically significant but are pointers to the fact that some key environmental variables may likely be good predictors of both profit and firm value in the longer-term. Both environmental impact score (EIS) and environmental reputation survey (RS) showed some effects on both profit (ROE) and firm value (M/B) in H_1 and H_2 respectively, though not significant. This is an indication that corporate environmental responsibility may be good predictors of profit and firm value in the nearest future. To corroborate this assertion, the test of the relationship between a manager's environmental attitude and the perceived corporate reputation of his/her company showed a significant correlation, and this could be an indication that responsible environmental behaviour may be determinant of corporate performance. It is therefore instructive to note that the current neutral relationship between corporate environmental responsibility and financial performance may not be sustainable considering changing technology, alternative energy sources projects, and importantly most governments becoming more responsive and responsible in dealing with environmental issues dispassionately, as demonstrated by the USA government when dealing with BP Plc. regarding the April 20, 2010 explosion at the Deep-water Horizon oil rig in the Gulf of Mexico in Louisiana. As at the time of this study, BP Plc. had spent $17.7Billion in clean-up and compensation and this resulted in an operating loss of $4.9 billion for the company's financial year ended December 31, 2010. This singular event caused the company's year-end profit to plummet by 135% when

compared to the profit of $13.9 billion recorded for the financial year ended December 31, 2009. This is a one-off event and the level of monumental loss has never been recorded in the history of the oil and gas industry. Similar occurrences of BP case together with huge compensation pay- out, clean-up and litigation expenses will likely change the nature of relationship between corporate environmental responsibility and corporate financial performance.

7.4. Policy implication

This study has shown that environmental protection may not be completely left to the initiative of managers in the extractive sector considering our findings from the study. The findings indicate that a small amount of strategic stakeholders like government and big lending institutions can affect adversely the strategic objectives of the companies within the sector. The research has clearly demonstrated the weak position of consumers who sometimes do not have close substitutes for extractive sector goods, contrary to the situation in other competitive industries. Also, the research has shown that corporate environmental responsibility may not be a serious issue in the operations of the extractive sector since either positive or negative environmental consequences may not necessarily affect the sector's financial performance in the short-run. These seeming immunity to consequences of unethical environmental conduct could be explored by regulatory stakeholders and big lenders who could strengthen regulatory compliance rather than rely on voluntary environmental compliance methods, given that voluntary methods usually depend on

a degree of stakeholder recognition and larger-scale peer adoption to be successful – something that is unlikely in the near future.

In recent times, most of the companies in oil, gas and mining are becoming socially and environmentally responsible voluntarily by investing and engaging in many environmentally friendly programmes which are communicated through dedicated reports called a sustainability report or corporate responsibility report. Such reports are now issued in addition to the annual audited financial statements with in-depth reporting in areas like greenhouse gas emissions, CSR, corporate governance and stakeholder issues. Despite all these, governments in different countries have to come up with the political will and sufficiently powerful legislation capable of keeping the extractive industries in check. The influence the sector has in most countries and government patronage enjoyed may create conflicts of interest. The environment and biodiversity are directly connected, and government must treat laws and enforcement in the sector dispassionately in order to build sustainable environment. For instance, governments in various countries can promulgate laws stating timelines and the magnitude of accomplishments in areas such as gas flaring, renewable energy sources to replace fossil fuel, specific cuts in greenhouse gas emissions, and decreasing total water usage and so on. However, the difficulty in adopting such measures is made clear by (for example) the Copenhagen Climate Summit's failure in December 2009 to produce any signed accord on reducing greenhouse gas emissions and so on (BBC News, 2009). Such accord would have produced a document with concrete commitments that would have been cascaded down to sectors and companies. The recently concluded Durban Climate Change Conference held November/December 2011 in South Africa can be said to be a

success and to fill in the huge gap left by Copenhagen. In summary, the conference ensured that all the parties agreed to reduce the emissions gap, this is by making sure that the difference between aggregate impacts of emission and emission upper limit is no more than two degrees of global warming (Jacobs, 2011). For the first time, the conference agreed that climate change should be tackled through a framework of international law. The current practice is "pledge and review", which is just a purely voluntary national commitment. This is one of the areas where 'the Copenhagen talks' failed. The legal approach has the great advantage of ensuring that national commitments outlast individual governments, making them much more certain for business and for other countries seeking confidence that their own low carbon policies will not be undermined by free riders elsewhere. At the same time, Durban has set up a roadmap towards a new treaty to succeed Kyoto in 2020 (Kyoto protocol was initially adopted in December 1997), which for the first time will require the big emerging economies like China, India and Brazil, to make legally binding commitments (Jacobs, 2011). Hopefully, the participating countries will start new drives to reduce greenhouse gas (GHG) emission by getting the corporate pollutants be part of the new legislative regime, through various mechanisms of law, incentives and policies.

The strategic stakeholders in the extractive sector such as governments and multilateral lending institutions should compel all companies within the sector to reduce their environmental footprint by prescribed per cent or level for different sectors of the economy.

There is need for a Social and Environmental Audit Committee (SEAC) in each company within the sector. The committee can be headed by a non-executive director with extractive sector experience. The committee should be charged with the responsibilities of developing a comprehensive sustainability programme, monitoring and reporting environmental compliance. There is a need for an environmental management department that will be responsible for timely reporting to the SEAC. This committee may adopt the operating framework of an audit committee but must be separated from the audit committee. This is expected to be a specialised area; as such the committee's remit of activities must in no way be related to the economic or financial issues of the company.

Beyond the reliance on rules, policies and all forms of compliance methods, a voluntary environmental responsible behaviour must now be preached and encouraged in the extractive sector. The policies and rules do not themselves cut greenhouse gas emission, environmental degradation and corporate scandals, only personal resolution (of the moral agents) create positive change in behaviour and moral development that can bring about a new era of environmental sustainability. In a situation where environmental decisions are made not for compliance but what an individual believes to be right and not just acquiescing is the highest moral development level.

7.5. Limitation and recommendation for future studies

The study may not be free from generalisation problems considering the restricted sampling frame and sample size. The sample size of 101 companies used as a representative sample for the entire extractive sector is restricted to the S&P 500 and therefore might not have provided a balanced view. The use of a two year panel data may not be longitudinal enough to give a reasonable trend of CER activities in the extractive sector. Equally, the reliance of the study on only quantitative research might not have captured all the issues. Another limitation of the study is the test of difference in environmental attitude on only one social-demographic variable (i.e. managerial position) while others like age, educational level, income level and gender were left out. Equally the study did not carry out a reverse causation between CER and FP; which involves a model that will make FP an independent variable and CER a dependent variable. To enhance generalisation, future studies may consider an increase in the sample size, variables of longer trend (longitudinality) and expansion in the geographical spread of the study. The use of the qualitative research design can be employed to complement and enhance the quality of future research findings. Most importantly, studies focusing on other sectors of the economy will be useful in explaining the relationship between corporate environmental responsibility and corporate financial performance. In addition, differences in environmental attitude across all social-demographic variables may be explored and future research may try a reverse causation of this study's model by making empirical enquiry into FP's influence on CER.

7.6. Conclusions and reflection

The research problem focuses on the relationship between corporate environmental responsibility and financial performance in the extractive sector. This is the first empirical study that combines the oil, gas, mining of minerals and metal industries, and investigated the CER-FP link. The study was executed by both causal and survey research designs with the aid of parametric statistical tools. The key finding is that there is no relationship between corporate environmental responsibility and financial performance, the research evidence for absence of relationship is the sector unique characteristics. However, there are indications that the current nature of the relationship between corporate environmental responsibility and financial performance may not be sustainable, considering other research evidence in the study that showed a correlation between environmental attitude and corporate reputation, and the presence of some latent impact of certain environmental responsibility variables on both profit and firm value.

This study contributes to environmental decision making in multinational extractive companies theoretically, management practices wise and policy formation and implementation. However, in future, when performing an empirical test, in the area of corporate environmental responsibility or corporate social performance and financial performance, limiting the sample to companies in the same sector or the introduction of mediating variables to account for sector uniqueness, competitive intensity, and limited power of stakeholders may help to attain better results. The clear evidence from this study resolves to a large extent the age-long

inconclusiveness in the direction of the relationship between corporate environmental performance and financial performance.

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APPENDICE

Appendix 4.1. Data on S&P 500 Financial Performance - 2009

	Company name	Total Assets 2009	SHF 2009	Market Cap 2009	M/B % 2009	ROE % 2009	Solvency % % 2009	P/E Ratio % 2009	Equity price volatility
86.	**3M Company**	27,250,000	12,764,000	58,526,909	459	36.29	46.84	18.33	0.26
65.	**Abbott Laboratories**	52,416,623	22,855,627	83,508,410	365	31.47	43.60	14.53	0.17
382.	**Abercrombie & Fitch CO**	2,821,866	1,827,917	2,774,970	152	6.54	64.78	n.s.	0.50
83.	**Accenture PLC**	12,255,734	2,886,593	20,270,843	702	92.76	23.55	12.75	0.29
105.	**Ace Limited**	64,937,000	19,667,000	16,955,484	86	15.65	30.29	6.65	0.25
362.	**Adobe Systems INC**	7,282,237	4,890,568	18,373,506	376	14.34	67.16	47.54	0.39
270.	**Advanced Micro Devices INC**	9,078,000	648,000	6,488,501	1,001	62.96	7.14	21.34	0.51
126.	**AES Corporation**	39,535,000	4,675,000	8,885,527	190	49.54	11.82	13.50	0.33
78.	**Aetna INC**	38,548,500	9,503,800	13,741,950	145	20.00	24.65	10.77	0.32
116.	**Aflac Incorporated**	84,106,000	8,417,000	21,640,340	257	26.55	10.01	14.46	0.38
266.	**Agilent Technologies INC**	7,612,000	2,506,000	8,538,072	341	0.28	32.92	n.s.	0.44
200.	**Air Products & Chemicals INC**	13,029,100	4,791,900	16,298,138	340	17.46	36.78	25.82	0.25
339.	**Airgas INC**	4,495,932	1,795,544	5,263,259	293	17.49	39.94	26.81	0.23
286.	**AK Steel Holding Corporation**	4,274,700	880,800	2,334,964	265	-11.13	20.60	n.s.	0.61
486.	**Akamai Technologies INC**	2,087,510	1,738,722	4,340,221	250	13.64	83.29	29.74	0.51
100.	**Alcoa INC**	38,472,000	12,420,000	15,706,972	126	-12.06	32.28	n.s.	0.40
350.	**Allegheny Technologies INC**	4,346,000	2,012,200	4,390,872	218	3.23	46.30	138.51	0.53
315.	**Allergan INC**	7,536,600	4,822,800	19,376,324	402	17.59	63.99	31.19	0.24
84.	**Allstate Corporation (The)**	130,513,000	16,692,000	16,115,818	97	7.48	12.79	18.87	0.29
357.	**Alpha Natural Resources, Inc.**	5,120,343	2,591,289	5,216,730	201	1.30	50.61	89.94	0.65

448.	**Altera Corp**	2,293,231	1,085,336	6,684,259	616	28.15	47.33	26.62	0.38
91.	**Altria Group, Inc.**	36,677,000	4,069,000	40,677,506	1,000	119.86	11.09	12.73	0.16
68.	**Amazon.Com, Inc.**	13,813,000	5,257,000	58,244,844	1,108	22.08	38.06	64.57	0.36
246.	**Ameren Corp**	23,702,000	7,856,000	5,786,256	74	12.17	33.14	9.46	0.21
145.	**American Electric Power Company INC**	48,348,000	13,201,000	16,631,513	126	14.68	27.30	12.26	0.18
81.	**American Express Company**	124,088,000	14,406,000	48,185,143	334	19.72	11.61	22.62	0.30
47.	**American International Group INC**	847,585,000	70,783,000	n.a.	#VALUE!	-19.50	8.35	n.a.	0.47
445.	**American Tower Corp**	8,519,931	3,315,082	17,346,752	523	12.71	38.91	70.34	0.27
476.	**Ameriprise Financial Inc.**	113,770,000	9,269,000	9,899,240	107	9.93	8.15	13.43	0.42
25.	**Amerisourcebergen Corp**	13,572,740	2,716,469	6,652,616	245	30.34	20.01	13.22	0.26
138.	**Amgen Incorporated**	39,629,000	22,667,000	57,256,671	253	22.96	57.20	12.43	0.22
375.	**Amphenol Corp**	3,219,184	1,746,077	7,919,737	454	25.57	54.24	24.92	0.33
185.	**Anadarko Petroleum Corp**	50,123,000	19,928,000	30,680,143	154	-0.54	39.76	n.s.	0.43
405.	**Analog Devices INC**	3,369,407	2,529,149	7,480,417	296	11.76	75.06	30.19	0.29
430.	**AON Corporation**	n.a.	n.a.	n.a.	#VALUE!	n.a.	n.a.	n.a.	0.25
174.	**Apache Corp**	28,185,743	15,778,621	34,683,108	220	2.07	55.98	n.s.	0.35
484.	**Apartment Investment & Management CO**	7,906,468	1,269,718	1,862,664	147	-17.26	16.06	n.s.	0.35
322.	**Apollo Group, Inc.**	3,263,377	1,159,923	9,934,460	856	91.98	35.54	16.60	0.44
10.	**Apple Inc.**	47,501,000	31,640,000	166,039,642	525	38.14	66.61	20.16	0.25
192.	**Applied Materials INC**	9,574,243	7,094,608	16,271,311	229	-6.85	74.10	n.s.	0.31
24.	**Archer-Daniels-Midland Company**	31,582,000	13,627,000	17,186,327	126	18.35	43.15	10.21	0.31
206.	**Assurant INC**	21,693,930	4,861,409	3,443,258	71	14.60	22.41	8.00	0.30
8.	**At&T Inc.**	268,312,000	101,564,000	165,405,034	163	18.23	37.85	13.63	0.17
449.	**Autodesk INC**	2,447,200	1,473,500	5,465,028	371	5.75	60.21	94.22	0.43
204.	**Automatic Data Processing INC**	25,351,700	5,322,600	17,778,198	334	35.70	21.00	13.34	0.20
164.	**Autonation INC**	5,407,300	2,303,200	3,341,187	145	15.16	42.59	16.88	0.36
236.	**Autozone INC**	5,318,405	-433,074	7,912,304	-1,827	n.s.	-8.14	12.04	0.18
495.	**Avalonbay Communities INC**	7,457,605	3,050,127	6,686,495	219	2.52	40.90	43.09	0.29
269.	**Avery Dennison Corporation**	5,002,800	1,362,600	4,114,053	302	-58.04	27.24	n.s.	0.35
186.	**Avon Products INC**	6,823,400	1,272,600	13,452,265	1,057	71.80	18.65	21.67	0.35
146.	**Baker Hughes INC**	11,439,000	7,284,000	12,544,213	172	8.39	63.68	29.80	0.43
247.	**Ball Corp**	6,488,300	1,581,300	4,865,133	308	33.93	24.37	12.54	0.25
12.	**Bank Of America Corporation**	2,223,299,000	231,444,000	130,280,447	56	1.88	10.41	20.76	0.53

152.	**Bank Of NEW York Mellon Corporation**	212,224,000	29,003,000	33,682,703	116	-7.61	13.67	n.s.	0.35
161.	**Baxter International INC**	17,354,000	7,191,000	35,375,930	492	38.02	41.44	16.04	0.24
226.	**Bb&T Corporation**	165,764,220	16,240,621	17,444,844	107	6.37	9.80	19.90	0.35
254.	**Beam Inc.**	12,370,600	5,092,400	6,494,790	128	5.57	41.17	26.81	0.31
240.	**Becton, Dickinson And Company**	9,304,624	5,142,712	16,697,433	325	30.70	55.27	13.56	0.21
225.	**Bed Bath & Beyond INC**	5,152,130	3,652,904	10,902,007	298	26.97	70.90	18.17	0.29
318.	**Bemis Company, Inc.**	3,928,705	1,803,732	3,208,035	178	13.32	45.91	22.49	0.25
43.	**Best BUY CO, INC**	18,302,000	6,320,000	15,258,168	241	34.73	34.53	11.59	0.35
313.	**BIG Lots, Inc.**	1,669,493	1,001,412	2,348,437	235	32.29	59.98	11.72	0.34
324.	**Biogen Idec Inc.**	8,551,854	6,221,530	15,472,121	249	21.42	72.75	15.98	0.33
228.	**Blackrock, Inc.**	178,124,000	24,329,000	11,854,135	49	5.23	13.66	13.90	0.37
441.	**BMC Software INC**	4,137,600	1,387,700	6,939,598	500	36.33	33.54	17.12	0.34
34.	**Boeing CO**	62,053,000	2,128,000	39,330,808	1,848	81.34	3.43	29.98	0.30
468.	**Boston Properties INC**	12,348,703	4,446,002	9,303,888	209	6.17	36.00	40.27	0.28
241.	**Boston Scientific Corp**	25,177,000	12,301,000	13,593,870	111	-10.63	48.86	n.s.	0.38
106.	**Bristol-Myers Squibb Company**	31,008,000	14,843,000	50,019,749	337	37.74	47.87	4.74	0.18
261.	**Broadcom Corp**	5,127,242	3,891,846	13,802,742	355	1.85	75.91	211.50	0.39
384.	**Brown Forman Corp**	3,475,000	1,816,000	4,352,807	240	34.69	52.26	10.03	0.24
214.	**C.H. Robinson Worldwide, Inc.**	1,834,248	1,079,900	9,851,455	912	54.36	58.87	27.30	0.26
411.	**C.R. Bard INC**	2,906,900	2,193,600	7,520,170	343	30.61	75.46	16.52	0.24
335.	**CA, Inc.**	11,888,000	4,987,000	12,205,023	245	23.10	41.95	16.00	0.27
252.	**Cablevision Systems Corporation**	9,555,730	-5,155,955	6,375,317	-124	n.s.	-53.96	22.32	0.48
498.	**Cabot Oil & GAS Corporation**	3,683,401	1,812,514	4,518,283	249	12.32	49.21	30.46	0.46
282.	**Cameron International Corporation**	7,725,373	3,919,760	9,225,206	235	16.40	50.74	19.40	0.41
243.	**Campbell Soup CO**	6,056,000	728,000	10,870,332	1,493	148.21	12.02	15.01	0.17
128.	**Capital One Financial Corporation**	169,646,400	26,589,400	17,250,110	65	5.02	15.67	19.52	0.37
14.	**Cardinal Health INC**	25,118,800	8,724,700	11,009,977	126	13.29	34.73	9.56	0.26
377.	**Carefusion Corporation**	8,349,000	5,451,000	n.a.	#VALUE!	6.20	65.29	n.a.	0.30
219.	**Carmax INC**	2,556,191	1,933,582	4,499,519	233	23.40	75.64	16.11	0.38
144.	**Carnival Corporation**	36,835,000	22,039,000	19,995,328	91	8.19	59.83	11.17	0.34
54.	**Caterpillar INC**	60,038,000	8,740,000	35,602,949	407	6.51	14.56	39.78	0.33
309.	**Cbre Group, Inc.**	5,039,406	629,122	3,973,534	632	-0.10	12.48	119.18	0.49

149.	**CBS Corporation**	26,962,000	9,019,400	8,785,993	97	4.91	33.45	38.79	0.42
370.	**Celgene Corp**	5,389,311	4,394,606	25,590,659	582	22.20	81.54	32.95	0.28
224.	**Centerpoint Energy, Inc.**	19,773,000	2,639,000	5,664,290	215	20.77	13.35	15.23	0.23
256.	**Centurylink, Inc.**	22,562,729	9,460,939	10,773,386	114	8.61	41.93	16.76	0.23
407.	**Cephalon INC**	4,658,095	2,261,958	4,660,194	206	12.79	48.56	13.60	0.30
455.	**Cerner Corp**	2,148,567	1,580,678	6,729,721	426	18.52	73.57	34.79	0.30
353.	**CF Industries Holdings, Inc.**	2,494,900	1,728,900	4,408,151	255	40.23	69.30	12.06	0.47
338.	**Charles Schwab Corporation**	75,431,000	5,073,000	21,871,309	431	25.15	6.73	27.79	0.34
213.	**Chesapeake Energy Corp**	29,914,000	11,444,000	16,762,676	146	-81.16	38.26	n.s.	0.39
3.	**Chevron Corporation**	164,621,000	91,914,000	154,462,557	168	20.16	55.83	14.73	0.25
456.	**Chipotle Mexican Grill Inc.**	961,505	703,461	1,330,502	189	29.03	73.16	10.49	0.36
168.	**Chubb Corporation**	48,396,000	15,634,000	16,798,515	107	18.95	32.30	7.69	0.23
113.	**Cigna Corporation**	42,807,000	5,417,000	9,644,123	178	35.06	12.65	7.39	0.32
406.	**Cincinnati Financial Corporation**	14,005,000	4,760,000	4,269,282	90	12.23	33.99	9.88	0.27
361.	**Cintas Corp**	3,720,951	2,367,409	3,558,483	150	15.27	63.62	15.75	0.28
53.	**Cisco Systems INC**	68,128,000	38,647,000	126,951,052	328	19.91	56.73	20.70	0.37
18.	**Citigroup INC**	1,856,646,000	154,973,000	75,679,662	49	-5.03	8.35	n.s.	0.47
453.	**Citrix Systems INC**	3,091,147	2,188,507	7,613,789	348	8.86	70.80	39.86	0.47
325.	**Cliffs Natural Resources Inc.**	4,639,300	2,542,800	6,036,641	237	11.43	54.81	29.43	0.53
303.	**Clorox CO**	4,576,000	-175,000	7,763,613	-4,436	n.s.	-3.82	14.59	0.23
404.	**CME Group Inc.**	35,651,000	19,301,000	22,347,749	116	7.45	54.14	27.06	0.34
272.	**CMS Energy Corp**	15,256,000	2,841,000	3,595,645	127	11.79	18.62	16.49	0.20
345.	**Coach INC**	2,564,336	1,696,042	8,536,653	503	57.94	66.14	13.69	0.38
66.	**Coca-Cola Company (The)**	48,671,000	24,799,000	132,079,344	533	36.07	50.95	19.36	0.16
262.	**Coca-Cola Refreshments Usa, Inc.**	7,972,000	3,179,000	10,365,313	326	22.87	39.88	17.99	0.42
328.	**Cognizant Technology Solutions Corp**	3,338,240	2,653,177	13,359,361	504	24.01	79.48	24.97	0.36
134.	**Colgate Palmolive CO**	11,134,000	3,116,000	40,844,252	1,311	113.54	27.99	18.06	0.19
61.	**Comcast Corporation**	112,733,000	42,721,000	34,783,415	81	11.95	37.90	9.56	0.28
425.	**Comerica Incorporated**	59,249,000	7,029,000	4,468,760	64	-1.64	11.86	262.87	0.38
129.	**Computer Sciences Corp**	15,618,700	5,509,900	6,082,723	110	17.24	35.28	5.46	0.42
492.	**Compuware Corporation**	2,013,325	913,813	1,910,238	209	22.88	45.39	13.57	0.36
169.	**Conagra Foods, Inc.**	11,073,300	4,720,900	8,314,028	176	19.24	42.63	8.50	0.18
4.	**Conocophillips**	152,138,000	62,023,000	75,772,268	122	15.45	40.77	8.51	0.26

302.	**Consol Energy INC**	7,775,401	1,785,548	9,005,458	504	44.15	22.96	16.69	0.46
157.	**Consolidated Edison, Inc.**	33,844,000	10,462,000	12,515,596	120	12.61	30.91	14.42	0.15
389.	**Constellation Brands, Inc.**	8,094,300	2,576,300	2,980,890	116	10.06	31.83	30.02	0.30
147.	**Constellation Energy Group INC**	23,544,400	8,887,100	7,065,628	80	84.28	37.75	1.59	0.25
311.	**Cooper Industries Public Limited Company**	5,984,400	2,963,300	7,113,660	240	16.29	49.52	16.20	0.33
265.	**Corning INC**	21,295,000	15,543,000	30,048,165	193	12.44	72.99	14.96	0.38
17.	**Costco Wholesale Corp**	21,979,000	10,024,000	22,170,181	221	17.23	45.61	20.41	0.21
193.	**Coventry Health Care INC**	8,166,532	3,712,554	3,594,515	97	11.62	45.46	14.84	0.36
189.	**CSX Corp**	26,887,000	8,754,000	19,035,202	217	19.95	32.56	16.65	0.32
158.	**Cummins Inc.**	8,816,000	3,773,000	9,254,217	245	16.96	42.80	21.62	0.41
16.	**CVS Caremark Corporation**	61,641,000	35,768,000	45,433,589	127	16.53	58.03	12.29	0.23
369.	**D.R. Horton, Inc.**	6,756,800	2,391,800	3,618,091	151	-23.28	35.40	n.s.	0.40
159.	**Danaher Corp**	19,595,420	11,630,176	24,156,860	208	12.25	59.35	20.97	0.28
249.	**Darden Restaurants INC**	5,025,200	1,606,000	4,959,830	309	31.91	31.96	13.33	0.28
271.	**Davita Inc.**	7,558,236	2,135,066	6,003,228	281	35.51	28.25	14.21	0.27
172.	**Dean Foods Company**	7,843,941	1,351,946	3,256,112	241	28.14	17.24	13.55	0.46
76.	**Deere & CO**	41,132,600	4,818,700	19,265,280	400	27.79	11.72	22.06	0.32
37.	**Dell, Inc.**	33,652,000	5,641,000	25,240,866	447	35.88	16.76	17.61	0.36
451.	**Denbury Resources Inc.**	4,269,978	1,972,237	3,697,380	187	-6.20	46.19	n.s.	0.45
436.	**Dentsply International INC**	3,087,932	1,832,105	5,222,858	285	19.83	59.33	19.04	0.30
202.	**Devon Energy Corp**	29,686,000	15,570,000	32,641,350	210	-29.07	52.45	n.s.	0.31
437.	**Devry INC**	1,434,299	926,942	3,574,949	386	25.61	64.63	21.59	0.51
390.	**Diamond Offshore Drilling INC**	6,264,261	3,630,642	13,681,448	377	51.46	57.96	9.94	0.34
93.	**Directv**	18,260,000	2,911,000	31,911,182	1,096	63.00	15.94	33.88	0.24
263.	**Discover Financial Services**	46,020,987	8,435,547	8,391,916	99	25.14	18.33	6.58	0.36
365.	**Discovery Communications, Inc.**	10,952,000	6,197,000	4,145,194	67	16.77	56.58	7.66	0.29
137.	**Dominion Resources INC**	42,554,000	11,442,000	23,244,612	203	16.38	26.89	18.06	0.17
255.	**Dover Corp**	7,882,403	4,083,608	7,746,811	190	12.04	51.81	21.73	0.34
41.	**DOW Chemical Company (The)**	66,018,000	20,555,000	31,601,150	154	2.28	31.14	94.05	0.41
297.	**DR Pepper Snapple Group Inc.**	8,776,000	3,187,000	7,190,073	226	27.24	36.31	12.96	0.24
230.	**DTE Energy CO**	24,195,000	6,278,000	7,189,214	115	12.46	25.95	13.51	0.18
148.	**Duke Energy Corporation**	57,040,000	21,750,000	22,452,269	103	8.42	38.13	20.89	0.15

462.	**DUN & Bradstreet Corp**	1,749,400	-745,700	4,385,090	-588	n.s.	-42.63	13.82	0.21
447.	**E*Trade Financial Corporation**	47,366,500	3,749,600	3,333,389	89	-48.95	7.92	n.s.	0.49
71.	**E. I. DU Pont De Nemours And Company**	38,185,000	7,215,000	30,428,587	422	30.27	18.89	17.44	0.28
292.	**Eastman Chemical CO**	5,515,000	1,513,000	n.a.	#VALUE!	16.79	27.43	n.a.	n.a.
154.	**Eaton Corp**	16,282,000	6,777,000	10,548,196	156	4.47	41.62	27.54	0.35
217.	**Ebay INC**	18,408,320	13,787,648	30,423,389	221	20.88	74.90	12.73	0.37
284.	**Ecolab INC**	5,020,900	2,000,900	10,590,181	529	30.99	39.85	25.38	0.24
165.	**Edison International**	41,444,000	10,748,000	12,267,184	114	7.95	25.93	14.55	0.20
472.	**Edwards Lifesciences Corp**	1,615,500	1,157,900	4,913,028	424	26.29	71.67	21.44	0.33
326.	**EL Paso Corp**	22,505,000	3,351,000	6,893,493	206	-26.05	14.89	n.s.	0.38
371.	**Electronic Arts INC**	4,646,000	2,729,000	6,095,182	223	-25.87	58.74	n.s.	0.38
97.	**Eli Lilly And Company**	27,460,900	9,523,700	41,031,589	431	56.26	34.68	9.48	0.18
123.	**EMC Corp**	26,812,003	15,549,882	35,635,685	229	8.84	58.00	32.75	0.29
92.	**Emerson Electric CO**	19,763,000	8,555,000	30,123,718	352	28.64	43.29	17.47	0.30
179.	**Entergy Corp**	37,561,953	8,924,703	15,462,218	173	21.11	23.76	12.56	0.18
283.	**EOG Resources INC**	18,118,667	9,998,042	24,554,179	246	8.72	55.18	44.92	0.38
479.	**EQT Corporation**	5,957,257	2,151,030	5,749,973	267	11.79	36.11	36.64	0.36
454.	**Equifax INC**	3,550,500	1,601,200	3,906,703	244	20.67	45.10	16.70	0.26
444.	**Equity Residential**	15,417,515	5,047,339	9,328,149	185	-0.04	32.74	26.82	0.30
222.	**Estee Lauder Companies Inc. (The)**	5,176,600	1,640,000	3,875,429	236	20.90	31.68	17.74	0.35
112.	**Exelon Corporation**	49,180,000	12,640,000	32,223,772	255	34.96	25.70	11.90	0.18
387.	**Expedia, Inc.**	5,937,156	2,682,681	6,770,919	252	17.07	45.18	22.61	0.40
287.	**Expeditors International Of Washington INC**	2,323,722	1,553,007	7,372,970	475	25.94	66.83	30.69	0.31
50.	**Express Scripts, Inc.**	11,931,200	3,551,800	23,741,302	668	36.84	29.77	28.69	0.32
2.	**Exxon Mobil Corp**	233,323,000	110,569,000	323,717,292	293	31.45	47.39	16.79	0.23
482.	**F5 Networks INC**	1,068,645	799,020	3,120,031	390	16.48	74.77	34.09	0.57
232.	**Family Dollar Stores, Inc.**	2,877,802	1,440,060	4,230,841	294	31.31	50.04	14.53	0.29
433.	**Fastenal Company**	1,327,358	1,190,843	6,176,491	519	24.98	89.72	33.50	0.30
491.	**Federated Investors INC**	912,433	528,207	2,816,942	533	61.87	57.89	14.64	0.31
59.	**Fedex Corp**	24,244,000	13,626,000	17,258,593	127	4.97	56.20	177.92	0.31
301.	**Fidelity National Information Services, Inc.**	13,997,600	8,308,900	8,730,896	105	1.97	59.36	82.45	0.26

