Empirical Investigations of the Relationship between Corporate Social and Financial Performance

Thesis submitted in partial fulfilment of the requirement for the degree of Doctor of Philosophy

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To Kostas, Thanasis and Iraklis

who left us too soon.

"Πολλ' οἰδ' αλώπηξ, εχίνος δε εν, μέγα."

Αρχίλοχος, 7ος π.Χ αιώνας

Declaration

I confirm that this is my own work and the use of all material from other sources has been properly and fully acknowledged.

_____ Date: _____

Ioannis Oikonomou

Abstract

This thesis attempts to make original contributions on the empirical relationship between corporate social responsibility and firm financial performance in a variety of ways. First, I investigate the wealth-protective effects of socially responsible firm behaviour by examining its association with equity risk for an extensive panel data sample of S&P 500 companies. Special consideration is given to downside risk and investor utility. The main findings are that corporate social responsibility is negatively but weakly related to systematic firm risk and corporate social irresponsibility is positively and strongly related to financial risk. However, the risk–return trade-off appears to be such that no clear utility gain or loss can be realized by investing in firms characterised by specific levels of social and environmental performance. Overall volatility conditions are shown to play a moderating role in the nature and strength of the corporate social performance-risk relationship.

I then extend the research framework to the corporate bond market and provide evidence of a negative link between corporate social performance and credit risk as well as corporate spreads. Additional analysis shows that this relationship is more pronounced in recent years and for bonds with higher maturities and either high or very low ratings. Although the moderating nature of volatility conditions found for stocks is not repeated in the bond market, the results are robust across industrial categorisations, despite the differences in their risk profiles.

The final empirical study explores the impact that positive social corporate actions have on the financial effects of negative/harmful social corporate actions and vice versa. When considering the phenomenon at the firm level using multiple regression analysis, no statistically significant link is detected. However, when pools and portfolios of firms are constructed, a U-shaped relationship becomes noticeable, with firms that engage solely in corporate socially responsible or socially irresponsible behaviour outperforming those engaging in both, especially in the case of the diversity and employee relations dimensions where all possible assessments of financial performance point towards a curvilinear link.

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A Ph.D. is a solitary experience. Or so it is said. The purpose of this part of the thesis will be to counter this statement. First and foremost, I would like to express my deepest gratitude to my supervisors, Chris Brooks and Stephen Pavelin for their guidance, support and the unwavering faith that they showed in me. Chris's supervising approach and academic mindset have been a perfect match with my needs as a doctoral researcher. His knowledge, experience, communicative efficiency, willingness to provide enough guidance to steer me towards the right direction but not so much as to suffocate my own critical thinking and creative abilities are qualities that I could not have hoped for my ideal supervisor to have. Stephen has been immensely helpful in making me think harder about the motivations, potential contributions, importance and positioning of my work. He has encouraged me greatly in my efforts and generously shared his in-depth understanding of the business case for corporate social responsibility. The work ethic and eloquence of both of them have also been truly inspiring.

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1. Introduction

1.1 Motivation for the thesis

Corporate social responsibility (CSR), corporate social performance (CSP), sustainable responsible business and corporate citizenship are only a few examples in the seemingly endless stream of terms that have been used in order to put a name to concepts relating to the responsibilities of corporations that go beyond the requirements of law and the economic obligations towards their shareholders. One of the most intuitive and straight-forward definitions of corporate social responsibility, which is appropriate for a gentle introduction to the issue, is that provided by the European commission according to which CSR is *"A concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis.*[1] Although there are subtle differences between the definitions and a certain degree of variability in the terminology used, this definition captures the essence of the issue of interest.

Although the exact meaning of CSR is still a matter of debate, there has been a tremendous amount of attention devoted to the subject, and to issues revolving around it, which has been constantly increasing over the years. The importance of CSR-related issues and their coverage in the mass media has gained momentum and it appears that firm mangers, shareholders, consumers, environmental activists, employees, individual and professional investors, policy makers and non-governmental organisations are becoming increasingly aware of the potential impacts that corporate policies, programs and activities have on the firm itself as well as the wider society. Recent surveys reveal that the vast majority of consumers (88%) believe that firms should attempt to accomplish their business goals while still trying to improve society and the natural environment[2] while the 2010 UN Global Compact–Accenture CEO Study shows that 93% of a sample of more than 750 CEOs consider sustainability an important factor for firm viability and long-term financial success. The former UK Prime Minister Gordon Brown repeatedly sponsored

[1] Relevant information can be found at: http://ec.europa.eu/enterprise/policies/sustainable-business/corporate-social-responsibility/index_en.htm, last accessed July 20th , 2011.

[2] Conducted in 2010 by Do Well Do Good, LLC. Available at http://dowelldogood.net/?page_id=688, last accessed July 5th, 2011.

the application of CSR and practices and has stated that *"Corporate social responsibility is broadening all the time into a belief that economic, social and environmental objectives can be pursued together and in harmony"*. [3] The European Union has also been promoting CSR in European countries and funding private initiatives and research projects in this direction. It has also emphasised the relevance of CSR in the context of economic crises.

The academic research of relevance is also rich and wide ranging and covers a great variety of topics in many different disciplines such as strategic management, media studies, business ethics, resource and environmental economics, organisational management, marketing and financial economics. Within this literature, a central, recurring, theme has been the relationship between corporate social responsibility (or performance) and corporate financial performance (CFP). There have been many different assertions concerning the link between the two concepts. The strict neo-classical view, expressed most notably by Milton Friedman (1970), suggests that firms do not have any obligations other that obedience to current legislation and shareholder value maximisation. Anything beyond this constitutes arbitrary taxation of the shareholder by the firm manager, is a misallocation of valuable resources, violates fundamental principles of modern democratic political regimes and should therefore not be considered sound corporate policy. The complete opposite is suggested by proponents of some strands of the corporate citizenship theory who believe that the objective of firms should not be shareholder value maximisation but an all-encompassing maximisation of societal good, including benefits to employees, consumers, local communities and the natural environment. So, according to this view, CSR principles should be the norm irrespective of the financial costs they incur and the financial revenues that they produce for the firm.

In between these two extremes, there are those who do not view CSR application and solid firm financial performance as being mutually exclusive but rather as being complimentary. Based principally on stakeholder theory, developed by Freeman (1984), it has been argued, in many different ways, that superior CSR can lead to improved relationships with key firm constituents, thus creating sustainable comparative advantages and materially contributing to the long-term financial well being of the corporation. Jensen (2002) offers a good example of this literature as he develops the "enlightened value maximisation theory", which essentially supports that in order

[3] Entire speech can be found at http://www.guardian.co.uk/politics/2003/mar/04/economy.uk, last accessed July 20th, 2011.

for a firm to become and remain successful, the corporate objective has to remain shareholder value maximisation but at the same time there are various constraints with regards to key stakeholders of the firm who should at the very least not be mistreated. Views like this have provided a strong motivation to empirically investigate whether "the business case for CSR" seems to hold or not. This has spurred an ever growing body of literature that has tried to answer the question of whether CSR can create, destroy or not materially affect firm value along with related enquiries concerning the size, shape and causality of this relationship. There are more than 200 published studies on this subject (Margolis, Elfenbein and Walsh, 2009) and yet there is no clear consensus on the issue, although a bird's eye view of the literature would suggest that there is a mild positive relationship between CSR and CFP. The lack of consensus can be attributed to a variety of limiting factors and shortcomings of the extant literature including, inter alia, inappropriate measures of CSR and CFP or an incorrect matching of the two, simplistic model specifications that omit important variables, non-robust estimations that can lead to spurious results and datasets that exhibit minimal amounts of variability with regard to the underlying firm characteristics. Even in the majority of those studies where most of the inherent difficulties of the task at hand are effectively tackled, the degree of novelty and departure from the core, and most frequently asked, questions to more subtle issues of the relationship investigated is often minimal. Therefore, there appears to be ample space for academic contributions in this particular research area, both in terms of more appropriately addressing themes that have already been analysed and in terms of extending the literature by investigating new topics.

Providing insights with regard to: 1) the nature of the link between CSP and CFP, 2) the magnitude and dynamics of this relationship, 3) the related interacting, moderating and mediating factors, 4) the industries and social dimensions for which this link is more pronounced, 5) the financial markets that better reflect it and other relevant issues, is also a matter of great interest to practitioners. Firm managers would like to have better information about the ways that they can effectively and efficiently incorporate CSR principles in their business' operation in order to improve their strategic relationships with key constituents, protect their reputational capital, reduce the cost of corporate debt and the cost of capital and generally use it to improve the bottom line of their firm. Institutional investors and portfolio managers have also been increasingly drawn to the financial impacts of CSP. The number of socially responsible investing (SRI) funds has quadrupled in the last 15 years and the wealth that these funds manage has

increased more than 25 times in the same period.[4] Individuals and institutions interested in SRI would like to know whether CSP can actually boost financial returns or decrease financial risks, if the effect is similar for all types of financial assets and markets, if the relationship holds at the firm level or at the portfolio level, and what factors can significantly affect the financial impacts of CSP. Hence there are also significant practical motivations to address the CSP-CFP issue in this thesis.

1.2 Intended contribution of the thesis

The work presented in this thesis is empirical in nature. It addresses the theme of the financial impacts of corporate social performance through an empirical lens and is intended to describe and explain if and how the markets actually incorporate CSP in the pricing of financial assets. It is important to note that it is not an aggregation of normative studies as it is not involved with the moral properties of the behaviour of the firms and investors. In the conclusions that are drawn in every chapter, any non-financial utility that the manager or investor may receive form CSR is ignored. This is a very interesting and important aspect in the CSR research area as it can be argued that investors make wealth allocation decisions based on a combination of rational and irrational economic criteria (for example, they might seek to maximise financial performance but at the same type impose a restriction with regard to the social/environmental minimum of their investments or they may wish to allocate funds in SRI only after they have already achieved certain performance targets) but it goes beyond the scope of the thesis. The studies conducted do not have instrumental elements either as it is not my intention to simulate the financial results that would occur if firms and investors behaved in certain ways.

Perhaps the greatest contribution of this thesis is the attempt to reorient the CSP-CFP research towards a path which has been rarely taken in the 40 years of empirical investigations in this area. The vast majority of the relevant studies have focused solely on identifying the value-enhancing (value-destructive) effects that superior (inferior) CSP is argued to have. A very small number of academic papers have concentrated on revealing the value-protective attributes of CSP in the form of reduced financial risks (Ullmann, 1985; Aupperle and Pham, 1989; Orlitzky and

[4] Information can be found at the Social Investment Forum's site http://ussif.org/resources/sriguide/srifacts.cfm, last accessed July 20th , 2011.

Benjamin, 2001). I posit that this relationship between corporate social performance and financial risk per se is equally as important as with that between CSP and economic returns (if not even more important in times of general financial distress and increased average investor risk aversion) and provide numerous conceptual links that support the existence of such a relationship.

All of the studies presented in the thesis make use of a very large and heterogeneous longitudinal dataset. This constitutes an advancement over the bulk of research conducted in this area which frequently utilises cross-sectional datasets, sometimes focuses on a single industry or two, and is naturally plagued by small sample biases and other related criticisms. It has only been in the last few years (mostly during the period when this thesis was being formulated) that more researchers have employed panel datasets to empirically investigate the CSP-CFP link. The source of corporate social and environmental performance data used is the Kinder, Lydenberg and Domini database (KLD). KLD is a rating agency[5] which assess the social and environmental performance of several thousand US firms based on a wide range of criteria and using information from sources that are either internal or external to the firm. I argue that the CSP measures produced from this dataset, with considerations to various issues such as the potential differential financial impact of corporate social strengths and concerns, have significant conceptual and practical advantages over most of the alternative measures that have been used in the existing literature.

Careful consideration is also given to the methodology applied in order to ensure the robustness of the empirical results. Although significant progress has been made with reference to the rigour and sophistication in the way that the CSP-CFP investigation is addressed, there is still room for improvement. A wide range of risk metrics are employed, many of which are introduced in the literature for the first time and are argued to be more appropriate in the effort to detect the wealth-protective effects of CSP. A host of variables that have been shown to affect financial risk and returns in the asset pricing, corporate risk management and CSP-CFP literatures are used to avoid spurious results arising from omitted variable biases. Considerable efforts are made to ensure the appropriateness of the panel regressions that are performed. Fixed and random effect panel estimations, standard error estimates clustered in two dimensions, quantile regressions and panel ordered probit regressions are some of the methods used to investigate the financial phenomena of interest.

[5] Acquired by RiskMetrics Group, a provider of risk management and corporate governance services, in November 2009.

The thesis also extents the CSP-CFP literature in that it looks at the financial impact of CSP on both the equity and the corporate bond markets. With the exception of a handful of papers published in the last three years, all of the work in this area has concentrated on the effects of CSP on firm shares. I argue that there are reasons to suspect that the CSP-CFP link may be even stronger in the market for corporate debt. A comparison of the results of the respective analyses is particularly illuminating for managers that have to choose whether to fund their firm through debt or equity and want to know the impacts of all the important factors on the cost of both before making this decision. Investors who do not just pick securities but are interested in wealth allocation between different financial asset classes would also be interested in the inferences that are made. Lastly, I also attempt to provide as many details as possible about how the two measurable concepts are connected, and do so in ways that the existing literature has not really done. I look at the differences of the impacts of various dimensions of corporate social performance, separate the effects of positive and negative corporate social activities, investigate whether there are aspects of CSP that are incorporated in the higher moments of the distribution of stock returns and attempt to match social dimensions with the industries that they are more relevant. In addition, I test the moderating effects that overall volatility conditions have on the CSP-CFP link, examine how CSP affects the corporate cost of debt and credit quality with regard to investor horizon, identify the degree of temporal variation of the results and dedicate the entire last empirical chapter to the financial effects of interactions that exist *within* corporate social performance.

1.3 Outline of the thesis

The remainder of the thesis is structured as follows. In Chapter 2, I conduct an in-depth presentation of the related literature. I begin by broadly describing the evolution of CSR in academic research and continue by outlining the major conceptual work upon which the business case for CSR is based as well as some interesting theoretical frameworks that have been developed. I continue with the main part of this chapter which naturally focuses on the empirical investigations that have been performed with respect to the CSP-CFP association. I follow the historical course of the literature and analytically describe the motivation for and methodology of some of the most indicative studies, pinpointing the limitations and drawbacks as well as the innovations and contributions where appropriate. I separate this part into several thematically

connected sections. The chapter concludes with a series of general inferences that can be drawn when looking at the entirety of published CSP-CFP empirical research.

Chapter 3 looks at the effects of CSP on equity risk. After a brief discussion concerning the motivation for the particular study and a glance at the existing evidence, I present the theoretical framework and develop the hypotheses that are tested. Since this comprises the first empirical work in the thesis, I provide all of the necessary details relating to the KLD database and the construction of the respective CSP measures, highlighting the usefulness and appropriateness of each. Next, I describe the standard and downside risk metrics used to capture both total and systematic financial risk as well as the utility measures employed and provide the rationale behind their use. After specifying the details of the extensive set of control variables that is used, econometric methodology, the sample characteristics and the descriptive statistics, I present and discuss the empirical results. A series of different models is specified, there is a categorisation of firms according to specialisation of social interests and the moderating effects of volatility conditions are examined. Lastly, quantile regressions provide closer look at the variation of the sensitivity of the effects of CSP on risk and the core analysis is repeated for a sample including firms of small and medium size.

In Chapter 4, I extend the investigation between CSP and financial risk in the corporate bond markets. I argue that because the corporate debt market is large and active, more dynamic and with a greater participation of institutional investors compared to the equity market, it is just as, and possibly more, appropriate to study the CSP-CFP link. Specifically, I look at the impacts of CSP on credit spreads and bond ratings. The outline of this chapter is similar to that of the previous one. After introducing the main subject and the motivation for researching it, I provide a description of the conceptual framework and the hypotheses arising from it. I continue by analytically explaining the process of estimating the corporate bond spreads and the recoding of the ratings assigned to an ordinal scale. Following this, I present the series of firm and bond characteristics that have been shown to influence corporate spreads according to the literature in fixed-income securities along with the details of the aggregation and arrangement of the dataset and the panel data econometrics that are applied. The chapter closes with a presentation of the output of the main regressions of CSP on bond spreads and credit ratings as well as a multitude of additional analyses and robustness tests that are performed. The results are interpreted and

connected with the limited existing evidence from the CSP-CFP literature as well as with the conclusions from those studies conducted on the equity market.

I proceed with what is, arguably, the most original and, because of that, the most challenging part of this thesis which I present in Chapter 5. The study presented in this chapter is based on conceptual and empirical work which proposes that corporate social strengths and corporate social concerns are distinct constructs which have different effects on firm financial performance and should not be combined to create aggregate CSP metrics. I develop two distinct theoretical frameworks that provide different explanations about the possible moderating effects that the presence (or absence) of one particular category of social strengths can have on the financial impact of the respective category of social concerns and vice versa. The dataset and CSP measures used in this study are identical to those used in Chapter 3 so I continue to explain the estimation of the interaction terms that I use and the different types of methodologies that I apply to compare the financial performance of samples and portfolios of stocks of firms that are found to be uniformly socially responsible, uniformly socially irresponsible or exhibit mixed indications with respect to their CSP. The results of these analyses are particularly revealing for academics and practitioners and are discussed. However, they cannot be compared to any prior empirical work, as none exists, which only adds to the inherent challenges of the task.

Even though a summary of all the relevant empirical findings is provided in each chapter, the results and conclusions drawn are brought together in Chapter 6 in order to provide a more holistic overview of the contributions of the thesis. Brief suggestions about possible avenues for future research in the CSP-CFP are also provided.

2. Literature Review

2.1 Introduction

The academic debate concerning the nature, sign, strength, significance, causality, shape, time variance as well as the identification of the underlying factors affecting the relationship between Corporate Social Responsibility (CSR) and Corporate Financial Performance (CFP) is a long standing and controversial one. For nearly 40 years, members of the academia of economics, business ethics, management and finance have attacked the subject using

i. various definitions and operationalizations of both CSR or CSP (corporate social performance) and CFP,

ii. a range of theoretical frameworks that may complement or oppose one another,

iii. a multitude of conceptual notions and mechanisms developed and used in different disciplines,

iv. diverse empirical methodologies characterised by constantly increasing levels of rigour and quantitative sophistication,

v. measures and data samples with different attributes,

with the predictable consequence of all the aforementioned being the production of a variety of results, often sharply conflicting.

Apart from these differences in the relevant literature, a delicate but important issue must also be considered. Although the subject of the relationship between CSR and CFP can be investigated through the use of rigorous scientific methods as well as any other, the ethical and social concerns rising from its very core may affect the assumptions upon which even the competent and informed researcher will build her model, thus affecting the results of her study. Aupperle et al. (1985) note this fact: *'…research into the relationship between corporate social responsibility and profitability…has frequently reflected an ideological bias'* and further on they refer to the CSR field of study as one being characterised by *'concepts…susceptible to particular ideological and emotional interpretations'*. Statman makes a similar observation when stating that '*conversations about socially responsible investing are difficult because they combine facts with beliefs*' (Statman, 2000). The academic background of the researcher also plays a role in this diversity of opinions and assumptions. For

example, it is only logical that a pure-finance theorist may not be able to completely understand the significance and appreciate the merit and extensions of stakeholder theory or that an expert of business ethics may not fully adhere to the neo-classical profit maximization motive. An illustrative example would be the different perspective that proponents of Strategic Management and supporters of the Business Citizenship theory have on the issue of CSP.

Lastly, it may as well be that there is a significant degree of time sensitivity in the relationship of CSR and CFP so that the choice of data in different time windows leads to different empirical results. All of the aforementioned factors combined synthesize a framework which explains, to a great extent, the diverging findings in the academic CSP-CFP literature. Whatever the source and nature of the factors that lead to contradicting empirical results regarding the CSP-CFP relationship, the fact remains that the issue seems far from being decisively resolved, although progress has been made.

In order for one to understand the problematic nature of identifying the particularities of the CSR-CFP relationship, recognize the fundamental incomparability among papers within a great part of the respective literature, appreciate the evolution of the field and realize today's standing point, some preliminary considerations have to be made. For this reason, this literature review will have a thematically broad starting point, offering a brief narration of the historical evolution of the definition of the CSR notion, following the shifting direction of academic interests in the area and highlighting the growing importance surrounding CSR issues.

Subsequently, I will concentrate on the main goal of this review, which is to provide an extensive and critical assessment of what constitutes the heart of the CSP-CFP research and evaluate both theoretical and empirical contributions. The rationale behind the use of different definitions, dimensions, and measures of CSR, alternative methodologies and utilisation of a variety of control variables, leading to different results and interpretations will be analytically discussed. Lastly, concise concluding remarks will be made and relevant research issues of particular interest which show great prospect will be pointed out.

2.2. Evolution of the research of CSR

2.2.1 Genesis

The concept that the responsibilities of corporations may not be solely limited to the obligation of profit generation (or profit maximization under stricter economic theory) towards their shareholders but rather be extended to different kinds of commitments towards various other groups who affect and/or are affected by the firm's actions[6] or even towards the public as a whole can be traced as far back as the 1920s (Windsor, 2001). Furthermore, the 1930s' debate concerning the definitional details of the role of firm managers also gave rise to the view that there are social responsibilities of firms which corporate decision makers have to take into consideration (Thomas and Nowak, 2006).

2.2.2 Early formations of an elusive notion

However, more formal and elaborate frameworks of what constitutes CSR were not provided until the late 1950s and early 1960s. Archie Carroll, one of the most important modern theorists of CSR, has acclaimed the early work of Bowen who he describes as the 'father of Corporate Social Responsibility' (Carroll, 1999). One of the very first definitions of CSR was given by Davis who refers to it as *'businessmen' decisions and actions taken for reasons at least partially beyond the firm's direct economic or technical interest*' (Davis, 1960). Davis also claims that social responsibility is likely to be positively related to firm financial performance when he states that '*some socially responsible business decisions can be justified by…having a good chance of bringing long-run economic gain to the firm*' (Davis, 1960). Walton on the other hand, at about the same time, questions Davis' assertion when warning that in the effort of a firm to be socially responsible *'costs are involved for which it may not be possible to gauge any direct measurable economic returns'* (Walton, 1967). Thus, these statements can be identified as the predecessors of the two opposing views in the central and enduring debate concerning the sign of the relationship between CSP and CFP.

[6] The informed reader will observe that the wording is very close to the famous definition of 'stakeholder' by Freeman (1984). However, in this case it is loosely used to illustrate the generation of a concept far preceding the creation and evolution of stakeholder theory.