275.	**Fifth Third Bancorp**	113,380,000	13,497,000	7,754,333	57	5.68	11.90	10.52	0.44
461.	**First Horizon National Corporation**	26,068,700	3,302,500	2,929,960	89	-12.73	12.67	n.s.	0.43
421.	**First Solar, Inc.**	3,349,512	2,652,787	11,523,588	434	25.87	79.20	18.00	0.55
156.	**Firstenergy Corporation**	34,304,000	8,559,000	14,159,605	165	14.43	24.95	14.08	0.22
346.	**Fiserv INC**	8,378,000	3,026,000	7,460,975	247	24.26	36.12	15.67	0.24
475.	**Flir Systems INC**	1,494,544	1,203,749	4,967,835	413	28.28	80.54	21.58	0.33
351.	**Flowserve Corp**	4,248,894	1,796,113	5,279,413	294	32.56	42.27	12.34	0.40
102.	**Fluor Corp**	7,178,483	3,305,533	8,061,677	244	34.39	46.05	11.88	0.41
399.	**FMC Corp**	3,136,200	1,076,400	4,043,653	376	28.80	34.32	17.78	0.32
347.	**FMC Technologies INC**	3,556,400	1,102,800	7,066,534	641	46.96	31.01	19.53	0.38
6.	**Ford Motor CO**	192,040,000	-7,820,000	32,362,488	-414	n.s.	-4.07	11.91	0.38
337.	**Forest Laboratories INC**	6,223,531	4,889,907	9,482,359	194	19.44	78.57	13.90	0.23
277.	**Franklin Resources, Inc.**	9,151,690	7,171,390	24,151,487	337	22.55	78.36	21.17	0.36
109.	**Freeport Mcmoran Copper & Gold INC**	25,996,000	9,119,000	34,514,873	378	64.05	35.08	13.66	0.44
363.	**Frontier Communications Corporation**	6,878,255	327,611	2,439,280	745	58.94	4.76	20.58	0.28
212.	**Gamestop Corp.**	4,955,327	2,723,157	3,257,450	120	21.61	54.95	8.63	0.32
298.	**Gannett CO INC**	7,148,432	1,603,925	3,508,115	219	35.53	22.44	9.88	0.45
143.	**GAP INC**	7,985,000	4,891,000	13,165,064	269	37.13	61.25	11.95	0.36
74.	**General Dynamics Corp**	31,077,000	12,423,000	26,293,488	212	28.28	39.97	10.98	0.26
5.	**General Electric Company**	781,901,000	117,291,000	161,096,601	137	8.52	15.00	15.02	0.28
141.	**General Mills INC**	17,874,800	5,172,300	16,837,129	326	37.55	28.94	12.91	0.17
182.	**Genuine Parts CO**	5,004,689	2,621,330	6,056,600	231	24.57	52.38	15.16	0.24
273.	**Genworth Financial INC**	106,418,000	12,276,000	5,545,072	45	-6.45	11.54	n.s.	0.62
237.	**Gilead Sciences INC**	9,698,559	6,367,065	38,939,757	612	55.00	65.65	14.77	0.29
60.	**Goldman Sachs Group, INC**	848,942,000	72,090,000	86,797,629	120	25.76	8.49	6.89	0.34
258.	**Goodrich Corporation**	8,741,400	2,921,000	7,989,955	274	26.84	33.42	13.55	0.30
111.	**Goodyear Tire & Rubber CO**	14,410,000	735,000	3,414,371	465	-48.57	5.10	n.s.	0.56
79.	**Google Inc.**	40,496,778	36,004,224	150,654,756	418	23.28	88.91	23.11	0.30
364.	**H&R Block INC**	5,359,722	1,405,859	5,142,551	366	59.71	26.23	10.63	0.39
188.	**H. J. Heinz Company**	9,664,184	1,219,938	10,829,583	888	108.19	12.62	11.79	0.16
396.	**Half Robert International INC**	1,283,535	899,810	4,035,403	448	7.42	70.10	115.08	0.37
118.	**Halliburton CO**	16,538,000	8,728,000	27,139,025	311	19.27	52.78	23.70	0.46
317.	**Harley Davidson INC**	9,155,518	2,108,118	5,907,965	280	8.47	23.03	n.s.	0.41

366.	**Harman International Industries INC**	2,473,497	1,007,132	1,102,794	109	-52.49	40.72	n.s.	0.49
290.	**Harris Corp**	4,465,100	1,869,100	3,785,055	203	25.96	41.86	105.73	0.31
150.	**Hartford Financial Services Group INC**	307,717,000	17,865,000	8,908,776	50	-9.67	5.81	n.s.	0.51
352.	**Hasbro INC**	3,896,892	1,594,772	4,437,497	278	33.21	40.92	11.84	0.26
480.	**Hcp, Inc.**	12,209,735	5,780,537	8,952,453	155	1.72	47.34	82.08	0.30
501.	**Health Care Reit INC**	6,367,186	3,797,039	5,451,888	144	3.93	59.63	31.85	0.27
423.	**Helmerich & Payne, Inc.**	4,161,024	2,683,009	4,168,620	155	22.30	64.48	11.81	0.44
295.	**Hershey Company (The)**	3,675,031	720,459	5,977,329	830	93.15	19.60	13.71	0.19
67.	**Hess Corporation**	29,465,000	13,384,000	19,797,384	148	11.37	45.42	26.75	0.39
7.	**Hewlett-Packard Company**	114,799,000	40,517,000	112,530,880	278	23.24	35.29	14.69	0.39
29.	**Home Depot INC**	40,877,000	19,393,000	47,628,537	246	20.53	47.44	17.90	0.25
70.	**Honeywell International INC**	35,993,000	8,861,000	29,911,339	338	23.12	24.62	19.32	0.30
238.	**Hormel Foods Corp**	3,692,055	2,122,608	4,893,352	231	24.88	57.49	14.27	0.20
356.	**Hospira, Inc.**	5,502,900	2,623,700	8,270,149	315	14.67	47.68	20.48	0.34
334.	**Host Hotels & Resorts, Inc.**	12,555,000	6,189,000	7,209,012	116	-3.81	49.30	n.s.	0.40
477.	**Hudson City Bancorp INC**	60,267,800	5,339,200	7,212,547	135	16.37	8.86	13.68	0.38
72.	**Humana INC**	14,153,494	5,776,003	7,453,947	129	27.73	40.81	7.17	0.30
413.	**Huntington Bancshares INC**	51,554,700	5,336,000	2,612,530	49	-68.93	10.35	n.s.	0.43
15.	**IBM Corp**	109,022,000	22,637,000	171,950,616	760	80.13	20.76	12.81	0.20
131.	**Illinois Tool Works INC**	16,081,984	8,808,207	24,038,667	273	13.78	54.77	25.38	0.30
304.	**Integrys Energy Group, Inc.**	11,844,600	2,901,100	3,208,881	111	0.46	24.49	n.s.	0.21
51.	**Intel Corp**	53,095,000	41,704,000	112,648,798	270	13.68	78.55	25.78	0.25
483.	**Intercontinentalexchange, INC**	21,884,875	2,399,732	8,226,761	343	20.57	10.97	26.04	0.30
416.	**International Flavors & Fragrances INC**	2,644,774	769,003	3,251,821	423	35.96	29.08	16.63	0.27
446.	**International Game Technology**	4,328,100	1,062,000	6,364,524	599	20.07	24.54	50.19	0.40
88.	**International Paper CO**	25,548,000	6,023,000	11,598,278	193	19.91	23.58	17.49	0.38
268.	**Interpublic Group Of Companies INC**	12,263,100	2,497,700	3,587,552	144	9.30	20.37	38.33	0.48
360.	**Intuit INC**	4,826,000	2,557,000	9,595,014	375	25.54	52.98	21.46	0.31
474.	**Intuitive Surgical INC**	1,809,700	1,537,300	11,588,557	754	25.77	84.95	49.82	0.35
378.	**Invesco Ltd.**	10,909,600	6,912,900	10,072,000	146	5.17	63.37	31.23	0.45
398.	**Iron Mountain INC**	6,846,834	2,153,367	4,628,352	215	15.46	31.45	20.95	0.30
184.	**ITT Corporation**	11,129,000	3,878,000	9,087,498	234	20.89	34.85	14.11	1.41

119.	**J. C. Penney Company, Inc.**	12,581,000	4,778,000	5,859,533	123	8.43	37.98	23.34	0.42
320.	**J. M. Smucker Company (The)**	8,192,161	4,939,931	4,666,146	94	8.02	60.30	17.67	0.19
127.	**Jabil Circuit INC**	5,317,858	1,435,162	2,339,338	163	-70.04	26.99	n.s.	0.49
194.	**Jacobs Engineering Group INC**	4,428,614	2,625,913	5,391,422	205	23.77	59.29	13.48	0.37
488.	**Janus Capital Group, Inc.**	2,530,300	1,001,100	2,448,162	245	-74.96	39.56	n.s.	0.49
458.	**JDS Uniphase Corp**	1,668,100	934,500	1,234,377	132	-97.22	56.02	n.s.	0.66
36.	**Johnson & Johnson**	94,682,000	50,588,000	177,713,623	351	31.14	53.43	14.49	0.16
57.	**Johnson Controls INC**	24,088,000	9,100,000	15,219,890	167	-3.49	37.78	n.s.	0.36
379.	**Joy Global INC**	3,008,279	813,739	5,158,037	634	83.89	27.05	11.35	0.44
13.	**JP Morgan Chase & CO.**	2,031,989,000	165,365,000	164,207,051	99	9.76	8.14	14.00	0.36
348.	**Juniper Networks INC**	7,590,263	5,822,136	14,013,458	241	5.36	76.71	119.77	0.47
166.	**Kellogg Company**	11,200,000	2,272,000	20,185,361	888	74.12	20.29	16.66	0.17
333.	**Keycorp**	93,287,000	10,933,000	4,876,202	45	-21.02	11.72	n.s.	0.43
104.	**Kimberly Clark Corp**	19,209,000	5,406,000	26,463,825	490	47.65	28.14	14.05	0.15
497.	**Kimco Realty Corp**	10,183,079	4,852,973	5,097,085	105	-0.53	47.66	n.s.	0.35
395.	**KLA Tencor Corp**	3,609,538	2,184,392	4,289,619	196	-27.58	60.52	n.s.	0.35
114.	**Kohls Corporation**	14,465,000	7,595,000	15,443,533	203	20.51	52.51	15.87	0.30
45.	**Kraft Foods INC**	66,714,000	25,876,000	40,113,237	155	15.25	38.79	13.28	0.16
23.	**Kroger CO**	23,126,000	4,852,000	13,927,166	287	12.14	20.98	201.84	0.22
133.	**L-3 Communications Holdings, Inc.**	14,875,000	6,567,000	10,105,805	154	21.11	44.15	11.32	0.27
312.	**Laboratory Corp Of America Holdings**	4,837,800	2,106,100	7,948,008	377	42.00	43.53	14.63	0.24
415.	**Legg Mason INC**	8,613,700	5,871,300	4,628,933	79	5.50	68.16	22.65	0.41
386.	**Leggett & Platt INC**	3,061,200	1,554,000	3,103,004	200	12.77	50.76	27.75	0.32
402.	**Lennar Corp**	7,314,791	2,443,479	1,926,366	79	-31.12	33.40	n.s.	0.43
343.	**Lexmark International INC**	3,354,200	1,013,600	2,029,101	200	18.45	30.22	13.91	0.46
372.	**Life Technologies Corporation**	9,115,740	4,026,668	9,312,796	231	4.83	44.17	64.41	0.31
208.	**Limited Brands, Inc.**	7,173,000	2,183,000	6,129,966	281	29.78	30.43	13.68	0.35
385.	**Lincoln National Corporation**	177,433,000	11,700,000	7,515,755	64	-5.05	6.59	n.s.	0.50
471.	**Linear Technology Corp**	1,421,529	-186,337	5,189,886	-2,785	n.s.	-13.11	17.94	0.27
49.	**Lockheed Martin Corp**	35,111,000	4,129,000	28,691,974	695	102.45	11.76	9.49	0.20
288.	**Loews Corporation**	67,578,000	16,899,000	15,617,110	92	10.23	25.01	11.29	0.23
289.	**Lorillard Inc.**	2,575,000	87,000	12,888,114	14,814	n.s.	3.38	13.60	0.26
46.	**Lowe's Companies, Inc.**	33,005,000	19,069,000	31,869,496	167	14.81	57.78	18.00	0.29

420.	**LSI Corporation**	2,967,930	1,461,104	3,925,477	269	-8.95	49.23	n.s.	0.44
381.	**M&T Bank Corporation**	68,880,400	7,752,900	7,899,133	102	6.70	11.26	20.79	0.32
89.	**Macy's Inc.**	21,300,000	4,653,000	6,706,724	144	10.90	21.85	20.38	0.36
26.	**Marathon Oil Corporation**	47,052,000	21,910,000	22,098,925	101	15.71	46.57	15.11	0.56
35.	**Marathon Petroleum Corporation**	21,254,000	9,172,000	n.a.	#VALUE!	7.47	43.15	n.a.	n.a.
178.	**Marriott International INC**	7,933,000	1,142,000	9,701,657	850	-36.60	14.40	n.a.	0.35
190.	**Marsh & Mclennan Companies INC**	15,337,000	5,828,000	11,647,490	200	9.47	38.00	54.17	0.26
426.	**Marshall & Ilsley Corporation**	57,210,000	6,985,600	2,859,586	41	-19.98	12.21	n.s.	0.48
248.	**Masco Corp**	9,175,000	2,629,000	4,959,171	189	-5.74	28.65	n.s.	0.45
291.	**Mattel INC**	4,780,555	2,530,989	7,222,375	285	26.08	52.94	13.82	0.27
388.	**Mccormick & CO INC**	3,387,800	1,334,600	4,228,472	317	31.21	39.39	14.10	0.19
94.	**Mcdonald's Corporation**	30,224,900	14,033,900	67,384,411	480	46.22	46.43	14.81	0.16
281.	**Mcgraw-Hill Companies, Inc. (The)**	6,475,250	1,847,287	10,552,298	571	63.82	28.53	14.45	0.30
9.	**Mckesson Corporation**	28,189,000	7,532,000	17,704,474	235	24.75	26.72	14.02	0.26
397.	**Mead Johnson Nutrition Company**	2,070,300	-674,900	3,358,108	-498	n.s.	-32.60	8.42	0.23
294.	**Meadwestvaco Corporation**	9,021,000	3,406,000	4,899,702	144	11.51	37.76	21.78	0.32
33.	**Medco Health Solutions, Inc.**	17,915,500	6,387,200	30,470,012	477	32.93	35.65	23.80	0.34
130.	**Medtronic INC**	23,588,000	13,182,000	33,108,423	251	18.51	55.88	15.99	0.27
435.	**Memc Electronic Materials INC**	3,566,500	2,168,600	3,044,908	140	-4.62	60.80	n.s.	0.57
48.	**Merck & Co., Inc.**	112,314,000	59,058,000	77,069,370	130	25.89	52.58	6.00	0.21
42.	**Metlife, Inc.**	539,314,240	33,497,951	28,944,247	86	-8.24	6.21	n.s.	0.41
349.	**Metropcs Communications, Inc.**	7,386,018	2,288,142	2,688,817	118	11.52	30.98	15.26	0.60
470.	**Microchip Technology INC**	2,516,313	1,533,380	5,188,068	338	15.51	60.94	23.91	0.29
223.	**Micron Technology INC**	11,459,000	4,953,000	6,402,146	129	-37.39	43.22	n.s.	0.61
28.	**Microsoft Corp**	77,888,000	39,558,000	211,546,349	535	50.11	50.79	14.52	0.23
373.	**Molex INC**	3,011,586	1,961,252	1,485,831	76	-16.40	65.12	n.s.	0.37
392.	**Molson Coors Brewing Company**	12,021,100	7,079,600	7,178,923	101	10.13	58.89	9.97	0.23
175.	**Monsanto CO**	17,831,000	10,039,000	45,791,291	456	29.07	56.30	21.89	0.35
443.	**Moody's Corporation**	2,003,300	-606,200	6,338,200	-1,046	n.s.	-30.26	15.77	0.39
77.	**Morgan Stanley**	771,462,000	52,780,000	40,239,228	76	-1.92	6.84	332.56	0.51
203.	**Mosaic Company (The)**	12,676,200	8,493,000	n.a.	#VALUE!	34.21	67.00	n.a.	0.48

180.	**Motorola Mobility Holdings INC**	5,858,000	1,904,000	n.a.	#VALUE!	-70.12	32.50	n.a.	0.63
107.	**Motorola Solutions, Inc.**	25,603,000	9,775,000	17,932,922	183	-5.15	38.18	n.s.	2.12
95.	**Murphy Oil Corp**	12,756,359	7,346,026	10,348,539	141	17.39	57.59	12.36	0.36
341.	**Nabors Industries Ltd.**	10,644,690	5,167,656	6,201,228	120	-4.55	48.55	n.s.	0.51
394.	**Nasdaq OMX Group, Inc. (The)**	10,722,000	4,947,000	4,183,452	85	7.90	46.14	15.73	0.37
171.	**National Oilwell Varco, Inc.**	21,532,000	14,113,000	18,444,466	131	15.65	65.54	12.56	0.43
469.	**National Semiconductor Corp**	1,963,300	177,000	3,187,060	1,801	64.18	9.02	43.48	0.53
308.	**Netapp, Inc.**	5,384,400	1,784,200	6,161,748	345	0.47	33.14	95.38	0.41
438.	**Netflix, Inc.**	679,734	199,143	3,010,266	1,512	96.51	29.30	25.98	0.67
293.	**Newell Rubbermaid Inc.**	6,423,900	1,778,700	4,168,277	234	24.07	27.69	14.59	0.36
452.	**Newfield Exploration CO**	6,254,000	2,768,000	6,408,244	232	-31.97	44.26	n.s.	0.44
209.	**Newmont Mining Corporation**	22,299,000	10,703,000	22,727,991	212	27.60	48.00	17.59	0.29
69.	**News Corporation, Inc.**	53,121,000	23,224,000	16,538,626	71	-23.85	43.72	n.s.	0.37
136.	**Nextera Energy, Inc.**	48,458,000	12,967,000	21,822,438	168	14.98	26.76	13.51	0.18
412.	**Nicor INC**	4,435,700	1,037,700	1,904,239	184	19.33	23.39	14.05	0.19
101.	**Nike INC**	13,249,600	8,693,400	22,173,054	255	22.51	65.61	14.91	0.28
274.	**Nisource INC**	19,271,700	4,854,100	4,241,106	87	8.18	25.19	19.48	0.21
408.	**Noble Corporation**	8,396,896	6,788,432	10,660,834	157	29.70	80.84	6.35	0.38
403.	**Noble Energy, Inc.**	11,807,000	6,157,000	12,355,055	201	-4.29	52.15	n.s.	0.34
205.	**Nordstrom INC**	6,579,000	1,572,000	7,512,224	478	44.27	23.89	17.04	0.38
211.	**Norfolk Southern Corp**	27,369,000	10,353,000	19,284,998	186	15.67	37.83	18.80	0.28
316.	**Northeast Utilities**	14,057,679	3,694,102	4,525,205	122	13.96	26.28	13.71	0.20
368.	**Northern Trust Corporation**	82,141,531	6,312,099	12,654,884	200	19.88	7.68	14.64	0.30
80.	**Northrop Grumman Corporation**	30,418,000	12,687,000	17,523,033	138	16.32	41.71	10.39	0.26
499.	**Novell INC**	1,902,908	934,522	1,418,400	152	-21.83	49.11	n.s.	0.33
478.	**Novellus Systems INC**	1,558,978	1,179,777	2,263,975	192	-5.88	75.68	n.s.	0.38
221.	**NRG Energy, Inc.**	23,378,000	7,932,000	6,053,824	76	21.04	33.93	6.66	0.28
132.	**Nucor Corp**	12,571,904	7,390,526	14,686,045	199	-5.60	58.79	n.s.	0.32
376.	**Nvidia Corp**	3,585,918	2,665,140	8,539,911	320	-3.09	74.32	n.s.	0.54
336.	**Nyse Euronext**	14,382,000	6,871,000	6,578,000	96	2.98	47.77	30.04	0.43
300.	**O Reilly Automotive INC**	4,781,471	2,685,865	5,229,733	195	18.50	56.17	17.01	0.22
108.	**Occidental Petroleum Corp**	44,229,000	29,081,000	66,029,128	227	17.32	65.75	22.68	0.35
162.	**Omnicom Group INC**	17,920,700	4,194,800	12,185,125	290	30.38	23.41	15.54	0.27

160.	**Oneok INC**	12,827,683	2,207,194	4,701,714	213	31.65	17.21	15.39	0.24
64.	**Oracle Corp**	47,416,000	25,090,000	97,625,081	389	31.22	52.91	17.45	0.32
264.	**Owens Illinois INC**	8,727,000	1,538,000	5,541,907	360	13.98	17.62	34.42	0.45
196.	**Paccar INC**	14,569,000	5,103,700	13,184,457	258	3.43	35.03	117.82	0.36
410.	**Pall Corp**	2,840,812	1,114,598	3,547,366	318	24.29	39.24	18.13	0.34
167.	**Parker Hannifin Corp**	9,855,902	4,268,199	6,895,518	162	16.00	43.31	13.56	0.35
383.	**Patterson Companies, Inc.**	2,133,620	1,186,320	2,495,327	210	26.94	55.60	12.50	0.28
439.	**Paychex INC**	5,127,415	1,341,478	9,864,928	735	60.54	26.16	18.49	0.23
260.	**Peabody Energy Corp**	9,955,300	3,749,700	12,108,852	323	17.38	37.67	27.19	0.44
489.	**People's United Bank**	20,637,335	3,212,780	n.a.	#VALUE!	5.00	15.57	n.a.	n.a.
490.	**People's United Financial, INC**	21,257,200	5,100,700	5,815,845	114	2.83	24.00	57.47	0.26
257.	**Pepco Holdings, Inc.**	15,779,000	4,256,000	3,733,838	88	7.68	26.97	15.89	0.19
38.	**Pepsico INC**	39,848,000	16,804,000	94,875,030	565	48.08	42.17	15.97	0.16
460.	**Perkinelmer INC**	3,059,040	1,628,957	2,404,172	148	6.52	53.25	28.09	0.32
30.	**Pfizer INC**	212,949,000	90,014,000	146,784,865	163	12.03	42.27	17.00	0.23
153.	**Pg&E Corp**	42,945,000	10,333,000	16,563,374	160	16.39	24.06	13.87	0.19
31.	**Philip Morris International Inc.**	34,552,000	5,716,000	91,786,755	1,606	161.70	16.54	14.53	0.19
391.	**Pinnacle West Capital Corp**	11,986,324	3,316,109	3,704,875	112	11.73	27.67	54.22	0.18
424.	**Pioneer Natural Resources CO**	8,867,265	3,536,188	5,555,011	157	-7.00	39.88	n.s.	0.41
299.	**Pitney Bowes INC**	8,571,039	-3,152	4,714,481	-149,571	n.s.	-0.04	11.14	0.31
481.	**Plum Creek Timber Company, Inc.**	4,448,000	1,466,000	6,147,840	419	13.98	32.96	26.05	0.24
135.	**PNC Financial Services Group INC**	269,863,000	32,567,000	24,351,516	75	9.90	12.07	10.13	0.34
155.	**PPG Industries INC**	14,240,000	3,753,000	9,775,320	260	16.44	26.36	29.09	0.28
233.	**PPL Corp**	22,165,000	5,496,000	12,183,082	222	9.79	24.80	30.08	0.18
198.	**Praxair INC**	14,317,000	5,315,000	24,639,854	464	27.13	37.12	19.65	0.23
279.	**Precision Castparts Corp**	7,660,700	5,888,800	17,952,055	305	23.95	76.87	19.47	0.30
401.	**Priceline COM INC**	1,834,224	1,321,629	9,599,321	726	33.47	72.05	19.61	0.41
358.	**Principal Financial Group INC**	137,759,400	7,893,500	7,667,410	97	9.45	5.73	11.88	0.43
21.	**Procter & Gamble CO**	134,833,000	63,099,000	148,941,257	236	22.84	46.80	11.25	0.14
197.	**Progress Energy INC**	31,236,000	9,449,000	11,467,465	121	13.09	30.25	15.15	0.16
142.	**Progressive Corporation (The)**	19,519,900	5,748,600	12,129,369	211	27.08	29.45	11.47	0.26
494.	**Prologis Trust**	16,796,895	7,987,324	6,755,627	85	-4.26	47.55	n.s.	0.41
502.	**Prologis, Inc.**	6,841,958	2,940,016	3,738,114	127	-4.22	42.97	n.s.	0.40
125.	**Prudential Financial INC**	480,203,000	25,729,000	22,989,119	89	12.02	5.36	7.44	0.39

176.	**Public Service Enterprise Group Incorporated**	28,678,000	8,868,000	16,823,849	190	29.72	30.92	10.57	0.21
464.	**Public Storage INC**	9,805,645	8,928,407	13,808,970	155	8.94	91.05	23.57	0.28
329.	**Pultegroup, Inc.**	10,051,222	3,194,440	3,803,671	119	-61.83	31.78	n.s.	0.54
434.	**QEP Resources, Inc.**	6,481,400	2,753,800	n.a.	#VALUE!	12.09	42.49	n.a.	0.41
139.	**Qualcomm INC**	27,445,000	20,316,000	74,770,708	368	11.83	74.02	46.97	0.31
355.	**Quanta Services INC**	4,116,954	3,109,183	4,359,128	140	7.52	75.52	26.88	0.41
250.	**Quest Diagnostics Incorporated**	8,563,643	3,989,639	11,164,301	280	30.78	46.59	15.36	0.27
201.	**R. R. Donnelley & Sons Company**	8,747,600	2,134,000	4,572,031	214	4.36	24.40	n.s.	0.34
332.	**Radioshack Corp**	2,429,300	1,048,300	2,441,291	233	31.34	43.15	11.91	0.44
296.	**Ralph Lauren Corporation**	n.a.	n.a.	n.a.	#VALUE!	n.a.	n.a.	n.a.	0.38
485.	**Range Resources Corp**	5,395,881	2,378,589	7,863,037	331	-2.47	44.08	n.s.	0.44
87.	**Raytheon Company**	23,607,000	9,827,000	19,743,340	201	29.82	41.63	10.20	0.23
493.	**RED Hat INC**	1,870,872	1,111,052	5,293,321	476	10.94	59.39	60.67	0.40
259.	**Regions Financial Corporation**	142,318,000	17,881,000	6,284,689	35	-6.72	12.56	n.s.	0.54
235.	**Republic Services INC**	19,540,300	7,564,500	10,761,879	142	11.43	38.71	21.74	0.24
231.	**Reynolds American Inc.**	18,009,000	6,498,000	15,434,195	238	23.61	36.08	16.04	0.19
285.	**Rockwell Automation, Inc.**	4,305,700	1,316,400	6,047,357	459	20.81	30.57	27.46	0.41
321.	**Rockwell Collins INC**	4,645,000	1,292,000	8,008,435	620	66.41	27.81	13.48	0.27
427.	**Roper Industries INC**	4,327,736	2,421,490	4,768,550	197	14.03	55.95	19.91	0.29
239.	**Ross Stores INC**	2,768,633	1,157,293	5,689,490	492	62.09	41.80	12.85	0.25
457.	**Rowan Companies, Inc.**	5,210,694	3,110,370	2,575,321	83	16.11	59.69	7.01	0.41
307.	**Ryder System INC**	6,259,830	1,426,995	2,307,601	162	10.07	22.80	37.84	0.36
55.	**Safeway INC**	14,963,600	4,946,400	8,652,256	175	-19.27	33.06	n.s.	0.28
183.	**Saic, Inc.**	5,295,000	2,291,000	7,257,089	317	34.88	43.27	15.06	0.27
463.	**Salesforce.Com, Inc.**	2,460,201	1,043,802	8,083,560	774	13.64	42.43	100.14	0.47
319.	**Sandisk Corp**	6,001,719	3,910,298	6,615,912	169	12.88	65.15	15.93	0.44
227.	**Sara LEE Corporation**	9,419,000	2,036,000	6,789,353	333	14.64	21.62	18.65	0.25
327.	**Scana Corp**	12,094,000	3,408,000	4,639,637	136	15.32	28.18	13.33	0.18
82.	**Schlumberger N.V.**	33,465,000	19,120,000	78,157,743	409	20.58	57.13	24.94	0.36
440.	**Scripps Networks Interactive, Inc.**	2,963,062	1,383,716	5,365,536	388	37.60	46.70	17.92	0.32
331.	**Sealed Air Corp**	5,420,100	2,199,600	3,474,866	158	15.00	40.58	14.34	0.31
52.	**Sears Holdings Corporation**	24,808,000	9,096,000	10,780,337	119	4.62	36.67	45.87	0.46
218.	**Sempra Energy**	28,512,000	9,107,000	13,795,871	151	16.21	31.94	12.33	0.19

242.	**Sherwin Williams Company (The)**	4,323,856	1,490,950	6,987,457	469	41.77	34.48	16.20	0.23
432.	**Sigma Aldrich Corp**	2,713,800	1,686,000	6,151,671	365	29.04	62.13	17.74	0.29
354.	**Simon Property Group INC**	25,948,266	4,862,695	22,607,435	465	7.96	18.74	79.86	0.28
330.	**SLM Corporation - Sallie MAE**	169,985,300	5,278,600	5,348,638	101	13.66	3.11	16.46	0.45
417.	**Snap On INC**	3,447,400	1,290,000	2,439,675	189	15.91	37.42	18.18	0.31
120.	**Southern CO**	52,046,000	15,960,000	26,663,043	167	16.32	30.67	16.23	0.13
173.	**Southwest Airlines CO**	14,269,000	5,454,000	8,480,373	155	3.01	38.22	85.66	0.32
418.	**Southwestern Energy CO**	4,770,250	2,331,225	16,643,234	714	-2.24	48.87	n.s.	0.36
314.	**Spectra Energy Corp.**	24,091,000	7,266,000	13,264,952	183	17.49	30.16	15.64	0.23
73.	**Sprint Nextel Corporation**	55,424,000	18,095,000	10,310,471	57	-19.31	32.65	n.s.	0.57
306.	**ST Jude Medical INC**	6,425,811	3,323,551	12,293,908	370	31.82	51.72	15.82	0.30
234.	**Stanley Black & Decker, Inc.**	4,769,100	1,986,100	4,142,472	209	14.26	41.65	18.49	0.36
90.	**Staples INC**	13,717,334	6,771,886	16,982,614	251	17.07	49.37	22.99	0.34
177.	**Starbucks Corp**	5,576,800	3,045,700	15,221,115	500	18.38	54.61	38.95	0.32
310.	**Starwood Hotels & Resorts Worldwide, Inc.**	8,761,000	1,824,000	6,838,952	375	-16.23	20.82	93.68	0.41
220.	**State Street Corporation**	157,946,000	14,491,000	21,537,724	149	-8.00	9.17	n.s.	0.36
473.	**Stericycle INC**	2,182,803	845,695	4,646,772	549	32.84	38.74	26.45	0.26
251.	**Stryker Corporation**	9,071,300	6,595,100	20,034,091	304	24.62	72.70	18.09	0.28
63.	**Sunoco INC**	11,895,000	2,557,000	3,051,330	119	-24.13	21.50	n.s.	0.34
229.	**Suntrust Banks, Inc.**	174,164,700	22,530,900	10,127,764	45	-10.88	12.94	n.s.	0.46
62.	**Supervalu INC**	16,436,000	2,887,000	3,237,323	112	21.89	17.57	8.24	0.51
280.	**Symantec Corp**	10,638,000	4,147,000	13,324,585	321	-157.95	38.98	n.s.	0.33
58.	**Sysco Corp**	10,148,186	3,449,702	13,260,848	384	51.33	33.99	12.56	0.20
429.	**T. Rowe Price Group, INC**	3,210,300	2,882,200	13,711,981	476	23.90	89.78	31.62	0.38
32.	**Target Corp**	44,533,000	15,347,000	38,571,077	251	25.23	34.46	15.50	0.23
170.	**TE Connectivity Ltd..**	16,220,000	7,016,000	10,219,190	146	-52.31	43.26	n.s.	0.31
380.	**Teco Energy, Inc.**	7,219,500	2,085,400	3,467,307	166	14.99	28.89	16.35	0.21
466.	**Tellabs INC**	2,622,800	1,914,900	2,193,520	115	5.91	73.01	n.a.	0.48
215.	**Tenet Healthcare Corp**	7,953,000	646,000	2,593,288	401	31.73	8.12	14.33	0.59
450.	**Teradata Corporation**	1,569,000	910,000	5,380,816	591	36.70	58.00	21.18	0.37
467.	**Teradyne INC**	1,235,337	664,579	1,876,416	282	-21.46	53.80	n.s.	0.46
103.	**Tesoro Corporation**	8,070,000	3,087,000	1,899,775	62	-6.09	38.25	n.s.	0.52

151.	**Texas Instruments INC**	12,119,000	9,722,000	32,649,880	336	20.75	80.22	22.42	0.27
191.	**Textron INC**	18,940,000	2,826,000	5,099,716	180	-5.27	14.92	n.s.	0.41
187.	**Thermo Fisher Scientific Inc.**	21,625,000	15,430,900	19,472,524	126	6.01	71.36	22.92	0.31
400.	**Tiffany & CO**	3,488,360	1,883,239	5,053,949	268	20.71	53.99	19.08	0.37
110.	**Time Warner Cable Inc.**	43,694,000	8,685,000	14,587,239	168	22.01	19.88	13.63	0.28
85.	**Time Warner Inc.**	66,059,000	33,396,000	34,023,221	102	9.69	50.55	13.79	0.28
496.	**Titanium Metals Corp**	1,378,600	1,107,000	2,253,865	204	5.10	80.30	65.71	0.43
98.	**TJX Companies INC**	7,463,977	2,889,276	15,560,766	539	67.55	38.71	12.82	0.23
414.	**Torchmark Corporation**	16,023,759	3,398,891	3,638,383	107	17.53	21.21	8.99	0.29
459.	**Total System Services INC**	1,710,954	1,175,801	3,405,376	290	28.97	68.72	15.95	0.26
96.	**Travelers Companies INC (The)**	96,531,000	27,415,000	27,242,173	99	17.18	28.40	7.52	0.25
122.	**Tyco International Limited**	25,553,000	12,941,000	16,347,168	126	-13.53	50.64	n.s.	0.29
75.	**Tyson Foods INC**	10,595,000	4,398,000	3,781,193	86	-12.35	41.51	n.s.	0.32
124.	**Union Pacific Corp**	42,184,000	16,801,000	32,240,696	192	17.70	39.83	17.06	0.29
44.	**United Parcel Service INC**	31,883,000	7,630,000	40,516,185	531	44.12	23.93	18.83	0.21
121.	**United States Steel Corporation**	15,422,000	4,676,000	7,901,475	169	-39.46	30.32	n.s.	0.53
39.	**United Technologies Corporation**	55,762,000	20,066,000	65,074,614	324	28.71	35.99	16.99	0.26
19.	**Unitedhealth Group INC**	59,045,000	23,606,000	35,418,267	150	24.60	39.98	9.27	0.30
245.	**Unum Group INC**	54,477,000	8,500,100	6,476,039	76	15.20	15.60	7.60	0.33
431.	**Urban Outfitters INC**	1,636,093	1,296,775	5,319,534	410	26.56	79.26	24.19	0.39
117.	**Us Bancorp**	281,176,000	26,661,000	43,048,662	161	9.87	9.48	19.24	0.33
244.	**V. F. Corporation**	6,473,863	3,815,151	8,128,871	213	17.16	58.93	17.62	0.30
22.	**Valero Energy Corp**	35,572,000	14,725,000	9,452,854	64	-2.15	41.39	n.s.	0.46
419.	**Varian Medical Systems INC**	2,308,248	1,311,783	5,022,474	383	36.18	56.83	15.74	0.30
487.	**Ventas, Inc.**	5,616,245	2,465,511	6,849,937	278	7.88	43.90	25.70	0.29
500.	**Verisign INC**	2,470,144	549,741	4,662,449	848	22.66	22.26	18.99	0.31
11.	**Verizon Communications INC**	226,907,000	41,382,000	94,110,674	227	32.67	18.24	19.23	0.18
140.	**Viacom, Inc.**	21,900,000	8,704,000	16,490,090	189	27.77	39.74	10.24	0.32
216.	**Visa Inc.**	32,281,000	23,189,000	31,799,395	137	17.25	71.83	13.51	0.33
409.	**Vornado Realty Trust**	20,185,472	6,242,769	12,674,119	203	1.74	30.93	259.14	0.30
422.	**Vulcan Materials Company**	8,524,871	4,037,237	6,604,854	164	-0.48	47.36	217.88	0.40
253.	**W.W. Grainger, Inc.**	3,726,332	2,163,720	6,998,535	323	32.69	58.07	16.65	0.26
27.	**Walgreen CO**	25,142,000	14,376,000	33,621,838	234	22.01	57.18	16.76	0.27
1.	**Wal-Mart Stores, Inc.**	170,407,000	70,468,000	203,577,489	289	31.39	41.35	14.17	0.16

56.	**Walt Disney CO**	63,117,000	33,734,000	50,571,321	150	16.77	53.45	15.29	0.28
323.	**Washington Post CO**	5,186,206	2,951,076	3,564,410	121	7.21	56.90	39.21	0.35
163.	**Waste Management INC**	21,154,000	6,285,000	16,555,134	263	23.44	29.71	16.66	0.24
465.	**Waters Corp**	1,907,931	848,949	5,867,224	691	45.54	44.50	18.15	0.33
374.	**Watson Pharmaceuticals INC**	5,903,500	3,023,100	4,204,205	139	11.99	51.21	18.94	0.24
40.	**Wellpoint INC**	52,095,500	24,863,300	26,716,965	107	29.77	47.73	5.63	0.30
20.	**Wells Fargo & Company**	1,243,646,000	114,359,000	126,449,865	111	15.74	9.20	9.98	0.38
210.	**Western Digital Corp**	5,291,000	3,192,000	5,844,180	183	15.70	60.33	12.43	0.45
305.	**Western Union CO. (The)**	7,353,400	353,500	13,046,249	3,691	320.08	4.81	15.37	0.27
267.	**Weyerhaeuser CO**	15,250,000	4,044,000	9,117,973	225	-20.82	26.52	n.s.	0.91
115.	**Whirlpool Corp**	15,094,000	3,664,000	5,991,263	164	8.02	24.27	18.27	0.39
199.	**Whole Foods Market, Inc.**	3,783,388	2,040,928	4,283,217	210	12.30	53.94	36.07	0.37
207.	**Williams Companies INC**	25,280,000	8,447,000	12,292,385	146	11.16	33.41	43.13	0.37
367.	**Windstream Corporation**	9,145,400	260,700	4,697,022	1,802	209.28	2.85	14.20	0.22
342.	**Wisconsin Energy Corp**	12,697,900	3,597,300	5,825,676	162	16.43	28.33	15.23	0.18
359.	**Wyndham Worldwide Corp.**	9,352,000	2,688,000	3,602,675	134	18.34	28.74	12.30	0.39
344.	**Wynn Resorts, Limited**	7,581,769	3,034,338	7,169,581	236	1.39	40.02	347.13	0.45
195.	**Xcel Energy INC**	25,305,961	7,388,225	9,690,019	131	14.30	29.20	14.32	0.16
99.	**Xerox Corp**	24,032,000	7,050,000	7,353,810	104	8.89	29.34	15.16	0.34
428.	**Xilinx INC**	n.a.	n.a.	n.a.	#VALUE!	n.a.	n.a.	n.a.	0.29
278.	**XL Group PLC**	41,394,628	9,612,785	6,271,222	65	2.03	23.22	83.74	0.34
393.	**Xylem Inc.**	2,535,000	1,687,000	n.a.	#VALUE!	16.42	66.55	n.a.	n.a.
276.	**Yahoo INC**	14,936,030	12,493,320	23,509,725	188	4.60	83.65	39.35	0.37
181.	**Yum! Brands, Inc.**	7,148,000	1,025,000	16,355,549	1,596	136.20	14.34	15.27	0.24
340.	**Zimmer Holdings, Inc.**	7,785,500	5,638,700	12,589,190	223	17.70	72.43	17.55	0.28
442.	**Zions Bancorporation**	51,144,478	5,710,257	1,773,233	31	-28.42	11.16	n.s.	0.44

Source: Osiris database

Appendix 4.2. Data on S&P 500 Financial Performance – 2010

	Company name	Total Assets 2010	SHF 2010	Market Cap 2010	M/B % 2010	ROE % 2010	Solvency (%) 2010	P/E ratio % 2010	Equity price volatility
86.	**3M Company**	30,156,000	15,663,000	61,692,341	394	36.74	51.94	15.10	0.26
65.	**Abbott Laboratories**	59,462,266	22,388,135	74,060,043	331	25.52	37.65	16.01	0.17
382.	**Abercrombie & Fitch CO**	2,947,902	1,890,784	4,428,329	234	12.09	64.14	29.47	0.50
83.	**Accenture PLC**	12,835,253	2,835,746	23,324,082	823	102.77	22.09	13.10	0.29
105.	**Ace Limited**	70,925,000	22,974,000	21,127,021	92	15.96	32.39	6.80	0.25
362.	**Adobe Systems INC**	8,141,148	5,192,387	14,824,003	285	18.16	63.78	19.14	0.39
270.	**Advanced Micro Devices INC**	4,964,000	1,013,000	5,576,818	551	95.85	20.41	11.84	0.51
126.	**AES Corporation**	40,511,000	6,473,000	9,599,056	148	16.13	15.98	n.s.	0.33
78.	**Aetna INC**	37,737,700	9,890,800	12,207,051	123	26.73	26.21	6.91	0.32
116.	**Aflac Incorporated**	101,039,000	11,056,000	26,593,284	241	32.43	10.94	11.35	0.38
266.	**Agilent Technologies INC**	9,696,000	3,228,000	12,053,688	373	21.44	33.29	17.62	0.44
200.	**Air Products & Chemicals INC**	13,505,900	5,546,900	17,602,262	317	25.13	41.07	17.11	0.25
339.	**Airgas INC**	4,935,881	1,734,882	5,591,755	322	23.41	35.15	22.39	0.23
286.	**AK Steel Holding Corporation**	4,188,600	644,700	1,800,582	279	-27.07	15.39	n.s.	0.61
486.	**Akamai Technologies INC**	2,352,676	2,177,605	8,579,187	394	12.05	92.56	50.11	0.51
100.	**Alcoa INC**	39,293,000	13,611,000	15,719,986	115	4.03	34.64	61.89	0.40
350.	**Allegheny Technologies INC**	4,493,600	2,040,800	5,439,900	267	6.16	45.42	76.94	0.53
315.	**Allergan INC**	8,308,100	4,757,700	21,116,841	444	3.59	57.27	n.s.	0.24
84.	**Allstate Corporation (The)**	128,802,000	19,016,000	17,157,303	90	5.92	14.76	18.49	0.29
357.	**Alpha Natural Resources, Inc.**	5,179,283	2,656,036	7,227,842	272	3.82	51.28	75.64	0.65
448.	**Altera Corp**	3,759,837	2,323,652	11,121,010	479	37.35	61.80	14.21	0.38
91.	**Altria Group, Inc.**	37,402,000	5,192,000	51,402,312	990	110.23	13.88	13.21	0.16
68.	**Amazon.Com, Inc.**	18,797,000	6,864,000	80,790,616	1,177	21.81	36.52	70.13	0.36
246.	**Ameren Corp**	23,515,000	7,730,000	6,717,293	87	6.16	32.87	48.33	0.21
145.	**American Electric Power Company**	50,455,000	13,682,000	17,299,441	126	13.51	27.12	14.29	0.18

	INC								
81.	**American Express Company**	147,042,000	16,230,000	51,665,562	318	36.75	11.04	12.73	0.30
47.	**American International Group INC**	683,443,000	85,753,000	n.a.	#VALUE!	18.51	12.55	n.a.	0.47
445.	**American Tower Corp**	10,368,014	3,501,444	20,608,489	589	15.88	33.77	55.26	0.27
476.	**Ameriprise Financial Inc.**	131,192,000	10,725,000	14,270,198	133	14.86	8.18	11.33	0.42
25.	**Amerisourcebergen Corp**	14,434,843	2,954,297	8,549,152	289	34.79	20.47	13.43	0.26
138.	**Amgen Incorporated**	43,486,000	23,944,000	51,870,367	217	22.21	55.06	11.21	0.22
375.	**Amphenol Corp**	4,015,857	2,320,855	9,216,001	397	28.60	57.79	18.56	0.33
185.	**Anadarko Petroleum Corp**	51,559,000	20,684,000	37,744,324	182	7.93	40.12	49.93	0.43
405.	**Analog Devices INC**	4,328,831	3,199,717	10,055,646	314	28.18	73.92	14.12	0.29
430.	**AON Corporation**	n.a.	n.a.	n.a.	#VALUE!	n.a.	n.a.	n.a.	0.25
174.	**Apache Corp**	43,425,000	24,377,000	43,470,227	178	21.36	56.14	14.49	0.35
484.	**Apartment Investment & Management CO**	7,378,566	1,066,042	3,024,151	284	-17.29	14.45	n.s.	0.35
322.	**Apollo Group, Inc.**	3,601,451	1,356,050	6,248,325	461	73.82	37.65	11.30	0.44
10.	**Apple Inc.**	75,183,000	47,791,000	259,223,467	542	38.79	63.57	18.50	0.25
192.	**Applied Materials INC**	10,943,345	7,536,113	16,500,440	219	18.40	68.86	17.59	0.31
24.	**Archer-Daniels-Midland Company**	31,808,000	14,609,000	16,603,547	114	17.69	45.93	8.60	0.31
206.	**Assurant INC**	21,432,277	4,785,537	4,104,456	86	12.67	22.33	14.70	0.30
8.	**At&T Inc.**	268,488,000	111,647,000	173,635,795	156	16.34	41.58	8.74	0.17
449.	**Autodesk INC**	2,787,600	1,609,300	9,250,426	575	16.90	57.73	43.63	0.43
204.	**Automatic Data Processing INC**	26,862,200	5,478,900	20,250,282	370	34.01	20.40	16.72	0.20
164.	**Autonation INC**	5,974,200	2,078,900	4,173,514	201	18.34	34.80	18.42	0.36
236.	**Autozone INC**	5,571,594	-738,765	9,861,883	-1,335	n.s.	-13.26	13.36	0.18
495.	**Avalonbay Communities INC**	7,821,488	3,310,618	9,598,771	290	2.96	42.33	54.90	0.29
269.	**Avery Dennison Corporation**	5,099,400	1,645,700	4,632,730	282	21.35	32.27	14.62	0.35
186.	**Avon Products INC**	7,873,700	1,656,500	12,471,980	753	57.07	21.04	20.75	0.35
146.	**Baker Hughes INC**	22,986,000	14,100,000	24,655,917	175	9.09	61.34	30.36	0.43
247.	**Ball Corp**	6,927,700	1,518,000	6,010,217	396	39.95	21.91	12.84	0.25
12.	**Bank Of America Corporation**	2,264,909,000	228,248,000	134,535,865	59	-0.58	10.08	n.s.	0.53
152.	**Bank Of NEW York Mellon Corporation**	247,259,000	33,157,000	37,461,724	113	11.14	13.41	14.51	0.35
161.	**Baxter International INC**	17,489,000	6,567,000	29,497,653	449	28.78	37.55	20.77	0.24
226.	**Bb&T Corporation**	157,081,400	16,497,883	18,238,228	111	5.88	10.50	21.35	0.35
254.	**Beam Inc.**	12,675,300	5,671,100	9,192,994	162	10.36	44.74	18.87	0.31

240.	**Becton, Dickinson And Company**	9,650,694	5,434,580	17,202,008	317	30.57	56.31	13.06	0.21
225.	**Bed Bath & Beyond INC**	5,646,193	3,931,659	12,265,339	312	32.89	69.63	15.50	0.29
318.	**Bemis Company, Inc.**	4,285,831	1,879,623	3,533,574	188	17.41	43.86	17.54	0.25
43.	**Best BUY CO, INC**	17,849,000	6,602,000	12,708,893	193	31.48	36.99	9.95	0.35
313.	**BIG Lots, Inc.**	1,619,599	946,793	2,399,136	253	37.54	58.46	10.78	0.34
324.	**Biogen Idec Inc.**	8,092,493	5,396,506	15,978,168	296	22.79	66.69	15.93	0.33
228.	**Blackrock, Inc.**	178,459,000	26,094,000	12,129,559	46	11.58	14.62	5.97	0.37
441.	**BMC Software INC**	4,485,400	1,662,900	8,884,609	534	31.95	37.07	19.49	0.34
34.	**Boeing CO**	68,565,000	2,766,000	47,873,464	1,731	162.94	4.03	14.48	0.30
468.	**Boston Properties INC**	13,348,263	4,372,643	12,063,116	276	4.35	32.76	75.83	0.28
241.	**Boston Scientific Corp**	22,128,000	11,296,000	11,506,980	102	-9.41	51.05	n.s.	0.38
106.	**Bristol-Myers Squibb Company**	31,076,000	15,713,000	45,325,428	288	38.64	50.56	14.67	0.18
261.	**Broadcom Corp**	7,944,310	5,826,089	21,108,685	362	18.83	73.34	19.51	0.39
384.	**Brown Forman Corp**	3,383,000	1,895,000	5,252,723	277	35.99	56.02	11.73	0.24
214.	**C.H. Robinson Worldwide, Inc.**	1,995,699	1,204,068	13,312,800	1,106	51.83	60.33	34.40	0.26
411.	**C.R. Bard INC**	3,171,500	1,631,500	8,525,675	523	43.99	51.44	16.93	0.24
335.	**CA, Inc.**	12,414,000	5,620,000	12,333,082	219	21.51	45.27	15.11	0.27
252.	**Cablevision Systems Corporation**	8,840,685	-6,296,918	8,314,280	-132	n.s.	-71.23	23.04	0.48
498.	**Cabot Oil & GAS Corporation**	4,005,031	1,872,700	3,935,381	210	10.60	46.76	38.07	0.46
282.	**Cameron International Corporation**	8,005,100	4,392,400	12,305,464	280	16.69	54.87	21.86	0.41
243.	**Campbell Soup CO**	6,276,000	926,000	12,189,193	1,316	134.13	14.75	14.69	0.17
128.	**Capital One Financial Corporation**	197,503,000	26,541,000	19,446,790	73	16.31	13.44	7.09	0.37
14.	**Cardinal Health INC**	19,990,200	5,276,100	12,169,240	231	22.96	26.39	18.95	0.26
377.	**Carefusion Corporation**	7,943,000	4,704,000	5,046,310	107	7.25	59.22	26.01	0.30
219.	**Carmax INC**	6,839,909	2,291,630	7,977,821	348	26.77	33.50	21.04	0.38
144.	**Carnival Corporation**	37,490,000	23,031,000	25,788,544	112	8.59	61.43	13.04	0.34
54.	**Caterpillar INC**	64,020,000	10,824,000	59,832,138	553	34.65	16.91	22.16	0.33
309.	**Cbre Group, Inc.**	5,121,568	908,215	6,612,875	728	29.96	17.73	33.01	0.49
149.	**CBS Corporation**	26,142,600	9,820,600	12,023,053	122	12.44	37.57	16.60	0.42
370.	**Celgene Corp**	10,177,162	5,983,973	27,833,671	465	16.92	58.80	31.61	0.28
224.	**Centerpoint Energy, Inc.**	20,111,000	3,198,000	6,652,456	208	22.05	15.90	15.05	0.23
256.	**Centurylink, Inc.**	22,038,098	9,641,241	14,000,895	145	15.89	43.75	14.86	0.23
407.	**Cephalon INC**	4,891,833	2,633,432	4,643,409	176	23.50	53.83	10.91	0.30

455.	**Cerner Corp**	2,422,790	1,905,297	7,849,446	412	19.01	78.64	33.08	0.30
353.	**CF Industries Holdings, Inc.**	8,758,500	4,050,400	9,613,049	237	16.98	46.25	27.53	0.47
338.	**Charles Schwab Corporation**	92,568,000	6,226,000	20,443,502	328	12.51	6.73	45.03	0.34
213.	**Chesapeake Energy Corp**	37,179,000	15,264,000	16,942,938	111	18.89	41.06	10.19	0.39
3.	**Chevron Corporation**	184,769,000	105,081,000	183,634,100	175	30.51	56.87	9.65	0.25
456.	**Chipotle Mexican Grill Inc.**	1,121,605	810,873	6,580,851	812	35.65	72.30	36.77	0.36
168.	**Chubb Corporation**	48,432,000	15,530,000	18,186,176	117	19.24	32.07	8.37	0.23
113.	**Cigna Corporation**	45,446,000	6,645,000	9,931,928	149	28.14	14.62	7.36	0.32
406.	**Cincinnati Financial Corporation**	14,769,000	5,032,000	5,157,105	102	9.96	34.07	13.68	0.27
361.	**Cintas Corp**	3,969,736	2,534,029	3,974,616	157	13.57	63.83	18.49	0.28
53.	**Cisco Systems INC**	81,130,000	44,267,000	131,756,254	298	21.27	54.56	16.96	0.37
18.	**Citigroup INC**	1,913,902,000	165,789,000	137,407,297	83	7.95	8.66	12.63	0.47
453.	**Citrix Systems INC**	3,703,600	2,552,991	12,845,651	503	13.08	68.93	46.36	0.47
325.	**Cliffs Natural Resources Inc.**	7,778,200	3,845,900	10,567,196	275	33.76	49.44	10.36	0.53
303.	**Clorox CO**	4,548,000	83,000	8,754,691	10,548	969.88	1.82	14.59	0.23
404.	**CME Group Inc.**	35,046,100	20,060,100	21,560,990	107	8.58	57.24	22.66	0.34
272.	**CMS Energy Corp**	15,616,000	2,793,000	4,549,108	163	21.12	17.89	14.04	0.20
345.	**Coach INC**	2,467,115	1,505,293	10,913,608	725	76.94	61.01	14.85	0.38
66.	**Coca-Cola Company (The)**	72,921,000	31,003,000	152,720,150	493	45.94	42.52	12.93	0.16
262.	**Coca-Cola Refreshments Usa, Inc.**	8,596,000	3,143,000	8,479,831	270	23.74	36.56	13.59	0.42
328.	**Cognizant Technology Solutions Corp**	4,583,074	3,584,431	22,242,228	621	24.51	78.21	30.32	0.36
134.	**Colgate Palmolive CO**	11,172,000	2,675,000	38,793,277	1,450	128.22	23.94	17.88	0.19
61.	**Comcast Corporation**	118,534,000	44,354,000	45,517,904	103	13.76	37.42	12.52	0.28
425.	**Comerica Incorporated**	53,667,000	5,793,000	7,455,007	129	5.44	10.79	26.91	0.38
129.	**Computer Sciences Corp**	16,455,000	6,446,000	8,333,625	129	15.85	39.17	10.20	0.42
492.	**Compuware Corporation**	2,038,377	952,612	2,526,679	265	16.25	46.73	23.52	0.36
169.	**Conagra Foods, Inc.**	11,738,000	4,923,900	10,773,604	219	21.96	41.95	14.88	0.18
4.	**Conocophillips**	156,314,000	68,562,000	100,054,187	146	28.81	43.86	8.81	0.26
302.	**Consol Energy INC**	12,070,610	2,944,477	11,007,666	374	15.89	24.39	31.74	0.46
157.	**Consolidated Edison, Inc.**	36,146,000	11,274,000	14,401,874	128	13.76	31.19	14.52	0.15
389.	**Constellation Brands, Inc.**	7,167,600	2,551,900	3,776,123	148	21.59	35.60	6.75	0.30
147.	**Constellation Energy Group INC**	20,018,500	8,019,200	6,192,671	77	-19.92	40.06	n.s.	0.25
311.	**Cooper Industries Public Limited Company**	6,668,600	3,206,100	9,483,926	296	16.53	48.08	21.37	0.33

265.	**Corning INC**	25,833,000	19,375,000	30,194,820	156	19.83	75.00	8.49	0.38
17.	**Costco Wholesale Corp**	23,815,000	10,829,000	24,810,969	229	18.97	45.47	19.04	0.21
193.	**Coventry Health Care INC**	8,495,585	4,199,166	3,920,134	93	16.35	49.43	8.94	0.36
189.	**CSX Corp**	28,141,000	8,686,000	24,176,093	278	29.31	30.87	15.47	0.32
158.	**Cummins Inc.**	10,402,000	4,670,000	21,761,044	466	34.63	44.90	20.92	0.41
16.	**CVS Caremark Corporation**	62,169,000	37,700,000	47,245,477	125	14.93	60.64	13.79	0.23
369.	**D.R. Horton, Inc.**	5,938,600	2,613,200	3,539,664	135	3.81	44.00	14.44	0.40
159.	**Danaher Corp**	22,217,130	13,711,010	30,847,021	225	17.09	61.71	17.20	0.28
249.	**Darden Restaurants INC**	5,276,100	1,894,000	6,033,037	319	28.70	35.90	14.92	0.28
271.	**Davita Inc.**	8,114,424	1,978,422	6,754,428	341	37.63	24.38	16.65	0.27
172.	**Dean Foods Company**	7,956,667	1,499,525	1,610,494	107	10.08	18.85	17.60	0.46
76.	**Deere & CO**	43,266,800	6,290,300	32,552,683	518	48.09	14.54	17.46	0.32
37.	**Dell, Inc.**	38,599,000	7,766,000	25,402,634	327	43.14	20.12	9.64	0.36
451.	**Denbury Resources Inc.**	9,065,063	4,380,707	7,629,878	174	10.94	48.33	28.08	0.45
436.	**Dentsply International INC**	3,257,951	1,839,386	4,855,530	264	19.44	56.46	18.27	0.30
202.	**Devon Energy Corp**	32,927,000	19,253,000	33,908,470	176	18.53	58.47	7.45	0.31
437.	**Devry INC**	1,627,826	1,179,381	3,739,210	317	34.99	72.45	13.36	0.51
390.	**Diamond Offshore Drilling INC**	6,726,984	3,861,712	9,296,724	241	34.60	57.41	9.73	0.34
93.	**Directv**	17,909,000	-194,000	33,290,554	-17,160	n.s.	-1.08	15.15	0.24
263.	**Discover Financial Services**	60,784,968	6,456,846	9,955,095	154	19.65	10.62	13.02	0.36
365.	**Discovery Communications, Inc.**	11,019,000	6,225,000	5,716,533	92	15.02	56.49	8.77	0.29
137.	**Dominion Resources INC**	42,817,000	12,254,000	24,799,291	202	41.10	28.62	8.83	0.17
255.	**Dover Corp**	8,562,894	4,526,562	10,917,877	241	20.44	52.86	15.60	0.34
41.	**DOW Chemical Company (The)**	69,588,000	21,839,000	39,626,842	181	12.83	31.38	20.12	0.41
297.	**DR Pepper Snapple Group Inc.**	8,859,000	2,459,000	7,984,559	325	33.39	27.76	15.12	0.24
230.	**DTE Energy CO**	24,896,000	6,722,000	7,664,394	114	14.13	27.00	12.17	0.18
148.	**Duke Energy Corporation**	59,090,000	22,522,000	23,590,212	105	9.81	38.11	17.87	0.15
462.	**DUN & Bradstreet Corp**	1,905,500	-654,400	4,089,084	-625	n.s.	-34.34	16.28	0.21
447.	**E*Trade Financial Corporation**	46,373,000	4,052,500	3,533,077	87	-0.08	8.74	n.s.	0.49
71.	**E. I. DU Pont De Nemours And Company**	40,410,000	9,278,000	45,535,154	491	40.00	22.96	15.07	0.28
292.	**Eastman Chemical CO**	5,986,000	1,627,000	n.a.	#VALUE!	39.09	27.18	n.a.	n.a.
154.	**Eaton Corp**	17,252,000	7,362,000	17,084,133	232	14.07	42.67	18.39	0.35