Somewhere around the mid-1960s, the failing confidence and increased external pressures from the social public towards the corporate world leads to the reorientation of the priorities of firms, thus increasing their awareness of societal demands along with their propensity towards producing official disclosures related to CSR.[7] From that point onwards it could be said that CSP (along with its relationship to CFP) becomes a valid theme of academic research. Slowly but steadily, an increasing number of research papers are being published in academic journals, offering new theoretical structures and/or empirical evidence in relation to several aspects of CSP.[8] Leaving the first empirical studies of the CSP-CFP relationship (published in the early 1970s) plus an influential text of Friedman aside to be discussed in the main section of this review, let us continue on the historical evolution of CSR-related research.

2.2.3 Multiple levels of CSR and extensions to further issues

In order for CSR research to progress, the first thing that has to be done is to provide a better definition for this concept. This is a great challenge because the term is rather vague and seems too inclusive. As Votaw (1973) observes: *'The term is a brilliant one; it means something, but not always the same thing, to everybody'*. Adding to these ongoing academic efforts aimed at providing a more complete and rigorous framework of CSR, Sethi identifies three distinct tiers that taken together constitute CSR, namely: social obligation (a response to legal and market constraints), social responsibility (congruent to societal norms) and social responsiveness (adaptive, anticipatory and preventive) (Sethi, 1975; Carroll, 1999).

Carroll's own work (1979, 1991) sheds some light on the different 'levels of CSR' by showing that it may be optimal for firm managers to prioritise responsibilities as economic, legal, ethical and philanthropic (the fourth level having a more discretionary nature from the third), with the respective relative degrees of importance of each level being 4:3:2:1. At first glance, assigning a specific importance ratio to each CSR dimension instead of a simple importance ranking seems unrealistic. However, the creation of questionnaires of pair wise comparisons of all four

[7] See for example the evidence from surveys discussed by Abbott and Monsen (1979, p.508-509).

[8] For a great review of the evolution of the definitional constructs related to CSR, see Thomas and Nowak (2006). Part of the structure of this section draws from their paper.

dimensions can actually lead to the estimation of such ratios.[9] Later work of the same author (Schwartz and Carroll, 2003) revisits his pyramid model in order to transform it to an 'overlapping circles' representation of CSR.

Several other issues and potential research subjects emerge around the developing notions of CSR like its relationship to corporate strategy (Bowman and Haire, 1975; Buehler and Shetty, 1976), CSR auditing and the impact of that disclosure on the market (Belkaoui, 1976), CSR measurement issues (Abbott and Monsen, 1979), executive perceptions of CSR (Holmes, 1976) and quite a few others[10] including the link between CSR and CFP, though the latter subject is still at its infancy, with related studies having multiple caveats, problems and limitations.

2.2.4 Friedman Vs Freeman

The 1980s work in the field continues at the same pace until Freeman's seminal ideas on what is now stakeholder theory are published. Up to that point, the debate concerns whether applying CSR principles in the business environment will have positive, negative or neutral impacts on a corporation's bottom line. The position of the academic opponents of CSR, with the eminent economist Milton Friedman being one of the most outspoken ones as I shall later explain, can be summarised by the argument that the potentially beneficial financial effects of CSR (if any) will require the incurrence of disproportionately high implementation costs, thus leading to an overall negative financial effect. At the other end of the spectrum, CSR proponents emphasised the advantageous nature of CSR and supported it in a variety of ways. Freeman's work in particular, provides supporters of CSR with new, more sophisticated types of ammunition in their 'intellectual war' against the Friedman-believers of pure profit maximization.[11] Theorists of management and business economics have used stakeholder theory as a building block to provide

[9] An example of a question in such a questionnaire could be: 'Do you consider the legal dimension of CSR to be more important than the economic dimension?' and the answer could be on a scale from 1 to 10, with a grade of 1 representing the legal dimension being 10 times more important than the economic dimension and vice versa for a grade of 10.

[10] The interested reader is directed to the comprehensive review of Margolis and Walsh, 2003 for an indicative compilation of CSR related papers of that time and beyond.

[11] It would not be entirely simplistic to proclaim that in a way almost the entire range of arguments that have been used in favour of or against the financial impacts of CSR are basically taking a position within this undeclared Friedman versus Freeman debate.

a series of elaborate arguments concerning the (for the greatest part) positive effects that optimal[12] employment of CSR will have on the economic/financial performance of the firm. The bottom line of their rationale is excellently pinpointed in the following quote from Hillman and Keim (2001):

'building better relations with primary stakeholders like employees, customers, suppliers and communities could lead to increased financial returns by helping firms develop intangible but valuable assets which can be sources of competitive advantage'.

Lastly, there are also those who take a position in between the two former camps and support that there is actually no relationship between CSP and CFP. As Waddock and Graves (1997) put it:

'Proponents of this line of reasoning (e.g., Ullman, 1985) argue that there are so many intervening variables between social and financial performance that there is no reason to expect a relationship to exist, except possibly by chance. On the other hand, the measurement problems that have plagued CSP research may mask any linkage that exists.'

As shall be demonstrated in depth in the next section, essentially all empirical studies of the CSP-CFP relationship will either hypothesize in favour of the validity of Freeman-like types of arguments or claim that the financial burdens arising from the implementations of the required programs and process will outweigh the respective benefits or support that there is in fact no significant relationship between the respective variables. The particularities of the most important theoretical contributions in the CSP-CFP area are also left to be presented in the next section. Overall, Freeman's work sets the basis for CSR to be viewed not across the spectrum of additional societal, ethical and environmental obligations of corporations but rather as a dimension of effective stakeholder management; something crucial for the firm's long-run economic well standing.

Other evolutions of the same era are the attempt to detect the distinguishing features between notionally related concepts like CSR, Corporate Social Performance and Corporate Social Responsiveness as well as the emergence of new branches of CSR issues like its relation to public policy and business ethics (Carroll, 1999). Empirical research of substantial significance and

[12] Optimality in this case can be interpreted as the appropriate dimension of CSR being developed by a specific firm which wishes to target a particular group of primary stakeholders, while making sure that the costs of this development do not outweigh the potential benefits.

increased sophistication in the area of CSR and CFP is also conducted during this time (once again this is left aside for the next section). Lastly, the rather vague but important mention of CSR principles in the Brundtland Report published by the World Commission on Environment and Development (WCED) leads to increased academic and public interest towards CSR concerns.

2.2.5 Rise and Prominence: a 1990s and thereafter story

From the late 1980s, through the whole 1990s and up to the present day, the volume, sophistication and thematic popularity of the academic work that has been done on CSR related issues has only been increasing. One of the reasons for this can be spotted in the far-reaching review of Margolis and Walsh (2003) which begin their organisational studies approach by underlining the growing miseries of the world including vastly unequally distributed wealth, human slavery, HIV infection rates, infant mortality in sub-Saharan Africa and so on. As they observe: *'in the face of these broad and deep problems, calls go out for companies to help'*. And it is only reasonable for the public to turn on companies as the shifting balance of economic power has turned in their favour. Tsoutsoura (2004) gives evidence for the latest statement by noting that *'according to the OECD, of the 100 largest global economies, as measured by GDP, 51 of them are US corporations and only 49 are nation states'*. Faced with a multitude of additional societal demands and expectations, companies have to rethink their place in society, corporate objectives and strategies.

Numerous scientific reports and articles in influential media have helped to increase public awareness in societal and environmental issues while organisations like 'Business for CSR' have worked towards this direction as well. The academics of course, have not remained passive spectators of these evolutions. Theoretical advances have been made on the part of stakeholder theory and business ethics, while new frameworks emerge (like corporate citizenship) and old ones are reformulated (like the concept of societal licensing). More robust definitions of CSR (and CSP as the measurable dimension of the former) are offered, including Wood's (1991) highly useful and widely referenced CSP definition as *'a business organization's configuration of principles of social responsibility, processes of social responsiveness and policies, programs and observable outcomes as they relate to the firm's societal relationships'*. New measures of CSP are used including Fortune magazine's 'Best 100 Companies to Work for in America' survey and, most importantly, the

Kinder Lydenberg Domini (KLD) rating system, the latter eventually becoming arguably the most reliable and academically popular CSP measure.

With the passing of the years, a greater pool of CSP data is constructed, finally not solely limited to American companies. More evolved methodologies for finer graining these data and drawing inferences from them are employed. Lastly, from the mid-nineties and on, an exponentially increasing number of socially responsible investing funds (SRI funds) emerge, and the matter of the comparison of their performance with that of conventional funds has provided a window of opportunity through which many more scholars enter the field, especially from finance, bringing with them the quantitative rigour that comes with their own academic territory.

Having provided a solid background concerning the importance, notions, scope and historic evolution of the wider research area, this seems like the ideal point to depart from this section and continue with the main interest of this review, namely the CSR-CFP relationship.

2.3. Theoretical contributions in the relationship between CSR and CFP

2.3.1 Introductory considerations

Before beginning the critical analysis of the academic literature studying the relationship between CSR and CFP, a few considerations have to be made.

Firstly, although terms like Corporate Social Responsibility, Corporate Social Performance, Corporate Social Involvement and Corporate Social Responsiveness are distinct (though related) on a theoretical level, in practice a great part of the empirical literature uses them interchangeably. From here on, the use of the 'CSR' acronym will refer to the respective notion of social responsibility that each individual paper uses and tests for. I will however make a conscious effort to use CSP as the term capturing the key concept and variable of interest and avoid using the term CSR, unless the study discussed is focused on positive corporate social/environmental policies, practices and outcomes. I will also use the term CSR if that is the way the author(s) elect to refer to the key concept in question.

A similar consideration must be made about the notion of financial performance. Various measures have been used, broadly categorized either as market (e.g. risk adjusted capital returns)

or accounting (e.g. return on sales) measures depicting alternative ways to access a firm's financial performance. From here on, the use of the 'CFP' acronym will refer to the respective notion of economic/financial performance that each individual paper uses and tests for.

Thirdly, the vast majority of the papers that are going to be reviewed will be empirical works trying to provide some new insight into the CSR-CFP relationship via a quantitative methodology. This fact can by no means be interpreted as illustrative of some intellectual superiority of the empirical work of the field as opposed to the instrumental, normative and descriptive research that is conducted through the construction of theoretical frameworks. It merely means that the empirical work lies closer to the particular research interests and expertise of the reviewer and the scope of this thesis. In fact, exactly because these theoretical studies provide the backbone for the rationale behind the existence (or lack) of a CSP-CFP relationship, I will begin by presenting the contributions of some of the most important of those.

2.3.2 Friedman's view

Ironically, one of the most influential texts that were written about CSR and its speculated effects on CFP cannot be categorised as a research paper. Milton Friedman, in his article 'The Social Responsibility of Business is to increase its Profits' (Friedman, 1970), harshly criticises the increasing interest by academics and practitioners towards CSR. Apart from dismissing the work that has been done up to that point as *'notable for analytical looseness and lack of rigor'* he emphatically proclaims that employing CSR principles in the business world is unfair both to the firms' shareholders and to the general public: To the former because they have to pay an 'unofficial tax' which reduces their rightful claims to the residual earnings of the firm and to the latter because this 'tax imposition' and subsequent expenditure of 'tax proceeds' are supposed to be solely governmental functions in an established democratic political system. Managers, Friedman suggests, are not entitled nor suited to face any issue other than the economic well being of their firm.[13] Basically, the two-fold basis of Friedman's critique is what has eloquently been stated as

[13] Friedman was not however the first to make such claims. Rostow (1959) wrote that: '*Programs which would give reality to the idea of spending corporate funds to advance the general welfare…will sooner or later invite the critical attention of legislators, governors, and presidents, who consider that they have been elected by the people to advance the general welfare, and know more about it than the directors of endocratic corporations'*. (Rostow, p.68).

misappropriation and misallocation of corporate funds (Margolis and Walsh, 2003).[14] This piece of work of the eminent economist is directly or indirectly echoed in a vast number of papers either to support or confront it, so it is no surprise that despite its lack of academic fashion it is frequently referenced. Since it is more a statement than the result of research, an elaborate critique of this text is beyond the scope of this review. Suffice it to state that Friedman's criticism towards the very concept of CSR seems to encourage rather than discourage scholars from getting involved with the subject.

2.3.3 Revisiting the early CSR models

I have already described the conceptual frameworks developed by Sethi (1975) and Carroll (1979 and 2003) as being the first rigorous attempts towards a more crystallised view of CSR. These models, especially Carroll's, have been and to some extent continue to be the 'mainstream' ways of looking into the layers of 'CSR' and have provided a simple rule concerning the relative importance of each layer (under Carroll's pyramid they are economic, legal, ethical, philanthropic with the respective importance analogy being 4:3:2:1).

I have also referenced the definition of Woods (1991) which has attempted to study CSP using three levels of analysis (institutional, organizational and individual) and provided a CSR framework comprising of principles of social responsibility, processes of social responsiveness and outcomes of CSP (termed social impacts). This definitional framework has been proven to be particularly useful in empirical research of the CSP and CFP connection as its outcome-orientated nature provides a solid basis for the researchers to look for specific types of indicators in order to assess corporate social responsibility. What I did not yet mention is that this work of Wood constitutes an advancement building on the work of Wartick and Cochran (1984). The latter authors also wrote about three facets of CSP but did so in ways that are more restrictive and not as dynamic, interactive or outcome related as Wood's framework.

[14] And before either of these two studies was published, there was Rostow's (1959) work once more : *'The new corporate morality may result in prices and wages which sabotage the market mechanism and systematically distort the allocation of resources'* (Rostow, p.64)

2.3.4 Stakeholder theory in the CSP-CFP literature

With stakeholder theory being the conceptual basis of the literature arguing in favour of a positive CSP-CFP link, it seems necessary to take a closer look at some of the work done in this field.

Jones's (1995) paper on instrumental stakeholder theory seems to posses all those elements that characterise a seminal paper. After stating his (quite realistic) assumptions, Jones uses an elaborate set of arguments, building on notions and frameworks coming from agency theory, transaction cost economics, team production and business ethics to prove that in the case of repeated, regular interactions between a firm and its stakeholders, mutual collaboration based on trusting and cooperative relationships will lead to efficient contracting, creation of competitive sustainable advantage and subsequently positive market assessments. The reasons why I consider this paper to be of great importance are that: 1) it provides an illustrative example of what a conceptual paper should look like in terms of method and structure and 2) it does have important implications for the CSP-CFP literature as the main conclusion can be broken down into more detailed paths that link social attributes of the firm with improved financial performance (in fact, in the last part of the paper Jones makes such propositions). The only weak point of this work is a generic problem of this whole branch of theoretical literature: the framework that is constructed, although sophisticated, is incredibly difficult to subject to empirical verification and naturally, the author does not provide a possible testing method.

A theoretical contribution which has played an important role in the empirical CSP-CFP research comes from Clarkson (1995). Clarkson argues that a serious flaw in the attempts to detect a solid relationship between the two concepts stems from the fact that improper implicit assertions have been made. Specifically, he states that (up to the time of this paper) researchers have used an extremely wide range of policies, processes and activities as indicative of CSP some which are completely irrelevant. Firms, Clarkson essentially argues, are managing their relationships with their stakeholders and not society as a whole. Therefore it is important to distinguish between stakeholder management and social issues. Under this classification, he uses Wood's three levels of analysis (institutional, organizational and individual) to categorize accordingly. Eventually, the bulk of relevant empirical studies acknowledged Clarkson's argument and became more careful as to what it considered socially responsible under a stakeholder perspective. Hillman and Keim

(2001), as I shall explain later on, go beyond that and actually try to empirically prove that stakeholder management does have an effect on a firm's CFP while social involvement does not.

Another conceptual paper making a point with important implications for empirical CSP-CFP literature comes from Wood and Jones (1995).[15] The authors try to explain the mixed (or at least not concrete) empirical results of the financial effects of CSP and they argue that apart from the inherent definitional and measurement problems that come with the territory, an additional reason is the mismatching between CSP manifestations and CFP measures that are not theoretically linked in any way. They analytically discuss the caveats of the literature by reviewing studies dealing with various dimensions and aspects of CSR. They also argue that market CFP measures seem to provide more robust and consistent results among studies exactly because there is sufficient theory linking CSP dimensions with market oriented stakeholders. As in the case of Clarkson, this critique is very valuable in the effort to improve the rigour of the CSP-CFP literature and it does so by making researchers think better about the possible causal pathways between the two notions and their operationalisations.

Having referenced the previous three papers (Jones, 1995; Clarkson, 1995; Wood and Jones, 1995) it must be mentioned that the rise of stakeholder theory has created renewed scepticism about the objective of business. In an effort to connect profit maximization theory with stakeholder theory, Jensen (2002) provides a hybrid which he calls 'enlightened value maximization'. After giving a variety of reasons for the practical limitations of stakeholder theory (the most important one being that it does not provide a clear, one-dimensional objective), he then goes on to recognize that the long term survival and successful operation of a corporation is to some extent dependent on its relationships with its primary stakeholders. Thus, he states that the corporate objective should be total long term value maximization of the firm with the restriction that important constituencies are not to be completely ignored or mistreated. While this might seem a peripheral issue, it is actually very important in the CSP-CFP literature as it indicates the increased legitimacy that stakeholder theory received over the years, leading to a need for testing the bottom-line effects of its implementation at the firm level.

[15] For the sake of clarity, it's necessary to note that this is indeed the Donna Wood whose definition of CSP I have already mentioned but Jones is not Thomas Jones whose work in instrumental stakeholder theory I have already referenced.

2.3.5 Factors and dynamics of CSR supply and demand

Another interesting part of the theoretical side of the field has emerged only within the last decade. Some scholars have started looking at CSR as a corporate product and because of this view it was necessary to create a supply and demand theory that would determine the market assessment of CSP. McWilliams and Siegel (2001) do so by stating that consumers, investors, employees and communities are the sources of CSR demand and that the relevant determinants of CSR demand include advertising, demographics, and consumer income inter alia. For the supply of CSR they use a resource based view of the firm and highlight the costs that come with implementing CSR principles. Thus, they conclud that CSR depends on particular firm and industry characteristics (size, R&D and advertising expenditures, stage in the industry life cycle etc.) and is not inherently positively or negatively linked to CFP. Only a cost-benefit analysis for each firm could reveal the net CSP effect to that firm. Although quite innovative and managerially useful, this study basically throws all relevant empirical research out of the window and narrows valid research to case study analysis. However, even if their logic and framework is theoretically sound, there seems to be good reason to attempt to research the financial effects of CSP in aggregate or at least within a sector. CSP appears to be a central issue that affects the long term viability of companies and if we want a clear answer to the sign and magnitude of its relation to CFP, we cannot limit ourselves to the study of individual companies. What we could do is direct the studies to the identification of the factors affecting CSP (be they internal or external to the firm environment) and attempt to unearth the sensitivity of CSP (and its relations to CFP) towards these factors. I discuss this issue in the last part of the review.

Mackey, Mackey and Barney (2007) follow the lead of McWilliams and Siegel and create their own supply and demand model but this time it is from an investor's perspective. It is a framework which separates investors in 'financially' motivated and 'ethically' motivated.[16] The most important assumption they make is that CSR actually decreases the stream of cash flows of the firm. They then show that if the managers' goal is shareholder value maximization instead of profit maximization, it may be optimal for the firm to be socially responsible depending on whether there is an excess demand for or supply of CSR. This conclusion is extremely important and useful as it provides a strong argument in favour of the use of market measures and against

[16] The latter being motivated in whole or in part from ethical principles, a distinction that does not make a significant difference to the model.

the use of accounting (profitability) measures when trying to relate some manifestation of CFP to CSP (a crucial issue in the literature).

2.3.6 A different argument for the existence of a positive CSP-CFP link

Before continuing with the analysis of the empirical literature of the field, I believe it is important to discuss a side of CSP that has also evolved fairly recently and it illuminates a different kind of relationship between CSP and CFP. As has been explained, the theoretical work that has been done by stakeholder theorists points towards a positive CSP-CFP connection. Social responsibility, they argue, will lead to the creation of competitive advantage and so enhance corporate economic performance. Godfrey (2005), however, provides a kind of 'back door mechanism' concerning this link. He proclaims that CSP can generate specific qualities that can protect (instead of enhance) the intangible reputational assets of the firm and thus shareholder wealth itself. He is very versatile at using concepts and methodological tools from law, business ethics, and insurance economics to create a rigorous chain of arguments (based on specific assertions of course) that eventually lead to the above result. The problem is the difficulty to empirically test his theory as 'protection of reputational assets' is not something one can accurately measure. However, Godfrey et al. (2009) attempt to provide empirical evidence in favour of the existence of such a relationship. It seems suitable to make an exception and review this empirical work in this section so that it can be viewed in direct relation to its theoretical framework. The authors use event study methodology to assess the effect that consistent philanthropic (and other CSR) activity has on abnormal stock returns that surround negative legal and regulatory events associated with specific firms. CSR data are drawn from the KLD database.[17] The resulting sample, after excluding material events which happen to coincide with the event of interest (e.g. earnings announcements) comprises of 185 observations which relate to a total of 99 companies. The CFP variable in this study is the cumulative abnormal return adjusted for market-based fluctuations. The control variables used were the market to book value ratio, company size and a sector dummy variable.

The results overall support Godfrey's theory and also indicate that additional philanthropic activity beyond a certain point does not necessarily lead to extra reputational insurance and that the insurance effect is for the most part limited to smaller companies. However, having a good

[17] The details of this database will also be given in the next section of this review.

performance in any of the other CSR dimensions (community, environment, employee relations, diversity, and product quality) does not appear to have any statistically significant financial effect. Overall, although this paper provides a very good starting point in the effort to quantify the hypothesised wealth protective effects of CSR, it is limited to a specific category of negative events (legal/regulatory) which significantly narrows the spectrum of incidents that are likely to have a negative impact on the wealth of a firm's shareholders. Furthermore, the very nature of CSP makes it more probable that its financial benefits will accrue in the long run. For example, Hillman and Keim (2001) argue that improved CSP will result in *'long term value through socially complex resources'* while Cox et al. (2004) state that '*there is a broad consensus in the conceptual literature that many financial gains from improved social performance accrue in the long run'*. Thus it is indicated that regression analysis may be a more suitable method for identifying the more permanent and generic effects of consistent CSP than event study methodology, especially because the multidimensionality of CSP and the narrowing of CSP effects to discrete events limit the usefulness of this method (Hillman and Keim, 2001). Lastly, perhaps a more intuitive way to empirically test this hypothesis would be to examine the link between CSP and financial risk per se instead of simply looking at risk adjusted abnormal market returns (which do not provide a clear signal of whether CSR leads to superior absolute performance or reduced share price volatility).

Also of note is Brammer and Pavelin's (2005) work which further illustrates the idiosyncratic nature of the insurance motive of CSR. The authors further refine the logic behind investing in the protective attributes of CSR and show that specific CSR dimensions are more suitable for firms and industries with particular attributes. They also provide some descriptive data (breakdown of firm charitable giving by sector based on data of the 500 biggest publicly traded UK companies) which support their reasoning. Specifically, it is shown that overall philanthropic activity is more pronounced in those exact sectors ('high risk' sectors like chemicals and 'reputation significant' sectors like retail) where theory predicts that philanthropy as a CSR dimension will actually have a significant insurance effect.