217.	**Ebay INC**	22,003,762	15,302,179	36,283,052	237	13.71	69.54	20.15	0.37
284.	**Ecolab INC**	4,872,200	2,129,200	11,704,246	550	35.12	43.70	22.07	0.24
165.	**Edison International**	45,530,000	11,490,000	13,614,528	118	14.42	25.24	10.88	0.20
472.	**Edwards Lifesciences Corp**	1,767,200	1,308,200	9,230,203	706	20.50	74.03	42.34	0.33
326.	**EL Paso Corp**	25,270,000	4,615,000	9,689,002	210	28.39	18.26	13.44	0.38
371.	**Electronic Arts INC**	4,928,000	2,564,000	6,529,196	255	-10.88	52.03	n.s.	0.38
97.	**Eli Lilly And Company**	31,001,400	12,420,300	40,406,143	325	52.54	40.06	7.97	0.18
123.	**EMC Corp**	30,833,284	17,404,040	47,183,062	271	14.98	56.45	24.83	0.29
92.	**Emerson Electric CO**	22,843,000	9,792,000	39,621,846	405	29.40	42.87	18.31	0.30
179.	**Entergy Corp**	38,685,276	8,807,138	13,232,162	150	21.43	22.77	10.58	0.18
283.	**EOG Resources INC**	21,624,233	10,231,632	23,219,580	227	3.99	47.32	144.53	0.38
479.	**EQT Corporation**	7,098,438	3,078,696	6,687,597	217	11.54	43.37	29.37	0.36
454.	**Equifax INC**	3,433,600	1,691,400	4,393,096	260	22.18	49.26	16.47	0.26
444.	**Equity Residential**	16,184,194	5,090,186	14,777,025	290	-0.89	31.45	54.88	0.30
222.	**Estee Lauder Companies Inc. (The)**	5,335,600	1,948,400	6,763,582	347	35.33	36.52	14.14	0.35
112.	**Exelon Corporation**	52,240,000	13,560,000	27,541,251	203	31.13	25.96	10.75	0.18
387.	**Expedia, Inc.**	6,650,994	2,672,544	6,309,089	236	23.22	40.18	14.97	0.40
287.	**Expeditors International Of Washington INC**	2,679,179	1,740,906	11,594,657	666	32.40	64.98	33.69	0.31
50.	**Express Scripts, Inc.**	10,557,800	3,606,600	28,441,704	789	52.92	34.16	24.08	0.32
2.	**Exxon Mobil Corp**	302,510,000	146,839,000	368,711,748	251	36.07	48.54	12.11	0.23
482.	**F5 Networks INC**	1,362,192	1,003,698	8,353,346	832	23.68	73.68	55.26	0.57
232.	**Family Dollar Stores, Inc.**	2,968,145	1,421,554	5,675,632	399	39.66	47.89	15.85	0.29
433.	**Fastenal Company**	1,468,283	1,282,512	8,832,574	689	33.58	87.35	33.29	0.30
491.	**Federated Investors INC**	1,153,504	491,799	2,693,327	548	61.23	42.64	15.60	0.31
59.	**Fedex Corp**	24,902,000	13,811,000	26,148,233	189	13.71	55.46	22.12	0.31
301.	**Fidelity National Information Services, Inc.**	14,161,800	6,403,200	8,243,314	129	9.62	45.21	20.38	0.26
275.	**Fifth Third Bancorp**	111,007,000	14,080,000	11,689,438	83	6.68	12.68	15.52	0.44
461.	**First Horizon National Corporation**	24,699,000	2,678,100	2,742,871	102	1.84	10.84	44.53	0.43
421.	**First Solar, Inc.**	4,380,403	3,454,945	11,155,607	323	22.06	78.87	16.80	0.55
156.	**Firstenergy Corporation**	34,805,000	8,545,000	11,285,007	132	14.53	24.55	14.39	0.22
346.	**Fiserv INC**	8,281,000	3,229,000	8,709,065	270	24.56	38.99	17.56	0.24
475.	**Flir Systems INC**	1,857,352	1,522,548	4,718,200	310	23.84	81.97	19.02	0.33

351.	**Flowserve Corp**	4,459,910	2,103,022	6,656,203	317	25.22	47.15	17.14	0.40
102.	**Fluor Corp**	7,614,923	3,496,999	11,846,762	339	16.00	45.92	33.14	0.41
399.	**FMC Corp**	3,319,900	1,131,500	5,711,004	505	30.98	34.08	33.30	0.32
347.	**FMC Technologies INC**	3,644,200	1,311,700	10,643,471	811	41.01	35.99	28.34	0.38
6.	**Ford Motor CO**	164,687,000	-673,000	57,116,276	-8,487	n.s.	-0.41	8.71	0.38
337.	**Forest Laboratories INC**	6,922,454	5,498,880	9,240,772	168	24.33	79.44	8.83	0.23
277.	**Franklin Resources, Inc.**	12,290,974	8,153,523	24,910,298	306	27.63	66.34	15.73	0.36
109.	**Freeport Mcmoran Copper & Gold INC**	29,386,000	12,504,000	56,547,894	452	68.19	42.55	13.23	0.44
363.	**Frontier Communications Corporation**	17,890,230	5,196,740	9,670,394	186	5.21	29.05	64.64	0.28
212.	**Gamestop Corp.**	5,063,800	2,897,300	3,189,934	110	21.45	57.22	7.82	0.32
298.	**Gannett CO INC**	6,816,844	2,163,754	3,605,427	167	39.10	31.74	6.13	0.45
143.	**GAP INC**	7,065,000	4,080,000	11,838,725	290	48.58	57.75	9.83	0.36
74.	**General Dynamics Corp**	32,545,000	13,316,000	26,804,707	201	28.46	40.92	10.22	0.26
5.	**General Electric Company**	751,216,000	118,936,000	195,542,424	164	11.95	15.83	17.24	0.28
141.	**General Mills INC**	17,678,900	5,402,900	23,632,450	437	40.80	30.56	15.44	0.17
182.	**Genuine Parts CO**	5,465,044	2,793,819	8,087,833	289	27.27	51.12	17.01	0.24
273.	**Genworth Financial INC**	110,741,000	13,861,000	6,433,287	46	0.55	12.52	22.57	0.62
237.	**Gilead Sciences INC**	11,592,630	5,863,729	29,422,086	502	66.74	50.58	10.14	0.29
60.	**Goldman Sachs Group, INC**	911,332,000	77,356,000	85,970,684	111	16.67	8.49	10.29	0.34
258.	**Goodrich Corporation**	9,271,600	3,346,900	11,041,816	330	24.05	36.10	19.35	0.30
111.	**Goodyear Tire & Rubber CO**	15,630,000	644,000	2,878,523	447	1.24	4.12	n.s.	0.56
79.	**Google Inc.**	57,851,000	46,241,000	147,546,345	319	23.35	79.93	17.35	0.30
364.	**H&R Block INC**	5,234,318	1,440,630	6,028,271	418	54.43	27.52	12.63	0.39
188.	**H. J. Heinz Company**	10,075,711	1,891,345	14,821,994	784	68.23	18.77	17.18	0.16
396.	**Half Robert International INC**	1,273,984	834,371	4,502,937	540	13.80	65.49	70.66	0.37
118.	**Halliburton CO**	18,297,000	10,373,000	37,136,308	358	25.60	56.69	20.24	0.46
317.	**Harley Davidson INC**	9,430,740	2,206,866	8,166,021	370	17.69	23.40	55.72	0.41
366.	**Harman International Industries INC**	2,556,215	1,134,892	2,078,204	183	4.32	44.40	13.09	0.49
290.	**Harris Corp**	4,743,600	2,189,600	5,346,591	244	38.38	46.16	9.62	0.31
150.	**Hartford Financial Services Group INC**	318,346,000	20,311,000	11,775,896	58	11.15	6.38	7.01	0.51
352.	**Hasbro INC**	4,093,226	1,615,420	6,425,683	398	31.43	39.47	16.16	0.26
480.	**Hcp, Inc.**	13,331,923	7,957,367	11,424,495	144	3.99	59.69	37.15	0.30

501.	**Health Care Reit INC**	9,451,734	4,602,851	6,437,553	140	1.70	48.70	60.23	0.27
423.	**Helmerich & Payne, Inc.**	4,265,370	2,807,465	4,281,221	152	15.61	65.82	27.46	0.44
295.	**Hershey Company (The)**	4,272,732	902,316	7,862,648	871	89.64	21.12	15.42	0.19
67.	**Hess Corporation**	35,396,000	16,689,000	25,846,087	155	19.84	47.15	12.16	0.39
7.	**Hewlett-Packard Company**	124,503,000	40,449,000	95,335,904	236	27.13	32.49	10.88	0.39
29.	**Home Depot INC**	40,125,000	18,889,000	60,259,436	319	27.92	47.08	18.05	0.25
70.	**Honeywell International INC**	37,834,000	10,666,000	41,473,977	389	26.65	28.19	20.51	0.30
238.	**Hormel Foods Corp**	4,053,918	2,400,657	6,115,815	255	26.02	59.22	15.46	0.20
356.	**Hospira, Inc.**	6,046,300	3,183,500	9,304,566	292	12.30	52.65	26.05	0.34
334.	**Host Hotels & Resorts, Inc.**	12,411,000	6,303,000	11,900,265	189	-2.52	50.79	n.s.	0.40
477.	**Hudson City Bancorp INC**	61,166,000	5,510,200	6,708,929	122	16.20	9.01	12.49	0.38
72.	**Humana INC**	16,103,253	6,924,056	9,213,758	133	25.27	43.00	8.38	0.30
413.	**Huntington Bancshares INC**	53,819,600	4,980,500	4,926,698	99	7.07	9.25	15.78	0.43
15.	**IBM Corp**	113,450,000	23,046,000	182,328,914	791	85.58	20.31	12.29	0.20
131.	**Illinois Tool Works INC**	16,250,273	9,370,276	26,482,713	283	23.61	57.66	17.34	0.30
304.	**Integrys Energy Group, Inc.**	9,816,800	2,956,900	3,763,504	127	12.57	30.12	17.04	0.21
51.	**Intel Corp**	63,186,000	49,430,000	117,305,344	237	32.46	78.23	10.23	0.25
483.	**Intercontinentalexchange, INC**	26,642,259	2,777,550	8,715,940	314	21.97	10.43	21.88	0.30
416.	**International Flavors & Fragrances INC**	2,872,455	999,422	4,444,467	445	35.98	34.79	16.86	0.27
446.	**International Game Technology**	4,007,000	1,234,300	4,307,545	349	24.70	30.80	23.16	0.40
88.	**International Paper CO**	25,368,000	6,834,000	11,916,307	174	12.03	26.94	18.50	0.38
268.	**Interpublic Group Of Companies INC**	13,070,800	2,529,000	5,190,370	205	17.82	19.35	19.14	0.48
360.	**Intuit INC**	5,198,000	2,821,000	12,486,151	443	28.89	54.27	21.75	0.31
474.	**Intuitive Surgical INC**	2,390,400	2,037,400	10,127,874	497	28.09	85.23	26.53	0.35
378.	**Invesco Ltd.**	20,444,100	8,264,600	11,117,056	135	10.09	40.43	23.87	0.45
398.	**Iron Mountain INC**	6,395,799	1,955,845	5,005,232	256	5.15	30.58	n.s.	0.30
184.	**ITT Corporation**	12,438,000	4,505,000	9,567,396	212	18.16	36.22	11.99	1.41
119.	**J. C. Penney Company, Inc.**	13,042,000	5,460,000	7,587,641	139	10.64	41.86	19.51	0.42
320.	**J. M. Smucker Company (The)**	7,974,853	5,326,320	7,274,814	137	13.72	66.79	14.85	0.19
127.	**Jabil Circuit INC**	6,367,747	1,578,046	2,229,004	141	15.67	24.78	13.20	0.49
194.	**Jacobs Engineering Group INC**	4,683,917	2,859,048	4,904,780	172	13.71	61.04	19.94	0.37
488.	**Janus Capital Group, Inc.**	2,726,800	1,171,500	2,383,180	203	20.91	42.96	14.90	0.49
458.	**JDS Uniphase Corp**	1,703,600	908,700	2,133,823	235	-6.29	53.34	n.s.	0.66

36.	**Johnson & Johnson**	102,908,000	56,579,000	169,855,787	300	29.95	54.98	12.74	0.16
57.	**Johnson Controls INC**	25,743,000	10,071,000	20,536,010	204	17.51	39.12	13.77	0.36
379.	**Joy Global INC**	3,284,041	1,355,394	7,327,514	541	50.10	41.27	15.88	0.44
13.	**JP Morgan Chase & CO.**	2,117,605,000	176,106,000	165,827,469	94	14.12	8.32	9.55	0.36
348.	**Juniper Networks INC**	8,467,851	6,608,200	19,316,617	292	11.78	78.04	31.24	0.47
166.	**Kellogg Company**	11,847,000	2,158,000	18,808,366	872	80.72	18.22	15.08	0.17
333.	**Keycorp**	91,843,000	11,374,000	7,792,171	69	6.97	12.38	13.34	0.43
104.	**Kimberly Clark Corp**	19,864,000	5,917,000	25,707,277	434	43.10	29.79	13.95	0.15
497.	**Kimco Realty Corp**	9,833,875	4,935,842	7,323,353	148	1.82	50.19	80.02	0.35
395.	**KLA Tencor Corp**	3,907,056	2,246,611	4,739,424	211	12.96	57.50	22.32	0.35
114.	**Kohls Corporation**	14,779,000	7,850,000	14,847,469	189	22.78	53.12	13.26	0.30
45.	**Kraft Foods INC**	95,289,000	35,834,000	55,040,836	154	10.16	37.61	13.38	0.16
23.	**Kroger CO**	23,505,000	5,296,000	13,609,335	257	32.74	22.53	12.27	0.22
133.	**L-3 Communications Holdings, Inc.**	15,451,000	6,764,000	7,978,508	118	21.94	43.78	8.40	0.27
312.	**Laboratory Corp Of America Holdings**	6,187,800	2,466,300	8,941,464	363	37.12	39.86	16.02	0.24
415.	**Legg Mason INC**	n.a.	n.a.	n.a.	#VALUE!	n.a.	n.a.	n.a.	0.41
386.	**Leggett & Platt INC**	3,001,000	1,507,300	3,332,862	221	16.95	50.23	18.87	0.32
402.	**Lennar Corp**	8,787,851	2,608,949	2,334,081	89	3.63	29.69	24.77	0.43
343.	**Lexmark International INC**	3,705,200	1,394,300	2,735,611	196	30.23	37.63	8.05	0.46
372.	**Life Technologies Corporation**	9,486,199	4,434,076	10,363,381	234	9.96	46.74	27.40	0.31
208.	**Limited Brands, Inc.**	6,451,000	1,476,000	9,431,422	639	84.76	22.88	11.72	0.35
385.	**Lincoln National Corporation**	193,824,000	12,806,000	8,809,112	69	9.86	6.61	8.99	0.50
471.	**Linear Technology Corp**	1,590,718	39,785	6,233,284	15,667	n.s.	2.50	17.25	0.27
49.	**Lockheed Martin Corp**	35,067,000	3,708,000	25,176,578	679	103.18	10.57	8.60	0.20
288.	**Loews Corporation**	69,296,000	18,450,000	16,194,926	88	15.62	26.62	8.15	0.23
289.	**Lorillard Inc.**	3,296,000	-225,000	12,277,002	-5,456	n.s.	-6.83	11.93	0.26
46.	**Lowe's Companies, Inc.**	33,699,000	18,112,000	34,224,096	189	17.82	53.75	17.17	0.29
420.	**LSI Corporation**	2,424,912	1,317,502	3,693,096	280	3.45	54.33	92.39	0.44
381.	**M&T Bank Corporation**	68,021,300	8,357,700	10,391,860	124	13.08	12.29	14.12	0.32
89.	**Macy's Inc.**	20,631,000	5,530,000	9,803,485	177	23.87	26.80	11.57	0.36
26.	**Marathon Oil Corporation**	50,014,000	23,771,000	26,288,025	111	21.55	47.53	10.24	0.56
35.	**Marathon Petroleum Corporation**	23,232,000	8,244,000	n.a.	#VALUE!	12.41	35.49	n.a.	n.a.
178.	**Marriott International INC**	8,983,000	1,585,000	15,130,750	955	34.76	17.64	33.04	0.35

190.	**Marsh & Mclennan Companies INC**	15,310,000	6,368,000	14,857,942	233	12.08	41.59	17.50	0.26
426.	**Marshall & Ilsley Corporation**	50,832,000	6,338,900	3,653,625	58	-14.19	12.47	n.s.	0.48
248.	**Masco Corp**	8,140,000	1,384,000	4,538,610	328	-56.14	17.00	n.s.	0.45
291.	**Mattel INC**	5,417,733	2,628,584	9,125,031	347	32.22	48.52	13.48	0.27
388.	**Mccormick & CO INC**	3,419,700	1,453,700	5,306,085	365	31.83	42.51	14.33	0.19
94.	**Mcdonald's Corporation**	31,975,200	14,634,200	81,097,458	554	47.84	45.77	16.40	0.16
281.	**Mcgraw-Hill Companies, Inc. (The)**	7,046,561	2,210,296	11,177,870	506	60.60	31.37	13.50	0.30
9.	**Mckesson Corporation**	30,886,000	7,220,000	20,099,257	278	22.65	23.38	16.72	0.26
397.	**Mead Johnson Nutrition Company**	2,293,100	-367,400	12,734,877	-3,466	n.s.	-16.02	28.22	0.23
294.	**Meadwestvaco Corporation**	8,814,000	3,286,000	4,401,550	134	9.74	37.28	41.52	0.32
33.	**Medco Health Solutions, Inc.**	17,097,300	3,986,800	26,003,085	652	58.55	23.32	18.22	0.34
130.	**Medtronic INC**	28,090,000	14,629,000	48,125,929	329	27.13	52.08	15.53	0.27
435.	**Memc Electronic Materials INC**	4,611,900	2,251,700	2,560,845	114	-0.56	48.82	74.44	0.57
48.	**Merck & Co., Inc.**	105,781,000	54,376,000	111,034,949	204	3.04	51.40	129.26	0.21
42.	**Metlife, Inc.**	730,905,860	48,995,339	43,784,719	89	8.42	6.70	15.21	0.41
349.	**Metropcs Communications, Inc.**	7,918,580	2,541,576	4,476,259	176	12.29	32.10	23.31	0.60
470.	**Microchip Technology INC**	2,968,058	1,812,438	7,161,949	395	25.42	61.06	17.09	0.29
223.	**Micron Technology INC**	14,693,000	8,020,000	6,790,191	85	23.94	54.58	3.67	0.61
28.	**Microsoft Corp**	86,113,000	46,175,000	201,655,945	437	54.17	53.62	10.75	0.23
373.	**Molex INC**	3,236,578	1,985,131	1,743,016	88	6.62	61.33	22.66	0.37
392.	**Molson Coors Brewing Company**	12,697,600	7,798,800	8,087,784	104	10.37	61.42	11.43	0.23
175.	**Monsanto CO**	17,852,000	10,069,000	28,454,709	283	14.80	56.40	25.96	0.35
443.	**Moody's Corporation**	2,540,300	-309,600	6,215,668	-2,008	n.s.	-12.19	12.24	0.39
77.	**Morgan Stanley**	807,698,000	65,407,000	41,165,393	63	9.48	8.10	7.22	0.51
203.	**Mosaic Company (The)**	12,707,700	8,722,200	20,615,609	236	13.64	68.64	24.92	0.48
180.	**Motorola Mobility Holdings INC**	6,204,000	1,732,000	8,570,781	495	-0.23	27.92	n.s.	0.63
107.	**Motorola Solutions, Inc.**	25,577,000	10,885,000	12,770,564	117	6.22	42.56	20.18	2.12
95.	**Murphy Oil Corp**	14,233,243	8,199,550	14,340,941	175	17.25	57.61	17.97	0.36
341.	**Nabors Industries Ltd.**	11,646,569	5,328,162	6,695,271	126	1.54	45.75	70.70	0.51
394.	**Nasdaq OMX Group, Inc. (The)**	16,207,000	4,718,000	4,694,876	100	11.15	29.11	11.92	0.37

171.	**National Oilwell Varco, Inc.**	23,050,000	15,748,000	28,220,486	179	15.22	68.32	16.93	0.43
469.	**National Semiconductor Corp**	2,274,800	425,900	3,344,776	785	63.07	18.72	15.99	0.53
308.	**Netapp, Inc.**	6,494,400	2,530,500	11,948,740	472	17.66	38.96	29.84	0.41
438.	**Netflix, Inc.**	982,067	290,164	9,181,642	3,164	92.26	29.55	57.08	0.67
293.	**Newell Rubbermaid Inc.**	6,405,300	1,902,000	5,277,654	277	15.79	29.69	18.02	0.36
452.	**Newfield Exploration CO**	7,494,000	3,343,000	9,653,824	289	24.80	44.61	18.46	0.44
209.	**Newmont Mining Corporation**	25,663,000	13,345,000	29,867,136	224	29.95	52.00	13.12	0.29
69.	**News Corporation, Inc.**	54,384,000	25,113,000	21,793,308	87	13.23	46.18	8.58	0.37
136.	**Nextera Energy, Inc.**	52,994,000	14,461,000	21,753,675	150	17.21	27.29	11.12	0.18
412.	**Nicor INC**	4,496,500	1,103,900	2,273,071	206	18.85	24.55	16.42	0.19
101.	**Nike INC**	14,419,300	9,754,000	28,641,510	294	25.80	67.65	15.02	0.28
274.	**Nisource INC**	19,938,800	4,923,200	4,903,750	100	8.86	24.69	16.79	0.21
408.	**Noble Corporation**	11,221,321	7,163,003	9,024,062	126	12.80	63.83	11.67	0.38
403.	**Noble Energy, Inc.**	13,282,000	6,848,000	15,072,169	220	15.06	51.56	20.79	0.34
205.	**Nordstrom INC**	7,462,000	2,021,000	9,018,419	446	49.04	27.08	14.71	0.38
211.	**Norfolk Southern Corp**	28,199,000	10,669,000	22,827,036	214	22.19	37.83	15.34	0.28
316.	**Northeast Utilities**	14,522,042	3,927,376	5,621,010	143	15.39	27.04	14.49	0.20
368.	**Northern Trust Corporation**	83,843,874	6,830,376	13,419,968	196	14.49	8.15	20.05	0.30
80.	**Northrop Grumman Corporation**	31,531,000	13,557,000	18,915,023	140	17.45	43.00	9.21	0.26
499.	**Novell INC**	2,225,998	1,335,548	2,083,222	156	7.64	60.00	5.51	0.33
478.	**Novellus Systems INC**	1,832,397	1,328,138	2,914,864	219	22.94	72.48	11.11	0.38
221.	**NRG Energy, Inc.**	26,896,000	8,303,000	4,830,234	58	9.07	30.87	10.32	0.28
132.	**Nucor Corp**	13,921,910	7,120,070	13,835,249	194	3.75	51.14	104.60	0.32
376.	**Nvidia Corp**	4,495,246	3,181,462	13,897,520	437	8.52	70.77	54.90	0.54
336.	**Nyse Euronext**	13,378,000	6,796,000	7,824,780	115	10.09	50.80	13.56	0.43
300.	**O Reilly Automotive INC**	5,047,827	3,209,685	8,436,855	263	21.48	63.59	20.12	0.22
108.	**Occidental Petroleum Corp**	52,432,000	32,484,000	79,714,667	245	22.65	61.95	17.62	0.35
162.	**Omnicom Group INC**	19,566,100	3,580,500	13,796,746	385	37.72	18.30	16.83	0.27
160.	**Oneok INC**	12,499,175	2,448,623	5,907,086	241	30.84	19.59	17.65	0.24
64.	**Oracle Corp**	61,578,000	30,798,000	113,280,882	368	26.76	50.01	18.46	0.32
264.	**Owens Illinois INC**	9,754,000	1,815,000	5,026,065	277	23.36	18.61	n.s.	0.45
196.	**Paccar INC**	14,234,100	5,357,800	20,911,943	390	12.32	37.64	45.70	0.36
410.	**Pall Corp**	2,999,212	1,182,350	4,461,272	377	27.72	39.42	18.49	0.34
167.	**Parker Hannifin Corp**	9,910,382	4,367,965	8,931,036	204	17.28	44.07	16.12	0.35

383.	**Patterson Companies, Inc.**	2,422,969	1,441,511	4,024,003	279	23.52	59.49	18.96	0.28
439.	**Paychex INC**	5,226,300	1,402,000	10,314,957	736	52.02	26.83	21.63	0.23
260.	**Peabody Energy Corp**	11,363,100	4,660,700	17,251,416	370	23.88	41.02	22.45	0.44
489.	**People's United Bank**	23,858,322	4,193,764	n.a.	#VALUE!	3.49	17.58	n.a.	n.a.
490.	**People's United Financial, INC**	25,037,100	5,219,300	5,196,119	100	2.43	20.85	60.63	0.26
257.	**Pepco Holdings, Inc.**	14,480,000	4,230,000	4,097,131	97	3.55	29.21	128.04	0.19
38.	**Pepsico INC**	68,153,000	21,164,000	103,537,663	489	38.90	31.05	16.40	0.16
460.	**Perkinelmer INC**	3,209,373	1,925,818	3,047,911	158	8.41	60.01	7.94	0.32
30.	**Pfizer INC**	195,014,000	87,813,000	140,254,249	160	10.73	45.03	16.99	0.23
153.	**Pg&E Corp**	46,025,000	11,282,000	18,756,428	166	14.71	24.51	17.19	0.19
31.	**Philip Morris International Inc.**	35,050,000	3,506,000	106,196,453	3,029	294.47	10.00	14.70	0.19
391.	**Pinnacle West Capital Corp**	12,362,703	3,683,327	4,506,103	122	13.98	29.79	12.87	0.18
424.	**Pioneer Natural Resources CO**	9,679,102	4,120,583	10,079,471	245	19.14	42.57	17.05	0.41
299.	**Pitney Bowes INC**	8,444,023	-96,581	4,917,094	-5,091	n.s.	-1.14	16.82	0.31
481.	**Plum Creek Timber Company, Inc.**	4,251,000	1,374,000	6,052,291	440	14.77	32.32	28.41	0.24
135.	**PNC Financial Services Group INC**	264,284,000	32,838,000	31,926,358	97	12.37	12.43	9.40	0.34
155.	**PPG Industries INC**	14,975,000	3,638,000	13,705,029	377	35.60	24.29	17.82	0.28
233.	**PPL Corp**	32,837,000	8,210,000	12,705,281	155	15.09	25.00	13.60	0.18
198.	**Praxair INC**	15,274,000	5,792,000	29,250,068	505	33.91	37.92	24.48	0.23
279.	**Precision Castparts Corp**	n.a.	n.a.	n.a.	#VALUE!	n.a.	n.a.	n.a.	0.30
401.	**Priceline COM INC**	2,905,953	1,813,336	19,616,320	1,082	41.16	62.40	37.18	0.41
358.	**Principal Financial Group INC**	145,631,100	9,727,800	10,430,699	107	8.65	6.68	14.54	0.43
21.	**Procter & Gamble CO**	128,172,000	61,115,000	172,736,654	283	24.62	47.68	13.80	0.14
197.	**Progress Energy INC**	33,054,000	10,023,000	12,736,964	127	14.03	30.32	14.88	0.16
142.	**Progressive Corporation (The)**	20,446,200	6,048,900	13,180,768	218	25.88	29.58	12.34	0.26
494.	**Prologis Trust**	14,902,667	7,505,223	8,173,626	109	-21.48	50.36	n.s.	0.41
502.	**Prologis, Inc.**	7,372,895	3,320,723	5,339,517	161	0.28	45.04	535.72	0.40
125.	**Prudential Financial INC**	539,854,000	32,928,000	27,300,150	83	13.68	6.10	8.52	0.39
176.	**Public Service Enterprise Group Incorporated**	29,909,000	9,633,000	16,094,676	167	27.16	32.21	10.29	0.21
464.	**Public Storage INC**	9,495,333	8,676,598	17,274,405	199	7.94	91.38	43.28	0.28
329.	**Pultegroup, Inc.**	7,699,376	2,135,167	2,874,356	135	-57.82	27.73	n.s.	0.54
434.	**QEP Resources, Inc.**	6,785,300	3,010,300	6,376,794	212	15.05	44.37	19.55	0.41
139.	**Qualcomm INC**	30,572,000	20,858,000	72,446,446	347	21.54	68.23	22.31	0.31

355.	**Quanta Services INC**	4,341,212	3,365,555	4,206,514	125	7.32	77.53	27.46	0.41
250.	**Quest Diagnostics Incorporated**	8,527,630	4,033,480	9,196,753	228	29.36	47.30	12.82	0.27
201.	**R. R. Donnelley & Sons Company**	9,083,200	2,224,300	3,604,061	162	14.52	24.49	16.26	0.34
332.	**Radioshack Corp**	2,175,400	842,500	2,104,640	250	39.89	38.73	10.21	0.44
296.	**Ralph Lauren Corporation**	4,648,900	3,116,600	4,876,820	156	22.12	67.04	10.17	0.38
485.	**Range Resources Corp**	5,498,586	2,223,761	7,200,029	324	-16.46	40.44	n.s.	0.44
87.	**Raytheon Company**	24,422,000	9,754,000	16,892,923	173	24.93	39.94	9.18	0.23
493.	**RED Hat INC**	2,199,322	1,290,699	7,965,442	617	11.91	58.69	74.25	0.40
259.	**Regions Financial Corporation**	132,351,000	16,734,000	8,792,588	53	-5.29	12.64	n.s.	0.54
235.	**Republic Services INC**	19,461,900	7,846,500	11,473,631	146	11.18	40.32	22.65	0.24
231.	**Reynolds American Inc.**	17,078,000	6,510,000	19,019,163	292	33.67	38.12	17.09	0.19
285.	**Rockwell Automation, Inc.**	4,748,300	1,460,400	8,756,837	600	37.26	30.76	18.90	0.41
321.	**Rockwell Collins INC**	5,064,000	1,482,000	9,156,816	618	53.71	29.27	16.32	0.27
427.	**Roper Industries INC**	5,069,524	2,750,907	7,235,668	263	16.30	54.26	22.43	0.29
239.	**Ross Stores INC**	3,116,204	1,332,692	7,764,312	583	67.31	42.77	14.00	0.25
457.	**Rowan Companies, Inc.**	6,217,457	3,752,310	4,406,271	117	10.10	60.35	15.74	0.41
307.	**Ryder System INC**	6,652,374	1,404,313	2,723,469	194	13.27	21.11	23.40	0.36
55.	**Safeway INC**	15,148,100	4,993,300	8,384,272	168	17.65	32.96	14.22	0.28
183.	**Saic, Inc.**	6,223,000	2,491,000	6,161,001	247	35.45	40.03	10.30	0.27
463.	**Salesforce.Com, Inc.**	3,091,165	1,276,491	17,162,706	1,345	8.17	41.29	266.20	0.47
319.	**Sandisk Corp**	8,776,710	5,782,624	11,692,338	202	25.20	65.89	8.99	0.44
227.	**Sara LEE Corporation**	8,836,000	1,487,000	9,251,165	622	47.48	16.83	18.28	0.25
327.	**Scana Corp**	12,968,000	3,702,000	5,165,240	140	14.42	28.55	13.74	0.18
82.	**Schlumberger N.V.**	51,767,000	31,226,000	113,925,708	365	16.51	60.32	26.70	0.36
440.	**Scripps Networks Interactive, Inc.**	3,388,432	1,776,173	6,758,218	380	41.66	52.42	16.44	0.32
331.	**Sealed Air Corp**	5,399,400	2,404,600	4,063,866	169	14.28	44.53	15.98	0.31
52.	**Sears Holdings Corporation**	24,268,000	8,511,000	8,291,449	97	2.19	35.07	62.34	0.46
218.	**Sempra Energy**	30,283,000	9,127,000	12,598,084	138	8.61	30.14	17.05	0.19
242.	**Sherwin Williams Company (The)**	5,169,235	1,609,440	9,039,539	562	42.11	31.13	19.75	0.23
432.	**Sigma Aldrich Corp**	3,014,000	1,976,000	8,073,654	409	27.53	65.56	21.02	0.29
354.	**Simon Property Group INC**	24,857,429	4,830,780	29,140,012	603	15.60	19.43	47.74	0.28
330.	**SLM Corporation - Sallie MAE**	205,307,000	5,011,600	6,113,583	122	21.76	2.44	11.53	0.45
417.	**Snap On INC**	3,729,400	1,388,500	3,290,552	237	19.98	37.23	17.64	0.31

120.	**Southern CO**	55,032,000	17,284,000	31,757,878	184	17.74	31.41	16.08	0.13
173.	**Southwest Airlines CO**	15,463,000	6,237,000	9,697,305	155	11.94	40.33	21.13	0.32
418.	**Southwestern Energy CO**	6,017,463	2,964,876	12,980,099	438	33.58	49.27	21.49	0.36
314.	**Spectra Energy Corp.**	26,686,000	8,067,000	16,199,066	201	18.67	30.23	15.44	0.23
73.	**Sprint Nextel Corporation**	51,654,000	14,546,000	12,487,152	86	-22.68	28.16	n.s.	0.57
306.	**ST Jude Medical INC**	8,566,448	4,371,671	14,077,424	322	27.65	51.03	15.51	0.30
234.	**Stanley Black & Decker, Inc.**	15,139,400	7,017,000	11,100,904	158	3.38	46.35	56.15	0.36
90.	**Staples INC**	13,911,667	6,943,710	16,134,486	232	19.54	49.91	18.29	0.34
177.	**Starbucks Corp**	6,385,900	3,674,700	19,198,194	522	39.11	57.54	20.30	0.32
310.	**Starwood Hotels & Resorts Worldwide, Inc.**	9,776,000	2,471,000	11,587,718	469	13.56	25.28	24.29	0.41
220.	**State Street Corporation**	160,505,000	17,787,000	23,263,838	131	11.73	11.08	14.95	0.36
473.	**Stericycle INC**	2,639,023	1,048,425	6,921,142	660	31.65	39.73	33.29	0.26
251.	**Stryker Corporation**	10,895,100	7,173,600	21,325,351	297	24.11	65.84	16.75	0.28
63.	**Sunoco INC**	13,297,000	3,046,000	4,860,559	160	19.24	22.91	20.77	0.34
229.	**Suntrust Banks, Inc.**	172,874,000	23,130,000	14,753,795	64	0.09	13.38	71.62	0.46
62.	**Supervalu INC**	13,758,000	1,340,000	1,831,098	137	-113.66	9.74	n.s.	0.51
280.	**Symantec Corp**	11,232,000	4,548,000	13,520,629	297	19.02	40.49	18.94	0.33
58.	**Sysco Corp**	10,313,701	3,827,526	16,724,152	437	48.32	37.11	14.17	0.20
429.	**T. Rowe Price Group, INC**	3,642,000	3,296,500	16,550,343	502	32.46	90.51	24.62	0.38
32.	**Target Corp**	43,705,000	15,487,000	38,824,123	251	29.02	35.44	13.30	0.23
170.	**TE Connectivity Ltd..**	16,992,000	7,048,000	13,078,265	186	22.11	41.48	11.86	0.31
380.	**Teco Energy, Inc.**	7,194,600	2,169,700	3,822,416	176	18.88	30.16	16.11	0.21
466.	**Tellabs INC**	2,602,900	1,861,500	2,501,348	134	10.29	71.52	16.07	0.48
215.	**Tenet Healthcare Corp**	8,500,000	1,766,000	3,248,221	184	8.95	20.78	2.90	0.59
450.	**Teradata Corporation**	1,883,000	1,189,000	6,894,300	580	34.82	63.14	22.90	0.37
467.	**Teradyne INC**	1,810,355	1,122,188	2,546,856	227	35.16	61.99	6.71	0.46
103.	**Tesoro Corporation**	8,732,000	3,215,000	2,654,193	83	-0.78	36.82	n.s.	0.52
151.	**Texas Instruments INC**	13,401,000	10,437,000	38,160,118	366	43.60	77.88	11.99	0.27
191.	**Textron INC**	15,282,000	2,972,000	6,498,649	219	2.89	19.45	75.57	0.41
187.	**Thermo Fisher Scientific Inc.**	21,349,400	15,361,000	22,004,362	143	7.58	71.95	21.25	0.31
400.	**Tiffany & CO**	3,735,669	2,177,475	7,347,656	337	25.14	58.29	19.94	0.37
110.	**Time Warner Cable Inc.**	45,822,000	9,210,000	23,489,056	255	23.84	20.10	18.08	0.28

85.	**Time Warner Inc.**	66,524,000	32,940,000	35,686,082	108	11.90	49.52	13.91	0.28
496.	**Titanium Metals Corp**	1,498,000	1,209,900	3,095,394	256	10.38	80.77	38.40	0.43
98.	**TJX Companies INC**	7,971,763	3,099,899	18,465,861	596	69.81	38.89	13.75	0.23
414.	**Torchmark Corporation**	16,159,762	4,016,241	4,782,428	119	19.26	24.85	9.25	0.29
459.	**Total System Services INC**	1,952,261	1,241,124	2,988,716	241	24.80	63.57	15.49	0.26
96.	**Travelers Companies INC (The)**	93,561,000	25,475,000	25,573,335	100	16.90	27.23	7.95	0.25
122.	**Tyco International Limited**	27,128,000	14,084,000	19,185,986	136	9.02	51.92	16.95	0.29
75.	**Tyson Foods INC**	10,752,000	5,166,000	4,998,833	97	23.29	48.05	6.41	0.32
124.	**Union Pacific Corp**	43,088,000	17,763,000	45,695,162	257	24.96	41.22	16.44	0.29
44.	**United Parcel Service INC**	33,597,000	7,979,000	52,904,083	663	69.22	23.75	15.17	0.21
121.	**United States Steel Corporation**	15,350,000	3,851,000	8,389,992	218	-10.00	25.09	n.s.	0.53
39.	**United Technologies Corporation**	58,493,000	21,385,000	72,690,608	340	30.57	36.56	16.62	0.26
19.	**Unitedhealth Group INC**	63,063,000	25,825,000	39,718,771	154	28.59	40.95	8.57	0.30
245.	**Unum Group INC**	57,307,700	8,944,400	7,681,233	86	14.88	15.61	8.67	0.33
431.	**Urban Outfitters INC**	1,794,321	1,411,548	5,547,963	393	29.56	78.67	20.32	0.39
117.	**Us Bancorp**	307,786,000	30,322,000	51,736,748	171	13.85	9.85	15.85	0.33
244.	**V. F. Corporation**	6,457,556	3,861,219	9,347,425	242	19.43	59.79	16.36	0.30
22.	**Valero Energy Corp**	37,621,000	15,025,000	13,090,790	87	9.97	39.94	40.40	0.46
419.	**Varian Medical Systems INC**	2,323,952	1,275,367	7,380,372	579	41.79	54.88	20.48	0.30
487.	**Ventas, Inc.**	5,758,021	2,386,726	8,244,412	345	9.52	41.45	33.49	0.29
500.	**Verisign INC**	2,444,006	676,430	5,618,837	831	14.10	27.68	6.76	0.31
11.	**Verizon Communications INC**	220,005,000	38,569,000	101,142,279	262	32.89	17.53	39.68	0.18
140.	**Viacom, Inc.**	22,096,000	9,283,000	20,128,256	217	19.52	42.01	23.57	0.32
216.	**Visa Inc.**	33,408,000	25,011,000	36,882,488	147	18.54	74.87	12.44	0.33
409.	**Vornado Realty Trust**	20,517,471	6,315,710	15,304,544	242	11.89	30.78	25.65	0.30
422.	**Vulcan Materials Company**	8,337,891	3,964,980	5,695,408	144	-4.85	47.55	n.s.	0.40
253.	**W.W. Grainger, Inc.**	3,904,377	2,205,216	9,538,086	433	38.72	56.48	19.10	0.26
27.	**Walgreen CO**	26,275,000	14,400,000	26,159,026	182	23.42	54.80	12.51	0.27
1.	**Wal-Mart Stores, Inc.**	180,663,000	68,542,000	199,721,019	291	34.34	37.94	12.19	0.16
56.	**Walt Disney CO**	69,206,000	37,519,000	63,766,316	170	17.66	54.21	16.09	0.28
323.	**Washington Post CO**	5,158,367	2,825,890	3,461,485	122	18.52	54.78	12.57	0.35
163.	**Waste Management INC**	21,476,000	6,260,000	17,542,773	280	26.05	29.15	18.41	0.24
465.	**Waters Corp**	2,327,670	1,068,797	7,097,257	664	40.97	45.92	18.59	0.33
374.	**Watson Pharmaceuticals INC**	5,827,300	3,281,700	6,472,210	197	7.64	56.32	35.10	0.24

40.	**Wellpoint INC**	50,134,000	23,812,600	22,380,668	94	18.28	47.50	7.75	0.30
20.	**Wells Fargo & Company**	1,258,128,000	127,889,000	162,658,936	127	14.86	10.17	12.85	0.38
210.	**Western Digital Corp**	7,328,000	4,709,000	6,921,076	147	32.28	64.26	5.01	0.45
305.	**Western Union CO. (The)**	7,929,200	582,700	12,179,455	2,090	196.53	7.35	13.39	0.27
267.	**Weyerhaeuser CO**	13,429,000	4,612,000	10,145,389	220	2.08	34.34	7.92	0.91
115.	**Whirlpool Corp**	15,584,000	4,226,000	6,752,817	160	13.87	27.12	10.91	0.39
199.	**Whole Foods Market, Inc.**	3,986,540	2,373,258	6,379,159	269	17.35	59.53	26.54	0.37
207.	**Williams Companies INC**	24,972,000	7,288,000	14,455,629	198	-12.98	29.18	n.s.	0.37
367.	**Windstream Corporation**	11,353,700	830,600	6,742,759	812	60.81	7.32	21.91	0.22
342.	**Wisconsin Energy Corp**	13,059,800	3,832,500	6,880,551	180	18.38	29.35	15.07	0.18
359.	**Wyndham Worldwide Corp.**	9,416,000	2,917,000	5,242,000	180	19.30	30.98	13.83	0.39
344.	**Wynn Resorts, Limited**	6,674,497	2,237,948	12,870,570	575	15.06	33.53	80.38	0.45
195.	**Xcel Energy INC**	27,387,690	8,188,499	10,835,659	132	14.52	29.90	14.42	0.16
99.	**Xerox Corp**	30,600,000	12,355,000	15,980,513	129	6.60	40.38	27.32	0.34
428.	**Xilinx INC**	3,184,318	2,120,470	7,104,291	335	19.89	66.59	19.87	0.29
278.	**XL Group PLC**	40,748,407	10,682,653	7,052,782	66	7.55	26.22	10.96	0.34
393.	**Xylem Inc.**	3,735,000	2,719,000	n.a.	#VALUE!	14.27	72.80	n.a.	n.a.
276.	**Yahoo INC**	14,928,104	12,558,129	21,677,203	173	8.52	84.12	17.60	0.37
181.	**Yum! Brands, Inc.**	8,316,000	1,576,000	22,984,026	1,458	101.14	18.95	19.85	0.24
340.	**Zimmer Holdings, Inc.**	7,999,900	5,771,300	10,598,745	184	14.90	72.14	17.76	0.28
442.	**Zions Bancorporation**	51,035,696	6,647,214	4,311,917	65	-6.07	13.02	n.s.	0.44

Source: Osiris data base

Appendix 4.3**.** Data on S&P 500 Green Ranking 2009

rank	company	sector	green score	env. Impact	green policy	Green reputation survey
22	3M»	General Industrials	**88.48**	57.33	68.85	92.71
42	Abbott Laboratories»	Pharmaceuticals	**84.61**	39.21	68.76	65.43
232	Abercrombie & Fitch»	Retail	**71.29**	53.77	43.92	30.18
11	Accenture»	Industrial Goods	**92.04**	89.8	84.63	65.89
64	ACE»	Banks and Insurance	**81.81**	84.66	65.65	42.78
391	Activision Blizzard»	Consumer Products, Cars	**63.98**	77.33	18.05	48.81
7	Adobe Systems»	Technology	**94.15**	89.61	88.08	72.57
357	Advance Auto Parts»	Retail	**65.61**	56.14	24.79	44.16
12	Advanced Micro Devices»	Technology	**91.17**	99.51	81.46	55.78
132	AECOM Technology»	Industrial Goods	**76.78**	70.8	50.14	52.81
489	AES»	Utilities	**45.58**	5.55	16.63	39.49
178	Aetna»	Health Care	**73.81**	77.73	45.32	42.59
167	Aflac»	Banks and Insurance	**74.46**	87.63	49.11	34.84
463	AGCO»	Industrial Goods	**58.2**	31.1	10.72	36.8
48	Agilent Technologies»	Industrial Goods	**83.57**	94.75	66.73	47.85
151	Air Products and Chemicals»	Basic Materials	**75.52**	10.5	68.93	45.25
415	Airgas»	Basic Materials	**62.45**	13.08	31.76	35.17
314	Alcoa»	Basic Materials	**67.77**	4.17	71.46	61.92
428	Allegheny Technologies»	Basic Materials	**61.3**	13.67	24.72	46.2
19	Allergan»	Pharmaceuticals	**90.02**	74.76	85.53	48.11
370	Alliant Techsystems»	Transport, Aerospace	**65.25**	38.03	26.76	39.62
70	Allstate»	Banks and Insurance	**81.07**	83.67	67.3	31.25
326	Altria Group»	Food and Beverage	**67.32**	22.58	37.48	32.79
162	Amazon.com»	Retail	**74.85**	51.79	42.13	66.58
498	Ameren»	Utilities	**23.9**	1.59	16.59	31.38
293	American Eagle	Retail	**68.59**	52.98	36.06	33.11

	Outfitters»					
495	American Electric Power»	Utilities	**30.29**	1.4	37.89	48.32
60	American Express»	Financial Services	**81.96**	80.89	65.19	46.01
291	American International Group»	Banks and Insurance	**68.64**	84.06	35.32	30.84
269	Ameriprise Financial»	Financial Services	**69.63**	63.87	37.48	34.82
452	AmerisourceBergen»	Retail	**59.86**	62.28	17.37	18.55
185	Amgen»	Pharmaceuticals	**73.6**	35.65	47.81	43.17
411	Amphenol»	Industrial Goods	**62.86**	32.09	20.79	42.5
111	AMR»	Media, Travel, and Leisure	**77.81**	24.17	57.59	54.36
427	Anadarko Petroleum»	Oil and Gas	**61.32**	21.59	20.12	40.43
262	Analog Devices»	Technology	**69.95**	38.42	39.1	38.91
175	Aon»	Banks and Insurance	**73.98**	80.7	44.55	46.19
335	Apache»	Oil and Gas	**67.08**	28.72	27.05	59.92
131	Apollo Group»	Retail	**76.8**	64.06	53.8	41.99
65	Apple»	Technology	**81.79**	55.55	58.33	71.26
8	Applied Materials»	Technology	**92.67**	91.98	87.33	60.06
493	Archer-Daniels-Midland»	Food and Beverage	**33.98**	2.58	19.51	21.54
388	Arrow Electronics»	Industrial Goods	**64.32**	65.45	22.01	40.22
343	Ashland»	Basic Materials	**66.68**	28.13	32.1	40.61
278	Assurant»	Banks and Insurance	**69.39**	86.24	35.87	35.32
122	AT&T»	Technology	**77**	60.1	51.27	52.52
303	Automatic Data Processing»	Industrial Goods	**68.12**	78.72	30.91	41.4
223	AutoNation»	Retail	**71.75**	56.94	44.82	30.49
443	AutoZone»	Retail	**60.54**	56.34	19.55	18.56
130	Avery Dennison»	Basic Materials	**76.82**	15.26	59.81	56.96
221	Avnet»	Industrial Goods	**71.94**	64.86	39.72	46.74
52	Avon Products»	Consumer Products, Cars	**82.83**	48.32	70.47	41.74
73	Baker Hughes»	Oil and Gas	**80.77**	89.41	62.23	44.53
81	Ball»	General Industrials	**80.16**	32.48	58.36	65.2
124	Bank of America»	Banks and Insurance	**76.94**	76.34	51.79	47.88

15	Baxter International»	Health Care	**90.59**	91.78	81.8	61.02
323	BB&T»	Banks and Insurance	**67.46**	81.69	26.8	49.08
426	Beckman Coulter»	Health Care	**61.71**	45.35	13.83	49.72
24	Becton Dickinson»	Health Care	**87.91**	91.59	77.11	53.86
250	Bed Bath & Beyond»	Retail	**70.51**	55.35	37.39	44.55
290	Bemis»	General Industrials	**68.76**	13.28	46.08	40.98
284	Berkshire Hathaway»	Banks and Insurance	**69.03**	24.76	37.23	46.48
86	Best Buy»	Retail	**80**	58.52	60.37	48.46
150	Big Lots»	Retail	**75.56**	49.31	53.28	36.39
101	Biogen Idec»	Pharmaceuticals	**78.38**	97.33	50.82	51.58
246	BJ's Wholesale Club»	Retail	**70.81**	50.6	43.67	27.65
474	BlackRock»	Financial Services	**55.23**	8.13	31.07	30.79
47	BNY Mellon»	Financial Services	**83.78**	64.26	69.36	49.87
137	Boeing»	Transport, Aerospace	**76.63**	95.35	47.04	52.93
253	BorgWarner»	Consumer Products, Cars	**70.3**	30.7	36.34	55.47
164	Boston Scientific»	Health Care	**74.72**	88.22	40.85	63.83
359	Brinker International»	Media, Travel, and Leisure	**65.54**	22.98	29.24	44.44
17	Bristol-Myers Squibb»	Pharmaceuticals	**90.45**	24.36	87.56	62.98
362	Broadcom»	Technology	**65.49**	38.22	28.5	35.88
499	Bunge»	Food and Beverage	**18.82**	1.2	19.49	20.1
209	Burger King Holdings»	Media, Travel, and Leisure	**72.42**	28.92	51.6	24.74
401	C. R. Bard»	Health Care	**63.28**	44.16	18.24	48.72
409	C.H. Robinson Worldwide»	Transport, Aerospace	**62.9**	73.96	12.8	57.15
46	CA Technologies»	Technology	**83.8**	72.58	69.65	47.88
418	Cablevision Systems»	Media, Travel, and Leisure	**62.18**	64.46	16.36	40.82
380	Calpine»	Utilities	**64.55**	4.76	68.13	41.44
416	Cameron International»	Oil and Gas	**62.42**	29.71	19.86	43.57
154	Campbell Soup»	Food and Beverage	**75.4**	8.33	75.75	54.35
56	Capital One Financial»	Financial Services	**82.28**	82.28	63.32	54.65
381	Cardinal Health»	Retail	**64.51**	60.3	25.9	30.04
440	CareFusion»	Health Care	**60.69**	45.55	13.12	43.39

202	Carmax»	Retail	**72.69**	56.54	43.98	41.17
211	Carnival»	Media, Travel, and Leisure	**72.31**	40.4	39.58	56.4
446	Casey's General Stores»	Retail	**60.17**	37.83	12.89	42.24
72	Caterpillar»	Industrial Goods	**80.85**	89.21	57.75	59.79
30	CB Richard Ellis Group»	Financial Services	**86.76**	58.92	71.24	69.96
422	CBS»	Media, Travel, and Leisure	**62.09**	71.39	16.4	39.11
104	Celanese»	Basic Materials	**78.24**	13.87	66.66	51.88
397	Celgene»	Pharmaceuticals	**63.73**	34.86	26.4	30.39
238	CenterPoint Energy»	Utilities	**71.05**	41.59	37.59	52.01
408	CenturyLink»	Technology	**62.91**	65.85	19.3	36.99
236	Charles Schwab»	Financial Services	**71.12**	65.65	41.14	34.95
371	Cheesecake Factory»	Media, Travel, and Leisure	**65.04**	20.4	29.66	42.32
404	Chesapeake Energy»	Oil and Gas	**63.14**	33.87	22.86	37.14
320	Chevron»	Oil and Gas	**67.57**	41	27.46	56
112	Chubb»	Banks and Insurance	**77.8**	85.05	57.24	36.47
312	CIGNA»	Health Care	**67.8**	86.83	29.48	42.72
349	Cintas»	Industrial Goods	**66.12**	45.75	24.16	53
13	Cisco Systems»	Technology	**91.07**	69.41	77.56	83.87
304	CIT Group»	Financial Services	**68.08**	80.3	30.81	41.33
32	Citigroup»	Banks and Insurance	**86.72**	100	66.41	64.99
491	Cliffs Natural Resources»	Basic Materials	**43.23**	2.98	29.13	35.42
50	Clorox»	Consumer Products, Cars	**83.03**	26.94	68.35	60.96
224	CME Group»	Financial Services	**71.73**	81.88	37.74	49.36
462	CMS Energy»	Utilities	**58.23**	7.93	39.02	32.06
436	Coach»	Consumer Products, Cars	**61.03**	20.21	32.09	1
54	Coca-Cola Enterprises»	Food and Beverage	**82.78**	18.82	62.35	87.89
141	Coca-Cola»	Food and Beverage	**76.33**	18.23	44.56	93.08
138	Cognizant Technology»	Technology	**76.55**	98.52	48.82	40.78
38	Colgate-Palmolive»	Consumer Products, Cars	**85.32**	18.03	78.33	59.2
242	Comcast»	Media, Travel, and Leisure	**70.96**	69.61	38.77	40.99
110	Comerica»	Banks and Insurance	**77.85**	71.19	56.71	40.39
327	Commercial Metals»	Basic Materials	**67.29**	27.73	35.1	36.02

425	Community Health Systems»	Health Care	**61.73**	46.34	13.63	50.1
77	Computer Sciences»	Technology	**80.44**	71.79	62.48	43.21
249	ConAgra Foods»	Food and Beverage	**70.58**	7.34	66.9	51.26
230	ConocoPhillips»	Oil and Gas	**71.37**	22.38	44.08	45.98
496	CONSOL Energy»	Basic Materials	**28.78**	2.19	3.19	51.01
31	Consolidated Edison»	Utilities	**86.76**	48.12	77.52	51.94
369	Constellation Energy Group»	Utilities	**65.29**	16.64	30.99	50.16
239	Continental Airlines»	Media, Travel, and Leisure	**71.04**	34.07	42.5	39.45
277	Convergys»	Technology	**69.4**	75.94	30.96	52.32
255	Con-Way»	Transport, Aerospace	**70.2**	43.97	36.85	46.33
194	Cooper Industries»	Industrial Goods	**72.96**	40.01	47.83	35.04
367	CoreLogic»	Banks and Insurance	**65.34**	83.47	27.78	27.79
214	Corning»	Technology	**72.21**	26.74	44.82	46.66
169	Costco Wholesale»	Retail	**74.22**	50.3	45.98	48.85
464	Coventry Health Care»	Health Care	**58.19**	86.44	4.37	43.78
109	Covidien»	Health Care	**77.95**	93.96	52.25	48.5
308	Crown Holdings»	General Industrials	**67.92**	17.63	40.54	36.66
215	CSX»	Transport, Aerospace	**72.21**	51.59	32.56	75.62
147	Cummins»	Industrial Goods	**75.85**	90.99	47.71	48.91
272	CVS Caremark»	Retail	**69.53**	37.63	38.79	36.62
461	Dana Holding»	Consumer Products, Cars	**58.56**	26.34	9.27	48.29
455	Danaher»	Industrial Goods	**59.64**	39.61	13.44	35.12
67	Darden Restaurants»	Media, Travel, and Leisure	**81.53**	20.6	68.92	52.63
434	DaVita»	Health Care	**61.08**	61.09	12.52	44.6
329	Dean Foods»	Food and Beverage	**67.23**	6.94	66.74	27.34
117	Deere»	Industrial Goods	**77.31**	76.14	49.25	59.26
1	Dell»	Technology	**100**	81.49	100	84.33
234	Delta Air Lines»	Media, Travel, and Leisure	**71.25**	25.75	49.54	24.09
228	Devon Energy»	Oil and Gas	**71.63**	27.93	40.58	54.75
386	Diamond Offshore	Oil and Gas	**64.34**	19.02	29.89	38.4

	Drilling»					
297	Dick's Sporting Goods»	Retail	**68.36**	53.17	36.3	30.43
279	Dillard's»	Retail	**69.37**	52.78	34.22	45.75
424	DIRECTV»	Media, Travel, and Leisure	**61.9**	72.38	17.8	32.64
270	Discover Financial Services»	Financial Services	**69.59**	79.9	34.57	41.79
347	Discovery Communications»	Media, Travel, and Leisure	**66.17**	67.03	23.73	49.9
429	DISH Network»	Media, Travel, and Leisure	**61.27**	70	14.9	37.22
365	Dollar Tree»	Retail	**65.41**	51	31.74	21.1
471	Dominion Resources»	Utilities	**56.81**	5.36	44.42	44
95	Domtar»	Basic Materials	**79**	15.06	67.54	50.64
435	Dover»	Industrial Goods	**61.05**	35.85	13.26	50.16
197	Dow Chemical»	Basic Materials	**72.78**	12.88	47.06	72.92
248	Dr Pepper Snapple Group»	Food and Beverage	**70.74**	18.62	47.35	36.1
468	DTE Energy»	Utilities	**57.23**	4.96	47.66	46.24
486	Duke Energy»	Utilities	**49.67**	2.39	53.74	52.84
140	DuPont»	Basic Materials	**76.46**	17.83	52.13	70.09
143	Eastman Chemical»	Basic Materials	**76.16**	11.1	65.83	53.73
146	Eastman Kodak»	Consumer Products, Cars	**76.01**	72.18	48.6	51.11
16	Eaton»	General Industrials	**90.54**	36.64	84.98	63.79
98	eBay»	Retail	**78.87**	92.38	57.19	41.77
26	Ecolab»	Basic Materials	**87.65**	67.83	75.76	60.96
484	Edison International»	Utilities	**50.97**	3.18	38.9	51.11
299	El Paso»	Oil and Gas	**68.22**	9.71	51.92	50.9
378	Electronic Arts»	Consumer Products, Cars	**64.76**	76.93	22.55	40.65
58	Eli Lilly»	Pharmaceuticals	**82.12**	95.55	55.07	72.69
66	EMC»	Technology	**81.61**	69.81	61.95	55.02
259	EMCOR Group»	General Industrials	**69.96**	63.27	35.35	44.68
183	Emerson Electric»	Industrial Goods	**73.68**	37.23	47.85	42.43
355	Energizer Holdings»	Consumer Products, Cars	**65.81**	23.77	28.82	47.21

477	Entergy»	Utilities	**54.6**	5.95	31.26	55.33
267	EOG Resources»	Oil and Gas	**69.66**	29.12	38.72	43.23
53	Estée Lauder»	Consumer Products, Cars	**82.81**	67.43	72.46	30.99
181	Exelon»	Utilities	**73.73**	11.49	55.37	64.22
227	Expedia»	Retail	**71.64**	66.64	39.2	45.49
444	Expeditors Intl. of Washington»	Transport, Aerospace	**60.44**	18.42	22.53	30.69
406	Express Scripts»	Health Care	**63.07**	73.57	19.17	37.83
189	Exxon Mobil»	Oil and Gas	**73.35**	35.45	46.66	44.91
338	Family Dollar Stores»	Retail	**66.91**	51.19	32.86	30.09
204	Fastenal»	Industrial Goods	**72.65**	61.49	38.8	56.34
105	FedEx»	Transport, Aerospace	**78.19**	33.47	54.79	60.1
344	Fidelity National Financial»	Financial Services	**66.63**	85.65	27.78	38.48
379	Fidelity National Info. Services»	Industrial Goods	**64.64**	76.74	22.55	39.71
384	Fifth Third Bancorp»	Banks and Insurance	**64.38**	81.09	24.19	31.72
490	FirstEnergy»	Utilities	**44.83**	3.97	21.82	40.86
321	Fiserv»	Industrial Goods	**67.5**	75.15	28.32	45.02
453	Flowserve»	Industrial Goods	**59.69**	33.27	15.18	33.59
240	Fluor»	General Industrials	**71**	66.84	37.3	46.33
268	FMC Technologies»	Oil and Gas	**69.65**	32.28	37.98	43.48
289	Foot Locker»	Retail	**68.81**	53.17	37.4	30.56
82	Ford Motor»	Consumer Products, Cars	**80.14**	90	52.49	69.77
470	Forest Laboratories»	Pharmaceuticals	**57.03**	34.46	10.83	24.75
414	Fortune Brands»	General Industrials	**62.47**	21.79	19.47	51.81
257	Foster Wheeler»	General Industrials	**70.13**	62.48	34.72	48.4
205	Franklin Resources»	Financial Services	**72.62**	39.02	44.02	45.17
430	Freeport-McMoRan»	Basic Materials	**61.27**	15.45	26.46	34.68
318	GameStop»	Retail	**67.66**	49.51	37.3	21.88
341	Gannett»	Media, Travel, and Leisure	**66.71**	47.53	29.54	39.94
71	Gap»	Retail	**80.87**	88.02	59.9	53.51