Having completed the appraisal of the theoretical frameworks that have been created to shed some light on the CSP-CFP relationship, I can now proceed to describing and assessing the empirical part of the literature.

2.4. Empirical papers of the CSP-CFP literature

2.4.1 A rough start

As with the every other scientific subarea, the earliest empirical studies that attempted to identify the sign of the CSP-CFP relationship were characterised by a low level of methodological rigour and were limited in many ways.

In the very first issue of 'Business and Society Review', its editor Milton Moskowitz (1972) names 14 companies as being characteristic of exemplary social responsibility and proposes that they are very good investment choices. In the next issue of the same journal, it is observed that the portfolio consisting of these stocks have outperformed, in terms of capital returns, both the Dow-Jones and S&P Industrials for the elapsed period of 6 months and so it is argued that there seems to be a positive relationship between CSR and stock returns. Vance (1975), however, updates the performance records of Moskowitz's portfolio for the period between 1972 and 1975 and observes that they had performed poorly in comparison to the stock market indices. To substantiate his claims, Vance uses the results of two reputational surveys conducted by 'Business and Society Review' (one with the participants being business men and one with business students) to separate a sample of 45 companies into low and high CSR performers. He then goes on to correlate their market performance (simple capital returns) with their social responsibility and found a negative correlation coefficient. Thus, he supports that there seems to be a negative association between CSP and financial performance.

There is a series of fundamental issues which makes both of these studies' results fairly unreliable. They do not make any adjustments for risk;[18] they do not take dividends into consideration when calculating stock returns; the time windows over which they observe stock returns are too narrow (six months and 1 year respectively); data samples are small; no statistical significance tests are conducted. Additionally, Vance's study uses the results of reputational surveys of questionable reliability.

[18] A great observation of Cochran and Wood (1984) which explains the different results of these papers is that the portfolio of stocks under consideration has a beta of 1.56 making it quite aggressive. Also, in Moskowitz's time window there is a bullish market while in Vance's there is a bearish market. Both these facts taken together clarify the opposing outcomes of the two studies.

Alexander and Buchholz (1978) make significant improvements over previous studies. They use Vance's firm sample and his taxonomy of CSR performance, adjust for risk using beta as a risk measure and examine the sample over a three year and a five year period. They also conduct statistical significance tests to add robustness to their results. Interestingly, they also look for a relationship between CSP and the levels of financial risk. Their results contradict both those of Moskowitz and those of Vance as they find no significant relationship between either risk-adjusted market performance and CSR or financial risk per se and CSR. Of course, some of the caveats remain in their work as they too do not account for dividends in the calculation of stock returns and use Vance's small sample and his ranking of socially responsible companies based on the surveys. Furthermore, they do not use any control variables to make their methodology more rigorous.

Bowman and Haire (1975) provide a typical early example of CSP-CFP research that uses content analysis of corporate disclosure as a measure of CSR. In particular, the authors consider the proportion of lines of text in the annual report that somehow refers to CSR related issues. They look for a variety of indicative key terms and phrases such as 'corporate responsibility', 'corporate citizenship', 'social responsiveness', 'beyond the profit motive' and so on. They use data from Moody's Industrial Manual and choose 31 companies depicting social responsibility and 51 companies at random which comprise the control group of the former. The CFP measure they utilise is Return on Equity. Their methodology is very simple. After further categorising their overall sample of both socially responsible and irresponsible companies into low, medium and high CSR firms, they examine the average ROE of the past 5 years, for its category of firms. They conclude that there appears to be an inverse U-shaped relationship between CSR and financial performance, with low CSR firms having the lowest mean ROE and medium CSR firms having the highest mean ROE. They reinforce these results by applying the same methodology to the dataset of a previous study of Bragdon and Marlin (1972)[19] from which the same pattern emerges and argue that this is because CSR only has a signalling effect about the style and competence of management rather that any inherent value. Given this lack of inherent value, it appears that having a close to average CSR performance is the optimal strategy. There is a series of limitations evident in the approach of this paper. The choice of CSR measure is of course problematic given that there may be a significant discrepancy between the content of public disclosures (which may

[19] That study, however, utilises the Council on Economic Priorities air and water pollution measures to capture the environmental dimension of CSR.

simply serve corporate public relations and marketing goals) and the actual social posture of any firm.[20] The methodology is also particularly crude, with the data sample being quite small and the results lacking any degree of statistical significance due to the lack of econometric testing of their robustness. Furthermore, attempting to use a past study with a different orientation and different CSR measure in order to reinforce the results of this study does not appear appropriate.

Along the same lines is the work of Belkaoui (1976) who compares the stock returns of a group of 50 US companies whose annual reports included some pollution control information with those of 50 randomly selected US firms from the same industries as the former. Using the market model, Belkaoui attempts to identify any differences in the stock returns of the two groups some months before and after the publishing of the annual reports. The results indicate that the companies who include pollution control information in their reports underperform the control group before the publication and outperform them afterwards. Belkaoui's reasoning is that the market assesses the risk reducing effects of pollution controls to outweigh the costs needed to implement them and this fact is incorporated in the firms' stock prices after it is publicly disclosed. Though improved in comparison to the relevant work of Bowman and Haire (1975), this paper cannot escape the 'ingratiation' argument that follows corporate disclosures, while at the same time its data sample is small, the observation window narrow and the methodology is suboptimal due to the omission of various important control variables (predominantly firm size) and conduction of any sensitivity analysis.

A different measure of the assessment of CSP is used by Abbott and Monsen (1979). The authors construct the Social Involvement Disclosure scale (SID) which is obtained from a content analysis of the annual reports of the Fortune 500 companies. They count the different types of CSR dimensions which are mentioned in corporate disclosures and add them. They recognise the limitations and caveats that come with using the SID, the most important one being that there might be a discrepancy between what a firm acknowledges as socially important is actually what is reflected in corporate activities and not just a communicating technique towards stakeholders. Also, even if it is assumed that all information is reliable and representative of corporate activities, SID is a measure of CSR diversity rather than intensity. The upside is that it provides an objective measure based on publicly available documents and that it makes a step towards a

[20] This is a critique which has been directed towards every type of content analysis measure that has been used in the literature.

holistic, aggregate approach of CSR. In any case, Abbott and Monsen then separate the Fortune 500 companies into high and low CSR performers according to SID and try to associate social responsibility with average total returns to investors from 1964 to 1974. They find no significant pattern emerging between the returns of 'good' and 'bad' companies even when controlling for size (one of the first studies to use a control variable in the CSP-CFP literature). Unfortunately, their results are not completely solid as they simply compare the mean returns of companies with different CSP without conducting any kind of correlation or regression analysis or check for the statistical significance of their results.

2.4.2 Advancements and extensions

From the studies that I have examined so far, which I consider indicative of their time, it is quite obvious that the common denominator amongst them is a modest level of technical sophistication as well as widely diverging results. In time, significant improvements were made that accounted for several limitations of previous studies while new CSP measures were introduced, more CSP dimensions were examined and data from different industries were gathered and utilised.

An interesting and fairly robust paper is that of Aupperle et al. (1985). In it, Carroll's pyramid of CSR is used as the theoretical construct to be examined. A forced-choice survey of corporate CEOs is conducted and the factor analysis of its results reveals that Carroll's model seems to stand. Then, correlation analysis is conducted in which the results about CSR coming from the survey are used along with accounting measures of financial performance (ROA) and risk (beta, Value Line's safety index). No measure of economic performance is significantly related to factors like employment of social forecasting or having a social responsibility committee, but all of the latter are significantly and negatively related to financial risk (perhaps giving some very early support to the argument that Godfrey will use 20 years later). Apart from adding some methodological rigour in the area of empirical CSP-CFP studies and innovating with the use of new risk measures, the authors attempt to connect the theory of the area with their empirical tests instead of interpreting quantitative results ex post. However, their CSR measure is at somewhat ambiguous and their CFP measure is too narrow for cross-industrial firm samples. Building on this paper, Aupperle and Pham (1989) aggregate the non-economic components of CSR and use a variety of accounting (ROA, ROE, ROS) and market (stock price growth, total return to

investor) measures of CFP. This time, no significant relationship is detected between CSR and any measure of economic performance or even financial risk.

The contradictory results of all these studies made scholars begin to question the possible caveats of the empirical work that had been done in the field. Ullmann (1985) provides a good review of the literature, explaining that the conclusions concerning the relationships of CSP with CFP are conflicting because of inappropriate definitions of key notions, a lack of theoretical frameworks, deficiencies in existing CSR databases and a lack of, or differences in the, use of control variables. In a widely referenced paper, Cochran and Wood (1984) also recognise the points of Ullmann, adding time sensitivity of results, small data samples, short observation windows, and no/poor adjustments for risk. They also explain the inadequacies of both content analysis (subjectivity in choosing what to monitor; inconsistency between reporting and implementing) and reputation indices (subjectivity of evaluation, small numbers of firms covered) but decide to use the latter mainly for the sake of comparability of CSR data from year to year as well as comparability with the results of other studies. Specifically, they use the combined Moskowitz list as a reputation index, check for industry, asset age and risk and attempt to associate corporate reputation with three accounting CFP measures by conducting regression and logit analysis. The accounting CFP measures they employ are (1) the ratio of operating earnings to assets, (2) the ratio of operating earnings to sales, and (3) excess market valuation, the latter being estimated in the following way:

$$EV = \frac{Market\,Value\,of\;Equity\,and\,Book\,Value\,of\;Debt - Total\;Assets}{Sales} \qquad (2.1)$$

while the general form of the regression equations that they estimate is

$$CFP_i = a + b_j CSR_{ij} + b_k IND_{ik} + \varepsilon_i \qquad (2.2)$$

where CFP_i are the averaged financial performance measures for each firm, CSR_{ij} are 0, 1 dummy variables reflecting the Moskowitz categories and IND_{ik} are 0, 1 dummy variables reflecting industry. Two additional control variables are later introduced: a) asset turnover, or the ratio of sales to assets, is used to measure the effectiveness of the use of assets by a firm and b) the ratio of net fixed assets to gross fixed assets is used to measure asset age.

After observing and controlling for a very strong relationship between asset age and CSP (newer firms depicting higher CSP), they still find a slightly positive and significant CSP-CFP

relationship. The work of Cochran and Wood is important because it emphasises the need for improved CSR measures (suggesting that reputational indices may be better than content analysis) and better use of control variables that add robustness to results.

McGuire et al. (1988) go along the same road and use the well-known Fortune 500 list of companies with the best reputation (one attribute of which is environmental and social responsibility). They argue that the comparability of data over extended periods, the large number of respondents, the industry specific expertise of those respondents (who are corporate executives) and the close association between the ratings and actual orientation towards CSR make Fortune 500 a good CSP indicator. They also use multiple CFP measures (total return, asset growth, generated alpha returns amongst others) and risk measures (operating leverage and beta) and run regressions for different time windows, sometimes lagging their data. In doing so, they also conduct some of the first causality tests between CSP and CFP, a subject that will become more topical later on in the relevant literature. They find that CSP is positively (and strongly) related to CFP and negatively (and less strongly) related to risk, accounting CFP measures seem to be more strongly related to CSP than market measures and CFP seems to lead CSP rather that the other way around. They explain the second result by arguing that possibly, accounting measures are better in capturing the unique, idiosyncratic nature of CSP and the third conclusion by viewing CSP as a 'corporate luxury' which is promoted mainly in times of firm profitability.[21] Truly, this study is full of innovative ideas that move the debate away from simply looking at the sign and magnitude of the CSP-CFP link and paved the way for researching the causality of this relationship and the differences between using market and accounting CFP measures.

A study researching the effects of corporate environmental performance on a firm's stock market performance is that of Konar and Cohen (2001). The questions it addresses are whether being environmentally responsible leads to inferior stock market returns because of the associated explicit costs of the implementation agenda or alternatively, whether the generation of a solid environmental reputation results in positive excess returns. The data come from the S&P 500 firms after excluding non-polluting industries resulting in a sample of 321 firms for the year 1989.

[21] What Waddock and Graves(1997) will later call 'the slack resources theory'.

The CFP measure that is used is Tobin's *q*:

$$q = \frac{market\ value\ of\ \ firm}{replacement\ value\ of\ \ assets} = \frac{equity + debt + preferred\ stock}{plant + equipment + inventory + short\ term\ assets} \quad (2.3)$$

A series of variables that are thought to affect firm market value are also used: market share of the firm, industry concentration ratio, sales growth, advertising intensity, R&D intensity, firm size and others. Industry dummies are also included. Two variables are the principal measures of environmental performance: Toxic Release Inventory (TRI) data[22] and the number of environmental lawsuits pending against the firm in 1989. The results of standard regression analysis show that both variables have a statistically significant negative effect on Tobin's *q*, a fact that is more pronounced for TRI than for the number of lawsuits. Given the estimated coefficients of the main explanatory variables and the average TRI levels and lawsuits in the sample, it is estimated that the average liability for every polluting firm reaches $380 million or about 9% of the average replacement value of firm assets.

The main innovation of the study comes from the use of Tobin's *q* as an CFP measure which can be said to stand somewhere in between the standard market and accounting measures that have been utilised in past CSP-CFP research. In terms of its limitations, it should be stated that the fact that the market seems to penalise bad environmental performance does not necessarily mean that it will also reward strong environmental performance and certainly not in a symmetric way. Thus, the CSP measures that are used only capture corporate social irresponsibility as they both depict bad environmental records and cannot account for the performance of environmentally responsible companies.[23]

One of the relatively few papers[24] in the CSP-CFP literature to focus on the 'employee satisfaction' dimension of CSR is that of Edmans (2011). The author assesses the impact of this part of CSR on the long-run stock returns of firms. The CSP measure he uses is the list of '100 Best Companies to Work For in America'. Two thirds of the total score of each company in this

[22] Which are aggregate pounds of toxic chemicals emitted per dollar revenue of the firm, lagged for the purpose of this study as there is significant time difference between the actual emission and the date the data are released.

[23] Of course it can be argued that the companies having the lowest TRIs and the smallest number of environmental prosecutions are the best environmental performers but that would be a narrow definition of environmental responsibility.

[24] Especially when compared to the number of papers that focus on researching the corporate environmental responsibility effect on firm financial performance or the ones using individual CSP dimension measures.

list are based on employee responses to a survey created and conducted by the Great Place to Work Institute in San Francisco while the remaining one third comes from the Institute's evaluation of factors such as a company's demographic makeup, pay and benefits programs, and the firm's response to a series of open-ended questions about its corporate culture (Edmans, 2011, pp.8-9). The sample period is between 1984 and 2005. The author constructs a portfolio based on the 74 publicly traded Best Companies in 1984 (and later readjusts his portfolio to account for companies that are excluded from the list and those who replace them) and calculates the alpha of this portfolio after controlling for industries and within the framework of the Carhart four-factor model as specified by the equation:

$$R_{it} = a + \beta_{MKT} MKT_t + \beta_{HML} HML_t + \beta_{SMB} SMB_t + \beta_{MOM} MOM_t + \varepsilon_{it} \qquad (2.4)$$

where R_{it} is the return on Portfolio i in month t, in excess of a benchmark, a is an intercept that captures the abnormal risk-adjusted return, MKT_t, HML_t , SMB_t and MOM_t are the returns on the market, value, size and momentum factors, taken from Ken French's website.

Overall, the portfolio earns an average abnormal return of approximately 4% per year, a result which is even stronger for the 1998-2005 sub-period (and despite the fact that the Fortune magazine was publishing the list during these later years). The conclusions that are drawn by the author are that '*The results are consistent with human relations theories which argue that employee satisfaction causes stronger corporate performance, potentially through improved recruitment, retention and motivation increasing importance of human capital*' (Edmans, 2011, p.19) though '*the equity market (fails)…to incorporate the value of intangible assets fully into stock valuations*' which leads to the generation of the abnormal return mentioned above. So it appears that positive SRI screens may improve portfolio performance when focusing on employee welfare.

This paper offers a rare look at the infrequently researched relationship between employee satisfaction as a CSR dimension and long run stock returns. The hypothesis that it tests is interesting and well founded on previous theoretical work whilst its empirical methodology is clear and robust. However, the choice of the '100 Best Companies to Work For in America' as the CSP measure makes the paper subject to the usual critiques surrounding reputational surveys (subjectivity, high correlation with financial performance) and creates a sample bias towards companies that are for the most part large and highly visible.[25]

[25] The use of the Carhart model does in part impair the validity of these critiques though.

Simpson and Kohers (2002) also produce a paper which includes some interesting twists (in relation to the majority of the CSP-CFP research) in spite of the fact that a very simple, standard empirical methodology is applied. In particular, they offer evidence in favour of a positive CSP-CFP link by looking solely at the banking industry. The CSP measure they use comes from the Community Reinvestment Act Ratings (CRAR), an act which was passed in 1977 *'to insure that commercial banks meet the credit needs of the markets where they hold public charters to do business, especially the needs of low income customers'* (Simpson and Kohers, p.99). The CRA ratings can be divided into four categories:

1) outstanding, 2) satisfactory, 3) needs to improve, 4) substantial non-compliance

and they are based on several assessment factors including communication with members of the community to determine credit needs, the geographic distribution of credit applications, the bank's participation in community development projects and several others. The CFP measures that they choose are ROA[26] and the ratio of loan losses to total loans. A multitude of control variables are used including risk, cost of funds, local economic environment inter alia. The data sample isdrawn from all commercial national banks examined for CRA compliance in the years 1993 and 1994. Banks with a 'satisfactory' rating are excluded from the sample in order to provide a clearer distinction between banks with high and low CRA ratings while banks with a 'substantial non-compliance' rating are excluded simply because too few of them received such ratings. The resulting sample consisted of 385 commercial banks. Of interest is the fact that the writers decide to lag the CRA data as they consider these ratings to be relevant to the previous year from the one they are announced. The OLS regression analysis that is conducted provides strong results in favour of a positive CSP-CFP relationship as do the tests for differences in the group means. In general, the paper extends the relevant research by providing evidence from a new operational setting while at the same time introducing a very fitting variable (which helps the paper escape the Wood and Jones 'mismatching' critique) and applies a very clear and simple methodology. On the other hand, its concentration on a single sector makes the results lack generality while the introduction of CRA makes them incomparable to those of any other research.

Although the evolution of the CSP-CFP research should be noticeable by the reviews of the previous studies, it should not be taken for granted that more recent relevant papers (e.g. post

[26] Which in the case of the banking industry is very close to ROE.

1990 studies) are deprived of any blemishes. An example of this comes from the work Stanwick and Stanwick (1998) who examine the relationship between CSP and CFP, size and environmental performance. They use Fortune's corporate reputation index for the measurement of CSP, sales as a measure of firm size, return on sales as the measure of CFP and TRI as an indicator of environmental performance. Firms whose data (from 1987 to 1992) were used in the study meet the following criteria:

1) They are listed in the Fortune Corporate Reputation Index

2) They are listed in the top 500 companies of pollution emissions in the United States Environmental Protection Agency's Toxic Release Inventory Report and

3) Information about the firm's profitability and sales was available from the Fortune 500 listing. Simple correlation and regression analysis reveal that indeed there are significant relationships between CFP, size, pollution emissions and CSP. In particular, larger and more profitable companies depict higher social performance while polluters have lower CSP.

There are a few issues of note in this study. First of all, the fact that it examines whether there is a link between CSP and pollution emissions seems to come dangerously close to an attempt to prove a tautology. Second, the authors test for a direct relationship between CSP and size but do not try to investigate the possibility that there is also a positive relationship between size and CFP which could create spurious relationships among the three variables. There are also the limitations that come with using a reputational index as a CSP measure as well as the restriction to a polluting industries sample that is associated with the use of TRI data.

2.4.3 The development of more adequate measures of CSP and their impact on CSP-CFP research

Inadequate CSP measures are the Achilles heel of CSP-CFP research. Without a solid CSP measure, any empirical result relating social responsibility and financial performance is debatable. As should be evident by now, the elusive nature of CSR has made it very difficult to find an objective, consistent, quantifiable measure which can identify the individual as well as aggregate economic effects of the multiple dimensions of corporate social responsibility (environment, employee relations, community relations, philanthropy, involvement in 'sinful' industries and so on) and can be applied to a wide range of firms irrespective of their industry and sector.

The drawbacks and limitations of the use of various surveys, reputational rankings and content analysis of corporate disclosures have already been mentioned in this review. There is also the case of using governmental pollution indices which evaluate the pollution control performance of corporations.[27] But these indices are not satisfactory CSP measures either as they: *'reflect only one aspect of environmental performance and do not represent other aspects of social performance'* (Ruf et al. 1998).

Amidst all CSP measures, the ones that stand out are those that are based on what has, with the course of time, become *'the best-researched and most comprehensive'* (Waddock, 2003) database for social performance: the Kinder, Lydenberg and Domini database (KLD). KLD is a rating service which assesses a great number of firms with regard to their strengths and concerns in a series of dimensions of CSR that are considered of interest. To be more specific, companies are rated on nine dimensions of CSP (community relations, diversity issues, employee relations, environment issues, product issues, military contracting, nuclear power, involvement in areas with human rights violations and alcohol/tobacco/gambling involvement) with a binary score of 0 or 1 being assigned to each of the many indicators that comprise the strengths and concerns of each of these dimensions. KLD uses both internal to the firm (e.g. annual reports) and external sources (e.g. articles) to conduct year by year assessments of the social performance of 650 firms, including all the firms listed in the S&P 500. Independent researchers consistently apply these criteria and discuss ambiguous judgments to minimize the subjectivity of the whole process.

The advantages that come from using KLD to construct a dimension- specific or aggregate measure of CSP are multiple. First, it offers a significantly large data sample as hundreds of companies from multiple sectors are rated in various dimensions of CSP for almost two decades now. Second, it investigates the social performance arising from many different dimensions of social responsibility. In these ways, KLD is more useful than using one-dimensional CSP measures that are appropriate only for companies in specific industries (e.g. TRI is only suitable for polluting industries and solely assesses corporate environmental performance while CRA ratings can only be used for the banking sector). Third, it quantifies many qualitative aspects of CSP and allows for an aggregation amongst CSP dimensions, allowing for more sophisticated empirical work (unlike e.g. a qualitative assessment of a firm's social responsibility coming from the interpretation of segments of the prose of corporate disclosures - content analysis CSP

[27] A notable example is the Toxics Release Inventory (TRI) according to which *'industrial facilities in specific sectors are required to report their environmental releases and waste management practices annually to the Environmental Protection Agency'* (EPA website: http://www.epa.gov/tri/).

measures). Fourth, as noted above, the consistent application of the same criteria, the independence of researchers and the use of both internal and external information sources add reliability and subjectivity to the assessment process. This characteristic is probably the major relative strength of KLD in comparison to reputational surveys, indices and lists that have been used as CSP measures (e.g. Fortune's 'Top 100 Most Admired Companies List'. Lastly, by assessing both the strengths and weaknesses of firms' CSP, the KLD ratings provide the model maker the opportunity to create a framework that focuses on positive or negative indications of corporate social responsibility or use both and even weight them if he/she does not consider them to have a symmetric impact on CFP (for example using TRI or lawsuits only accounts for 'corporate irresponsibility' and ignores positive indications of CSP).

There have been criticisms of the use of KLD data such as the use of 'numerically crude' scales or *'attempting to quantify the nearly unquantifiable'* (Wood and Jones, 1995); however, these problems are generic in the attempt to construct a CSP measure which is both relatively accurate and useful, especially when considering that the notion of the object that is being measured is rather obscure despite the continuous and significant efforts that have been made to shed more light on the actual meaning of it.

All the above considered together, it should not come as a surprise that the use of KLD ratings tends to constitute the norm when it comes to choosing (or creating) a CSP measure in empirical research. Other organisations have closely followed the rating methodology, data collection process and overall logic of KLD. One such example is that of EIRIS, which may be considered as the UK equivalent of KLD and will be presented later on this review.

Sharfman (1996) provides evidence that support the construct (i.e. vertical) validity of the KLD data. He creates aggregate CSP scores by combining KLD ratings in 6 different ways and compares the outcomes with the respective rankings of the Fortune 500 survey and with data from holding lists of socially responsible investing (SRI) funds. Sharfman finds moderate positive correlations (between 0.18 and 0.55) between the aggregate KLD scores and the ranking coming from the uses of the other CSP measures. Of course, these kinds of tests prove that KLD measures are valid only if it is assumed that the measures to which they are compared are also valid and as I have already mentioned, there have been criticisms concerning the use of the latter. Still, they are reasonable measures and so the results of this study provide some preliminary support for the use of KLD data.

Several considerations have been made about what is the best way to combine the KLD data in order to make an aggregate, multidimensional CSP measure. Ruf et al. (1998) have done some interesting work in this area. They use the so-called Analytic Hierarchy Process (AHP) to achieve this and take into consideration the relative importance each dimension has for different stakeholder groups by constructing pair wise comparison matrices. The stakeholder groups that they use to conduct their survey and construct the matrices of relative importance are public affair officers, executives of non-profit organizations and managerial accountants. They recognise that this sample of stakeholders is not representative but it is at least considered by individuals who should be knowledgeable in corporate social responsibility issues. Their results indicate that greater weights should be used for product issues and employee relations and smaller weights for military, nuclear power and South Africa[28] involvements. Though interesting and pointing in the correct direction of weighting the CSP dimensions according to their relative importance, this study has significant limitations. The non-representative sample of stakeholders makes the results unusable for future research. Even if the sample was representative, still the dynamic nature of the alleged time sensitivity in the assessment of various CSP dimensions would require a periodic update of the survey and the implementation of AHP. This is highly disadvantageous because implementing AHP is a lengthy and cumbersome process because of the extensive questionnaires that need to be used in order to construct the pair wise matrices.

In a reformulation of their work, Ruf et al. (2001) take a slightly different approach. This time they use changes in CSP instead of CSP levels as their independent variable, thus providing '*better controls for extraneous factors'* and *'a more sensitive test'*. Also, they construct the relevant importance matrices after surveying investors in SRI funds and again weighted the KLD dimensions accordingly. They use accounting CFP measures (return on sales, return on equity, growth of sales) and their control variables were firm size, industry dummy variables and a momentum factor for financial performance. The model uses to test for the relationship between CSP and CFP is specified by the equation:

$$\Delta FIN_{i,t} = \beta_0 + a_1 Size_{i,t} + \alpha_2 \Delta FIN_{i,t-1} + \sum_{j=1}^{k-1} \beta_j I_{i,j} + \alpha_3 \Delta CSP_i + \varepsilon_{i,t} \qquad (2.5)$$

[28] When the early drafts of the paper were written (in the early 1990s), the apartheid regime still existed in South Africa.

where $\Delta FIN_{i,t}$ = Growth in sales, $\Delta Return$ on equity, or $\Delta Return$ on sales for firm i from time period $t-1$ to t, $Size_{I,t}$ = Log of Sales of firm i at time t, K = the number of industry categories, $I_{I,j}$ = the industry group to which firm i belongs, represented as a dummy variable, ΔCSP_i = Change in CSP for firm i from 1990 to 1991.

Their results are mixed, depicting either a positive or non-significant relationship depending on the exact CFP measure and sub-period (between 1991 and 1995) that is examined. The more interesting result is that when rerunning the regressions for an equally-weighted KLD score, it seems that the latter has less explanatory power compared to the weighted average they construct, supporting the view that the dimensions of social responsibility do not have the same importance in the eyes of stakeholders. An important contradiction in the methodology of this paper is the use of accounting CFP measures when the stakeholder group under consideration is social investors. It would have been more plausible to use market CFP measures which are more suitable for market oriented stakeholders.

Waddock and Graves (1997) have also worked in this direction. Their goal is to test for the sign and the causality of the relationship between CSP and CFP. Arguing that not all dimensions of CSP are equally important to stakeholders (thus a KLD score that equally-weights across dimensions is inappropriate), they use the opinions of a panel of experts to assign weights to each KLD dimension of CSR.[29] Like Ruf et al., they choose to use accounting CFP measures (ROE, ROA, ROS) and control for the effects of firm size, leverage and industry. In their analysis, they use both contemporaneous and lagged data in order to check for the causality of the relationship. The results of the correlation and regression analysis they conduct both suggest that there exist positive, statistically significant relationships between CSP and CFP with bidirectional causality between the two. To rationalise the latter conclusion, they briefly explain that there seems to be a 'virtuous circle' between two separate effects. One, that according to typical stakeholder theory arguments, good CSP will eventually lead to improved CFP in a variety of ways that have been discussed in the review of the conceptual papers of the area (good management theory). Two, that better CFP creates available slack resources that give firms the opportunity to invest in a peripheral issue or luxury corporate product like CSR. These effects constantly reinforce one

[29] The authors do not provide the details for these weights but state that they are statistically the same as those of Ruf et al (1998). Although the Waddock and Graves paper was published in 1997 and Ruf et al. was published in 1998, the work of the latter had been presented in the Academy of Managements Best Paper proceedings in 1993.

another leading to a strong, positive CSP-CFP relationship. This study is frequently quoted exactly because of this causality test and the respective interesting results.

In another relevant paper, Hillman and Keim (2001) also test for a CSP – CFP relationship which does not take into account various CSR dimensions in the KLD database. The authors follow the basic lines of Clarkson's rationale, arguing that only the CSR dimensions that lead to improved relationships between the firms and primary stakeholder groups are of importance while other dimensions do not and simply incur additional costs which may even lead to value destruction for the firm. Thus, dimensions like employee relations, diversity issues, product issues, community relations and environmental issues (termed strategic management issues - SM) are expected to have a positive effect on CFP, while the dimensions like involvement in alcohol/tobacco/gambling, military contracting and nuclear power (named simply social issue participations – SIP) are expected to have a negative effect. The respective variables are constructed by giving equal importance to each dimension. The CFP measure that is used is Market Value Added (MVA), which is calculated as:

$$MVA = market\ value - capital \qquad (2.6)$$

where market value refers to the equity market valuation of the company and capital refers to the total amount of debt and equity invested in the company. Hillman and Keim explain the choice of MVA as an adequate CFP measure by stating that it *'is unique in its ability to capture shareholder value creation because it captures both the valuation (the degree of wealth enrichment for the shareholders) and performance (the overall quality of capital management)'* (Hillman and Keim, p.129). The lack of specific discrete events and long term nature of the hypothesised effects of SM and SIP make the authors utilise regression analysis instead of event study methodology. The SM and SIP variables are lagged as it is assumed that causality will run from them towards CFP and some time will be needed for the effects to show. They also control for size (net sales), risk (beta) and industry (2-digit SIC codes). The period of examination is 1994-1996. The results indicate a positive and significant relationship between SM and CFP and a negative relationship between SIP and CFP, while the causality is that which had been assumed. Additional analyses that use accounting CFP measures (ROE, ROA and MV/BV) or that test for a reverse causality do not provide significant results. Lastly, the individual financial effects of the SM dimensions are examined and it seems that 'community relations' is the most important aspect of CSP that leads to a positive economic effect. I believe this paper to be a great example of solid empirical work in the CSP-CFP

literature. It connects with the theoretical frameworks, draws from arguably the best data available to construct a fairly robust, quantifiable CSP measure, uses suitable CFP measures, rigorous methodology and conducts various sensitivity analyses.

Berman et al. (1999) also work within a 'primary stakeholder' theoretical framework and attempt to identify the impact of the quality of stakeholder relationships on firm financial performance. They test for the existence of three possible causal pathways between these variables: a) a direct independent link between stakeholder relationships and CFP, b) a framework in which stakeholder relationships moderate firm strategy and thus have an indirect effect on CFP and c) a framework in which stakeholder relationships are the primary driver of firm strategy and mediate the latter's relationship with firm financial performance. Their CFP measure is return on assets, stakeholder relationships are captured by the respective KLD ratings (employee satisfaction, product safety/quality, diversity, community and natural environment), selling intensity, capital expenditures, efficiency and capital intensity are considered to be the operationalisations of corporate strategy while several controls for the operating environment are also used. The data sample consists of 1991 to 1996 observations from the top 100 firms on the Fortune 500 list (after excluding companies because of missing data only 81 remain). The main regression model that is estimated is the following:

$$Y_{it} = a'C + b_1' Env_{it} + b_2' St_{it} + b_3' StR_{it} + e_{it} \qquad (2.7)$$

where the subscript *i* indexes the firms and *t* indexes the time periods. Y_t defines the dependent (performance) variable for year *t*. Env_{it}, represents the vector of operating environment variables, St_{it}, the vector of strategy variables, and StR_{it}, the vector of stakeholder relationship variables. Finally, e_{it}, is the error term associated with each firm-year (Berman et al, 1999, p.496).

For hypothesis (a), only the above regression needs to be estimated and if both the stakeholder variables and strategy variables are significant, this would indicate the existence of independent, direct relationships between those variables and firm financial performance. For hypothesis (b), the cross-terms of the two groups of explanatory variables need to be added to the above model and if this model constitutes an improvement over the previous one, the moderation hypothesis is supported. As for hypothesis (c), it is tested using the method of Baron and Kenny (1986). According to this method, for stakeholder relationships to drive strategy and in this way affect firm financial performance, there have to be: a significant relationship between the stakeholder

variables and firm strategy, a significant relationship between firm strategy and CFP, a significant relationship between stakeholder relationships and CFP and an insignificant relationship between the stakeholder variables and CFP when firm strategy variables are added to the regression equation (resulting in the above model specification). These results taken together would point to the existence of a link between CSP and CFP with firm strategy as the mediating factor.

The actual empirical results of this paper offer support to the existence of a direct relationship between only two of the CSP dimensions (employees and product safety/quality) and financial performance. However, there are nine interactions (cross-terms) between stakeholder and strategy variables which are significant when testing hypothesis (b), some of them coming from other CSP dimensions and thus indicating the possibility of the existence of more complex, indirect relationships between CSP and CFP which cannot be ignored. Lastly, there is no evidence in support of hypothesis (c), so firm strategy does not appear to be a mediating factor in the CSP-CFP relationship.

This paper offers a unique perspective in the CSP-CFP empirical research area, as it attempts to unveil the particularities of a more sophisticated, indirect mechanism that may connect stakeholder relationships with firm financial performance, a route which has been rarely taken by other researchers whilst it seems perfectly plausible that such a relationship may in fact exist. The main drawback of the paper is the use of ROA as the sole measure of financial performance. It seems somehow unfitting to use an accounting measure such as ROA in a study that draws data from firms of various industries, many of them being completely different as to the nature of their operations and thus having varying levels of total assets. This is a generic problem when using accounting CFP measures but the fact that no adjustments are made and no triangulations with other measures are conducted make it an important weakness of the paper. The limitations of the use of reputation surveys like the one conducted for the creation of the Fortune 500 list have already been discussed.

A methodologically similar paper is that of Frooman et al. (2008), who offer a different and rather compelling argument for the existence of a link between CSP and CFP. They hypothesise that risk is actually an intermediary between the two and use bond market data to test the relationship, or as the authors themselves eloquently describe it: *'we argue that CSP acts through risk to affect CFP; that is, that CSP affects risk ('good CSP reduces risk, 'bad' CSP increases risk) and it is risk that affects financial performance, in this case the firm's cost of long-term capital'* (Frooman et al., 2008, p.1).

In this testable framework, the financial benefit that a firm will reap for being socially responsible will come from a high credit rating which will lead to a reduced cost of capital for the firm and cheaper access to funds. That is why the risk measure that is used is Moody's risk ratings (the alphanumeric ratings were translated to numeric with AAA bonds receiving a score of 21 and C bonds receiving a score of 1) and CFP is captured by the yield to maturity (YTM) of the firms' bonds. Once again, the CSP measures are constructed from the KLD database, this time for the 2006 calendar year. Industry, firm size, time to maturity, coupon rates and debt-to-equity are controlled for. The sample of firms is drawn from the Russell 3000 index. To test for the hypothesised mediation, the Baron and Kenny (1986) approach that was explained before is used. The results of all four steps of this method are consistent with the existence of a long term relationship between CSP and CFP (captured by cost of capital) which is fully mediated by the risk rating of the firm's bond. This paper pushes CSP-CFP research forward by introducing a new idea that brings CSP, CFP and risk together into a common framework while at the same time draws data from the bond markets which usually attract more long term investors compared to the widely researched (in this research field) stock markets. I should be mentioned, however, that (as with every implementation of an innovative idea) the results are completely incomparable with those of any other study.

Recently, there have been a few studies that take some very original views on the empirical, firm level relationship between CSP and CFP. Ioannou and Serafeim (2010) depart from the mainstream literature and investigate the impact of CSP on sell-side analyst recommendations of firm stocks. They also utilise KLD and conduct their analysis on an extensive longitudinal dataset spanning 16 years (1993 to 2008). After careful consideration of their panel data econometric methodology and controlling for a host of variables (including firm size, valuating ratios, firm profitability, percentage of intangible assets), the authors show that although during the earlier years (period 1993 to 1997), there was a negative relationship between CSR and positive analyst recommendations, this relationship is inverted during later periods and remains positive for different time windows from 1998 onwards. Thus, a change in perception with regard to analysts' opinions on the economic effects of CSR seems to have taken place with the passing of the years. Going a step further, Ioannou and Serafeim research the finer details of the previous finding and provide evidence which supports that *"analysts with more firm-specific experience or broader CSR awareness or more resource availability provide more favourable recommendations for CSR industries for CSR strong firms compared to the rest of the analysts"* (p.26).

Also very innovative is the work of Cheng et al. (2011), who attempt to examine whether superior corporate social performance can lead to better access to finance for the firm. Their rationale is based mainly on the work of Jones (1995), according to which improved CSP can be seen as a the result of improved stakeholder engagement which in turn reduces opportunistic behaviour, introduces more efficient contracting with key constituents and thus reduces agency costs (pp.21-22). It is also argued that firms with higher CSP are more likely to disclose their CSR activities, an assertion which possibly leads to higher levels of transparency and reduced informational asymmetries and so to lower levels of perceived risk. In these ways, firms with higher social and environmental performance are hypothesised to face lower capital constraints and are in a better position to obtain capital though lower interest rates and/or for a specific interest rate, a larger amount of funds (p.22). The authors make use of Thomson Reuters ASSET4 database which has similar characteristics to KLD STATS and contains social, environmental and corporate governance ratings of firms according to more than 900 different evaluation points. The dataset goes back to 2002 and has expanded from covering about 1,000 firms to approximately 3,400 in the last years. The KZ index is the standard measure of capital constraints (Kaplan and Zingales, 1997) employed and it consists of five accounting ratios: cash flow to total capital, market to book ratio, dividends to total capital, debt to total capital and cash flows to total capital. The empirical results verify the hypothesis of a negative relationship between CSR and capital constraints and are robust to applications of both an instrumental variables and a simultaneous equations approach.

2.4.4 A closer look at some of the control variables used

So far, I have shown that all CSP-CFP studies characterised by a certain level of rigour have used a variety of control variables to avoid erroneous results coming from misspecified models. Firm size, capital structure, financial momentum, industry, economic cycle, R&D expenditures, advertising expenditure, and capital intensity, are only some of these variables. A relatively small but no less important part of the literature has tried to shed more light on the relationships between certain variables and the effects that their use (or absence) might have on empirical CSP-CFP research.

Orlitzky (2001) investigates whether or not the relationship between CSP and CFP is confounded by firm size. His reasoning is that the existence of positive relationships between firm size and both CSP and CFP could result in erroneous indications of an artificial positive CSP-CFP relationship. And indeed, there has been research that provides evidence for the existence of positive relationships between size and either economic performance or social performance. To test for this problem, he uses both meta-analysis and path analysis as the most suitable statistical methods. Aggregating the data of previous CSP-CFP research which has used size as a control variable, he creates an overall sample of more than 15,000 observations and manages to significantly reduce the sampling and measurement errors associated with individual studies. The result is a positive and significant CSP-CFP relationship, indicating that the use of size as a control variable does not confound the CSP-CFP link. The methodological rigour of Orlitzky's work makes this conclusion quite convincing and support the use of firm size as a control variable in the literature, something which is common grounds nowadays.

A second paper dealing with a similar issue is that of McWilliams and Siegel (2000). The argument is essentially the same but this time it is R&D expenditure and advertising intensity instead of firm size that is thought to cause an erroneous positive link between CSP and CFP. It is known that R&D is related to the long-run economic performance of firms and if one assumes that it is also positively related to CSP (e.g. through process and product innovations that lead to improved product quality and safety), then a strong case can be made about misspefication of models that omit R&D intensity from their control variables. Similar reasoning is provided for the effects of advertising (which is thought to be a proxy for barriers to entering an industry). The authors initially conduct a correlation analysis which shows that the R&D to Sales ratio, CSP (aggregate, equally-weighted index constructed by KLD data) and financial performance (unspecified but stated as accounting profitability) are all positively and significantly related. Running a regression with CSP and R&D as the explanatory variables, CFP as the dependent variable and size, risk and industry as control variables leads to very small and insignificant positive coefficients between CSP and CFP. Also, the R^2 of the model is very small. The econometric model they estimate has a general form:

$$PERF_i = f(CSP_i, SIZE_i, RISK_i, IND_i, RDINT_i, INDADINT_i) \qquad (2.8)$$

where $PERF_i$ = long-run economic or financial performance of firm i (measures of accounting profits), CSP_i = a proxy for corporate social responsibility of firm i (based on an index of social

performance), $SIZE_i$ = a proxy for the size of firm *i*, $RISK_i$ = a proxy for the riskiness of firm *i* (debt/asset ratio), IND_i = industry of firm *i* (4 digit SIC code), $RDINT_i$ is R&D intensity of firm *i* (R&D expenditures/sales) and $INDADINT_i$ is advertising intensity of the industry of firm *i*.

To further test this, they use the Waddock and Graves (1997) dataset and add R&D intensity to their model. Again, the effect of CSP to CFP now seems to be neutral. These results could seriously hurt the validity of a great portion of the CSP-CFP literature. However, it should be noted that McWilliams and Siegel are rather vague as to the exact CFP measure they use and they conduct no sensitivity analysis to make their results more robust. Perhaps this is the reason why, despite the potential importance of this study, there is only a limited number of papers in the CSP-CFP literature that use R&D intensity or advertising intensity as control variables.

2.4.5 Some evidence from Europe

Although it has not been emphasised until now, the perceptive reader will have noticed that the empirical work in the CSP-CFP literature that has been reviewed so far uses data of US companies. Given the facts that the history of CSP has taken roots in the US and that most CSP measures have also been developed and are implemented in the US, this observation should not be shocking. Though limited, relevant research conducted with the use of non-US data is growing.

One example of such research comes from Brammer et al. (2006). This is a very interesting attempt to examine the relationship of CSP and CFP at the firm level using UK data. In particular, the authors use the Ethical Investment Research Service (EIRIS) database. The particularities of the database are not crucially important for this review; suffice it to say that it is the closest UK equivalent to the KLD database. The dimensions of CSP that EIRIS examines are employment, environment, community, human rights and supply chain management but due to lack of data for a given length of time, the study is limited to the former three. An aggregate CSP measure is constructed by the authors who normalize the scores of each dimension and then add them. The CFP measure that they use is long-run stock returns over 1 and 2 years with a sample comprising of all firms included in the FTSE All Share Index and an observation window between 2002 and 2004. The preliminary analysis consists of creating equally-weighted portfolios of stocks with different CSP levels and comparing them with benchmarks such as the FTSE 100. This process results in a nearly monotonic decrease of returns when moving from a lower CSP

quintile to a higher one. It seems that the worst CSP firms are the best financial performers. However, there is no risk adjustment for these returns, and factors like size and industry are also ignored so far.

In the main empirical part of the paper, regressions are run with 1-year and 2-year stock returns being the dependent variables, aggregate CSP and individual dimensions being the explanatory variables. The control variables used in the Carhart (1997) model (beta, momentum factor, capitalisation and Price to Book Value Ratio) are then added in the model to increase the robustness of the analysis. Thus the estimated model becomes:

$$r_{i,t} = a_0 + a_1 CSR_{i,t-1} + a_2 ENV_{i,t-1} + a_3 EMP_{i,t-1} + a_4 COMM_{i,t-1} + a_5 PTBV_{i,t-1} + a_6 BETA_{i,t-1} + a_7 CAP_{i,t-1} + a_8 r_{i,t-1} + u_{i,t} \quad (2.9)$$

where $r_{i,t}$ are the returns to stock i in year t (where each year runs from 1 July), *CSR* is the composite measure, *ENV* is the environment indicator, *EMP* is the employment indicator, *COMM* is the community indicator, u_t is a disturbance term, and either $a_1 = 0$ or a_2, a_3, $a_4 = 0$, *BETA* is the CAPM beta, *CAP* is firm size , *PTBV* is price-to-book value and $r_{i,t-1}$ is the previous year's return.

Overall, the results indicate a negative relation between stock returns and either aggregate CSP or individual CSP dimensions with the exception of community, but the respective coefficients are significant only for aggregate CSP and employment. Furthermore, when categorisations are made according to industries, the sub-samples that are created consist of small numbers of firms and thus the results are even less significant. It appears that even today, the lack of a sufficient quantity of social responsibility data in the UK hampers the efforts to conduct sophisticated research in this area. The only clear and significant result of this research is that on aggregate, CSP is negatively related to stock performance in the UK as proven by the standard yet rigorous methodology of this study.