398	Garmin»	Consumer Products, Cars	**63.7**	54.56	17.35	52.79
394	General Dynamics»	Transport, Aerospace	**63.9**	41.39	23.9	36.44
83	General Electric»	General Industrials	**80.1**	97.13	43.94	89.07
226	General Mills»	Food and Beverage	**71.7**	8.72	64.39	56.65
261	Genuine Parts»	Consumer Products, Cars	**69.96**	65.25	35.15	44.8
89	Genworth Financial»	Banks and Insurance	**79.82**	85.25	63.89	31.69
158	Genzyme»	Pharmaceuticals	**74.98**	47.33	51.72	37.36
351	Gilead Sciences»	Pharmaceuticals	**66**	34.26	34.71	22.34
165	Goldman Sachs Group»	Financial Services	**74.71**	39.41	51.13	39.13
271	Goodrich»	Transport, Aerospace	**69.53**	42.38	39.02	34.17
276	Goodyear Tire & Rubber»	Consumer Products, Cars	**69.4**	19.41	37.67	54.3
36	Google»	Technology	**86.25**	72.97	60.65	97.9
264	H&R Block»	Retail	**69.8**	78.12	35.77	39.94
84	H. J. Heinz»	Food and Beverage	**80.06**	9.51	80.59	60.56
222	Halliburton»	Oil and Gas	**71.87**	27.53	50.91	23.17
91	Hanesbrands»	Consumer Products, Cars	**79.6**	94.16	57.75	44.05
296	Harley-Davidson»	Consumer Products, Cars	**68.47**	42.18	34.64	39.6
191	Harris»	Technology	**73.04**	54.36	43.93	44.77
153	Hartford Financial Services Grp.»	Banks and Insurance	**75.47**	83.86	50.14	40.07
266	Hasbro»	Consumer Products, Cars	**69.72**	30.5	36.02	51.74
465	Health Management Associates»	Health Care	**58.16**	46.74	4.37	50.32
457	Health Net»	Health Care	**59.15**	86.04	4.37	51.87
421	Henry Schein»	Health Care	**62.1**	63.07	14.9	45.44
399	Hershey»	Food and Beverage	**63.6**	11.69	34.51	41.43
281	Hertz Global Holdings»	Media, Travel, and Leisure	**69.29**	65.05	36.23	35.73
244	Hess»	Oil and Gas	**70.96**	59.71	35.33	53.83
331	Hewitt Associates»	Industrial Goods	**67.2**	74.36	28.32	42.61
2	Hewlett-Packard»	Technology	**99.32**	90.6	94.09	95.35
156	Home Depot»	Retail	**75.24**	54.96	49.23	45.85
334	Honeywell International»	General Industrials	**67.09**	36.05	25.14	62.07

442	Hormel Foods»	Food and Beverage	**60.55**	3.57	64.71	35.47
74	Hospira»	Pharmaceuticals	**80.75**	36.44	67.42	38.78
319	Host Hotels & Resorts»	Financial Services	**67.59**	59.31	34.88	27.08
317	Humana»	Health Care	**67.7**	87.43	27.49	48.45
447	Huntington Bancshares»	Banks and Insurance	**60.13**	82.87	16.14	21.97
396	Huntsman»	Basic Materials	**63.81**	14.86	29.36	47.62
134	Hyatt Hotels»	Media, Travel, and Leisure	**76.73**	42.78	48.33	64.33
437	Illinois Tool Works»	Industrial Goods	**60.93**	28.32	16.91	41.53
96	Ingersoll-Rand»	Industrial Goods	**78.94**	79.11	55.71	51.57
258	Ingram Micro»	Technology	**70.07**	68.22	39.58	30.91
309	Integrys Energy Group»	Utilities	**67.89**	10.7	46.97	51.29
5	Intel»	Technology	**97.57**	95.74	88.79	92.71
3	International Business Machines»	Technology	**99.2**	98.71	89.52	98.42
155	International Paper»	Basic Materials	**75.27**	10.9	63.58	57.18
393	Interpublic Group»	Media, Travel, and Leisure	**63.97**	70.99	21.85	37.19
55	Intuit»	Technology	**82.66**	91.39	67.65	40.56
301	Invesco»	Financial Services	**68.15**	20.8	35.9	47.19
339	Iron Mountain»	Industrial Goods	**66.84**	71.59	27.07	44.23
87	ITT»	General Industrials	**79.94**	94.95	53.54	59.83
392	J. B. Hunt Transport Services»	Transport, Aerospace	**63.98**	39.81	18.96	53.61
63	J. C. Penney»	Retail	**81.83**	97.72	62.96	40.47
483	J. M. Smucker»	Food and Beverage	**51.07**	6.35	30.29	14.67
182	Jabil Circuit»	Industrial Goods	**73.72**	48.92	49.16	34.35
133	Jacobs Engineering Group»	General Industrials	**76.75**	69.01	49.58	54.53
459	Jarden»	Consumer Products, Cars	**58.83**	30.3	14.49	30.61
4	Johnson & Johnson»	Pharmaceuticals	**99.02**	74.95	98.86	80.34
14	Johnson Controls»	Consumer Products, Cars	**90.94**	90.79	81.73	64.97
454	Joy Global»	Industrial Goods	**59.69**	28.52	13.57	41.91
45	JPMorgan Chase»	Banks and Insurance	**83.85**	97.53	64.24	53.6

207	Juniper Networks»	Technology	**72.59**	55.95	40.35	52.32
322	KBR»	General Industrials	**67.48**	68.82	28.08	46.63
247	Kellogg»	Food and Beverage	**70.77**	8.52	66.86	44.09
315	KeyCorp»	Banks and Insurance	**67.73**	67.23	34.06	29.23
76	Kimberly-Clark»	Consumer Products, Cars	**80.65**	17.04	64.34	68.29
40	Kohl's»	Retail	**84.63**	63.47	70.92	52.13
235	Kraft Foods»	Food and Beverage	**71.17**	7.14	70.77	45.05
136	Kroger»	Retail	**76.7**	78.91	47.12	60.76
377	L-3 Communications»	Transport, Aerospace	**64.8**	55.75	23.98	40.17
466	Laboratory Corp. of America»	Health Care	**57.84**	61.29	5.95	38.81
210	Las Vegas Sands»	Media, Travel, and Leisure	**72.32**	43.77	45.65	35.51
458	Lear»	Consumer Products, Cars	**59.05**	31.89	12.02	39.12
403	Leggett & Platt»	Consumer Products, Cars	**63.14**	22.19	24.22	41.88
333	Liberty Global»	Media, Travel, and Leisure	**67.16**	70.2	26.77	48.06
390	Liberty Media (Interactive)»	Media, Travel, and Leisure	**64.11**	70.4	19.97	44.61
102	Life Technologies»	Pharmaceuticals	**78.29**	29.31	59.99	46.3
100	Limited Brands»	Retail	**78.65**	89.01	55.16	49.7
302	Lincoln National»	Banks and Insurance	**68.14**	85.45	34.93	27.83
85	Lockheed Martin»	Transport, Aerospace	**80.04**	41.19	60.75	52.35
385	Loews»	Banks and Insurance	**64.36**	57.93	18.84	52.38
479	Lorillard»	Food and Beverage	**53.43**	15.85	8.92	25.38
103	Lowe's»	Retail	**78.27**	79.31	51.85	58.56
218	Lubrizol»	Basic Materials	**72.11**	19.61	47.3	45.59
282	M&T Bank»	Banks and Insurance	**69.13**	63.67	34.14	41.58
113	Macy's»	Retail	**77.69**	49.71	61.8	26.46
438	Manitowoc»	General Industrials	**60.86**	52.58	10.04	53.05
251	Manpower»	Industrial Goods	**70.4**	83.07	33.56	51.57
121	Marathon Oil»	Oil and Gas	**77.14**	43.17	55.17	45.22
115	Marriott International»	Media, Travel, and Leisure	**77.43**	41.79	52.22	57.91
78	Marsh & McLennan»	Banks and Insurance	**80.41**	77.92	61.18	46.37

432	Marshall & Ilsley»	Banks and Insurance	**61.09**	77.53	15.92	31.44
190	Marvell Technology Group»	Technology	**73.32**	94.36	36.88	59.26
129	Masco»	General Industrials	**76.88**	74.56	50.71	51.04
402	MasterCard»	Financial Services	**63.24**	80.5	23.08	25.78
345	Mattel»	Consumer Products, Cars	**66.47**	31.69	28.48	48.15
325	McDermott International»	General Industrials	**67.38**	44.56	27.27	53.75
79	McDonald's»	Media, Travel, and Leisure	**80.28**	30.11	63.44	51.59
39	McGraw-Hill»	Media, Travel, and Leisure	**84.66**	99.11	65.5	53.45
237	McKesson»	Retail	**71.08**	62.68	36.52	50.51
364	MDU Resources Group»	General Industrials	**65.46**	21	27.33	52.37
480	Mead Johnson Nutrition»	Food and Beverage	**52.65**	6.54	24.82	45.9
161	MeadWestvaco»	General Industrials	**74.89**	12.48	56.54	61.51
180	Medco Health Solutions»	Health Care	**73.73**	75.75	43.61	47.57
37	Medtronic»	Health Care	**86.15**	93.17	74.83	44.98
68	Merck»	Pharmaceuticals	**81.3**	43.57	63.54	52.81
49	MetLife»	Banks and Insurance	**83.51**	96.54	63.11	57.33
174	MGM Resorts»	Media, Travel, and Leisure	**74.02**	42.98	48.06	42.31
177	Micron Technology»	Technology	**73.86**	38.62	46.18	48.73
29	Microsoft»	Technology	**86.84**	72.78	71.89	66.2
350	Mohawk Industries»	Consumer Products, Cars	**66.08**	16.84	32.41	50.58
160	Molson Coors Brewing»	Food and Beverage	**74.95**	13.47	57.01	55.87
497	Monsanto»	Food and Beverage	**28.19**	1.99	7.55	46.47
157	Morgan Stanley»	Financial Services	**75.04**	59.51	51.62	35.16
475	Mosaic»	Basic Materials	**55.16**	14.27	10.24	40.11
43	Motorola»	Technology	**84.52**	88.42	68	57.69
400	Murphy Oil»	Oil and Gas	**63.39**	23.97	24.92	39.55
449	Mylan»	Pharmaceuticals	**60.09**	34.66	16.69	31.41
441	Nabors Industries»	Oil and Gas	**60.57**	32.88	17.13	34.71
375	National Oilwell Varco»	Oil and Gas	**64.9**	36.84	28.66	31.38
203	Navistar International»	Industrial Goods	**72.69**	31.49	42.68	54.27
413	NCR»	Technology	**62.81**	46.14	17.69	45.99

287	NetApp»	Technology	**68.92**	47.93	31.07	53.43
389	Newell Rubbermaid»	Consumer Products, Cars	**64.21**	31.29	25.96	37.48
420	Newmont Mining»	Basic Materials	**62.12**	9.91	29.68	66.78
107	News Corp.»	Media, Travel, and Leisure	**78.12**	93.57	51.75	52.12
354	NextEra Energy»	Utilities	**65.92**	6.15	51.47	81.65
356	NII Holdings»	Technology	**65.79**	66.04	24.24	45.1
10	Nike	Consumer Products, Cars	**92.66**	67.63	77.53	97.39
254	NiSource»	Utilities	**70.27**	7.73	64.27	51.47
166	Noble»	Oil and Gas	**74.63**	20.01	52.23	50.61
118	Nordstrom»	Retail	**77.22**	53.97	54.49	45.69
233	Norfolk Southern»	Transport, Aerospace	**71.28**	22.78	37.85	64.8
119	Northeast Utilities»	Utilities	**77.21**	60.5	54.86	42.43
128	Northern Trust»	Banks and Insurance	**76.9**	27.14	57.85	43.53
173	Northrop Grumman»	Transport, Aerospace	**74.09**	96.14	43.85	41.45
492	NRG Energy»	Utilities	**37.76**	2.78	22.03	40.65
305	Nucor»	Basic Materials	**68.03**	11.3	48.49	39.28
188	Nvidia»	Technology	**73.44**	99.31	40.15	41.49
201	NYSE Euronext»	Financial Services	**72.7**	82.08	39.72	51.02
387	Occidental Petroleum»	Oil and Gas	**64.33**	23.37	22.91	54.73
18	Office Depot»	Retail	**90.14**	96.93	75.55	71.56
472	Omnicare»	Retail	**56.32**	60.7	4.37	31.24
106	Omnicom Group»	Media, Travel, and Leisure	**78.16**	96.34	52.32	47.97
193	ONEOK»	Utilities	**73.01**	24.96	47.89	45.02
80	Oracle»	Technology	**80.21**	76.54	61.93	42.34
295	O'Reilly Automotive»	Retail	**68.53**	56.74	34.7	36.37
473	Oshkosh»	General Industrials	**55.66**	29.51	1	48.16
57	Owens Corning»	General Industrials	**82.25**	24.56	67.29	59.87
360	Owens-Illinois»	General Industrials	**65.52**	16.44	31.76	49.79
410	PACCAR»	Industrial Goods	**62.88**	33.08	19.99	44.83
243	Parker-Hannifin»	Industrial Goods	**70.96**	88.81	36.33	46.65
310	PartnerRe»	Banks and Insurance	**67.83**	84.26	27.78	48.63
374	Paychex»	Industrial Goods	**64.93**	73.77	22.55	42.37

500	Peabody Energy»	Basic Materials	**1**	1	28.46	54.46
94	Pepco Holdings»	Utilities	**79.09**	41.99	62.24	39.2
135	PepsiCo»	Food and Beverage	**76.71**	10.31	65.24	68.13
332	Petsmart»	Retail	**67.19**	50.8	27.61	49.61
21	Pfizer»	Pharmaceuticals	**88.53**	93.76	75.37	62.38
20	PG&E»	Utilities	**88.64**	27.33	75.65	84.13
460	Philip Morris International»	Food and Beverage	**58.81**	15.65	21.38	30.05
187	Pitney Bowes»	Technology	**73.45**	40.2	43.87	52.03
213	PNC Financial Services Group»	Banks and Insurance	**72.24**	78.32	41.07	43.03
245	Polo Ralph Lauren»	Retail	**70.83**	58.12	46.61	16.25
292	PPG Industries»	Basic Materials	**68.61**	17.43	36.65	55.89
488	PPL»	Utilities	**48.55**	3.77	28.7	50.62
92	Praxair»	Basic Materials	**79.35**	14.46	64.15	66.3
467	Precision Castparts»	Transport, Aerospace	**57.75**	17.24	14.62	36.61
159	Principal Financial Group»	Banks and Insurance	**74.96**	73.17	47.86	44.46
59	Procter & Gamble»	Consumer Products, Cars	**82.1**	36.24	52.16	100
476	Progress Energy»	Utilities	**54.84**	4.37	39.33	56.26
171	Progressive»	Banks and Insurance	**74.14**	87.03	46.02	42.17
88	Prudential Financial»	Banks and Insurance	**79.88**	83.27	63.11	34.96
219	Public Service Enterprise Grp.»	Utilities	**72.08**	10.11	56.5	58.58
405	Public Storage»	Financial Services	**63.11**	44.96	23.43	30.24
225	Qualcomm»	Technology	**71.71**	57.13	41.12	41.86
358	Quest Diagnostics»	Health Care	**65.58**	62.88	24.74	42.59
195	Qwest Communications»	Technology	**72.96**	98.91	40.39	37.22
342	R. R. Donnelley & Sons»	Industrial Goods	**66.69**	25.55	29.18	52.21
217	RadioShack»	Retail	**72.15**	58.32	45.77	30.06
482	Ralcorp Holdings»	Food and Beverage	**51.43**	8.92	23.45	13.71
75	Raytheon»	Transport, Aerospace	**80.73**	91.19	55.35	64.67

423	Regal Entertainment Group»	Media, Travel, and Leisure	**61.98**	73.37	17.22	35.08
407	Regions Financial»	Banks and Insurance	**63.06**	84.85	17.33	42.5
366	Reliance Steel & Aluminum»	Basic Materials	**65.4**	61.69	29.2	26.54
448	Republic Services»	Industrial Goods	**60.13**	19.22	13.18	56.2
229	Reynolds American»	Food and Beverage	**71.59**	23.57	39.19	62.73
231	Robert Half International»	Industrial Goods	**71.37**	82.48	39.28	41.18
216	Rockwell Automation»	General Industrials	**72.2**	90.2	37.19	52.7
126	Rockwell Collins»	Transport, Aerospace	**76.91**	55.15	51.76	51.65
346	Ross Stores»	Retail	**66.45**	53.57	37.52	10.35
199	Royal Caribbean Cruises»	Media, Travel, and Leisure	**72.71**	16.25	48.59	56.06
114	Ryder System»	Transport, Aerospace	**77.53**	98.12	48.9	49.73
168	Safeway»	Retail	**74.32**	35.25	45.66	56.55
192	SAIC»	Technology	**73.03**	74.16	43.11	43.53
152	Sara Lee»	Food and Beverage	**75.49**	9.32	73.81	44.47
478	SCANA»	Utilities	**54.3**	5.75	31.51	54.12
139	Schlumberger»	Oil and Gas	**76.48**	52.38	52.64	45.83
170	Seagate Technology»	Technology	**74.15**	44.76	47.9	43.36
252	Sealed Air»	General Industrials	**70.32**	40.8	38.17	44.24
206	Sears Holdings»	Retail	**72.61**	93.37	43.1	34.49
200	Sempra Energy»	Utilities	**72.71**	21.99	46.14	50.96
306	Shaw Group»	General Industrials	**67.98**	54.76	29.47	49.24
307	Sherwin-Williams»	General Industrials	**67.98**	37.04	28.55	57.57
149	Simon Property Group»	Financial Services	**75.63**	59.11	51.55	40.45
353	SLM»	Financial Services	**65.98**	79.71	22.38	51.16
198	Smith International»	Oil and Gas	**72.72**	32.68	45.9	43.14
485	Smithfield Foods»	Food and Beverage	**50.44**	3.38	34.97	48.84
125	Sonoco Products»	General Industrials	**76.92**	14.66	57.25	68.27
494	Southern»	Utilities	**32.87**	1.79	38.99	23.69
142	Southwest Airlines»	Media, Travel, and Leisure	**76.25**	25.16	53.33	54.46
280	Spectra Energy»	Utilities	**69.3**	12.68	45.09	50.24

6	Sprint Nextel»	Technology	**94.98**	99.7	94.58	44.72
431	SPX»	Industrial Goods	**61.26**	30.9	17.51	40.52
256	St. Jude Medical»	Health Care	**70.13**	45.15	35.41	50.21
274	Stanley Black & Decker»	Consumer Products, Cars	**69.51**	88.62	31.75	49.45
23	Staples»	Retail	**88.28**	49.71	76.94	66.25
33	Starbucks»	Media, Travel, and Leisure	**86.65**	25.95	69.25	89.46
90	Starwood Hotels & Resorts»	Media, Travel, and Leisure	**79.65**	44.36	54.88	67.01
35	State Street»	Financial Services	**86.62**	23.18	76.27	68.28
273	Stryker»	Health Care	**69.52**	45.95	35.32	45.18
372	Sunoco»	Oil and Gas	**65.04**	57.73	23.16	44.07
376	SunTrust Banks»	Banks and Insurance	**64.89**	81.29	27.05	26.65
241	SUPERVALU»	Retail	**70.99**	92.77	35.03	47.47
44	Symantec»	Technology	**84.47**	90.4	65.64	63.19
263	Sysco»	Retail	**69.92**	62.08	30.4	60.74
419	T. Rowe Price Group»	Financial Services	**62.14**	11.89	31.5	38.72
61	Target»	Retail	**81.91**	95.15	56.48	66.77
311	TD AMERITRADE»	Financial Services	**67.83**	79.51	27.5	49.99
417	Tech Data»	Industrial Goods	**62.27**	68.42	19.1	32.02
361	Telephone and Data Systems»	Technology	**65.51**	66.24	25.37	39.03
456	Tenet Healthcare»	Health Care	**59.34**	46.54	9.91	42.14
433	Terex»	General Industrials	**61.09**	29.91	15.64	46.04
383	Tesoro»	Oil and Gas	**64.39**	19.81	26.05	49.88
34	Texas Instruments»	Technology	**86.63**	94.56	72.54	54.89
328	Textron»	Transport, Aerospace	**67.27**	37.43	32.44	38.66
275	Thermo Fisher Scientific»	Health Care	**69.5**	48.72	34.38	47
108	Tiffany»	Retail	**78.08**	51.19	58.86	39.33
286	Time Warner Cable»	Media, Travel, and Leisure	**68.93**	70.6	28.72	56.66
163	Time Warner»	Media, Travel, and Leisure	**74.73**	68.02	45.05	52.34
340	Timken»	Industrial Goods	**66.76**	16.05	35.99	47.52
120	TJX»	Retail	**77.16**	49.71	54.88	44.57

395	Transocean»	Oil and Gas	**63.82**	21.2	29.43	31.41
27	Travelers»	Banks and Insurance	**87.24**	86.64	77.66	49.25
439	TRW Automotive Holdings»	Consumer Products, Cars	**60.7**	26.54	15.48	46.1
123	Tyco Electronics»	Industrial Goods	**76.99**	92.18	53	39.64
144	Tyco International»	General Industrials	**76.14**	95.94	46.11	51.33
481	Tyson Foods»	Food and Beverage	**51.56**	4.56	39.04	27.56
145	U.S. Bancorp»	Banks and Insurance	**76.07**	78.52	53.15	35.79
260	UAL Corp.»	Media, Travel, and Leisure	**69.96**	33.67	40.84	35.98
368	Union Pacific»	Transport, Aerospace	**65.32**	47.73	21.66	53.8
208	Unisys»	Technology	**72.54**	75.35	41.64	43.97
62	United Parcel Service»	Transport, Aerospace	**81.83**	96.73	52.25	78.17
450	United States Steel»	Basic Materials	**60.02**	9.12	41.58	25.42
28	United Technologies»	Transport, Aerospace	**87.17**	92.97	71.43	64.76
184	UnitedHealth Group»	Health Care	**73.6**	66.44	43.19	49.03
469	Universal Health Services»	Health Care	**57.19**	46.94	4.37	42.15
179	Unum Group»	Banks and Insurance	**73.75**	84.46	47.74	33.33
316	Urban Outfitters»	Retail	**67.71**	52.18	34.37	31.65
294	URS»	Industrial Goods	**68.59**	69.21	27.88	56.59
330	Valero Energy»	Oil and Gas	**67.22**	21.39	29.56	59.48
445	Varian Medical Systems»	Health Care	**60.18**	48.52	14.97	32.01
99	Verizon Communications»	Technology	**78.86**	60.9	56.37	51.32
412	VF Corp.»	Consumer Products, Cars	**62.81**	40.6	19.16	43.04
298	Viacom»	Media, Travel, and Leisure	**68.32**	71.98	28.82	50.92
148	Virgin Media»	Technology	**75.64**	98.32	43.35	51.02
363	Visa»	Financial Services	**65.47**	80.1	24.77	39.02
220	VMware»	Technology	**72**	77.13	38.03	51.17
127	Vornado Realty Trust»	Financial Services	**76.91**	58.72	48.95	59.68
487	Vulcan Materials»	General Industrials	**48.55**	7.53	9.35	48.28
324	W. R. Berkley»	Banks and Insurance	**67.45**	87.23	27.78	45.36
265	W.W. Grainger»	Industrial Goods	**69.79**	61.89	30.78	58.42

300	Walgreen»	Retail	**68.21**	47.13	35.84	32.11
51	Wal-Mart»	Retail	**82.94**	49.11	55.24	92.15
69	Walt Disney»	Media, Travel, and Leisure	**81.21**	97.92	61.34	40.33
285	Washington Post»	Media, Travel, and Leisure	**68.98**	59.91	35.01	38.05
212	Waste Management»	Industrial Goods	**72.26**	12.09	46.6	72.42
283	Weatherford International»	Oil and Gas	**69.06**	38.82	39.54	29.92
382	WellPoint»	Health Care	**64.44**	87.82	19.41	47.29
41	Wells Fargo»	Banks and Insurance	**84.63**	82.68	69.82	53.11
313	Wendy's/Arby's Group»	Media, Travel, and Leisure	**67.79**	25.35	36.79	36.75
336	Western Digital»	Technology	**67.04**	51.99	28.11	46.55
288	Western Union»	Financial Services	**68.92**	75.55	28.32	56.94
172	Weyerhaeuser»	General Industrials	**74.12**	14.07	56.86	48.37
116	Whirlpool»	Consumer Products, Cars	**77.41**	64.66	49.04	62.38
93	Whole Foods Market»	Retail	**79.31**	35.06	52.52	76.25
352	Williams»	Oil and Gas	**65.99**	12.29	36.26	52.76
196	Williams-Sonoma»	Retail	**72.9**	54.16	42.08	49.84
451	Wisconsin Energy»	Utilities	**59.9**	6.74	37.99	61.24
176	Wyndham Worldwide»	Media, Travel, and Leisure	**73.94**	57.53	42.64	55.53
373	Wynn Resorts»	Media, Travel, and Leisure	**65.03**	42.58	27.87	32.54
348	Xcel Energy»	Utilities	**66.15**	5.16	65.64	56.96
25	Xerox»	Technology	**87.66**	92.58	70.53	72.25
97	XL Group»	Banks and Insurance	**78.88**	85.84	58.98	39.82
9	Yahoo!»	Technology	**92.67**	68.62	89.07	59.74
337	Yum Brands»	Media, Travel, and Leisure	**66.94**	26.15	32.42	43.45
186	Zimmer Holdings»	Health Care	**73.45**	43.37	44.9	47.65

Source: MSCI (formerly known as KLD), Trucost and CorporateRegister.com

Appendix 4.4**.** Data on S&P 500 Green Ranking 2008

rank	company	Industry	green score	env.impact	green policies	survey
40	3M	General Industrials	**82.85**	23	62.05	67.57
88	Abbott Laboratories	Pharmaceuticals	**77.98**	23.6	54.71	47.67
242	Abercrombie & Fitch →	Retail	**70.87**	63.4	38.5	21.88
75	Accenture	Industrial Goods	**79.23**	84.3	52.91	46.03
103	Ace	Banks and Insurance	**76.89**	95.6	47.85	40.48
416	Activision Blizzard →	Consumer Products, Cars	**63.8**	87.3	16.2	27.95
16	Adobe Systems	Technology	**87.88**	86.9	73.27	56.52
394	Advance Auto Parts →	Retail	**65.04**	66.9	28.73	1
17	Advanced Micro Devices	Technology	**87.86**	47.8	81.63	36.38
51	AECOM Technology	Industrial Goods	**81.44**	80.4	63.28	32.22
487	AES →	Utilities	**47.89**	2.7	23.19	34.04
330	Aetna	Health Care	**67.96**	87.9	25.23	35.57
203	Affiliated Computer Services →	Industrial Goods	**72.54**	78.3	38.31	34.59
234	AFLAC →	Banks and Insurance	**71.18**	98.3	38.59	19.52
459	AGCO →	Industrial Goods	**59.76**	34	8.03	30.85
37	Agilent Technologies	Industrial Goods	**83.24**	63.2	69.46	31.04
309	Air Products & Chemicals →	Basic Materials	**68.53**	9.5	46.86	37.56
339	Airgas →	Basic Materials	**67.54**	13.7	38.89	28.4
139	Alcoa	Basic Materials	**74.69**	5.3	72.35	63.7
498	Allegheny Energy →	Utilities	**25.04**	0.6	42.11	24.23
430	Allegheny Technologies →	Basic Materials	**63**	13.5	26.12	29.81
19	Allergan	Pharmaceuticals	**86.73**	56.9	77.43	37.54
366	Alliant Techsystems →	Transportation, Aerospace	**66.21**	44.2	26.58	24.02
68	Allstate	Banks and Insurance	**79.72**	93.9	52.45	50.95
205	Altria Group →	Food and Beverage	**72.4**	14.5	51.72	26.74
131	Amazon.com	Retail	**75.27**	61.9	44.17	43.14
495	Ameren →	Utilities	**31.63**	1.2	28.05	31.34

151	American Eagle Outfitters	Retail	**74.23**	64.4	39.43	49.24
494	American Electric Power →	Utilities	**33.17**	1	29.48	47.68
29	American Express	Financial Services	**83.94**	89.6	67.59	39.26
140	American International Group	Banks and Insurance	**74.64**	94.1	44.95	29.86
455	American Tower →	Technology	**59.99**	76.7	10.04	15.1
261	Ameriprise Financial →	Financial Services	**70.45**	98.7	32.84	31.95
345	AmerisourceBergen →	Retail	**67.39**	72.9	24.96	33.39
343	Ametek →	Industrial Goods	**67.45**	41.1	28.94	28.99
342	Amgen →	Pharmaceuticals	**67.46**	40.3	29.64	26.93
363	Amphenol →	Industrial Goods	**66.41**	36.1	27.71	24.99
362	Anadarko Petroleum →	Oil and Gas	**66.47**	29.3	28.72	25.43
247	Analog Devices →	Technology	**70.74**	46.9	37.21	29.3
375	Annaly Capital Management →	Financial Services	**65.8**	69.4	22.6	27.67
275	Aon Corp. →	Banks and Insurance	**70.08**	89.5	29.51	40.25
328	Apache →	Oil and Gas	**68.01**	38.6	28.15	37.34
183	Apollo Group	Retail	**73.07**	74	40.63	32.59
133	Apple	Technology	**75.18**	58.8	42.4	48.5
9	Applied Materials	Technology	**91.79**	50.9	89.51	44.51
486	Archer Daniels Midland →	Food and Beverage	**47.94**	4.1	20.06	22.33
357	Arrow Electronics →	Industrial Goods	**66.55**	75.4	24.78	25.74
304	Assurant →	Banks and Insurance	**68.81**	96	30.14	26.08
126	AT&T	Technology	**75.45**	75.6	44.6	40.49
384	Atmos Energy →	Utilities	**65.47**	39	22.51	32.99
55	Autodesk	Technology	**80.72**	83.9	58.64	40.65
325	Automatic Data Processing →	Industrial Goods	**68.09**	87.5	27.07	30.63
236	AutoNation →	Retail	**71.07**	67.3	40.56	16.29
382	AutoZone →	Retail	**65.58**	67.1	27.83	8.85
315	Avery Dennison →	Basic Materials	**68.31**	11.8	40.56	36.22
184	Avnet →	Industrial Goods	**73.04**	75	41.19	30.09

25	Avon Product	Consumer Products, Cars	**84.7**	41.5	73.2	38.22
154	Baker Hughes	Oil and Gas	**74.07**	30.3	47	32.77
111	Ball	General Industrials	**76.26**	18.9	55.32	39.25
135	Bank of America	Banks and Insurance	**75.04**	92.5	39.51	51.72
35	Baxter International	Health Care	**83.35**	53.4	69.66	33.35
244	BB&T Corp. →	Banks and Insurance	**70.81**	94.7	33.88	31.83
423	Beckman Coulter →	Health Care	**63.26**	53.2	16.75	27.3
83	Becton Dickinson	Health Care	**78.63**	55.3	55.29	37.88
224	Bed Bath & Beyond →	Retail	**71.46**	65.9	41.78	16.07
373	Bemis Co. →	General Industrials	**65.95**	12.2	39.76	16.25
61	Best Buy	Retail	**80.33**	70.6	57.03	44.69
116	Big Lots	Retail	**76.12**	58.2	57.32	7.8
220	Biogen Idec →	Pharmaceuticals	**71.73**	65	43.53	12.94
317	BJ Services →	Oil and Gas	**68.24**	37.6	32.9	23.9
157	Black & Decker	Consumer Products, Cars	**73.99**	36.7	44.57	37.34
451	BMC Software →	Technology	**60.34**	87.7	14.02	3.74
60	BNY Mellon	Financial Services	**80.35**	99.1	56.98	41.4
288	Boeing	Transportation, Aerospace	**69.41**	55.7	33.21	27.65
240	BorgWarner →	Consumer Products, Cars	**70.93**	32.6	36.27	38.7
259	Boston Scientific Corporation	Health Care	**70.46**	58.4	31.7	41.46
206	Brinker International →	Media, Travel, Leisure	**72.4**	28.6	42.76	33.27
8	Bristol-Myers Squibb	Pharmaceuticals	**92.62**	27.8	88.52	64.73
376	Broadcom →	Technology	**65.78**	44.9	22.79	32.44
63	Brown-Forman	Food and Beverage	**80.15**	25.7	60.71	44.88
493	Bunge →	Food and Beverage	**33.96**	2.2	3.95	21.11
185	Burger King Holdings →	Media, Travel, Leisure	**73.01**	35.5	45.54	25.65
159	Burlington Northern Santa Fe	Transportation, Aerospace	**73.93**	17.2	47.86	47.51
414	C.H. Robinson Worldwide →	Transportation, Aerospace	**64.16**	84.8	16.27	31.2
400	C.R. Bard	Health Care	**64.93**	52.3	19.61	32.98
385	CA →	Technology	**65.46**	82.1	22.04	24.14
347	Cablevision Systems →	Media, Travel, Leisure	**67.38**	74.8	23.6	37.31