On the same lines is the work of Von Arx and Ziegler (2008). They use CSR data from the Swiss bank Sarasin & Cie in Basle, which assess the social responsibility of 317 American and 720 European firms. The social dimensions that this database assesses are environment, employees, suppliers, investors and general public. The CFP measure used once more is stock returns. The authors test for the CSP-CFP relationship in the framework of single factor models like the CAPM (Sharpe, 1964) and multifactor models like Carhart's and Fama-French (which is Carhart's without the momentum factor). They also use nine country dummy variables to account for

possible regional differences (economic growth, governmental policies and so on) and lag their explanatory variables. Also, they control for industries in a different set of regressions. The period of observation is between 1996 and 2006 with a final sample of companies equal to 175 for the US and 281 for Europe. Their findings suggest that there is a positive relationship between CSP and stock returns which is more pronounced in the US than in Europe. When industry checks are used, there seems to be a negative CSP-CFP relationship for Europe alone but is it significant only in the case of single factor models. Once more, however, it seems that Europe produces signals of different strength and quality in the market assessment of CSP than does the US Further research backed by theoretical frameworks would be useful in an effort to find if this is due to an inferior quality of data or generically different assessments of CSP in Europe.

Thomas (2001) tests if the adoption of environmental policies, the prosecution by an environmental agency or the training of staff in environmental protocols -all considered dimensions of the overall adoption of an environmental protocol- affect excess stock returns. The empirical analysis that is conducted is focused in the UK and is separated in three distinct time periods, namely before 1991 (when John Major announced the setting up of the regulatory authority called the Environmental Agency), after 1996 (when the agency became fully operational) and the years in between. The purpose of this taxonomy of the empirical data is to address the question of *'whether the pattern of returns to companies that have adopted an active environmental agenda changed over the period when the new government policy was being debated'* (Thomas, p.126) which would mean that companies may have decided to reassess their posture towards their environmental responsibility and perhaps this fact was depicted in their stock market performance. The dataset was compiled from the responses of a total 131 corporations that participated in a broad ranging survey that was conducted by the Croydon Borough Council. Two different types of regression analyses are conducted, one using pooled data of the indicators of the adoption of an environmental agenda (a technique which imposes a uniform beta across companies) and another where the average alphas of the returns of each company are calculated and are then regressed against the previously mentioned indicators.

In both cases the specification of the model that is used is

$$R_{it} - R_{ft} = a + \beta(R_{mt} - R_{ft}) + \beta(R_{st} - R_{mt}) + \delta D_{it} + \varepsilon_{it} \qquad (2.10)$$

where $R_{it}-R_{ft}$ is the excess return of the stock of firm i in the month t, $R_{mt}- R_{ft}$ is the monthly excess return on the FT All Share Index over the same time period, R_{st} is the return on the Hoare Govett Small Capitalisation Index (thus the term $R_{st} – R_{mt}$ accounts for the small capitalisation effect) and D_{it} is a dummy variable, which takes on the value of unity if the company has adopted an environmental agenda and zero otherwise. The conclusions that are drawn are generally consistent between the two analyses, with the pooled data regression having greater explanatory power. It appears that the adoption of an environmental policy in the companies with a bad environmental track record has a positive effect on CFP via the reduction of negative excess returns. Companies that have been prosecuted by an environmental agency have significant positive excess returns in the pre-1991 period which are significantly reduced as we move to the post-1996 period, providing some evidence of a change in the market assessment of corporate environmental policies, possibly influenced by governmental initiative. Lastly, the dummy variable for staff training on environmental protocol is non-significant on both analyses.

The paper's focus on UK companies combined with the idea to search for the influence that government policy will have on the stock market assessment of environmental responsibility are the strong points of this study. One could, however, argue against the suitability of some of the indicators for the adoption of environmental policy. Furthermore, the data used sometimes lack the details concerning the specific date when a policy was adopted or a prosecution was made, thus harming to a certain extent the reliability of the paper's results.

2.4.6 Institutional preferences for CSP

Another interesting issue in the literature of CSP and CFP is the institutional investor preferences for stocks of firms which are characterised by their social responsibility. Increased demand for high CSP stock by institutional investors should lead (ceteris paribus) to increased stock prices and superior returns.

Graves and Waddock (1994) use the percentage of shares owned by institutional investors and the number of institutional owners as the dependent variables and the weighted KLD measure of CSP (Ruf et al., 1998)[30] as the independent variable and they control for profitability, size, debt level and industry. By including profitability in the control variables, the authors reveal that their

[30] Again, see footnote 13 for the inconsistency in the dates of the studies.

intention is to investigate the existence of an 'ethically motivated' preference for CSR stocks. They also interchange between various measures of profitability (ROE, ROA) and size (Assets, Sales). So the simple functional form of the model they estimate is

$$IO_t = f(CSP_{t-1}, control\ variables_{t-1}) \qquad (2.11)$$

where *IO* is a measure of institutional ownership, *CSP* is a measure of corporate social performance, and *t* is time.

The regression analyses conducted on the S&P 500 firms reveal a positive and significant relationship between the number of institutional investors and the level of CSP but a largely insignificant relationship when the percentage of shares owned is used as the dependent variable. The logical explanation for this is that SRI funds of the time were quite small in size, so although there were a significant number of them, they had limited amounts of funds at their disposal. Another possible explanation has to do with the different natures of the decisions of whether to invest in a socially responsible firm or not and how much to invest in it. This is a paper based on a solid methodology with no significant caveats which provided intuitive results and opened the way for this aspect of the CSP-CFP literature. It would have been interesting to test for institutional preferences for specific CSP dimensions.

Additional research in this area has been conducted by Cox et al. (2004). The researchers look for the relationship between the percentages of stock held/excluded by institutional investors according to the CSP of the respective firm. They use EIRIS data and test for the institutional ownership of the FTSE All Share Index stocks between 2000 and 2002. Of special interest is the separate institutional owners among long term investors (e.g. pension funds) and short term investors (e.g. unit trusts) and they hypothesize that because of the long term nature of positive CSP effects, there will be a positive (negative) correlation between a firm's CSP and the percentage of shares owned by long term (short term) institutional investors. The authors use the same three dimensions as Brammer et al. (2006) and they construct an aggregate CSP measure from them. They check for industry, size, leverage, profitability and add free float percentage to their control variables. Their results indicate that CSP explains approximately 25% of institutional investors' preferences and verify the assumptions made about the preferences of institutional owners with different investment horizons. Among CSP dimensions, the most preferred by institutional investors seems to be employee relations rather than community or environment. Lastly, a very interesting conclusion comes from noticing that institutions seem to prefer using

mostly negative instead of positive investment criteria when it comes to CSP (i.e. excluding the most socially irresponsible companies rather than including the top CSR performers). This is also a high quality paper which pushes the relevant research forward by providing new insights into institutional preferences for CSP and utilises rigorous empirical techniques.

2.4.7 The CSP-CFP relationship at the fund level

The empirical research I have reviewed so far deals with aspects of the link between CSR and CFP at the firm level. A significant part of the literature that has developed since the early 1990s deals with the assessment of the financial performance of portfolios of stocks whose managers employ positive or negative social responsibility screens during the stock selection process. This matter is particularly important from the perspective of finance researchers as it can be connected with *'questions of market efficiency, the size effect and the arbitrage pricing theory'* (Kurtz, 1997). Its practical significance is also noteworthy, because as Barnett and Salomon (2006) note: '*By some accounts, more than $1 trillion or about 10 percent of all US assets under management, including about 160 mutual funds, can be categorized as SRI'* making it an area where practitioners have good reason to demand illuminating answers to key questions.

Kurtz (1997) provides an early summation of the empirical work done in this field and outlines the contrasting academic camps. As within the literature on the CSP-CFP relationship at the firm level, there are two main arguments that lead to opposing conjectures concerning the effect of the application of the aforementioned screens on portfolio performance. The first argument draws from the foundation of portfolio theory and Markowitz's (1959) seminal work. According to this reasoning, an investor should only assess an investment opportunity in terms of risk and return. Every fundamental aspect of that investment should be reflected in one or both of these two characteristics. Thus, applying any additional screen or criterion would only result in a narrowing of the investment universe and the construction of a portfolio with suboptimal risk-adjusted performance.[31] The alternative point of view comes from stakeholder theory and states that because of the variety of reasons that lead to a positive CSR-CFP relationship at the firm level[32], constructing a portfolio that puts greater weights on the financial assets of socially

[31] Kurtz refers to this argument as 'reductionism'.

[32] Kurtz refers to the reasons that lead to a positive social portfolio performance as positive 'information effects'.

responsible companies (or smaller weights on financial assets of socially irresponsible companies) would yield superior risk-adjusted returns. A hard question for the proponents of this latter way of thinking to answer, as Kurtz notes, is that even if their rationale is fundamentally correct, investors would sooner or later realise these beneficial effects of CSR and they would arbitrage them away, while the negative effects that come from reductionism would remain, thus eventually leading to inferior risk adjusted performances of SRI funds. Without conducting any additional empirical research or statistical analysis of the results of previous studies, Kurtz goes on to reviewing some of them and drawing some inferences which he generalizes. The most important of those are that

1) There is evidence which suggests that social portfolios incur diversification costs.

2) Information effects may exist but it is difficult to isolate them and attribute superior returns directly to them.

3) Overall, it seems that SRI portfolios do not have significant differences from traditional, unscreened portfolios (e.g. the performance of the Domini index is approximately the same or slightly superior to that of the S&P 500 between 1991 and 1997 on a risk adjusted basis). This may suggest that information effects just offset diversification costs.

Although Kurtz's review is not so critical or analytical and is largely descriptive, it provides a good mapping of this area and suggests new, interesting paths that future research could take (like the relevance of studies for efficient market hypothesis or with a determination of the underlying social political factors that may affect the market assessments of CSP). In these ways, it proves truly useful for empirical researchers of the field.

Alas, as Kurtz himself suggests in the introduction of his review, the methodological rigour of the earlier studies of the CSP-CFP literature at the fund level is quite poor (a déjà-vu of the respective work at the firm level). The early work of Hamilton et al. (1993) in the field seems to be indicative of this fact. The authors simply use the CAPM model to calculate the excess returns of a sample of 32 SRI funds (which they divide in two subsamples according to their age) and compare them with the excess, risk adjusted returns of randomly selected conventional funds. They find no statistically significant relationship between the two (although on average the SRI funds slightly underperform traditional funds) and conclude that the market does seem to assess CSP characteristics. This study examines a relatively small number of funds (for which the

authors cannot be blamed as most socially-investing funds were created at about the time the paper was published and afterwards), does not consider a variety of control variables that could be used (fund size, industries, international versus domestic holdings, economic cycle, fund manager skills etc.) , does not utilise any multifactor models that could lead to the estimation of different excess returns, does not attempt to identify the individual effects of specific CSP screens and lastly, does not include any sensitivity analyses. Given all these, the robustness of these results could be disputed.

Most of the above mentioned limitations are also relevant to the work of Statman (2000). The author compares the performance of the S&P 500 with that of the Domini Social Index (DSI) for the period between 1990 and 1998. The idea is interesting given that the DSI is supposed to be the socially responsible version of the S&P 500 and both of them consist of a significant number of firms (500 for S&P 500 and 400 for DSI). The returns are adjusted for risk using standard deviation, beta and a 'modified version of the Sharpe ratio' which is called the excess standard-deviation-adjusted return. Analysis indicated that the alpha of the DSI is slightly higher than that of the S&P 500, but because its risk is higher as well (no matter the measure that is applied); it appears that the latter index is marginally superior on a risk adjusted basis. An interesting idea that comes from this paper, despite its weaknesses, is that one could attempt to construct a version of a behavioural CAPM which would include value expressive characteristics such as corporate responsibility. Unfortunately, the particularities of the factors that would be incorporated in such a model are not mentioned.

Geczy et al. (2003) utilise the CAPM as well as multifactor models such as the Fama-French three factor model (1993) and the Carhart four factor model (1997) to assess the risk adjusted performance of 20 industry-specific, value-weighted SRI portfolios and compare them with the respective returns of non-screening portfolios. Their models also incorporate the factor of management skill that could be a decisive feature of fund performance. Their main conclusion is that there is a cost associated with investing in socially responsible funds, the extent of which depends on investor views of pricing models and management stock-picking abilities. Specifically, the cost appears to be small for investors who believe in the CAPM and support the random-walk hypothesis (thus manager skills are irrelevant), higher for proponents of the Fama French model and very high in the case of those investors who really believe in fund managers' forecasting skills (i.e. investors who rely on funds' track records when choosing where to invest).

The analytical rigour and innovative approach of the problem by the authors make this an example of solid work in the field.

The same can be said about Barnett and Salomon's (2006) paper. From a conceptual perspective, the interesting twist is that the authors argue in favour of the existence of a curvilinear relationship between CSP and CFP at the fund level, depending on the number of screens that are applied. In particular, they hypothesise that the funds employing either a vey lax or a very strict CSP screening of companies will have superior risk adjusted returns from the funds that are 'caught in the middle' because the latter will not be able to reap the benefits of effective diversification or of the positive information effects respectively. In this way, they provide a theory which can make opposing views of the CSP-CFP link at the fund level appear as complimentary by looking at the performance differential among various types of SRI funds instead of that of SRI funds versus conventional funds. Apart from examining the effects of screening intensity (which is depicted by the number of screens a fund employs) they also try to identify the financial effects of screens of individual dimensions (environment, labour conditions, community). Their sample consists of monthly financial performance data from 1972 to 2000 for 67 socially responsible mutual funds (resulting in 4,821 fund-month observations). Only one of these SRI fund existed before 1982 and six funds were dropped because of lack of reporting screening criteria. Also, no fund exited the sample in the event window (so there is no case of survival bias). As far as the qualitative information concerning the number and type of screening strategies employed by each fund is concerned, they used sources such as the Social Investment Forum, Weisenberger and ICDI mutual fund tracking services. They also use the CAPM as well as the Carhart and Fama-French models and make econometric considerations in order to avoid autocorrelation problems caused by systematic components embedded in the error terms of the models. Additionally, they consider a great number of control variables: fund age, size, international investments, percentage invested in stocks and bonds and macroeconomic factors. Their main findings are that a U-shaped relationship between CSP and CFP does exist at the fund level, in accordance with their initial rationale. The minimum risk adjusted performance is achieved when about 7 screens are used by a SRI fund. However, it is also indicated that the best performance is that of funds that apply only one or two screens, meaning that the information effects that come with strict screening processes do not fully compensate for diversification costs. On the matter of the effects of individual CSP dimensions, only community relation screens have a positive and statistically significant effect on CFP while the remaining filters either have

insignificant or even negative effects (such as environment). A series of sensitivity analyses that are conducted further increase the robustness of the results. Perhaps the only drawback of this study comes from the definition of screening intensity (because the number of screens does not really reveal how harsh the screens actually are).

The work of Kempf and Osthoff (2007) provides another typical example of the CSP-CFP research at the fund level. The authors investigate the impact of SRI criteria on the performance of such screened portfolios, considering positive, negative and best-in-class screens.[33] Following the norm, they make use of the KLD ratings in all six CSR dimensions for 650 companies (those included in the S&P500 and the Domini 400) and gather data for the years between 1992 and 2004. Their empirical analysis studies the effects that SRI criteria will have on the monthly excess portfolios returns, the later being calculated in the framework of the Carhart four-factor model.

Apart from the different types of screens, they also use different portfolio weighting schemes (e.g. equally-weighted versus value-weighted across industries), apply 'long only' or 'short selling allowed' investment strategies and separate their sample into different sub-periods in order to check for temporal effects that may influence their results. Overall, this methodology produces results that are largely in favour of a positive CSP-CFP relationship at the fund level, as it appears that going long on socially responsible companies and/or shorting socially irresponsible companies produces statistically (and usually economically) significant abnormal returns even after considering transaction costs. The best strategy would be to buy stocks with high social responsibility ratings and sell stocks with low social responsibility ratings, employing the best-in-class screening approach and using a combination of several social responsibility screens at the same time. The ex post analysis of historical data shows that this strategy would have led to yearly abnormal returns of up to 8.7%. Without really introducing something uniquely innovative, this study is still interesting and methodologically robust, offering strong indications that SRI does indeed offer investors the opportunity to reap the abnormal stock returns generated by CSP and provides some hints as to the suitability of the employment of a variety of investment techniques towards this aim.

[33] Which are essentially positive criteria but the constructed portfolio has to be balanced across industries.

2.4.8 Reviews and meta-studies

So far in this section, I have attempted to provide a critical overview of the most important parts and aspects of the empirical studies within the CSR-CFP literature. It seems fitting to sum up by taking a closer look at a few relevant critical reviews and a meta-analysis, which contribute to the field in different ways.

The first work I would like to cite comes from Margolis and Walsh (2003). It provides a broad, descriptive summary of the CSP-CFP literature and is arguably the best source of references in the field. Initially, it presents the schools of thought concerning the role of the firm ranging from shareholder capitalism to business citizenship and discusses the arguments supporting each. Next, the authors cite a number of papers that examine the CSP-CFP relationship and using the 'vote-count' method[34] of the respective results, they conclude that overall there seem to be evidence of a positive link between the two. They also mention several problems within this empirical research like the samples being non-representative by favouring large and highly visible companies, the focus on the environmental dimension of CSP and on polluting industries, the inconsistency in definitions of key terms, and the use (or lack) of control variables as well as inappropriate CSP and CFP measures. Although the main aim of this paper is to reorient the perspective of this academic area from the part of organizational studies, the synopsis of the assertions, particularities and results of the empirical work that has been done is extensive and can prove very useful for future research. However, the 'vote-counting' method that is used in order to state what the quantitative results indicate overall is potentially misleading.

The second notable paper is considered to be the epitome of the relevant reviews. Griffin and Mahon's (1997) work can be split in two main parts. In the first part, the authors argue that the inconsistencies in methodology applied make the bulk of empirical works incomparable with one another. Specifically, it is suggested that there are several problematic issues in the literature (the same as those mentioned by Margolis and Walsh) and in particular, the variability in the application of CSP dimensions and CFP measures used is highlighted. Eventually, these differences will lead to contradictory results which the authors also cite. In the second part of their paper, they go on to create their own CSP measure which is a triangulation of KLD data, Fortune's rankings, the Toxic Release Inventory rankings and amounts spent on corporate

[34] Summing up all papers that have the same qualitative results and arguing that the side with the numerical advantage provides the academic consensus on the issue.

philanthropy.[35] The authors also use a variety of CFP measures (though strictly accounting ones) to add robustness to their results. They apply these measures solely to the chemical industry and use a sample of only 7 companies. They rank these companies according to their CSP (using the aggregate measure as well as each constituent individually) and according to CFP (using each measure) and correlate these rankings. The results indicate that Fortune and KLD provide similar results (a conclusion compatible with that of Sharfman) and correlate positively with CFP. However, the TRI and generosity indices do not depict significant correlations with economic performance. An additional important note made is that the marginal, time-varying effects of implementing socially responsible activities have to be taken into consideration in any analysis of the financial effects of CSP together with the fact that the trends and relative ranking of companies may sometimes provide perspectives that cannot be easily detected through econometrics. This study is of course very specific and narrowed to a particular industry and a very limited number of companies making the actual results impossible to generalise. The importance arises from the identification of the caveats in the literature and the proposed solutions that are offered: the construction of new, more sophisticated aggregate CSP measures, separate analysis for each industry and use of CFP measures appropriate with each industry.

The third paper I would like to refer to in this section is Orlitzky's meta-analysis (2003) of the results of the literature. The method is the same as the one used in Orlitzky (2001). The author presents the inconclusive results of prior studies and argues that they are a product of methodological artefacts (sampling and measurement errors) and different statistical associations between different dimension and operationalisations of CSP and CFP. He also explains why the 'vote counting' method is completely inappropriate and harshly criticises Margolis and Walsh (2003) for applying it. To conduct the meta-analysis he uses Wood's (1991) definition to pinpoint CSR and a sample of 52 studies that examine the CSP-CFP relationship in a quantitative fashion thus creating a sample of significant size. The benefits of meta-analysis have already been mentioned when Orlitzky (2001) was referenced and need not be repeated here. The results show an overall positive CSP-CFP relationship of bidirectional causality. The three types of errors that were mentioned are found to explain somewhere between 15% and 100% of the cross-study variation of the correlations between CSP and CFP. The technical sophistication of this study

[35] They construct a philanthropy measure which they call a 'generosity index'.

helps to provide a clear signal of a positive CSP-CFP link and shows the possible magnitude that methodological caveats can have on empirical results.

Margolis, Elfenbeim and Walsh (2009) go a step further. They conduct a meta-analysis of 251 studies, investigating the empirical link between CSP and CFP and similar to Orlitzky (2003), find a mild but statistically significant relationship between the two ($r = 0.13$). What is of more interest is their effort to address the tremendous variability that is inherent in this research area. They create several subsamples of studies with different characteristics and repeat the meta-analytic approach on all of them in order to make illuminating comparisons of the results. Some of the conclusions they reach are particularly interesting. It appears that when accounting measures are used to capture firm financial performance, the CSP-CFP link is slightly stronger than when market CFP measures are employed ($r = 0.151$ versus $r = 0.114$ respectively). Bidirectional lead-lag relationships as well as contemporaneous association between the two key concepts are all shown to be positive and similar sizes (a bit higher for the link where CFP is lagging CSP). Furthermore, the studies are also categorised according to the nature of the CSP measure that is used in: corporate disclosures, corporate policies, environmental performance that is self reported or objectively measured, observer perceptions, philanthropic donations, revealed misdeeds, screened mutual funds, self-reported performance, third-party audits. Among all of these, the smallest association is observed for the 'corporate policies' category (which is, however, the one with the smallest number of aggregated observations) and the largest one comes from the 'observer perception' (possibly reinforcing the 'halo' criticisms).

With the continuing academic and professional interest in this area, it is practically certain that the pace of publication of relevant empirical research will remain high (if not increase), thus making reviews invaluable scholarly works.

2.5. Conclusions

2.5.1 A bird's eye view of the CSP-CFP research

Researching various aspects of the relationship between corporate social responsibility and financial performance is a challenging task. In the analytic presentation of the literature, I repeatedly attempted to emphasise all the hardships and difficulties that come with the territory. Definitional issues, a variety of theories in some areas and a lack of theory in others, measurement problems of CSP, inappropriate use and matching with CFP measures, unsuitable methodologies and insufficient data sets, all mixed with the possibility of ideological constraints that hamper research objectivity.

Progress has been made, however. A lot of studies have made significant conceptual and/or empirical contributions to the field, dealing with some of the aforementioned limitations or pushing forward to unexplored aspects of the CSP-CFP relationship. Even so, attempting to bring together a largely disparate research universe with all the problematic factors that influence it and all the variability of the methodological pathways that have been taken throughout the three and a half decades of empirical CSP-CFP studies remains a challenging task. Nevertheless, there are some patterns which have, arguably, been formed and are worth discussing.

Taking a look at the various CSP measures, I believe it is safe to state that although historically a number of them have been utilised for research purposes, KLD appears to be the most frequently used from the mid-nineties and onwards, followed by a range of reputational indices/surveys/lists. I have extensively explained the several advantages of using KLD ratings (and other third-party social and environmental auditors) and have also mentioned that that reputational data provide a reasonable alternative, so it seems plausible that these measures have survived in the relevant literature while others (content analysis, ad hoc forced-choice surveys, use of TRI or amount of funds donated to charity) are rarely used in recent papers. Overall, it seems that both of these types of measures have produced results in favour of a non-negative (either positive or non-significant) CSP-CFP link. However, in the case of KLD, these results could simply be an artifact of the improved methodological robustness of the more modern studies or a representation of the temporal change in the societal expectations of stakeholders towards companies (that may have increased with the passing of the years). Also, the non-

negative CSP-CFP relationship that emerges when using reputational indices could be attributed to the fact that corporate reputation is thought to be significantly and positively correlated with firm financial performance.

Redirecting my attention towards the financial performance measures that have been used, I would support the claim of Orlitzky (2003) as well as Margolis et al. (2009) that accounting CFP measures usually produce more significant positive results for a CSP-CFP relationship than do market measures. This could be because specific accounting measures can be matched with specific stakeholder groups and this 'tailoring' produces better results than does the use of market measures, which only depict the investors' assessments of a corporation's fundamentals. An alternative explanation would be that corporations that are more profitable and generally have a better financial status are more likely to do some 'window dressing' of their accounting data as well as attempt to create a socially responsible image, while the worst financial performers will usually not do either and in this way there will appear to be a positive relationship between accounting measures and CSP. On the other hand, the markets cannot be (especially under strong assumptions concerning their degree of efficiency) manipulated by the window dressing of accounting data or by any CSR ingratiating attempts. Combining these two lines of reasoning would explain why the CSP-CFP relationship is less pronounced when market CFP measures are used.

On the whole, if one looks at the entire spectrum of relevant literature, it could be said that the majority of relevant papers offer evidence in favour of a positive or at least a non negative CSP-CFP relationship, an observation that is made by Margolis and Walsh (2003). However, Orlitzky (2003) criticises such a vote-counting method as utterly inappropriate for inferring a general academic conclusion on this issue. Still, it does give a certain -though simplistic- signal that a firm applying the principles of CSR is at the very least no worse off in terms of stock market performance than a firm that does not. Because only a very limited number of studies have a non-linear model specification, there are very few results indicating a more complex CSP-CFP relationship (e.g. a curvilinear relationship), although there is some work that depicts a U-shaped link between the two (Barnett and Salomon, 2006).

It is worth noting that as the years progress, there seems to be a strengthening of the CSP-CFP link. For example, looking at the 1980s literature would give a more mixed picture concerning the sign and strength of the CSP-CFP relationship than looking at the 1990s and post-2000 literature.

Several possible explanations could be given for this observation, not necessarily mutually exclusive:

1) More and better CSP data, KLD being an illustrative example of this fact.
2) More refined and sophisticated models.
3) Better matching of CSP dimensions with CFP measures.
4) A increase of the societal expectations of firms which is eventually depicted in their accounting data and their stock market returns.

However, this observation needs to be more formally tested. Also, apart from the time variance of the results, there are some indications that the locality of the corporations included in the data sample plays an important role. Specifically, it can be noticed that overall, using data from US companies produces more positive results than using data from European companies. Consider for example the results of Brammer et al. (2006) who work with UK data and conclude that there is a statistically and economically strong, negative CSP-CFP relationship or the study of Von Arx and Ziegler (2008) which shows that the US data produce a more significant CSP-CFP link than do European data which lead to an insignificant relationship.

As for the methodologies, multiple regression analysis is by far the most frequently used method in this research area. It seems quite appropriate and intuitive as well, especially when time series or panel data are used given the long term nature of both CSR and its hypothesised effects of CFP. The results that have been produced throughout the many years that this method has been implemented in this research field are mixed but once again this can be attributed to a number of factors that have been previously mentioned. Event study methodology is the main alternative and has produced more consistent results (in favour of a positive relationship of CSP and CFP) but it draws data from a much smaller pool as it is usually implemented in relation to specific events that have a negative effect on CSR (e.g. oil spills, strikes, lawsuits against firms, TRI announcements etc.) so it can be used only within a very specific testable framework.

A variety of control variables have also been used and were presented during the critical analysis of the literature, with firm size and risk being the most common ones and others like R&D being more rarely incorporated in the specified models. The inclusion of a greater number of control variables has definitely increased the methodological rigour and the robustness of the results in relevant research, with the unavoidable cost of less significant (but more reliable) inferences.

An important observation can be made for the level of analysis. In particular, the CSP-CFP relationship seems to be more clear-cut at the firm level than at the fund level. My belief is that this remark is largely explicable. It may be that (in the words of Kurtz, 1997) positive information effects that associate an SRI portfolio offset, in part or in whole, the negative effects coming from sub-optimal security selection due to a narrower investment universe. As a result, depending on the relative strength of each effect, the sign of the CSP-CFP relationship could be either positive, negative or the relationship may be insignificant. Alternatively, it could be argued that in any diversified portfolio that is simply large enough (containing a large number of stocks from various industries), all that will matter for its performance in the long run will be systematic risk and thus on average no additional premiums or penalties will be realised[36]. So although it should not make a significant difference if the portfolio is a conventional one or one built based on SRI principles in the long run, for various sub-periods an SRI portfolio may outperform or underperform the market and/or conventional portfolios but the difference should not be very significant.[37] In the firm level, the previous factors are irrelevant so the research on the CSP-CFP relationship usually produces a clearer signal.

Lastly, studying the effects of the individual dimensions of CSR (environment, employees, communities, philanthropy, product safety/quality, diversity etc.) on firm financial performance produces various, sometimes contradictory results. Different studies find that the same dimensions may be positively, negatively or insignificantly related to CFP. For example, although most studies find a positive or neutral relationship between corporate environmental and financial performance, Barnett and Salomon (2006) find them to be negatively related.

2.5.2 The road ahead

The reasonable conclusion that can be drawn from the previous discussion is that significant advancements and developments have been made in this field. New measures, more robust methodologies, and larger and more refined data samples have raised the bar of CSP-CFP

[36] However, if CSP affects mostly systematic risk (and I will show that to a certain extent it does), then this rationale does not apply.

[37] Notice that although these two arguments contradict one another, either of them can be used to explain why there is some discrepancy between the results of the firm level and fund level CSP-FP research.

research to new heights. Still a lot of work remains. I consider two particular themes of this research area that have not been studied in depth to be especially fascinating.

The first issue concerns the relationship between CSR and financial risk. Amongst CSP-CFP studies, the common denominator is the use of measures of financial performance that focus on firm profitability (accounting measures) or on stock returns (market measures), usually adjusting for risk. The inherent assumption of these papers is that CSP can influence CFP solely through a 'front door mechanism'; meaning that CSP will, through some pathway, lead to the creation of sustainable comparative advantage that will enhance firm profitability leading to a positive CSP-CFP relationship. But what if there exists a 'backdoor mechanism' (Godfrey et al., 2009) between the two so that CSP has 'wealth protective' instead of 'wealth enhancing' effects in stock market value? That would mean that there has to be link between CSP and risk per se something investigated by a surprisingly small number of studies. Furthermore, the choice of appropriate risk measures is of great importance as measures capturing the 'value protective' nature of CSR seem fundamentally better-suited to be used in this framework. I will orient part of my research in this thesis to investigating the impacts that CSP has on systematic equity risk, downside risk, investor utility, corporate credit spreads and bond ratings in order to attempt to address this gap in empirical studies of the relationship between corporate social performance and firm financial performance in an illuminating and original way.

Another, rather neglected, issue has to do with the underlying factors that are likely to affect the CSP-CFP link. Given the fact that the social, political and economic environment is constantly changing, it seems plausible that so will the sign and strength of the relationship between CSP and CFP. It is peculiar that research has so far tried to find a relatively stable CSP-CFP association instead of attempting to investigate the factors that might lead to a dynamic, time varying connection of the two. The political cycle, the economic cycle and the influence of mass media in public perceptions of social responsibility immediately spring to mind. Furthermore, apart from exogenous factors that are likely to moderate or mediate the link between CSP and CFP, it is also possible that there are interactions between positive and negative corporate social or environmental activities which moderate the overall association of CSP and CFP by affecting stakeholder perceptions of what the firm is actually doing on this front and what motivates these actions. In other words, there may be some type of moderation of the CSP-CFP link arising from within CSP itself. This will also be addressed in one of the following chapters.

3. The Impact of Corporate Social Performance on Equity Risk and Investor Utility

3.1. Introduction

As has been mentioned in the extensive literature review of this thesis, the academic debate concerning the nature and particularities of the link between CSP and CFP is a persistent and controversial one. Due to a variety of definitional, measurement and methodological issues, there is no consensus in the relevant literature, with results being sharply conflicting at times (Margolis and Walsh, 2003; Griffin and Mahon, 1997). Among these studies, the common denominator is the use of measures of financial performance that focus on firm profitability (accounting measures) or on stock returns (market measures), frequently using risk (either accounting or market risk respectively) as an adjustment factor. The inherent assumption of these papers is that CSP can influence CFP solely through a *front door mechanism*.

In this chapter, I attempt to offer an alternative empirical pathway in relation to the CSP-CFP connection by investigating the possibility of the existence of a *backdoor mechanism* between the two so that CSP has *wealth-protective* instead of *wealth-enhancing* effects that are captured in the corporations' stock market valuation. There are several conceptual reasons for high levels of CSP to generate/enhance such effects or, respectively, for low levels of CSP to lead to the absence/decrease of those. I argue that such effects are likely to be revealed when orienting the focus of research towards the relationship of CSP and *financial risk per se* at the firm level and not when simply using risk as an adjustment factor or by treating it as a side issue only, as has been done in the vast majority of prior research.

Following this different course and researching the relationship between CSP and financial risk has several practical implications as well. Firstly, there are important managerial consequences. Whether the embracing of CSR principles and implementation of the analogous processes and programs increases or decreases the variability of future firm performance, constitutes an essential piece of information for managers in their effort to minimise the uncertainty of outcomes in their business and financial planning. For example, companies that have invested in environmental programs that utilise renewable energy and clean fuels or other firms that make

great efforts to ensure the optimal quality and safety characteristics of their products and services might be in a relative advantage to cope with adverse systematic economic shocks than their competitors who are not involved in such practices.

Secondly, exactly because of the alleged long term, risk reductive effects of socially responsible corporate activity, the stocks of firms with high levels of CSP might be attractive to specific types of institutional investors such as pension funds that *"tend to have significantly predictable, long-term outflows to beneficiaries"* (Ryan and Schneider ,2002,p.560). This reasoning is empirically supported by Cox et al. (2004), who find a positive and significant relationship between the proportion of company ownership by pension funds/life assurance companies and CSP. Lastly, given the turmoil in financial markets during the 1999-2001 (burst of dot-com bubble) and 2007-2008 periods (real estate downturn and systemic crisis), with most stock indices around the globe losing a significant part of their values in a period of few months, several stock exchanges crashing by more than 10% in a single day and academics comparing the latter situation with the stock market crash during the Great Depression (Almunia, Benetrix, Eichengreen, O' Rourke and Rua, 2010) the issue becomes even more interesting and topical. In times like these, it seems plausible that the average investor's risk aversion should increase and more attention will be directed towards the avoidance of high risk rather than the reaping of great returns. The hypothesized wealth-protective effects of CSP would make the respective firm stocks highly desirable investment assets.

As has been demonstrated in the literature review chapter of this thesis, past literature on the issue of CSP-risk association, and the issue of the causal effects of CSP on financial risk in particular, is both scarce in the number of papers that have been published and suffers from an array of significant limitations with regards to either data sample size and variability, use of social responsibility and financial performance measures and application of empirical methodologies. In this study, the use of longitudinal data from the KLD database for thousands of S&P 500 companies between the years 1991 to 2008 leads to the creation of a very large sample consisting of approximately 7,000 firm-year observations (more than the integrated sample of 6,186 observations pooled from many different studies that Orlitzky and Benjamin (2001) used), thus increasing the degrees of freedom and improving the efficiency of the econometric estimations. The great heterogeneity of the sample both in the cross-sectional (more than 760 corporate entities) and the time (18 years of data) dimensions is another highly desirable characteristic

which allows for an exploration of the variability of the CSP-risk relationship across industries and an investigation of its temporal dynamics. In the words of Ullman (1985): *"Longitudinal studies could provide insights into how strategies change as a function of shifting stakeholder power or economic performance"*. To the knowledge of the author, this constitutes one of the largest to be used in the context of the CSP-firm risk related research. Appropriate econometric methodology, especially when using a panel dataset, is crucially important as the Nelling and Webb (2009) study suggests (in which the authors demonstrate that the strength of the empirical results of the well-known Waddock and Graves (1997) paper may actually be inflated due to improper estimation techniques).

A wide spectrum of risk metrics is employed in order to make the analysis more rigorous and contribute to the identification of the finer features of the wealth-protective effects of CSR. Standard measures are used for the sake of comparability with previous studies and the more well-aimed downside risk metrics are introduced to literature. The additional introduction of utility measures, that allow the investigation of the CSP effects on the higher moments of the distributions of stock returns, and the application of appropriate panel data econometric methods in the estimation of the specified models, not only make this study more robust but also add to its level of novelty.

The remainder of this chapter is structured as follows: section 2 provides the theoretical framework upon which this empirical work is based. The characteristics of the data that are utilised and the construction of the CSP and financial risk/utility measures employed are introduced in section 3. Section 4 contains the details of the methodological process that is implemented. Section 5 presents the results of the various analyses and the robustness tests that have been performed whereas section 6 draws conclusions and makes suggestions for future research.

3.2. Background and development of hypotheses

3.2.1 CSP and Financial Risk: The Existing Evidence

Empirical testing of the hypothesis of the wealth-protective consequences of corporate social and environmental behavior through the examination of the link between CSP and financial risk[38] is a route that a surprisingly small number of researchers have taken. Spicer (1978) was amongst the first to conduct such a study. He uses the Controls for Environmental Pollution (CEP) reports as a CSP measure and finds negative Spearman rank order correlations between it and measures of total and systematic risk, thus providing some early empirical support for a risk-reducing effect of strong CSP.

Aupperle et al.[39] (1985) report a correlation analysis in which CSP constructs created from the results of a forced-choice survey of corporate CEOs are used along with accounting measures of financial performance (ROA) and risk (beta, Value Line's safety index). No measure of financial performance is significantly related to factors like the employment of social forecasting or having a social responsibility committee, but all of the latter are significantly and negatively related to total financial risk and insignificantly negatively associated to long term beta. Building on this paper, Aupperle and Pham (1989) aggregate the non-economic components of CSP and use a variety of accounting (ROA, ROE, ROS) and market (stock price growth, total return to investor) measures of FP. They find no significant relationship between CSP and any measure of financial performance or even financial risk. Somewhat similarly, McGuire et al. (1988) use a sample of large US companies rated in Fortune's 'America's Most Admired Companies' reputation index (one attribute of which is environmental and social responsibility). They use multiple FP measures (total return, asset growth, alpha and others) and risk measures (operating leverage and beta) and run regressions for different time windows. They find that CSP is positively (and strongly) related to FP and negatively (and less strongly) related to both prior and subsequent systematic risk.

Orlitzky and Benjamin's (2001) meta-analysis summarizes the characteristics of the datasets, methodologies and conclusions of the previously presented research papers along with those of

[38] From this point onwards, unless otherwise mentioned, *"financial risk"* will be used to mean *"market risk"*.

[39] Some of these studies have been presented in greater depth in the literature review chapter and are also briefly mentioned here only with regard to their focus on the link between CSP and financial risk.

many other studies that were published between 1976 and 1997. Their summary of previous research is indicative of the limitations of the empirical work in this research area. For example, they demonstrate (Table 1, pp. 380-382) that the entire set of meta-analysed studies consists of very narrow data samples, which contain between less than a dozen (Baldwin et al., 1986) to a maximum of 469 observations (Waddock and Graves, 1997). Furthermore, as observations are most commonly taken from the same year, making the respective studies cross-sectional in nature, the time sensitivity of the conclusions is not investigated.

There are also great discrepancies in the CSP measures that are used (reputational ratings, CEP reports or rankings, mention of CSR in annual reports, charitable contributions, Kinder, Lydenberg and Domini database (KLD) ratings etc) as well as in the financial risk measures. The latter can be further subdivided into market risk measures (standard deviation of firms' stock returns, stock return beta) and accounting risk measures (e.g. long term debt to assets, debt to equity ratio, volatility of Return on Assets etc). Such variation in the operationalisation of CSP and FP greatly diminishes the comparability of results. In response, Orlitzky and Benjamin (2001) perform a statistical meta-analysis of these studies using an integrated sample of 6,186 observations and conclude that the true score correlation coefficient (ϱ) between CSP and risk is negative. The association appears to be stronger for market risk (ϱ = -0.21) than for accounting risk (ϱ = -0.09). Furthermore, by testing the temporal sequence, the authors are able to conclude that *"the negative correlation between prior CSP and subsequent risk is about twice as large as the correlation between prior risk and subsequent CSP"* (p.387).

More recently, the study of Salama, Anderson and Toms (2011) provides some evidence on the nature of the link between Community and Environmental Responsibility (CER) rankings and systematic firm risk in the British context. Using cross-industrial UK panel data between 1994 and 2006, leading to a total sample size of 1625 observations, the authors find a negative and statistically significant relationship between the two variables, with CER being an antecedent of financial risk. However, the sensitivity of the coefficient of this association, as estimated by random-effects GLS regression, is just -0.028, significant at the 5% level. This is one of the very few studies of the field where a significantly large panel of longitudinal data is employed. However, the authors do not seem to take full advantage of the variability that such a dataset offers in order to further investigate the dynamics of the CER-firm risk association by attempting to identify possible moderators in the CSP-risk link, such as the possible impact of market

volatility conditions. Sharfman and Fernando (2008) strictly focus on the environmental dimension of CSP and show that environmental risk management can effectively lead to lower cost of equity capital through different pathways, including a lowering of systematic risk and increased tax benefits. The authors only use data from 2001 which makes their analysis cross-sectional.

In addition, Godfrey, Merrill and Hansen (2009) build on Godfrey's previous theoretical contribution (Godfrey, 2005) to investigate whether CSP carries insurance-like properties regarding the effect on stock market value of negative firm-specific, rather than industry or economy wide, events (p.426). Thus, they conduct an event study analysis upon the negative legal and regulatory actions taken against firms and find evidence that risks are mitigated by CSP but that wealth-protective effects are associated with activities that target a firm's secondary stakeholders, i.e. those who can affect the firm's primary stakeholders, but are not directly essential to the operation of the business. The fine-grained approach of this study, which employs detailed information about events that carry the potential for catastrophic reputational harm for individual companies, is appropriate in the context of the discrete, idiosyncratic type of association between CSP and firm risk hypothesised (Godfrey, 2005). However, the focus upon very specific types of negative events hinders more generalised inferences regarding the wealth-protective effects of CSP activities as total/systematic market risk is generated by not only negative legal and regulatory events but also a host of other source of uncertainty in the business environment. Similarly, Luo and Bhattacharya (2009) also predominantly look at the effect of CSP on idiosyncratic risk and find the two to be negative related. They do, however, perform some additional analysis which also indicates the existence of a negative association between CSP and systematic firm risk.

In summary: the extant literature on the effect of CSP on financial risk is sparse and problematic, and my study seeks to address a number of the substantive limitations of previous work concerning both the data and methodology employed. I use longitudinal data from the KLD database for S&P 500 companies between the years 1992 to 2009. The great heterogeneity of the sample facilitates investigation of the variability of the CSP-risk relationship across both industries and time. I will employ a wide spectrum of risk metrics that may capture the wealth-protective effects of strong CSP. While standard measures are used for the sake of comparability

with previous studies, I also make novel use of downside risk metrics. Furthermore, the addition of utility measures further extends the analysis to incorporate risk, return and higher moments.

3.2.2 Development of hypotheses

As has already been stated, the purpose of this study is to examine the relationship between corporate social performance and financial risk per se. In general, there are two broad types of arguments that one can invoke in order to support the existence of a link between CSP and firm risk. The first is the strict neoclassical school of thought[40] which contends that since in the context of a free market economy, a company's stated purpose is shareholder value maximisation, any effort to fulfil the demands of different kinds of implicit stakeholders constitutes a misallocation of corporate resources. This sort of imposition of arbitrary shareholder taxation (Friedman, 1970) is thought not to yield any measureable economic benefits to the firm itself or at least not enough to surpass the related costs that are needed for the implementation of social/environmental responsibility practices. Eventually, this corporate behaviour will be penalised by the market in the form of decreased stock returns or increased volatility of returns.

On the other hand, there is that part of the theoretical literature that argues in favour of the existence of a negative relationship between CSP and financial risk. Specifically, it can be supported that a company which is consistently socially and environmentally responsible should in the course of time reap the fruits of this strategic posture by experiencing less downward adjustments and less volatility in its share price (compared to less socially responsible firms) or, equivalently, that firms that have been shown to be involved in controversial, socially and/or environmentally irresponsible activities will be exposed to a higher degree of stock market risk.[41]

There are a number of conceptual arguments, mostly emanating from instrumental stakeholder theory (Jones, 1995; Donaldson and Preston, 1995), that support this view. High levels of CSP can be associated with low financial risk through, inter alia, lower probabilities of suffering legal prosecutions and fines, less stringent regulatory controls, more stable relations with the government and the financial community (McGuire et al., 1988), customer loyalty, a supportive environment on the part of employees and communities during times of crisis. All of these

[40] Or what Margolis and Walsh (2003) have called "the contractarian view of the firm".

[41] Between these contradicting points of view stands the reasoning for a neutral impact of CSR on financial performance due to too many intervening variables (Ullman, 1985, McWilliams and Siegel, 2000).

beneficial implications can lead to reductions of various operational risks that a company faces in terms of its profitability and overall viability. Also, high firm social performance may be considered to be a sign of superior management skills -the so called "good management hypothesis" (Waddock and Graves, 1997, p.306), thus indicating a firm which is likely to be characterised by more effective business and financial planning and consequently, by improved financial stability. Lastly, there is Godfrey's (2005) rationale, according to which better protection of corporate reputational and relational wealth is achieved by higher degrees of CSP through the generation of *mens rea* value and positive moral capital that mitigate negative assessments of corporate actions. The first two arguments describe wealth-protective CSP effects of a more generic nature that are likely to shield the firm from the negative impacts of wide ranging, systemic economic shocks while the last one illustrates the risk-reductive effects of CSP in the presence of negative firm related events. I will concentrate on the former types of arguments recognising that as Godfrey et al. (2009) correctly point out, *"The role of firm-specific characteristics in the face of common events clearly yields illumination"* (p.426). Given all of the above, this study is based on the instrumental stakeholder theory framework and as such will attempt to test if in fact a company that engages in socially responsible (irresponsible) behaviour will manage to decrease (increase) its financial risk through that behaviour. So ultimately, what is tested is summarised in the following hypotheses:

Hypothesis 1: CSP negatively affects market risk at the firm-level.