386	Calpine →	Utilities	**65.43**	6.6	51.15	30.97
299	Cameron International →	Oil and Gas	**69.16**	31.3	32.86	34.55
121	Campbell Soup	Food and Beverage	**75.85**	7.9	71.8	32.65
71	Capital One Financial	Financial Services	**79.53**	99.5	56.92	34.21
369	Cardinal Health →	Retail	**66.07**	72.3	21.34	33.51
195	CarMax →	Retail	**72.64**	66.7	45.75	13.26
155	Carnival	Media, Travel, Leisure	**74.07**	16.4	51.38	37.1
73	Caterpillar	Industrial Goods	**79.43**	34.9	56.26	48.44
45	CB Richard Ellis Group	Financial Services	**82.39**	68.6	70.02	20.38
435	CBS →	Media, Travel, Leisure	**62.44**	81	10.5	35.31
125	Celanese	Basic Materials	**75.6**	13	62.05	27.8
470	Celgene →	Pharmaceuticals	**58.73**	39.9	12.87	3.67
219	CenterPoint Energy	Utilities	**71.75**	54.6	37.21	35.7
463	Cerner →	Technology	**59.39**	85.2	11.4	4.04
122	Charles Schwab	Financial Services	**75.84**	92.7	46.9	34.35
402	Chesapeake Energy →	Oil and Gas	**64.73**	47.1	19.07	35.04
371	Chevron →	Oil and Gas	**65.99**	25.3	21.52	47.17
350	Chubb →	Banks and Insurance	**67.2**	98.5	25.4	27.28
311	Cigna	Health Care	**68.44**	97	26.73	34.12
348	Cincinnati Financial →	Banks and Insurance	**67.33**	97.4	26.87	23.57
165	Cintas	Industrial Goods	**73.61**	54.4	44.76	27.62
12	Cisco Systems	Technology	**88.59**	70.4	72.66	67.7
24	Citigroup	Banks and Insurance	**85.58**	89.8	67.47	54.49
438	Citrix Systems →	Technology	**61.97**	86.6	14.96	15.47
77	Clorox	Consumer Products, Cars	**79.15**	29	48.07	76.1
229	CME Group →	Financial Services	**71.35**	90.2	40	16.74
482	CMS Energy →	Utilities	**52.79**	5.6	23.41	23.68
326	Coach →	Consumer Products, Cars	**68.04**	21.4	34.92	25.81
36	Coca-Cola Enterprises	Food and Beverage	**83.26**	17.6	66.27	70.12
58	Coca-Cola	Food and Beverage	**80.48**	15.5	53.03	91.94
449	Cognizant Technology →	Technology	**60.49**	92	6.49	29.64
39	Colgate-Palmolive	Consumer Products, Cars	**83.09**	19.5	70.08	49.48
321	Comcast →	Media, Travel, Leisure	**68.17**	79	28.02	29.21
106	Comerica	Banks and Insurance	**76.61**	91.4	49.99	31.21

226	Commercial Metals	Basic Materials	**71.41**	23.7	41.1	32.71
452	Community Health Systems →	Health Care	**60.29**	56.1	6.26	34.5
380	Computer Sciences →	Technology	**65.59**	81.7	21.21	28
342	ConAgra Foods →	Food and Beverage	**27.49**	0.4	51.79	28.89
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238	ConocoPhillips	Oil and Gas	**71.02**	26.3	36.71	41.52
496	Consol Energy →	Basic Materials	**28.65**	1.8	4.59	44.71
215	Consolidated Edison	Utilities	**71.91**	28.2	39.18	40.87
450	Constellation Energy →	Utilities	**60.37**	12	20.27	30.67
97	Cooper Industries	Industrial Goods	**77.44**	48.6	54.98	30.36
352	Corning →	Technology	**66.91**	24.9	30.99	24.43
200	Costco Wholesale →	Retail	**72.56**	60.9	40.94	29.45
458	Coventry Health Care →	Health Care	**59.81**	97.9	6.26	23.92
460	Covidien →	Health Care	**59.6**	51.1	4.84	34.13
277	Crown Holdings →	General Industrials	**69.91**	19.1	41.85	24.9
204	CSX	Transportation, Aerospace	**72.5**	27.4	38.55	48.49
91	Cummins	Industrial Goods	**77.67**	41.3	52.49	43.35
174	CVS Caremark	Retail	**73.39**	46.5	43.12	33.74
305	D.R. Horton →	Consumer Products, Cars	**68.69**	32.8	35.99	19.34
358	Danaher →	Industrial Goods	**66.52**	47.6	26.46	26.45
150	Darden Restaurants	Media, Travel, Leisure	**74.24**	28.6	50.29	24.99
422	DaVita	Health Care	**63.3**	71.7	11.42	41.45
312	Dean Foods →	Food and Beverage	**68.43**	7.4	58.18	20.12
141	Deere	Industrial Goods	**74.54**	36.3	45.39	39.9
2	Dell	Technology	**98.87**	67.7	100	70.8
256	Delta Air Lines →	Media, Travel, Leisure	**70.53**	18.2	42.59	32.41
361	Dentsply International	Health Care	**66.48**	43	25.28	31.4
160	Devon Energy	Oil and Gas	**73.87**	37.8	44.97	34.73
413	Diamond Offshore Drilling →	Oil and Gas	**64.25**	20.7	25.59	24.41
469	DirecTV Group →	Media, Travel, Leisure	**59**	83.3	2.02	32.07
284	Discover Financial Services →	Financial Services	**69.7**	89.3	32.84	25.78

473	DISH Network →	Media, Travel, Leisure	**58.6**	79.2	1	32.23
293	Dollar Tree →	Retail	**69.25**	59.8	34.45	21.01
481	Dominion Resources →	Utilities	**56.27**	3.3	41.9	34.97
306	Donaldson →	Industrial Goods	**68.69**	29.5	33.55	29.51
418	Dover →	Industrial Goods	**63.68**	41.7	22.49	16.21
143	Dow Chemical	Basic Materials	**74.49**	11.4	54.99	47.14
468	Dr Pepper Snapple Group →	Food and Beverage	**59.12**	17	20.26	5.01
454	DTE Energy →	Utilities	**60.04**	3.9	50.93	32.55
490	Duke Energy →	Utilities	**44.91**	1.6	48.32	58.59
193	DuPont	Basic Materials	**72.73**	19.9	40.61	52.63
95	Eastman Chemical	Basic Materials	**77.46**	14.9	63.2	33.2
43	Eaton	General Industrials	**82.56**	26.4	70.62	33.27
76	eBay	Retail	**79.2**	82.9	59.82	23.05
202	Ecolab	Basic Materials	**72.55**	30.9	41.19	37.69
415	Edison International →	Utilities	**64.09**	3.7	58.47	44.82
225	El Paso →	Oil and Gas	**71.43**	11	50.75	34.55
381	Electronic Arts →	Consumer Products, Cars	**65.58**	87.1	21.05	27.97
123	Eli Lilly	Pharmaceuticals	**75.83**	49.8	44.65	49.43
74	EMC	Technology	**79.35**	65.8	54.41	45.65
129	Emerson Electric	Industrial Goods	**75.32**	43.2	48.58	33.83
260	Energizer Holdings →	Consumer Products, Cars	**70.45**	24.7	38.67	31.16
462	Entergy →	Utilities	**59.57**	4.9	36.69	55.09
216	EOG Resources	Oil and Gas	**71.9**	38.4	39.85	33.74
231	Equifax →	Financial Services	**71.25**	80.8	35.12	33.44
367	Equity Residential →	Financial Services	**66.08**	69	22.6	30.14
27	Estee Lauder	Consumer Products, Cars	**84.4**	33	75.75	29.56
329	Exelon →	Utilities	**67.96**	8.1	45.39	45.7
201	Expedia →	Retail	**72.55**	77.5	41.08	25.7
360	Expeditors Intl. of Washington →	Transportation, Aerospace	**66.5**	67.9	20.29	42.13
446	Express Scripts →	Health Care	**61.16**	82.5	7.88	32.18
395	ExxonMobil →	Oil and Gas	**65.04**	24.3	30.72	8.86
243	Family Dollar Stores →	Retail	**70.87**	59.8	37.58	25.3

237	Fastenal →	Industrial Goods	**71.04**	72.5	34.99	33.11
93	FedEx	Transportation, Aerospace	**77.5**	38.2	48.48	55.87
252	Fidelity National Financial →	Financial Services	**70.63**	98.1	32.84	33.68
152	Fidelity National Info. Services	Industrial Goods	**74.21**	86.2	43.28	32.28
379	Fifth Third Bancorp →	Banks and Insurance	**65.6**	94.3	21.69	25.2
356	First American →	Banks and Insurance	**66.67**	93.5	24.14	26.86
48	First Solar	Industrial Goods	**81.94**	45.5	62.62	46.49
491	FirstEnergy →	Utilities	**43.15**	2.4	16.89	32.46
248	Fiserv →	Industrial Goods	**70.74**	86.4	35.2	27.66
428	Flowserve →	Industrial Goods	**63.12**	36.5	16.54	31.98
196	Fluor →	General Industrials	**72.62**	75.8	40.19	29.46
327	FMC Technologies →	Oil and Gas	**68.03**	35.9	31.63	26.76
279	FMC →	Basic Materials	**69.9**	18.5	43.04	22.89
175	Foot Locker	Retail	**73.35**	64.4	40.82	36.63
108	Ford Motor	Consumer Products, Cars	**76.35**	40.7	43.23	62.16
456	Forest Laboratories →	Pharmaceuticals	**59.94**	39.9	12.87	14.65
390	Fortune Brands →	General Industrials	**65.33**	24.5	22.92	37.15
447	FPL Group →	Utilities	**61.01**	5.1	42.78	46.23
57	Franklin Resources	Financial Services	**80.6**	92.2	58.61	38.72
399	Freeport-McMoRan →	Basic Materials	**64.94**	15.3	27.75	36.63
228	GameStop →	Retail	**71.37**	61.3	37.97	28.52
38	Gap	Retail	**83.13**	64.4	57.9	68.54
374	Garmin →	Consumer Products, Cars	**65.81**	62.7	19.53	39.11
359	General Dynamics →	Transportation, Aerospace	**66.52**	49.4	26.67	24.88
82	General Electric	General Industrials	**78.67**	58.6	38.16	94.3
96	General Mills	Food and Beverage	**77.45**	8.9	69.92	47.11
457	Genuine Parts →	Consumer Products, Cars	**59.85**	75.2	8.32	19.77
147	Genzyme	Pharmaceuticals	**74.27**	57.1	40.51	47.29
427	Gilead Sciences →	Pharmaceuticals	**63.13**	39.9	23.21	9.22
110	Goldman Sachs Group	Financial Services	**76.26**	49	52.47	28.02
341	Goodrich →	Transportation, Aerospace	**67.49**	49.6	28.96	26.06
241	Goodyear Tire	Consumer Products, Cars	**70.88**	21.1	32.94	58.97

	&Rubber →					
79	Google	Technology	**78.8**	82.9	49.47	53.8
199	H&R Block →	Retail	**72.57**	88.1	40.56	26.35
90	H.J. Heinz	Food and Beverage	**77.9**	10.1	72.75	30.09
169	Halliburton	Oil and Gas	**73.53**	29.7	46.64	29.92
222	Harley-Davidson →	Consumer Products, Cars	**71.69**	26.8	44.03	23.1
294	Harris →	Technology	**69.22**	61.7	33.96	22.26
419	Harsco →	General Industrials	**63.62**	26.1	25.45	12.15
303	Hartford Financial Services →	Banks and Insurance	**68.85**	94.5	30.42	25.57
188	Hasbro →	Consumer Products, Cars	**72.91**	32.2	46.62	22.36
349	Henry Schein	Health Care	**67.23**	73.7	24.73	32.63
401	Hershey →	Food and Beverage	**64.74**	13.2	32.05	28.08
285	Hertz Global Holdings →	Media, Travel, Leisure	**69.69**	74.4	33.49	25.53
346	Hess →	Oil and Gas	**67.39**	28	28.58	35.24
210	Hewitt Associates →	Industrial Goods	**72.12**	84.8	38.35	29.99
1	Hewlett-Packard	Technology	**100**	64.8	97.9	88.44
254	Home Depot →	Retail	**70.61**	65.6	31.6	42.25
257	Honeywell International →	General Industrials	**70.5**	42.1	35.04	36.32
440	Hormel Foods →	Food and Beverage	**61.69**	4.5	55.14	20.23
62	Hospira	Pharmaceuticals	**80.28**	54	63.04	27.38
389	Hudson City Bancorp →	Banks and Insurance	**65.33**	100	20.89	25.2
392	Humana	Health Care	**65.32**	96.6	18.11	34.45
5	IBM	Technology	**94.08**	76.9	84.2	77.56
432	Illinois Tool Works →	Industrial Goods	**62.59**	31.5	15.23	33.39
407	Ingersoll-Rand →	Industrial Goods	**64.6**	38.8	19.49	35.18
441	Ingram Micro →	Technology	**61.6**	77.7	10.38	28.48
214	Integrys Energy Group	Utilities	**71.92**	10.3	54.53	34.58
4	Intel	Technology	**95.12**	46.7	87.87	81.86
170	International Game Tech.	Media, Travel, Leisure	**73.48**	43.4	46.16	25.21
344	International Paper →	Basic Materials	**67.42**	8.5	43.2	46.36
474	Interpublic Group →	Media, Travel, Leisure	**58.45**	80.2	1	30.87
302	Intuit →	Technology	**68.85**	84.1	27.46	36.61

146	Invesco	Financial Services	**74.32**	90.6	43.95	30.6
286	Iron Mountain →	Industrial Goods	**69.63**	81.2	31.57	30.38
30	ITT	General Industrials	**83.82**	50	67.41	46
429	J.B. Hunt Transport Services →	Transportation, Aerospace	**63.05**	48.2	17.75	23.74
44	J.C. Penney	Retail	**82.44**	61.5	66.75	33.17
478	J.M. Smucker →	Food and Beverage	**57.78**	7.8	29.26	15.08
212	Jabil Circuit →	Industrial Goods	**72.02**	51.9	39.83	30.28
145	Jacobs Engineering	General Industrials	**74.36**	78.9	45.18	28.34
3	Johnson & Johnson	Pharmaceuticals	**98.56**	56.7	98.17	75.88
11	Johnson Controls	Consumer Products, Cars	**89.53**	34.3	76.61	72.68
444	Joy Global →	Industrial Goods	**61.43**	30.1	9.95	41.56
41	JPMorgan Chase	Banks and Insurance	**82.82**	91.6	59.88	54.58
334	Juniper Networks →	Technology	**67.84**	65.2	26.15	35.38
262	KBR →	General Industrials	**70.43**	42.8	36.87	28.86
115	Kellogg	Food and Beverage	**76.17**	9.1	63.14	57.61
308	KeyCorp →	Banks and Insurance	**68.63**	99.1	28.01	31.46
120	Kimberly-Clark	Consumer Products, Cars	**75.98**	15.1	52.74	54.29
378	KLA-Tencor →	Technology	**65.61**	57.9	22.25	29.22
18	Kohl's	Retail	**86.78**	63.6	72.55	52.92
221	Kraft Foods →	Food and Beverage	**71.7**	7.6	63.76	28.33
161	Kroger	Retail	**73.85**	45.7	43.38	37.02
412	L-3 Communications →	Transportation, Aerospace	**64.27**	66.1	20.12	22.85
464	Laboratory Corp. of America →	Health Care	**59.38**	71.5	7.88	17.68
128	Las Vegas Sands	Media, Travel, Leisure	**75.33**	50.7	48.89	30.53
331	Leggett & Platt →	Consumer Products, Cars	**67.94**	22.8	32.07	32.34
461	Liberty Entertainment Group →	Media, Travel, Leisure	**59.58**	80	3.46	32.96
477	Liberty Global →	Media, Travel, Leisure	**57.94**	80	1	26.26
107	Life Technologies	Pharmaceuticals	**76.51**	55.5	52.79	26.98
70	Limited Brands	Retail	**79.54**	66.3	58.65	33.25
298	Lincoln National →	Banks and Insurance	**69.17**	95.2	33.24	19.07
130	Lockheed Martin	Transportation, Aerospace	**75.29**	48	53.88	14.63

137	Loews	Banks and Insurance	**74.87**	49.2	48.74	27.26
426	Lorillard →	Food and Beverage	**63.2**	14.5	24.54	33.65
117	Lowe's	Retail	**76.09**	65.6	48.78	34.82
197	Lubrizol	Basic Materials	**72.61**	22	46.15	28.67
324	M&T Bank →	Banks and Insurance	**68.1**	99.7	28.86	23.89
50	Macy's	Retail	**81.45**	60.9	63.68	34.41
217	Manpower →	Industrial Goods	**71.89**	93.1	36.22	34.03
100	Marathon Oil	Oil and Gas	**77.09**	25.9	53.08	42.53
42	Marriott International	Media, Travel, Leisure	**82.75**	43.8	66.53	41.27
297	Marsh & McLennan →	Banks and Insurance	**69.17**	85.4	27.64	38.65
434	Marvell Technology Group →	Technology	**62.5**	45.1	16.85	22.4
99	Masco	General Industrials	**77.17**	33.6	51.34	44.83
268	MasterCard	Financial Services	**70.33**	88.7	32.84	31.42
233	Mattel →	Consumer Products, Cars	**71.21**	34.2	42.09	21.39
467	McAfee →	Technology	**59.16**	86.8	10.09	6.17
340	McCormick →	Food and Beverage	**67.53**	8.3	48.51	29.74
336	McDermott International →	General Industrials	**67.83**	52.1	27.35	33.72
22	McDonald's	Media, Travel, Leisure	**86.06**	35.7	79.41	31.36
64	McGraw-Hill	Media, Travel, Leisure	**79.84**	78.5	57.5	37.05
190	McKesson →	Retail	**72.79**	73.8	39.69	33.33
292	MDU Resources Group →	General Industrials	**69.3**	17.4	40.22	30.25
158	MeadWestvaco	General Industrials	**73.98**	12.6	50.61	52.44
153	Medco Health Solutions	Health Care	**74.11**	85.8	43.1	32.02
65	Medtron	Health Care	**79.83**	54.2	60.09	33.06
163	Merck	Pharmaceuticals	**73.78**	53.6	41.16	41.27
316	MetLife →	Banks and Insurance	**68.28**	96.8	29.74	22.62
353	MetroPCS Communications →	Technology	**66.85**	76.2	22.48	35.97
164	MGM Mirage	Media, Travel, Leisure	**73.67**	50.7	45.5	26.72
127	Micron Technology	Technology	**75.4**	45.3	47.81	36.46
31	Microsoft	Technology	**83.79**	82.3	58.76	68.27

227	Mohawk Industries	Consumer Products, Cars	**71.39**	17.8	40.1	49.48
86	Molson Coors Brewing	Food and Beverage	**78.26**	12.8	72.51	18.34
485	Monsanto →	Food and Beverage	**49.55**	3.1	26.91	24.11
168	Moody's	Financial Services	**73.55**	80.8	41.34	33.62
89	Morgan Stanley	Financial Services	**77.91**	91.8	51.89	36.64
480	Mosaic →	Basic Materials	**57.21**	12.4	13.35	24.68
21	Motorola	Technology	**86.09**	59	68.77	59.65
383	Murphy Oil →	Oil and Gas	**65.55**	29.1	25.6	27.54
471	Mylan →	Pharmaceuticals	**58.71**	39.9	12.87	3.53
408	Nabors Industries →	Oil and Gas	**64.59**	37.6	21.68	28.09
92	Nalco Holding	Industrial Goods	**77.5**	19.7	61.35	27.07
269	Nasdaq OMX Group	Financial Services	**70.25**	90.8	32.84	30.58
291	National Oilwell Varco →	Oil and Gas	**69.35**	44.4	32.88	31.47
424	Navistar International →	Industrial Goods	**63.23**	32.4	13.53	44.59
351	NetApp →	Technology	**67.17**	54.8	25.93	31.69
370	Newell Rubbermaid →	Consumer Products, Cars	**66**	39.2	23.38	34.81
476	Newmont Mining →	Basic Materials	**58.22**	6.8	24.52	45.94
270	News Corp.	Media, Travel, Leisure	**70.19**	71	29.04	45.49
409	NII Holdings →	Technology	**64.45**	76.5	17.16	31.93
7	Nike	Consumer Products, Cars	**93.28**	77.1	78.31	89.9
211	NiSource	Utilities	**72.08**	6.2	67.6	37.59
387	Noble Energy →	Oil and Gas	**65.4**	31.8	22.77	33.63
136	Nordstrom	Retail	**74.99**	64.4	49.21	23.61
338	Norfolk Southern →	Transportation, Aerospace	**67.61**	27.4	27.93	39.48
144	Northeast Utilities	Utilities	**74.45**	52.7	46.21	30.76
53	Northern Trust	Banks and Insurance	**81.2**	90	64.43	24.8
337	Northrop Grumman	Transportation, Aerospace	**67.66**	62.9	31.58	15.74
499	NRG Energy →	Utilities	**22.75**	0.8	15.49	29.72
245	Nucor →	Basic Materials	**70.78**	10.8	49.65	32.98
314	Nvidia →	Technology	**68.32**	81.9	27.18	33.05
177	NYSE Euronext	Financial Services	**73.23**	91	40	33.79
417	Occidental Petroleum →	Oil and Gas	**63.69**	21.6	20.63	33.83
411	Omnicare →	Retail	**64.31**	71.9	16.72	32.96
472	Omnicom Group →	Media, Travel, Leisure	**58.68**	78.1	1	33.05

310	Oneok	Utilities	**68.46**	32	33.64	25.2
186	Oracle →	Technology	**72.92**	86	39.55	33
274	O'Reilly Automotive →	Retail	**70.11**	67.5	37.62	17.39
56	Owens Corning	General Industrials	**80.66**	15.8	66.78	47.24
433	Owens-Illinois →	General Industrials	**62.56**	16.2	22.16	30.3
396	Paccar →	Industrial Goods	**64.98**	35.3	23.19	27.27
404	Pactiv →	General Industrials	**64.67**	22.2	27.16	19.41
47	Pall	Industrial Goods	**81.94**	31.1	67.83	34.23
223	Parker Hannifin →	Industrial Goods	**71.55**	33.4	38.45	37.02
263	Paychex →	Industrial Goods	**70.42**	85	33.94	29.22
500	Peabody Energy →	Basic Materials	**1**	0.2	16.12	42.26
173	Penn National Gaming	Media, Travel, Leisure	**73.42**	63.1	42.76	30.81
280	Pentair →	Industrial Goods	**69.88**	34.7	33.45	37.71
134	Pepco Holdings	Utilities	**75.07**	27.6	51.16	29.89
278	Pepsi Bottling Group →	Food and Beverage	**69.9**	17	41.53	32.04
405	PepsiAmericas →	Food and Beverage	**64.65**	17	27.56	30.87
119	PepsiCo	Food and Beverage	**75.99**	8.7	68.89	37.97
318	Petsmart →	Retail	**68.21**	61.1	33.68	14.13
54	Pfizer	Pharmaceuticals	**81.11**	55.2	59.43	46.73
66	PG&E	Utilities	**79.77**	18.4	62.63	48.96
406	Philip Morris International →	Food and Beverage	**64.63**	14.7	34.27	14.27
368	Pinnacle West Capital →	Utilities	**66.08**	4.3	62.68	39.62
276	Pitney Bowes →	Technology	**69.96**	48.8	35.94	25.85
104	PNC Financial Services Group	Banks and Insurance	**76.79**	99.3	47.2	41.65
230	Polo Ralph Lauren →	Retail	**71.27**	70.2	38.08	25.63
335	PPG Industries →	Basic Materials	**67.83**	18	34.9	34.13
488	PPL →	Utilities	**46.23**	2.6	23.88	33.74
80	Praxair	Basic Materials	**78.78**	11.6	68.06	39.83
466	Precision Castparts →	Transportation, Aerospace	**59.27**	18.7	14.14	22.19
281	Pride International →	Oil and Gas	**69.77**	37.6	33.22	36.77
283	Principal Financial Group →	Banks and Insurance	**69.73**	92.9	33.82	22.42

26	Procter & Gamble	Consumer Products, Cars	**84.51**	23.9	64.7	72.98
489	Progress Energy →	Utilities	**46.23**	2	37.1	31.19
142	Progressive	Banks and Insurance	**74.52**	97.7	41.18	41.21
171	Prudential Financial	Banks and Insurance	**73.48**	93.7	39.58	37.2
431	Public Service Enterprise Grp.	Utilities	**62.96**	7.2	38.21	39.35
364	Public Storage →	Financial Services	**66.23**	51.5	25.92	24.09
475	Pulte Homes →	Consumer Products, Cars	**58.39**	33.2	5.01	28.89
182	Qualcomm	Technology	**73.08**	68.1	39.75	37.03
290	Quanta Services →	General Industrials	**69.37**	42.6	34.47	27.27
266	Quest Diagnostics	Health Care	**70.36**	72.1	33.09	33.36
354	Questar →	Utilities	**66.83**	24.1	29.58	29.34
307	Qwest Communications →	Technology	**68.65**	76	30.68	25.09
287	R.R. Donnelley & Sons →	Industrial Goods	**69.54**	25.5	35.55	32.54
166	RadioShack	Retail	**73.59**	69.8	49.36	9.25
437	Ralcorp Holdings →	Food and Beverage	**62.34**	9.9	30.16	31.23
208	Raytheon	Transportation, Aerospace	**72.19**	68.3	44.66	12.62
322	Regions Financial →	Banks and Insurance	**68.12**	99.9	27.01	30.15
232	Reliance Steel & Aluminum →	Basic Materials	**71.21**	72.7	37.82	25.31
448	Republic Services →	Industrial Goods	**60.57**	20.3	14.62	28.48
189	Reynolds American →	Food and Beverage	**72.82**	14.1	52.18	29.2
162	Robert Half International	Industrial Goods	**73.78**	92.3	42.32	31.03
149	Rockwell Automation	General Industrials	**74.25**	48.4	44.29	36.99
105	Rockwell Collins	Transportation, Aerospace	**76.68**	66.5	53	26.01
333	Roper Industries →	Industrial Goods	**67.84**	56.3	29.19	26.68
192	Ross Stores →	Retail	**72.75**	64.6	40.82	31.16
180	Safeway	Retail	**73.19**	46.5	39.16	45.11
313	SAIC →	Technology	**68.34**	84.8	27.18	32.85
156	Sara Lee	Food and Beverage	**74.04**	9.3	63.24	36.23
483	Scana →	Utilities	**51.57**	4.7	22.67	34.64
218	Schering-Plough →	Pharmaceuticals	**71.86**	52.8	34.42	46.52
118	Schlumberger	Oil and Gas	**75.99**	35.1	49.46	39.72

113	Seagate Technology	Technology	**76.25**	51.7	50.91	31.79
271	Sealed Air	General Industrials	**70.15**	22.4	35.87	40.1
207	Sears Holdings →	Retail	**72.35**	60.9	41.64	25.24
250	Sempra Energy	Utilities	**70.66**	16	41.8	38.78
300	Shaw Group →	General Industrials	**69.03**	57.3	29.23	37.32
246	Sherwin-Williams →	General Industrials	**70.77**	43.6	32.45	46.09
388	Sigma-Aldrich →	Basic Materials	**65.34**	40.9	21.45	34.73
258	Simon Property Group →	Financial Services	**70.5**	69.2	39.08	15.46
249	SLM →	Financial Services	**70.69**	89.3	32.84	34.7
112	Smith International	Oil and Gas	**76.26**	37.6	49.57	41.17
94	Sonoco	General Industrials	**77.5**	13.9	59.12	49.33
172	Southern Copper	Basic Materials	**73.43**	13.3	53.85	33.67
492	Southern →	Utilities	**36.54**	1.4	43.06	23.76
179	Southwest Airlines	Media, Travel, Leisure	**73.21**	15.7	52.62	27.17
296	Southwestern Energy →	Oil and Gas	**69.18**	47.3	32.2	31.56
289	Spectra Energy	Utilities	**69.38**	9.7	45.67	46.43
15	Sprint Nextel	Technology	**88.06**	74.2	77.29	46.51
391	SPX →	Industrial Goods	**65.33**	33.8	22.01	34.91
397	St. Jude Medical	Health Care	**64.97**	53	19.61	33.26
377	Stanley Works →	Consumer Products, Cars	**65.75**	36.9	25.93	24.6
20	Staples	Retail	**86.37**	60.9	77.28	33.86
10	Starbucks	Media, Travel, Leisure	**91.63**	30.5	82.01	75.42
46	Starwood Hotels & Resorts	Media, Travel, Leisure	**82.26**	52.5	64.75	40.02
6	State Street	Financial Services	**93.62**	95	84.39	70.69
365	Steel Dynamics →	Basic Materials	**66.23**	11.2	35.81	36.91
420	Stryker	Health Care	**63.39**	53.8	16.27	29.87
14	Sun Microsystems	Technology	**88.11**	68.5	77.13	48.96
425	Sunoco →	Oil and Gas	**63.21**	26.6	18.49	31.12
251	SunTrust Banks →	Banks and Insurance	**70.64**	95.4	34.8	27.26
191	Supervalu →	Retail	**72.76**	44	40.68	36.58
114	Symantec	Technology	**76.22**	83.5	44.14	48.15
272	Sysco →	Retail	**70.11**	73.1	31.54	36.2
198	T. Rowe Price →	Financial Services	**72.6**	91.2	36.84	38.58

72	Target	Retail	**79.47**	62.3	56.2	41.15
255	TD Ameritrade →	Financial Services	**70.55**	90.4	32.84	33.31
355	Tesoro →	Oil and Gas	**66.82**	23.4	28.27	34.49
23	Texas Instruments	Technology	**85.89**	42.4	72.66	50.31
398	Textron →	Transportation, Aerospace	**64.97**	44.6	25.42	16.49
319	Thermo Fisher Scientific	Health Care	**68.2**	58	30.79	24.27
98	Tiffany	Retail	**77.32**	59.4	56.17	22.01
421	Time Warner Cable →	Media, Travel, Leisure	**63.33**	79.4	11.27	40.96
87	Time Warner	Media, Travel, Leisure	**78.24**	77.3	53.38	36.37
167	TJX	Retail	**73.56**	60.9	47.41	17.03
32	Travelers	Banks and Insurance	**83.74**	97.4	65.9	42.57
124	Tyco Electronics	Industrial Goods	**75.73**	40.5	49.7	35.12
479	Tyson Foods →	Food and Beverage	**57.22**	5.4	38.21	15.83
84	U.S. Bancorp	Banks and Insurance	**78.62**	88.5	54.28	35.32
403	UGI →	Utilities	**64.7**	21.2	22.51	37.49
439	Union Pacific →	Transportation, Aerospace	**61.83**	27.4	12.48	38.5
85	United Parcel Service	Transportation, Aerospace	**78.36**	57.5	47.49	61.1
445	United States Steel →	Basic Materials	**61.16**	7	36.12	32.96
33	United Technologies	Transportation, Aerospace	**83.72**	41.9	71.03	36.51
253	UnitedHealth Group	Health Care	**70.62**	71.3	34.11	32.45
453	Universal Health Services →	Health Care	**60.17**	56.1	6.26	33.39
52	Unum Group	Banks and Insurance	**81.3**	94.8	60.34	38.98
282	Urban Outfitters →	Retail	**69.77**	62.1	37.58	15.15
132	URS	Industrial Goods	**75.25**	78.7	48.92	23.92
332	Valero Energy →	Oil and Gas	**67.91**	25.1	30.77	33.87
323	Valspar →	Basic Materials	**68.11**	19.3	36.11	26.81
273	Varian Medical Systems	Health Care	**70.11**	57.7	37.08	20.87
101	Verizon Communications	Technology	**77.09**	71.1	48.87	42.11
393	VF →	Consumer Products, Cars	**65.12**	31.6	19.23	42.88
442	Viacom →	Media, Travel, Leisure	**61.49**	81.4	9.7	29.28
49	Virgin Media	Technology	**81.91**	74.6	59.85	48.7
264	Visa →	Financial Services	**70.41**	88.9	32.84	32.19
213	Vornado Realty Trust →	Financial Services	**71.99**	69.6	36.81	36.52

484	Vulcan Materials →	General Industrials	**51.29**	6.4	15.25	22.78
372	W. R. Berkley →	Banks and Insurance	**65.98**	95.8	24.14	20.45
301	W.W. Grainger →	Industrial Goods	**68.96**	73.3	30.39	29.57
235	Walgreen →	Retail	**71.08**	46.5	36.33	35.41
59	Wal-Mart	Retail	**80.38**	59.2	41.06	100
34	Walt Disney	Media, Travel, Leisure	**83.51**	73.5	65.87	43.46
178	Washington Post	Media, Travel, Leisure	**73.22**	34.5	44.69	30.7
109	Waste Management	Industrial Goods	**76.27**	20.3	50.18	52.56
209	Weight Watchers International →	Retail	**72.15**	62.5	40.58	26.71
443	WellPoint →	Health Care	**61.48**	97.5	7.88	33.71
13	Wells Fargo	Banks and Insurance	**88.53**	93.3	80.12	38.96
181	Wendy's/Arby's Group	Media, Travel, Leisure	**73.11**	29.9	48.73	18.57
295	Western Digital →	Technology	**69.22**	55	34.39	22.12
265	Western Union →	Financial Services	**70.37**	85.6	32.84	32.19
138	Weyerhaeuser	General Industrials	**74.84**	10.6	58.89	45.4
78	Whirlpool	Consumer Products, Cars	**78.87**	28.8	52.38	59.37
67	Whole Foods Market	Retail	**79.73**	46.5	55.39	50.41
187	Williams	Oil and Gas	**72.91**	23.2	44.44	35.96
410	Windstream →	Technology	**64.42**	76.5	15.02	38.72
465	Wisconsin Energy →	Utilities	**59.37**	2.9	47.98	46.51
102	Wyeth	Pharmaceuticals	**77.02**	56.5	54.91	24.4
81	Wyndham Worldwide	Media, Travel, Leisure	**78.69**	50.7	56.18	36.76
176	Wynn Resorts	Media, Travel, Leisure	**73.32**	50.7	42.76	32.7
436	Xcel Energy →	Utilities	**62.39**	3.5	56.84	38.17
28	Xerox	Technology	**84.12**	40.1	67.58	51.8
239	XL Capital →	Banks and Insurance	**70.96**	96.2	39.01	16.1
320	XTO Energy →	Oil and Gas	**68.19**	21.8	32.2	35.26
69	Yahoo	Technology	**79.55**	77.9	54.55	44.33
194	Yum! Brands →	Media, Travel, Leisure	**72.69**	30.7	43.27	32.37
267	Zimmer Holdings	Health Care	**70.33**	51.3	37.31	23.48
		Retail	**74.26**	60.9	46.18	27.44

Source: MSCI (formerly known as KLD), Trucost and CorporateRegister.com

Appendix 4.5**.** Data on Extractive companies within S&P500 - 2010

rank	company	env. Impact	green policy	Green reputation survey	TA	ROE	Solvency (%)	P/E %	Equity price volatility	M/B
22	3M»	57.33	68.85	92.71	30,156	1.37	51.94	15.10	0.26	4.94
489	AES»	5.55	16.63	39.49	40,511	1.16	15.98	n.s.	0.33	2.48
151	Air Products and Chemicals»	10.5	68.93	45.25	13,506	1.25	41.07	17.11	0.25	4.17
415	Airgas»	13.08	31.76	35.17	4,936	1.23	35.15	22.39	0.23	4.22
314	Alcoa»	4.17	71.46	61.92	39,293	1.04	34.64	61.89	0.40	2.15
498	Allegheny Energy →	0.6	42.11	24.23	8,308	1.04	57.27	n.s.	0.24	5.44
428	Allegheny Technologies»	13.67	24.72	46.2	4,494	1.06	45.42	76.94	0.53	3.67
498	Ameren»	1.59	16.59	31.38	23,515	1.06	32.87	48.33	0.21	1.87
495	American Electric Power»	1.4	37.89	48.32	50,455	1.14	27.12	14.29	0.18	2.26
427	Anadarko Petroleum»	21.59	20.12	40.43	51,559	1.08	40.12	49.93	0.43	2.82
335	Apache»	28.72	27.05	59.92	43,425	1.21	56.14	14.49	0.35	2.78
130	Avery Dennison»	15.26	59.81	56.96	5,099	1.21	32.27	14.62	0.35	3.82
73	Baker Hughes»	89.41	62.23	44.53	22,986	1.09	61.34	30.36	0.43	2.75
416	Cameron International»	29.71	19.86	43.57	8,005	1.17	54.87	21.86	0.41	3.80
238	CenterPoint Energy»	41.59	37.59	52.01	20,111	1.22	15.90	15.05	0.23	3.08
404	Chesapeake Energy»	33.87	22.86	37.14	37,179	1.19	41.06	10.19	0.39	2.11
320	Chevron»	41	27.46	56	184,769	1.31	56.87	9.65	0.25	2.75
491	Cliffs Natural Resources»	2.98	29.13	35.42	7,778	1.34	49.44	10.36	0.53	3.75
462	CMS Energy»	7.93	39.02	32.06	15,616	1.21	17.89	14.04	0.20	2.63
230	ConocoPhillips»	22.38	44.08	45.98	156,314	1.29	43.86	8.81	0.26	2.46
496	CONSOL Energy»	2.19	3.19	51.01	12,071	1.16	24.39	31.74	0.46	4.74
31	Consolidated Edison»	48.12	77.52	51.94	36,146	1.14	31.19	14.52	0.15	2.28
369	Constellation Energy Group»	16.64	30.99	50.16	20,019	0.80	40.06	n.s.	0.25	1.77
228	Devon Energy»	27.93	40.58	54.75	32,927	1.19	58.47	7.45	0.31	2.76
386	Diamond Offshore Drilling»	19.02	29.89	38.4	6,727	1.35	57.41	9.73	0.34	3.41
471	Dominion Resources»	5.36	44.42	44	42,817	1.41	28.62	8.83	0.17	3.02
197	Dow Chemical»	12.88	47.06	72.92	69,588	1.13	31.38	20.12	0.41	2.81
468	DTE Energy»	4.96	47.66	46.24	24,896	1.14	27.00	12.17	0.18	2.14
486	Duke Energy»	2.39	53.74	52.84	59,090	1.10	38.11	17.87	0.15	2.05
143	Eastman Chemical»	11.1	65.83	53.73	5,986	1.39	27.18	n.a.	n.a.	1.00
26	Ecolab»	67.83	75.76	60.96	4,872	1.35	43.70	22.07	0.24	6.50
484	Edison International»	3.18	38.9	51.11	45,530	1.14	25.24	10.88	0.20	2.18

299	El Paso»	9.71	51.92	50.9	25,270	1.28	18.26	13.44	0.38	3.10
477	Entergy»	5.95	31.26	55.33	38,685	1.21	22.77	10.58	0.18	2.50
267	EOG Resources»	29.12	38.72	43.23	21,624	1.04	47.32	144.53	0.38	3.27
181	Exelon»	11.49	55.37	64.22	52,240	1.31	25.96	10.75	0.18	3.03
189	Exxon Mobil»	35.45	46.66	44.91	302,510	1.36	48.54	12.11	0.23	3.51
490	FirstEnergy»	3.97	21.82	40.86	34,805	1.15	24.55	14.39	0.22	2.32
268	FMC Technologies»	32.28	37.98	43.48	3,644	1.41	35.99	28.34	0.38	9.11
279	FMC →	18.5	43.04	22.89	3,320	1.31	34.08	33.30	0.32	6.05
430	Freeport-McMoRan»	15.45	26.46	34.68	29,386	1.68	42.55	13.23	0.44	5.52
83	General Electric»	97.13	43.94	89.07	751,216	1.12	15.83	17.24	0.28	2.64
222	Halliburton»	27.53	50.91	23.17	18,297	1.26	56.69	20.24	0.46	4.58
244	Hess»	59.71	35.33	53.83	35,396	1.20	47.15	12.16	0.39	2.55
309	Integrys Energy Group»	10.7	46.97	51.29	9,817	1.13	30.12	17.04	0.21	2.27
155	International Paper»	10.9	63.58	57.18	25,368	1.12	26.94	18.50	0.38	2.74
121	Marathon Oil»	43.17	55.17	45.22	50,014	1.22	47.53	10.24	0.56	2.11
475	Mosaic»	14.27	10.24	40.11	12,708	1.14	68.64	24.92	0.48	3.36
400	Murphy Oil»	23.97	24.92	39.55	14,233	1.17	57.61	17.97	0.36	2.75
441	Nabors Industries»	32.88	17.13	34.71	11,647	1.02	45.75	70.70	0.51	2.26
375	National Oilwell Varco»	36.84	28.66	31.38	23,050	1.15	68.32	16.93	0.43	2.79
420	Newmont Mining»	9.91	29.68	66.78	25,663	1.30	52.00	13.12	0.29	3.24
354	NextEra Energy»	6.15	51.47	81.65	52,994	1.17	27.29	11.12	0.18	2.50
254	NiSource»	7.73	64.27	51.47	19,939	1.09	24.69	16.79	0.21	2.00
166	Noble»	20.01	52.23	50.61	11,221	1.13	63.83	11.67	0.38	2.26
119	Northeast Utilities»	60.5	54.86	42.43	14,522	1.15	27.04	14.49	0.20	2.43
492	NRG Energy»	2.78	22.03	40.65	26,896	1.09	30.87	10.32	0.28	1.58
305	Nucor»	11.3	48.49	39.28	13,922	1.04	51.14	104.60	0.32	2.94
387	Occidental Petroleum»	23.37	22.91	54.73	52,432	1.23	61.95	17.62	0.35	3.45
193	ONEOK»	24.96	47.89	45.02	12,499	1.31	19.59	17.65	0.24	3.41
500	Peabody Energy»	1	28.46	54.46	11,363	1.24	41.02	22.45	0.44	4.70
94	Pepco Holdings»	41.99	62.24	39.2	14,480	1.04	29.21	128.04	0.19	1.97
20	PG&E»	27.33	75.65	84.13	46,025	1.15	24.51	17.19	0.19	2.66
368	Pinnacle West Capital →	4.3	62.68	39.62	12,363	1.14	29.79	12.87	0.18	2.22
292	PPG Industries»	17.43	36.65	55.89	14,975	1.36	24.29	17.82	0.28	4.77
488	PPL»	3.77	28.7	50.62	32,837	1.15	25.00	13.60	0.18	2.55
92	Praxair»	14.46	64.15	66.3	15,274	1.34	37.92	24.48	0.23	6.05
476	Progress Energy»	4.37	39.33	56.26	33,054	1.14	30.32	14.88	0.16	2.27
219	Public Service Enterprise Grp.	10.11	56.5	58.58	29,909	1.27	32.21	10.29	0.21	2.67
478	SCANA»	5.75	31.51	54.12	12,968	1.14	28.55	13.74	0.18	2.40
139	Schlumberger»	52.38	52.64	45.83	51,767	1.17	60.32	26.70	0.36	4.65

200	Sempra Energy»	21.99	46.14	50.96	30,283	1.09	30.14	17.05	0.19	2.38
388	Sigma-Aldrich →	40.9	21.45	34.73	3,014	1.28	65.56	21.02	0.29	5.09
172	Southern Copper	13.3	53.85	33.67	55,032	1.18	31.41	16.08	0.13	2.84
296	Southwestern Energy	47.3	32.2	31.56	6,017	1.34	49.27	21.49	0.36	5.38
280	Spectra Energy»	12.68	45.09	50.24	26,686	1.19	30.23	15.44	0.23	3.01
372	Sunoco»	57.73	23.16	44.07	13,297	1.19	22.91	20.77	0.34	2.60
383	Tesoro»	19.81	26.05	49.88	8,732	0.99	36.82	n.s.	0.52	1.83
443	UGI	45	43	0	57,308	1.15	15.61	8.67	0.33	1.86
450	United States Steel»	9.12	41.58	25.42	15,350	0.90	25.09	n.s.	0.53	3.18
330	Valero Energy»	21.39	29.56	59.48	37,621	1.10	39.94	40.40	0.46	1.87
352	Williams»	12.29	36.26	52.76	24,972	0.87	29.18	n.s.	0.37	2.98
451	Wisconsin Energy»	6.74	37.99	61.24	13,060	1.18	29.35	15.07	0.18	2.80
348	Xcel Energy»	5.16	65.64	56.96	27,388	1.15	29.90	14.42	0.16	2.32

Appendix 4.6. Data on Extractive companies within S&P500- 2009

rank	company	env. Impact	green policies	Green reputation survey	Total Assets	ROE	Solvency	P/E	Equity price volatility	M/B
40	3M	23	62.05	67.57	27,250,000	36.29	46.84	18.33	0.26	4.59
487	AES →	2.7	23.19	34.04	39,535,000	49.54	11.82	13.50	0.33	1.90
309	Air Products & Chemicals →	9.5	46.86	37.56	13,029,100	17.46	36.78	25.82	0.25	3.40
339	Airgas →	13.7	38.89	28.4	4,495,932	17.49	39.94	26.81	0.23	2.93
139	Alcoa	5.3	72.35	63.7	38,472,000	-12.06	32.28	n.s.	0.40	1.26
498	Allegheny Energy →	0.6	42.11	24.23	7,536,600	17.59	63.99	31.19	0.24	4.02
430	Allegheny Technologies →	13.5	26.12	29.81	4,346,000	3.23	46.30	138.51	0.53	2.18
495	Ameren →	1.2	28.05	31.34	23,702,000	12.17	33.14	9.46	0.21	0.74
494	American Electric Power →	1	29.48	47.68	48,348,000	14.68	27.30	12.26	0.18	1.26
362	Anadarko Petroleum	29.3	28.72	25.43	50,123,000	-0.54	39.76	n.s.	0.43	1.54
328	Apache	38.6	28.15	37.34	28,185,743	2.07	55.98	n.s.	0.35	2.20
315	Avery Dennison →	11.8	40.56	36.22	5,002,800	-58.04	27.24	n.s.	0.35	3.02
154	Baker Hughes	30.3	47	32.77	11,439,000	8.39	63.68	29.80	0.43	1.72
299	Cameron International	31.3	32.86	34.55	7,725,373	16.40	50.74	19.40	0.41	2.35
219	CenterPoint Energy	54.6	37.21	35.7	19,773,000	20.77	13.35	15.23	0.23	2.15
402	Chesapeake Energy →	47.1	19.07	35.04	29,914,000	-81.16	38.26	n.s.	0.39	1.46
371	Chevron →	25.3	21.52	47.17	164,621,000	20.16	55.83	14.73	0.25	1.68
491	Cliffs Natural Resources»	2.98	29.13	35.42	4,639,300	11.43	54.81	29.43	0.53	2.37
482	CMS Energy →	5.6	23.41	23.68	15,256,000	11.79	18.62	16.49	0.20	1.27
238	ConocoPhillips	26.3	36.71	41.52	152,138,000	15.45	40.77	8.51	0.26	1.22
496	Consol Energy →	1.8	4.59	44.71	7,775,401	44.15	22.96	16.69	0.46	5.04
215	Consolidated Edison	28.2	39.18	40.87	33,844,000	12.61	30.91	14.42	0.15	1.20
450	Constellation Energy →	12	20.27	30.67	23,544,400	84.28	37.75	1.59	0.25	0.80
97	Cooper Industries	48.6	54.98	30.36	5,984,400	16.29	49.52	16.20	0.33	2.40
160	Devon Energy	37.8	44.97	34.73	29,686,000	-29.07	52.45	n.s.	0.31	2.10
413	Diamond Offshore Drilling →	20.7	25.59	24.41	6,264,261	51.46	57.96	9.94	0.34	3.77
481	Dominion Resources →	3.3	41.9	34.97	42,554,000	16.38	26.89	18.06	0.17	2.03
143	Dow Chemical	11.4	54.99	47.14	66,018,000	2.28	31.14	94.05	0.41	1.54
454	DTE Energy →	3.9	50.93	32.55	24,195,000	12.46	25.95	13.51	0.18	1.15
490	Duke Energy →	1.6	48.32	58.59	57,040,000	8.42	38.13	20.89	0.15	1.03
95	Eastman Chemical	14.9	63.2	33.2	5,515,000	16.79	27.43	n.a.	n.a.	

202	Ecolab	30.9	41.19	37.69	5,020,900	30.99	39.85	25.38	0.24	5.29
415	Edison International →	3.7	58.47	44.82	41,444,000	7.95	25.93	14.55	0.20	1.14
225	El Paso	11	50.75	34.55	22,505,000	-26.05	14.89	n.s.	0.38	2.06
462	Entergy →	4.9	36.69	55.09	37,561,953	21.11	23.76	12.56	0.18	1.73
216	EOG Resources	38.4	39.85	33.74	18,118,667	8.72	55.18	44.92	0.38	2.46
329	Exelon →	8.1	45.39	45.7	49,180,000	34.96	25.70	11.90	0.18	2.55
395	ExxonMobil →	24.3	30.72	8.86	233,323,000	31.45	47.39	16.79	0.23	2.93
491	FirstEnergy →	2.4	16.89	32.46	34,304,000	14.43	24.95	14.08	0.22	1.65
327	FMC Technologies	35.9	31.63	26.76	3,556,400	46.96	31.01	19.53	0.38	6.41
279	FMC →	18.5	43.04	22.89	3,136,200	28.80	34.32	17.78	0.32	3.76
399	Freeport-McMoRan →	15.3	27.75	36.63	25,996,000	64.05	35.08	13.66	0.44	3.78
82	General Electric	58.6	38.16	94.3	781,901,000	8.52	15.00	15.02	0.28	1.37
169	Halliburton	29.7	46.64	29.92	16,538,000	19.27	52.78	23.70	0.46	3.11
346	Hess	28	28.58	35.24	29,465,000	11.37	45.42	26.75	0.39	1.48
214	Integrys Energy Group	10.3	54.53	34.58	11,844,600	0.46	24.49	n.s.	0.21	1.11
344	International Paper →	8.5	43.2	46.36	25,548,000	19.91	23.58	17.49	0.38	1.93
100	Marathon Oil	25.9	53.08	42.53	47,052,000	15.71	46.57	15.11	0.56	1.01
480	Mosaic →	12.4	13.35	24.68	12,676,200	34.21	67.00	n.a.	0.48	
383	Murphy Oil →	29.1	25.6	27.54	12,756,359	17.39	57.59	12.36	0.36	1.41
408	Nabors Industries →	37.6	21.68	28.09	10,644,690	-4.55	48.55	n.s.	0.51	1.20
291	National Oilwell Varco	44.4	32.88	31.47	21,532,000	15.65	65.54	12.56	0.43	1.31
476	Newmont Mining →	6.8	24.52	45.94	22,299,000	27.60	48.00	17.59	0.29	2.12
211	NiSource	6.2	67.6	37.59	19,271,700	8.18	25.19	19.48	0.21	0.87
387	Noble Energy →	31.8	22.77	33.63	8,396,896	29.70	80.84	6.35	0.38	1.57
144	Northeast Utilities	52.7	46.21	30.76	14,057,679	13.96	26.28	13.71	0.20	1.22
499	NRG Energy →	0.8	15.49	29.72	23,378,000	21.04	33.93	6.66	0.28	0.76
245	Nucor →	10.8	49.65	32.98	12,571,904	-5.60	58.79	n.s.	0.32	1.99
417	Occidental Petroleum →	21.6	20.63	33.83	44,229,000	17.32	65.75	22.68	0.35	2.27
310	Oneok	32	33.64	25.2	12,827,683	31.65	17.21	15.39	0.24	2.13
500	Peabody Energy →	0.2	16.12	42.26	9,955,300	17.38	37.67	27.19	0.44	3.23
134	Pepco Holdings	27.6	51.16	29.89	15,779,000	7.68	26.97	15.89	0.19	0.88
66	PG&E	18.4	62.63	48.96	42,945,000	16.39	24.06	13.87	0.19	1.60
368	Pinnacle West Capital →	4.3	62.68	39.62	11,986,324	11.73	27.67	54.22	0.18	1.12
335	PPG Industries →	18	34.9	34.13	14,240,000	16.44	26.36	29.09	0.28	2.60
488	PPL →	2.6	23.88	33.74	22,165,000	9.79	24.80	30.08	0.18	2.22
80	Praxair	11.6	68.06	39.83	14,317,000	27.13	37.12	19.65	0.23	4.64
489	Progress Energy →	2	37.1	31.19	31,236,000	13.09	30.25	15.15	0.16	1.21
431	Public Service Enterprise	7.2	38.21	39.35	28,678,000	29.72	30.92	10.57	0.21	1.90
483	Scana →	4.7	22.67	34.64	12,094,000	15.32	28.18	13.33	0.18	1.36

118	Schlumberger	35.1	49.46	39.72	33,465,000	20.58	57.13	24.94	0.36	4.09
250	Sempra Energy	16	41.8	38.78	28,512,000	16.21	31.94	12.33	0.19	1.51
388	Sigma-Aldrich →	40.9	21.45	34.73	2,713,800	29.04	62.13	17.74	0.29	3.65
172	Southern Copper	13.3	53.85	33.67	52,046,000	16.32	30.67	16.23	0.13	1.67
296	Southwestern Energy	47.3	32.2	31.56	4,770,250	-2.24	48.87	n.s.	0.36	7.14
289	Spectra Energy	9.7	45.67	46.43	24,091,000	17.49	30.16	15.64	0.23	1.83
425	Sunoco →	26.6	18.49	31.12	11,895,000	-24.13	21.50	n.s.	0.34	1.19
355	Tesoro	23.4	28.27	34.49	8,070,000	-6.09	38.25	n.s.	0.52	0.62
403	UGI →	21.2	22.51	37.49	54,477,000	15.20	15.60	7.60	0.33	0.76
445	United States Steel →	7	36.12	32.96	15,422,000	-39.46	30.32	n.s.	0.53	1.69
332	Valero Energy	25.1	30.77	33.87	35,572,000	-2.15	41.39	n.s.	0.46	0.64
187	Williams	23.2	44.44	35.96	25,280,000	11.16	33.41	43.13	0.37	1.46
465	Wisconsin Energy →	2.9	47.98	46.51	12,697,900	16.43	28.33	15.23	0.18	1.62
436	Xcel Energy →	3.5	56.84	38.17	25,305,961	14.30	29.20	14.32	0.16	1.31

Appendix 4.7. Questionnaire

The impact of Corporate Environmental Responsibility on the Financial Performance: Extractive Sector Perspective.

Dear Participant,

I am a research student in Brunel University, United Kingdom. I am currently undertaking a study on **"The impact of Corporate Environmental Responsibility on the Financial Performance: Extractive Sector Perspective"**. I will appreciate your responses to the statements in the attached questionnaire. The survey would take less than 10 minutes and your views shall assist me in dealing with an aspect of my study that deals with "**environmental attitude and corporate reputation"**.

Your participation is completely voluntary; you may stop and leave at any time. The data collected will be kept securely and only be used in an aggregated form in my report with no reference to you as an individual or your organisation.

Thank you for your anticipated cooperation.

Yours sincerely,

Olusegun Vincent, MSc FCA

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Section A: Environmental Attitude Scale

Kindly state the extent to which you agree or disagree with the following statements. The rating scales are indicated as follows: SA = strongly agree, A = agree, I = indifferent, D = disagree, SD = strongly disagree.						
Corporate environmental actions						
		SA	A	I	D	SD
1	Attending meeting relating to ecology can sometimes be a waste of time. [a]					
2	A clean-up drive or initiative is a mere eye-service. [a]					
3	Attending a meeting of an organisation specifically concerned with improving the environment may not be as important as budget meeting. [a]					
4	The creation of a senior management position for environmental management is a duplication of safety and maintenance functions. [a]					
5	Tracking government policies and writing legislators concerning pollution problems may not yield a change. [a]					
Environmental buying attitude						
6	It is better to buy a product on cost comparison than because it had a lower polluting effect. [a]					
7	A special effort to buy products in recycling containers may sometimes be time wasting. [a]					
8	There is no need to switch products for ecological reasons. [a]					
Environmental results and consequences						
9	Environmental audit is a waste of company's resources. [a]					
10	The environmental audit results must reflect on the managers' performance appraisal evaluation.					
11	Determination of employees' remuneration must reflect environmental factors and hazard.					
12	Voluntary elimination of my company's environmental footprint is a waste of resources. [a]					
13	Environmental infringements and penalties should attract stiff sanctions just like other serious offences in the company.					
14	A poor environmental score from rating organisations is as important as a poor financial report.					
15	Disclosure of my company's environmental performance to stakeholders is as important as financial statements disclosures to shareholders.					
Economic Trade-off decisions						
16	I will comply with environmental laws even if it leads to loss making.					
17	I will comply with environmental laws that will hinder profit target.					
18	I will not compromise health and safety for cost-savings.					
19	I will rather reduce environmental footprint and negative externalities my company created than to reduce cost.					
20	I see uncontrolled environmental pollution and negative externalities created by my company as brand destroyers.					
21	I will consider investment in Environmental Management System (EMS) before investment in new production equipment.					

Source: Scale is developed by the authors for the current study. Note, a = reversed coded items

Section B. My company's reputation

Please circle the appropriate number which represents your opinion about corporate reputation of your company .The rating scales are represented as follow: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree						
		SA	A	I	D	SD
1	My company stands behind its product and services					
2	My company develops innovative products and Services					
3	My company offers high quality products and Services.					
4	My company offers products/services that are Good value for money					
5	My company has excellent leadership.					
6	My company has a clear vision for its future					
7	My company recognises and takes advantage of market opportunities.					
8	My company is well managed					
9	My company is a good organisation to work for.					
10	My company is an organisation that would have good employees					
11	My company has the ability to attract and retain talented people.					
12	My company supports good causes.					
13	My company has the social responsibility to the community/environment					
14	My company maintains a high standard in the way it treats people.					
15	My company has strong record of profitability					
16	My company looks like a low risk investment					
17	My company tends to outperform its competitors					
18	My company is an organisation with strong prospect for growth					
19	My company uses corporate assets wisely					
20	My company has good reputation in the media					

Source: Adopted Fombrum (1997) Reputational Quotient Scale

Section C. Background

Please, circle the appropriate option

1 Sex: 1.Male 2. Female

2 Age: 1. 16-24 2. 25-34 3. 35-44 4. 45-55 5. Over 55

3 Which industry you are employed? 1. Oil, gas, mining, or metal 2. Others, please state it

4 What is your position? 1. Manager, 2. Senior Manager 3. Above senior manager

5 What is your level of education? 1. Secondary, 2. Tertiary education 3. Post-graduate.

Appendix 4.8. Research Ethics Approval

Re: RESEARCH ETHICS APPROVAL

Ahmad Ghoneim

Sent: 10 July 2011 13:34

To: Olusegun Vincent

Dear Olusegun,

Thank you for submitting your ethical forms and survey questionnaire.

I hereby approve your ethical form.

On a different note, please check the syntax and grammar of the intro section of your survey document.

Kindest regards

Ahmad

Dr. Ahmad Ghoneim
Lecturer of eBusiness and Information Systems
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Brunel University
Uxbridge, Middlesex UB8 3PH
United Kingdom
Tel: +44 (01895) 265 176
Fax: +44 (01895) 269 775

E-Mail: Ahmad.Ghoneim@brunel.ac.uk
URL: http://www.iseing.org
2011
30-31, May
Athens, Greece

Sent from my iPad

On 7 Jul 2011, at 22:41, "Olusegun Vincent" <Olusegun.Vincent@brunel.ac.uk> wrote:

> Dear Research Ethics Committee Members,
>
>
> This is to let you know that I have tried to fill my research ethics form via u-Link but encountered problem with the "yes/No" response. The "Yes/ No" option is not dynamic (the system does not allow for changes between yes and no). Therefore, I have decided to scan the form and attach other related documents for the purpose of approval.
>
> I hope you will understand my circumstance.
>
> Thank you.
>
> Olusegun Vincent
> PhD Student
> BBS
> <Research Ethics Form.pdf>
> <participant info sheet.doc>
> <questionnaire.docx>