Due to the complexity in defining and assessing CSP, it is necessary to further clarify what is meant by CSP for the purpose of this study. In particular, it is imperative to differentiate between socially responsible and irresponsible corporate activities. The multidimensionality of the notion of CSP makes it possible for a company to do well with regards to the societal demands of a particular set of stakeholders (e.g. having good relationships with employees) and bad with regards to others (e.g. being on bad terms with local communities). To rephrase, if CSP is seen as a measure of the moral character of a particular firm then it seems plausible that this company may not be deemed to be purely good or purely bad, but both, according to the focus on particular social issues.

In addition, as McGuire, Dow and Argheyd (2003) have noted, a firm may be both socially responsible and socially irresponsible even along a single dimension of social performance. For example, according to the KLD STATS dataset, Exxon Mobil in the year 2000 appeared

to be a company that had very strong retirement benefits programs for its employees (thus being socially responsible with regards to employee relations) but at the same time had been involved in major controversies concerning workforce health and safety issues (thus being socially irresponsible in the dimension of employee relations). It is therefore evident that the assessment of the social performance of this firm is not a straightforward task even with a sole focus that is upon a relatively narrowly defined dimension of corporate social performance.

To address this complexity in social performance, I follow the findings of the study of Mattingly and Berman (2006) on the distinction between corporate socially responsible and corporate socially irresponsible actions and the respective taxonomy within the KLD dataset which I will be using. The authors conclude that *"positive and negative social actions are both empirically and conceptually distinct constructs and should not be combined in future research"* (p. 20), a deduction that appears plausible given the fact that one would not necessarily expect stakeholders to react to corporate responsible and corporate irresponsible behaviour in opposite yet symmetrical manners. To make no such assumption, I will refine Hypothesis 1 as follows:

Hypothesis 1a: Corporate socially responsible actions and practices lead to reduced levels of firm financial risk

Hypothesis 1b: Corporate socially irresponsible actions and practices lead to increased levels of firm financial risk

Furthermore, there is empirical evidence that corporate social responsibility and corporate social irresponsibility affect a firm's bottom-line in differing magnitudes. Wood and Jones (1995) noted in their review that event studies employing market-based measures of CFP show a tendency for poor social performance to inflict financial harm but do not show evidence of a financial boon from strong social performance. Similarly, Meijer and Schuyt (2005) find that while consumers expect a firm's CSP not to fall below some minimum threshold (or else they will boycott), high levels of social responsibility do not bring significantly increased product sales. More recently, it has been shown that "the economic impacts [of CSP] are more positive for issues reducing negative externalities than for issues generating positive externalities" (Lankoski, 2009, p.218). For the KLD rating framework, this means that, ceteris paribus, a firm is likely to improve its economic performance (and decrease the associated firm risk) more if it manages to decrease its social/environmental concerns rather than increasing its respective strengths. Thus:

Hypothesis 2: Social/Environmental strengths are less negatively related to financial risk than social/environmental concerns are positively related to financial risk.

Going a step forward, amongst the various types of social/environmental concerns, there are those that have already lead or are very likely to soon lead, through a direct and clear-cut path, to a loss of monetary corporate funds, due to the imposition of fines and other penalties to the firm. Such concerns are associated with corporate activities that are not simply deemed to be unethical and socially irresponsible by the interested stakeholders, but are close to being (or have already been) characterised as violations of laws and regulations. Additionally, these activities are usually highly visible, as they tend to attract the attention of the mass media. As a result, they tend to offer compelling evidence and produce very strong signals against the firm's underlying moral character, thus destroying part of the company's reputational capital and relational wealth.[42] Because of this "signalling effect", this type of concern is expected to be strongly positively related to the volatility of firms' stock returns. Hence:

Hypothesis 3: Social/Environmental concerns that unequivocally result in losses of corporate funds through the imposition of fines and penalties are strongly positively related to financial risk.

There has also been some debate in the empirical CSP-CFP literature about the appropriate way to handle social performance data, i.e. whether they should be amalgamated into an aggregate, multidimensional measure (Aupperle et al., 1989) or if they should be treated as a heterogeneous set of corporate actions (Hillman and Keim, 2001). In order to reflect the qualitative variation across the dimensions of CSP – from charitable community projects to the adoption of pollution reduction technology and equal opportunity employment practices, and so on – I will separately analyse each of a number of disparate components of CSP as well as an aggregate measure of CSP.

At this point, it should be noted that some of the strengths of this study, particularly those arising from the use of an extensive dataset of firms operating in several different industries, may be also be considered its weak points by some academics. Griffin and Mahon (1997) in particular have been proponents of empirical CSP-CFP studies that focus on single industries. They argue that the unique operational characteristics of each industry lead to a specialisation of social interests and because of this: *"by analyzing broad, cross-sectional data, the results may mask individual differences for measuring CSP and CFP based on the specific context of an industry"* (p.10). Although only use of cross-sectional data is mentioned, the same critique could be applied to longitudinal data. However, if a researcher is to focus on single industries, then the available dataset he would have

[42] This line of reasoning follows the rationale of Godfrey (2005).

at his disposal would be significantly limited, leading to less robust results from an econometric standpoint. Of equal importance is the fact that such studies do not help to investigate whether particular dimensions of socially responsible behaviour have a more "universal" nature, in the sense that they can benefit a firm's bottom line regardless of its specific industrial classification.

Nevertheless, recognising the point that Griffin and Mahon have made, I will make some further attempt to orient part of my analysis towards samples of companies that belong to industries that are expected to receive significant amounts of attention, demands and pressures by the same types of stakeholder groups (which are decisive to the firms' viability).[43] This leads to:

Hypothesis 4: The association between specific social/environmental issues and financial risk is expected to be stronger when categorising firms according to theorised specialisation of social interests of certain stakeholders.

Our use of longitudinal data also provides an opportunity to investigate dynamics in the CSP-market risk link, and in particular examine how this link is moderated in the context of high overall market volatility. In this connection, it is worth noting that Orlitzky and Benjamin (2001) argue that after the burst of the dot-com stock market bubble, investors were more keenly focussed upon the underlying risk associated with equity investments and less mindful of capital gains and dividends. More generally, the finance and economics literature also suggests a stylised fact that aggregate risk aversion and risk premia change counter-cyclically across time.[44] If that is the case, then one would expect the relationship between CSP and financial risk per se to be more pronounced during the times of *"lean cows"*:

Hypothesis 5a: In the presence of conditions of high market volatility, the association between CSP and financial risk is expected to be stronger than otherwise.

The same line of reasoning also implies that the CSP-risk link should be stronger for investors with higher risk aversion than for more risk tolerant investors. This should be depicted when utility measures are used, since as risk aversion increases, risk effects tend to prevail over mean return effects. So a more general form of hypothesis 5a would be:

Hypothesis 5b: The relationship between corporate social behaviour and financial risk will be more pronounced as average investor risk aversion increases.

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[43] Or according to Clarkson's definition: "A primary stakeholder group in one without whose continuing participation the corporation cannot survive as a going concern" (Clarkson, 1995, p.106)

[44] This is supported by habit formation models for example like those proposed by Abel (1990), Constantinides (1990), Cambell and Cochrane (1999).

Having outlined the theoretical background and stated the hypotheses of this study, I proceed to discuss the intuition behind the selection and construction of the variables that are used in the specification of the econometric models.

3.3. Independent, dependent and control variables

3.3.1 Independent variables: the KLD database and CSP measures

In Subsection 2.4.3, I described in substantial detail the characteristics of the KLD social database and explained why I consider it to be the most useful and reliable source of corporate social data for empirical research. I will repeat the key characteristics of this database for the convenience of the reader. KLD is a rating service which assesses a great number of firms with regard to their strengths and concerns on a series of dimensions of CSP that are considered of interest. To be more specific, companies are rated on multiple indicators within seven "qualitative issue areas" (these being community relations, diversity issues, employee programs, environment issues, product safety and quality, corporate governance and human rights) as well as six controversial business issues (which examine the extent to which a firm is involved with military contracting, nuclear power, firearms, alcohol, tobacco or gambling). The rating is done separately on strengths and concerns of the same qualitative issue area while controversial business issues by definition are only rated on concerns. All the ratings are binary, with 1 representing the presence of a particular strength/concern and 0 representing its absence. KLD uses sources both internal to the firm (e.g. annual reports) and external (e.g. articles in the business press) to conduct year by year assessments of the social performance of 650 firms, including all the firms listed in the S&P 500 Composite Index and the ones listed in the Domini 400 Social Index. Since 2001, KLD has expanded its coverage universe to incorporate the largest 1000 US companies in terms of market value, an expansion which advanced further in 2003 with the inclusion of the 3000 largest US firms. Independent researchers consistently apply the aforementioned criteria and discuss ambiguous judgments to minimize the subjectivity of the whole process.

I choose to use KLD STATS (standing for Kinder, Lydenberg and Domini Statistical Tool for Analyzing Trends in Social & Environmental Performance) for this study. The core part of my work is centred on the companies listed in the S&P 500 composite index, thus initially limiting the generalisation of my conclusions to large or moderately large, publicly traded, highly visible

US corporations. The focus of the study on such a widely used benchmark index helps to increase the coverage of firm-year observations by making use of nearly the entire relevant dataset, starting in 1991 and ending in 2008. To my knowledge, this is the most chronologically extensive dataset that has been used in the context of the CSP-CFP literature when the analysis is conducted at the firm level.

Following Hillman and Keim (2001), I concentrate on those qualitative business issues that can be directly associated with specific, primary stakeholder groups and as such may be considered focal for the implementation of successful stakeholder management. In this sense, I disregard the entire set of controversial business issues as being representative of corporate action that Hillman and Keim deem *"social issues participation"*. Furthermore, to fully capitalise on the lengthiness of the dataset, as well as for the sake of consistency and comparability with previous studies, I only use the omnipresent indicators of each qualitative business issue. This process leads to the selection and utilisation of the indicators that are depicted in Figure 1. In addition, in accordance with the results of Mattingly and Berman (2006) on the taxonomy within the KLD data, I do not combine strengths and concerns of the same issue areas since they appear to be distinct constructs.

I implement the above principles and follow three different ways of combining the KLD data in order to make the most of the information contained. Firstly, I attempt to use the individual components of the KLD database. Doing so adds to both the exactness and variability of my conclusions, as it allows me to investigate the relationships between many different facets of the wide spectrum of corporate social action and financial risk. Consequently, I add all the ratings of the indicators for the strength/concerns of a particular qualitative business issue and then normalise the sum of those ratings by dividing it with the number of indicators of the specific issue area. The general formula for calculating any individual component for a particular firm is:

$$COMP = \frac{\sum_{i=1}^{n} \text{Re}\,spective\ Indicators'\ ratings}{n} \qquad (3.1)$$

where n is the number of indicators that are relevant to the particular issue area. As an example, the formula for calculating the "Community Strengths" score is:

$$COMS = \frac{Charitable\ Giving\ + Innovative\ Giving\ +\ Support\ for\ Hou\sin g\ +\ Other\ Strength}{4}$$

Although the information that can be gained by following the above procedure is valuable, it would be interesting to seek an aggregation of the individual components of social activity that maintains the dichotomy between strengths and concerns. The comparison of the results of a model using an aggregate KLD measure with those of the individual components model would help conclude whether in fact combining various features of social responsibility to create *"a single, monolithic construct"* (Godfrey et. al, 2009, p.426) dilutes the finer-grained effects of one-dimensional CSP.

In order to create the "Aggregate Strengths" and "Aggregate Concerns" measures, I simply add the respective individual strengths/concerns components which I previously constructed and then divide the sum by 5 in order for the slope coefficients that will be estimated to be comparable with those of the individual components. The implied assumption is that each type of social action is given equal weighting so that employee programs, for example, are considered just as important as product safety and quality. This is done in accordance with the work of Hillman and Keim (2001) and is due to the lack of conceptual work that would shed light in the effort to quantify the relative importance among the various facets of CSP. Ruf et al. (1998 and 2001) have tried to address this issue by implementing the Analytical Hierarchy Process (AHP), but the alleged time sensitivity in the assessment of various CSP dimensions -which would require a periodic update of the survey and the implementation of AHP- makes their results unfit for use in this study. Mitchell et al. (1997) even question the feasibility of the attainment of such a goal, at least in a universal sense. Thus, equal importance across CSP dimensions in the construction of the aggregate measure is an unavoidable yet practical compromise. The same logic applies for the equal importance weighting of the various indicators in the construction of each of the individual strengths and concerns components. So the formula for calculating the "Aggregate Strengths" measure is:

$$AGGS = \frac{1}{5} \times (COMS\ +\ DIVS\ +\ EMPS\ + ENVS\ + PSQS) \qquad (3.2)$$

where *COMS* stands for the Community strengths component, *DIVS* stands for Diversity strengths, *EMPS* stands for Employment strengths, *ENS* stands for Environment strengths and

PSQS for Product Safety and Quality strengths. Analogously for "Aggregate Concerns":

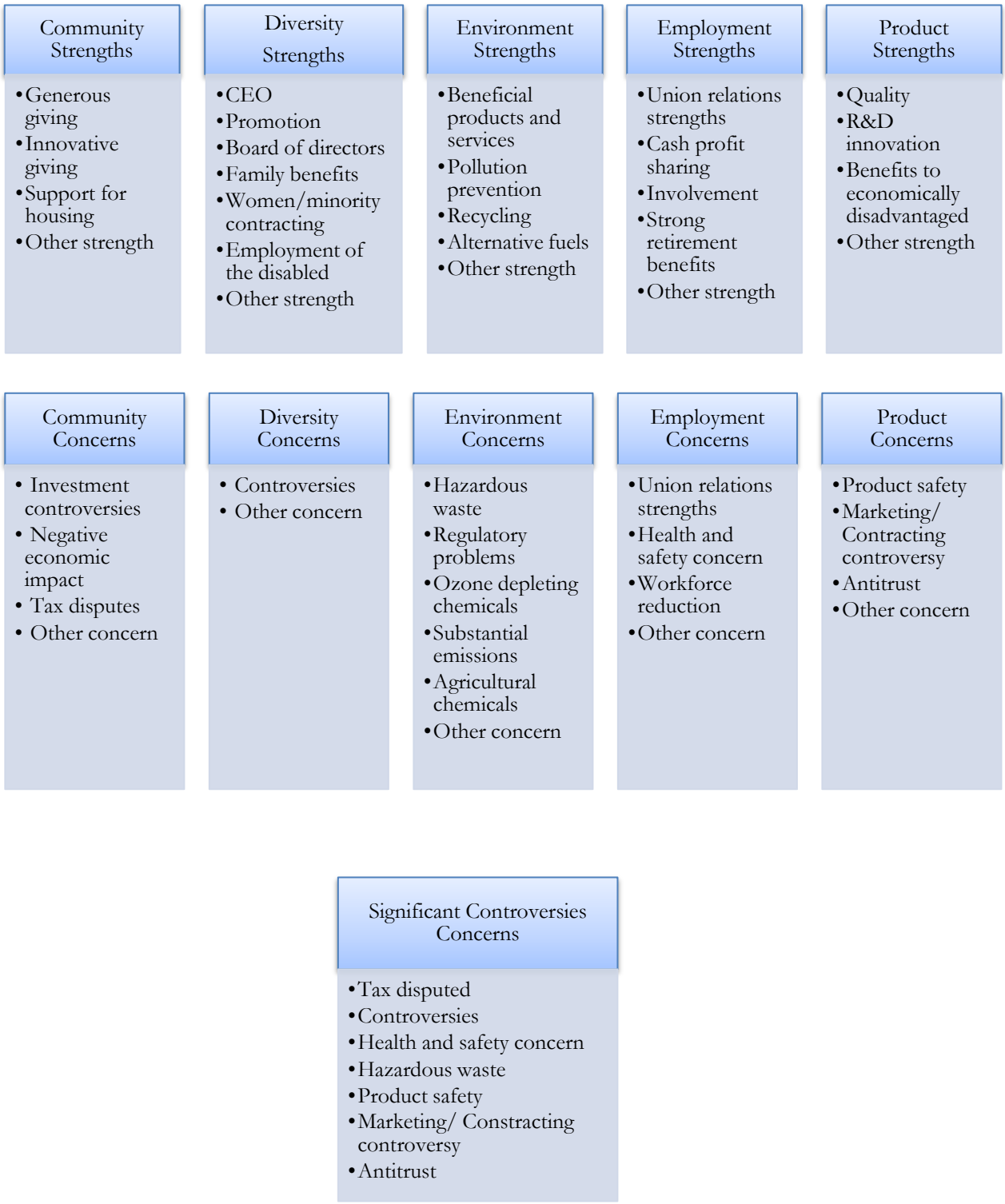
$$AGGC = \frac{1}{5} \times (COMC + DIVC + EMPC + ENVC + PSQC) \quad (3.3)$$

with the notation being completely equivalent to the one of equation (3.2).

The last reformulation of the CSP measures that I construct from the KLD dataset concentrates solely on those "concerns" indicators that according to their textbook definition[45] have already resulted or are expected to result in the rated company paying substantial fines or civil penalties due to the violation of employee/environment/product related standards or major controversies. This focus on indicators whose presence has already led, or is very likely to lead, to a direct loss of corporate funds (not including of course any indirect costs that are likely to be caused by the deterioration of corporate reputation etc.), is one of the most fundamental tests of the relationship between CSP and financial performance: Managers should at the very least avert their companies from producing those negative social and environmental externalities emanating strong signals that will significantly hurt firm reputation and, eventually, their bottom line. In the words of Graves and Waddock (1994), this construct is targeting to capture the risk that *"arises, inter alia, from the possibility of costly sanctions resulting from adverse legislative or regulatory actions, judicial decisions, or consumer retaliation"* (p.1035) and the deterioration of the reputational capital that it leads to. In order to construct such a measure, I add the ratings of the 8 concern indicators from all the qualitative issue areas of interest that fulfil the above definitional criteria. I then divide it by 8 in order to make this measure comparable to the individual component measures. Essentially, the formula that I use is the same as that of equation (3.1) with the difference that the indicators are now selected across several issue areas. Figure 3.1 shows, amongst other things, exactly which indicators are used in order to create this measure which I will hereafter call the Significant Controversies Concerns (SCC).

[45] The definitions as they appear in the "Getting Started With KLD STATS And Ratings Definitions" manual, 2008.

Figure 3.1: Omnipresent indicators of qualitative CSP issue areas of interest



3.3.2 Dependent variables: Financial risk and utility measures

Choosing one measure that captures market risk is not a straight forward task. Financial economists, mathematicians and risk managers have struggled for decades in order to create new risk metrics with different properties and more desirable characteristics. So, to improve the robustness of this study, an array of financial risk measures with different qualities will be utilised. Similarities in results across risk measures will solidify one another while any differences in the conclusions drawn by the use of each measure are likely to shed more light on the specificities of the alleged wealth-protective effects of CSR.

Firstly, for the sake of simplicity, comparability with previous research and renewal of the relevant literature with updated information, classical financial risk measures will be employed, namely the standard deviation of the returns of the firms' shares and the respective beta. The former is the most commonly used risk measure that depicts the overall dispersion of an asset's returns around its mean. It reflects the total variability of the returns of a particular stock. The second is the most widely used measure of systematic risk and as such it is often used instead of standard deviation.[46] Their respective formulas are given below:

$$s_i = \sqrt{\frac{1}{T-1}\sum_{t=1}^{T}(R_{it} - \mu_i)^2} \tag{3.4}$$

$$\beta_{im} = \frac{E[(R_{it} - \mu_i)(R_{mt} - \mu_m)]}{E[(R_{mt} - \mu_m)]^2} \tag{3.5}$$

where s_i is the standard deviation of the returns of the stock of firm i that are observed in a time interval t which spans from 1 to T, μ_i is the mean value of those returns, β_{im} is the beta of firm i

[46] Under traditional portfolio theory (Markowitz, 1959) the total risk that a security bears can be divided into systematic risk arising from broad factors that affect the entire universe of securities and idiosyncratic risk which arises from industry/firm specific factors. Through diversification, portfolios bearing no idiosyncratic risk can be constructed so that the investor is only compensated for the market risk of his investments. That is why it is argued that only the systematic risk of a security matters and beta is commonly used as a measure of financial risk.

when the market proxy is m, R_{mt} is the observed return of the market proxy at time t and μ_m is the average value of those returns.

In addition to the use of the aforementioned metrics, this study makes an original contribution to the CSP-CFP literature with the introduction of downside risk measures. The motivation for the use of these measures arises from several factors. Firstly, conventional risk measures like standard deviation are appropriate when the distributions of the returns of the assets under consideration are symmetrical (such as in the case of a normal distribution). In this situation, standard risk measures (SRMs) and downside risk measures (DRMs) will produce the same results. However, when the distributions of returns are asymmetrical (and they usually are: DeFusco et al., 1996) then either the downside price fluctuations will have a dominating effect over the upside or the other way around. Specifically, if the distribution of returns is negatively skewed or "skewed to the left" (so that skewness is smaller than 0), the standard deviation underestimates risk because it underestimates the proportion of extreme negative deviations from expectation, which are the true source of anxiety for the investor. Since SRMs and DRMs will generate different measurements of financial risk and since it seems more intuitive to think of financial risk as the probability of a downward movement (rather that a general price instability), DRMs are more appropriate. Secondly, it has been argued *that "losses and disadvantages have greater impact on preferences than gains and advantages"* (Tversky and Kahneman, 1991 p.1039), a sort of *loss aversion utility theory*, with the implication being that investors are more sensitive towards downside risk and are thus likely to require a significant premium for their exposures in assets with downside risk.

These first two arguments are valid whether we refer to the context of the financial effects of CFP or not. A more well-focused argument in favour of the use of DRMs is that they are especially compatible with Godfrey's (2005) arguments about the insurance effects that CSP will have on CFP. Within this spectrum, financial risk should be depicted as the likelihood of a downward adjustment of stock prices of socially irresponsible firms instead of a general instability and variability of those prices.

The first DRM that will be used is called semi-standard deviation and is the square root of the semi-variance, a notion introduced by Markowitz (1959).[47] Semivariance reflects the dispersion of

[47] It should be noted that both semi-variance and semi-standard deviation are misnomers, even though they are in common use. A more appropriate term for semi-variance would be "Lower Partial Second Moment". However, following the norm, the term semi-standard deviation will be used in this study.

the asset's returns that fall below the mean return in a specific data set. While variance, and consequently standard deviation, are measures of "overall" volatility (meaning that they consider both positive and negative deviations from the mean), semivariance only looks at the negative fluctuations of an asset's returns. The formula for semi-standard deviation is given below and the notation is identical to that of equation (3.4):

$$s_i^- = \sqrt{\frac{1}{T-1}\sum_{R_{it}<\mu_i}(R_{it}-\mu_i)^2} \tag{3.6}$$

A second measure of downside risk that will be applied is downside beta. The potential advantages of its use in comparison to the use of the standard beta are based on the same justifications as the use of semi-standard deviation instead of standard deviation and there is no reason to repeat them. However, there is no consensus in the financial literature about what is the most appropriate definition, and subsequently method for estimation, of the downside beta. The main issue in question is which is the minimum threshold that a market participant uses to compare the returns of the asset he has invested in. Risk will then be characterised by the downside deviations below this target. I consider two of the downside betas proposed in the literature.

The first comes from the work of Bawa and Lindenberg (1977), who use the risk free rate as the target return and the second is the one introduced by Harlow and Row (1989) who instead use the mean market return as a threshold. The respective formulae are:

$$\beta_{im}^{BL} = \frac{E[(R_i - R_f)\min(R_m - R_f, 0)]}{E[\min(R_m - R_f, 0)]^2} \tag{3.7}$$

$$\beta_{im}^{HR} = \frac{E[(R_i - \mu_i)\min(R_m - \mu_m, 0)]}{E[\min(R_m - \mu_m, 0)]^2} \tag{3.8}$$

where R_i and R_m are the returns on security i and the market portfolio respectively, μ_i and μ_m are the mean returns of security i and the market portfolio respectively and R_f is the risk free rate.

Up to his point, I have focused solely on the risk connected to the second moment of returns (although the DRMs that I mentioned correct the biases in the measurement of risk that maybe incurred due to high negative values of the third moment). An examination of the higher moments of the distribution of asset returns would significantly enrich the analysis by allowing a more in depth assessment of the nature of the effects of CSP on financial risk. For example, it may be that specific types of social and environmental firm actions that produce positive (negative) externalities affect the skewness of the distribution of its stock returns and tilt the distribution to the right (left). Or that a firm that is characterised by particularly mixed social performance (e.g. scoring high on both strengths and concerns on various business issues) may have a more leptokurtic distribution of stock returns, as there is an increased probability of extreme results occurring, either positive or negative. Additionally, the inclusion of the mean return in a utility measure may provide hints towards the extent to which the magnitude of the alleged risk reduction effects of CSP is offset by a proportionate reduction in asset returns or not.

To test the effect that CSP has on investors' utility, I will apply the extension of the mean-variance criterion to higher moments. This criterion has many advantageous characteristics. It can be applied when an investor's utility can be described by the negative exponential utility function, one of the most widely used such functions which is characterised by constant absolute risk aversion (CARA). Furthermore, and in contrast to the mean variance criterion, one does not need to additionally assume distributional normality of returns in order to use the criterion's extension to higher moments. In fact, it is not even necessary for the distribution of returns to be symmetric or mesokurtic since the criterion explicitly incorporates the third and fourth moments of the distribution. This is a highly desirable property which allows for non-parametric empirical applications. The fourth order approximation of the certainty equivalent[48] that is associated with the negative exponential utility function is given by the formula:

$$CE \approx \mu - \frac{1}{2}\gamma\sigma^2 + \frac{\tau}{6}\gamma^2\sigma^3 - \frac{\kappa}{24}\gamma^3\sigma^4 \qquad (3.9)$$

where μ is the mean ,σ is the standard deviation, τ is the skewness and κ is the kurtosis of the asset returns and γ is the investor's absolute risk aversion. A proof for this formula is provided in the appendix to the chapter.

[48] The monetary amount that has the same utility as the expected utility of an uncertain investment.

3.3.3 Control Variables

This subsection describes the series of variables that are used in the model specifications in an effort to remove the impact of non-CSP factors and, accordingly, zoom in on the effects of CSP variables on financial risk per se. Furthermore, this set of variables is employed in order to control for the possibility that the effect of CSP on firm financial risk is not spurious; the artifact of an omitted variable bias.[49]

i) Size: Ln(Market Value)

Larger firms are generally thought of as being less risky than smaller firms. This seems to be a sensible statement especially if one considers the probabilities of default of firms. Large firms are inherently more competent in enduring adverse economic shocks. Furthermore, it has been argued that firm size is proportionally negatively related to asset return variance (Beaver et. al, 1970, p.662) and that reputational effects are higher for larger firms, thus making banks view them as less risky and reduce the yields that they charge them (Diamond, 1991). Following the norm, the logarithm of firm size, as captured by stock market capitalisation, is used to correct for the skewness of the measure.

ii) Market to Book value (MTBV) ratio. Due to a significant number of missing values in the Datastream database, I construct a proxy for this ratio by dividing firm market value (by the respective book value of common equity.

As Fama and French (1992) note in their seminal work on the cross-sections of expected stock returns, it is possible that the reciprocal of MTBV captures risk which is associated with the distress factor of Chan and Chen (1991). Specifically, it is argued that companies that the market deems to have poor prospects are characterised by lower stock prices and higher book to market ratios (lower MTBV ratios) than companies with stronger prospects (p.428). However, these stronger prospects may lead to greater variability in profitability and capital market performance. This "growth vs value" differentiation of firms may explain why analysts often consider the stock of a company with low MTBV to be a less risky investment, with book value seen as the minimum threshold of firm equity.

[49] Which will inevitably arise from the exclusion of a relevant variable from the model specification, making the estimated coefficients biased and inconsistent, unless the excluded variable is not correlated with the included ones.

iii) Gearing: Total Debt to Common Equity ratio. Again, instead of directly using a gearing measure, I prefer to construct this proxy in order to avoid having a multitude of missing observations for this variable.

An excessively high ratio of financial leverage indicates significant indebtedness which may lead to a firm's difficulty to meet the demands of its creditors and as such, worsen its viability. In addition, the classic study of Modigliani and Miller (1958) shows that the higher a firm's debt, the higher the volatility of the earnings stream towards its stockholders which is why "*the expected rate of return … on the stock of any company… is a linear function of (its) leverage"* (p.271).

iv) Dividend Yield

Dividend yield on a company stock is the ratio of the dividend per share to the price per share of that stock. Although there is no consensus in the relevant literature, there is evidence suggesting that firm stocks having higher dividend yields are also characterised by higher risk adjusted total returns than stocks paying no or low dividends (Blume, 1980). Arguably, a constant, high expected flow of dividends is likely to reduce the volatility and systematic risk of stock prices due to duration[50] and information effects. Also, dividend yield can be thought to have a signalling effect regarding management's perception of the uncertainty of future earnings (Beaver et al., 1970, p.660) i.e., the higher the dividend yield, the less the uncertainty and vice versa.

v) Research and Development intensity: R&D expenditure to Total Sales ratio.

McWilliams and Siegel (2000) present evidence which supports the position that a significant part of the CSP-CFP literature is based on misspecified models, since R&D expenditure is not included as a control variable in the testing framework. This variable has been found to be an important determinant of firm performance, and is argued to also be positively correlated with CSR, as CSR is thought of as a stream of product and process innovations which are generated by R&D expenditures. The attempt to create such innovations is by its nature an inherently risky project. Because of this, the exclusion of this variable may lead to an omitted variable bias as discussed above, which results in biased and inconsistent coefficient estimates.

vi) Liquidity: Current ratio

[50] The term "Duration effect" is used to imply that high dividend yield provides more cash flow in the short term. If dividend policy is assumed to remain stable, then high dividend stocks will have a shorter duration.

The current ratio is calculated by dividing a firm's book value of current assets by that of its current liabilities. It is indicative of the firm's ability to remain solvent in the short run. The current ratio is one of the ratios most widely used to assess a firm's liquidity risk. Clearly, the lower the current ratio, the higher the liquidity risk for a company, a feature which may be depicted by increased stock price fluctuations for that firm. Note that during this discussion I have used the term "liquidity" to refer to a firm's *funding liquidity*[51] and not to the *market liquidity*[52] of the firm's stock in the market where it is traded, the latter being an irrelevant issue in the case of the very actively traded, highly liquid S&P 500 stocks of this sample.

vii) Industry classification (Datastream item code:INDM3)

I use the Industry Classification Benchmark (ICB) at its second level of analysis, i.e. a taxonomy of companies according to supersectors. This results in the construction of a total of 19 industry dummy variables. These are: Oil & Gas, Chemicals, Basic Resources, Construction & Materials, Industrial Goods & Services, Automobiles & Parts, Food & Beverage, Personal & Household Goods, Health Care, Retail, Media, Travel & Leisure, Telecommunications, Utilities, Banks, Insurances, Real Estate, Financial Services and lastly Technology. The inclusion of these dummy variables seems appropriate given the inherent variability in the risk attributes across supersectors. However, as the analysis is restricted to US firms, there is no need to include control variables for country effects.

[51] Funding liquidity is defined as a firm's ability to settle obligations with immediacy and the respective risk is driven by the possibility that over a specific horizon that a firm will become unable to settle obligations with immediacy (Drehmann and Nikolaou, 2009, pp.10-11).

[52] Market liquidity is defined as the ability to trade large size quickly at low cost when you want to trade (Harris, 2003, p.394).

3.4 Methodology

3.4.1 Sample construction

As has been already stated, my initial sample consists of all the companies listed in the S&P 500 Composite Index and rated by KLD on their corporate social performance at some point during the period between 1991 and 2008. This translates to an unbalanced panel dataset of 9,000 firm-year observations. KLD STATS provides the names and tickers of the companies it rates and since 1995 also uses their respective CUSIPs but unfortunately has never used Datastream codes. There are several round-about ways to match the year by year lists of S&P 500 companies with their Datastream identifying codes but all of them lead to a great loss of firm-year observations and they bear the additional risk of including the wrong type of stock for those companies that are listed on several exchanges. To avoid such hazards, a methodical, manual scrutinisation and subsequent matching of each firm to its respective Datastream code was conducted on a one-by-one basis. When a firm's stock was traded on several exchanges, the code of the stock being traded on the main stock exchange was used, when such an indication was available, else the firm was dropped from the sample. Preferred stocks were also dropped from the sample.

Overall, for the estimation of my basic models, a series of variables that have been mentioned in the previous section had to be used. For the construction of the various financial risk and utility measures, I calculated the weekly log-returns of the prices of the Total Return Index[53] for each share. For the calculation of the beta factor and the downside beta metrics, a market proxy had to be used. The obvious choice, given the dataset, was the S&P 500 itself. I also gathered data for all the control variables that I employed.[54] After dropping all firm-year observations for which at least one of the variables needed is missing, my sample consists of 6,986 firm-year observations (a total of N=769 different firms over a period of T=18 years). I choose to use this unbalanced panel of data rather than extracting a balanced subpanel from it, by either maximizing the number of firms observed (restricted maximization in the cross-sectional dimension) or by maximizing the average number of observations per firm (restricted maximization in the time

[53] The Total Return Index assumes the reinvestment of distributed dividends so that both pure capital gains and dividend payouts are included in the calculation of stock returns.

[54] Note that the core models do not include R&D intensity and liquidity as control variables. These factors are later added as robustness checks. As a result, the filtering process mentioned here does not concern these two variables.

series dimension) because either of these methods would lead to a huge loss in efficiency (Baltagi and Chang, 1994).

3.4.2 Model specification

As has been explained in the previous section of the study, there are three types of models that I estimate, each offering a different piece of information regarding the relationship between CSP and financial risk. The first one is the "individual components" model:

$$RM_{it} = \alpha_i + \sum_{j=1}^{10} \beta_j COMP_{jit\text{-}1} + \beta_{11} MV_{it\text{-}1} + \beta_{12} MTBV_{it\text{-}1} + \beta_{13} DY_{it\text{-}1} + \beta_{14} TDCE_{it\text{-}1} + \varepsilon_{it} \qquad (3.10)$$

where RM_{it} is the risk or utility measure for firm i at year t, a_i is the time invariant firm intercept of firm i[55], βs are the slope coefficients of the respective factors, $COMP_{jit\text{-}1}$ is the individual component j (strengths and concerns of the five qualitative issue areas of interest: community relations, diversity issues, employee programs, environment issues, product safety and quality), $MV_{it\text{-}1}$ is the market capitalisation, $MTBV_{it\text{-}1}$ is the market to book value ratio, $DY_{it\text{-}1}$ is the dividend yield, $TDCE$ is the total debt to common equity ratio, all referring to firm i at year $t\text{-}1$, and ε_{it} is the disturbance term.

The second one is the "aggregate strengths/concerns" model:

$$RM_{it} = \alpha_i + \beta_1 AGGS_{it\text{-}1} + \beta_2 AGGC_{it\text{-}1} + \beta_3 MV_{it\text{-}1} + \beta_4 MTBV_{it\text{-}1} + \beta_5 DY_{it\text{-}1} + \beta_6 TDCE_{it\text{-}1} + \varepsilon_{it} \qquad (3.11)$$

where the notation for most terms is identical to that of equation (3.10), $AGGS_{it\text{-}1}$ is the measure of aggregate CSP strengths (equation 3.2) and $AGGC_{it\text{-}1}$ the measure of aggregate CSP concerns (equation 3.3) for firm i at year $t\text{-}1$.

Lastly, there is the "significant controversies concerns" model:

$$RM_{it} = \alpha_i + \beta_1 SCC_{it\text{-}1} + \beta_2 MV_{it\text{-}1} + \beta_3 MTBV_{it\text{-}1} + \beta_4 DY_{it\text{-}1} + \beta_5 TDCE_{it\text{-}1} + \varepsilon_{it} \qquad (3.12)$$

where the notation for most terms is identical to that of equation (3.11) and $SCC_{it\text{-}1}$ is the measure constructed of social/environmental concerns leading to financial losses due to imposition of fines and penalties and the subsequent destruction of reputational capital for firm i at year t-1.

[55] The fixed effects model is applied and its details will be discussed in subsection 3.4.3.

For every model, a variety of risk/utility measures will be used (standard deviation, beta, downside risk metrics plus the extension of the certainty equivalent to higher moments for different values of absolute risk aversion), resulting in multiple estimations. In all models, the independent variables are lagged. This is done for several reasons. Firstly, it has been clearly stated that this study is oriented towards the examination of a relationship between CSP and market risk where CSP is the cause and subsequent levels of firm risk are the effect. Furthermore, lagging the CSP measures and control variables helps this study escape the alleged endogeneity problems and simultaneity bias that may arise due to a contemporaneous bidirectional causality of CSP and risk. Also, as the FAQ manual of KLD STATS reveals, although the data collection process and appraisal of firm social performance is an ongoing, continuous process, KLD actually assembles the data at the end of each calendar year, and compiles the data into the spreadsheets at the beginning of the next year (pp. 4-5). So, following the rationale of Godfrey et al. (2009), lagging my social/environmental variables for one year helps to *"ensure that the ratings for each firm were public knowledge"* (p.434) and so had already started to become incorporated in the markets in the form of informative prices. Hence when I use CSP measures from year t-1, I start collecting stock price data from the second week of year t to calculate the respective risk/utility metrics.

In addition, in order to avoid including in the analysis outliers that may heavily influence the results, all the risk and utility measures along with the financial control variables are winsorised at the 1% level.[56] This is highly important since firm-year observations that are characterised by extremely high volatility are likely to sway the goodness of fit of the model towards their direction.

3.4.3 Panel data econometrics

Choosing the correct panel data regression model is crucial in empirical analysis. The efficiency and consistency of the estimated intercepts and slope coefficients is dependent on the choice of the appropriate estimator, each having characteristic properties.

[56] Winsorisation is a transformation process in which the values of outliers are replaced by a specific threshold value (in this case, the bottom and top 1% of the observations are replaced by the 1st and 99th percentile of the relevant empirical distribution respectively).

The first choice the researcher has to make concerns the selection of a fixed or random effects model. Given the fact that the main concentration of this study is restricted to large, American, publicly traded firms that have been listed on the S&P 500 Composite Index, the fixed effects model appears to be the most intuitive option because as Baltagi (2005) notes: *"The fixed effects model is an appropriate specification if we are focusing on a specific set of N firms…and our inference is restricted to the behavior of this set of firms" (p.12).* The random effects model on the other hand is preferred when the firms of the dataset are assumed to be a random draw from a larger population (Baltagi, 2005, p.14), which is not the case in this instance. In addition, estimating models (3.10), (3.11) and (3.12) using random effects and performing Hausman tests results in p-values that are zero to 4 decimal places[57], thus strongly rejecting the null hypothesis of no misspecification of the random effects model and indicating the existence of correlation between the explanatory variables and the random effects (which constitutes a violation of the main assumption of random effects models as noted in Hsiao, 2003,p.34).

Another possible model to use is the pooled OLS. This model is the most restrictive of panel models as it specifies constant coefficients for both intercepts and slopes (whereas fixed effects for example specifies constant slope coefficients but allows the intercepts to be different between firms). The pooled OLS estimator is inconsistent when the fixed effects estimator is appropriate (Cameron and Trivedi, 2005, p.699). Performing likelihood ratio redundant fixed effects tests results in a strong rejection of the null hypothesis that these effects are redundant (p-values are zero to 4 decimal places). This is true for both of the one way fixed effects regression models and the two way model. So the pooled OLS model is clearly inappropriate.

Given the above discussion, it appears that the fixed effects estimators are the most appropriate to use in this study. The notation of equations (3.10), (3.11) and (3.12) has taken this factor into account, which is why the intercept term is α_i, indicating that it varies across firms but is time invariant. Notice that in all three equations, the set of industry dummy variables is not explicitly used in the specification because this piece of cross-sectional heterogeneity is constant over time (assuming that a company does not significantly alter its business orientation) and as such is captured by the intercepts.

Another issue of great importance when dealing with panel data sets is the estimation of robust standard errors. If the residuals of the model for a given firm are correlated across years (time-

[57] Results are not reported but are available by the author upon request.

series dependence) or the residuals for a given year are correlated across firms (cross-sectional dependence), then the standard errors of the estimated coefficients will be upward or downward biased. In the latter case, the statistical significance of the results of the study will be overestimated and conclusions drawn may be invalid. Indeed, a lot of studies in the finance literature have either completely ignored this issue or addressed it in an inappropriate manner (Petersen, 2009, pp.435-436). Recognising the implications of this matter, significant effort will be made to tackle it effectively.

There is good reason to expect that time-series dependence may arise in the residuals of the models since CSP is usually relatively constant for the same firms and social/environmental dimensions across time. Persistence in the application of CSR principles appears as the reasonable way to ensure the accruement of its long-run beneficial economic impacts. Taking a look at the bar schematics of the various CSP components (both strengths and concerns) for the individual cross-sections (firms) reinforces this expectation: The vast majority of firms have ratings that are persistently high or low throughout the years. So if there are any relevant factors that are positively correlated with these explanatory variables and have not been included in the model, the residuals will also be serially correlated. The inclusion of fixed effects (dummy variables) in the specified models deals with this issue and leads to unbiased standard errors, as long as this time-series dependence is fixed and not time-decreasing (Petersen,2009, p.464).

On the other hand, there are no particular grounds to anticipate that cross-sectional dependence will arise in the residuals of the fixed effects model. Furthermore, the detection of such dependence is not a straightforward process considering both the two-dimensional nature of the residuals and the fact that the cross-sections are randomly (alphabetically) stacked. As a rule of the thumb, Breusch-Godfrey serial correlation Lagrance multiplier tests on the cross-sectional samples (year by year) are performed and do not, on the whole[58], provide significant indications of the existence of cross-sectional dependence. Under the same rationale, performing White's heteroskedasticity tests in the cross-sectional, year-by-year samples provides evidence of cross-sectional heteroskedasticity in the residuals. To account for this, the diagonal White cross-sectional heteroskedasticity robust coefficient covariance estimator (adjusted for panel data) was

[58] Obviously, with three different models, many different dependent variables that are alternatively used for each model and 18 different years, there are several hundreds of such tests that are performed. The vast majority of them result in very high p-values (much above 0.10), indicating high levels of support for the null hypothesis of no correlation of the residuals.

applied. Henceforth, and unless otherwise noted, all the p-values that are mentioned will be the outcome of the implementation of the previously mentioned processes which should lead to the estimation of robust standard errors.

3.5 Results

3.5.1 Descriptive statistics and correlations

Tables 3.1a, 3.1b and 3.1c present the descriptive statistics of the various independent and dependent variables that are specified in the core models of the study. The statistics refer to the winsorised financial variables that are used to remove significant outliers from the distributions of the risk and utility measures and the control variables. According to the statistics provided in Table 3.1a, the mean value for each of the individual-component CSP measures is quite small, ranging between 0.0371 (Community concerns) and 0.1253 (Product concerns). The low mean values, combined with the zero median values of all measures, indicate that for most firm-year observations, the most frequent score in each CSP dimension is zero (indicative of the absence of the respective strength or concern). It should also be noted that by construction, each component can only take specific discrete values within the [0,1] range. For example, Community strengths can take a value of 0, 0.25, 0.50, 0.75 or 1 depending on how many of the four respective indicators are present for a particular firm in a specific year according to KLD. Standard deviations of KLD scores are also similar amongst individual components. It is worth noting that Community concerns has both the smallest mean and the smallest standard deviation (0.0970) while Product concerns has both the highest mean and the highest standard deviation (0.1999). Aggregating across CSP dimensions, one can see in Table 3.1b that the mean and median scores are very similar, a bit higher for strengths (mean of 0.0786) than for concerns (mean of 0.0743) but with the variability of concerns scores being higher than that of strengths (0.0926 against 0.0775).

The average winsorised value of the logarithm of firm market value is 8.91. The average firm-year observation also has a market-to-book value ratio of 3.70, a dividend yield of 1.89 and a leverage ratio (total debt to common equity) of 1.38. As for the dependent variables, one can notice in Table 3.1c that the average prices of all beta measures are very close to unity as they ought to be.

They do not exactly equal one, for the simple reason that this is an unbalance panel of data. The winsorised mean weekly volatility of returns is approximately 4.68% or a bit higher if one uses semi-standard deviation as a risk metric to correct for the negative skewness of returns. Lastly, mean utility measures are negative and algebraically lower as risk aversion increases, with the interpretation being that on average, any positive utility effects coming from reaping positive returns are increasingly offset by the respective values of the volatility of returns.

The first two panels of Table 3.2 provide some additional interesting statistics. Table 3.2a contains Pearson product moment correlations between the various individual social/environmental components as well as the aggregate measures. By construction, aggregate strengths (concerns) are highly positively correlated to uni-dimensional strengths (concerns). What is of great interest is the fact that overall, there are small but positive correlations amongst social strengths and concerns, thus reinforcing the opinion that strengths and concerns are distinct constructs that should not be mixed in empirical research as they do not constitute the flip sides of the same coin. Also, the correlations between individual components are small in absolute value, so near multicollinearity issues are not expected to arise in the estimation of model (3.10).

Furthermore, as was expected, there are high but not perfect positive correlations between the conventional risk metrics and their downside risk metric analogues when looking at total and systematic risk separately (Table 3.2b). This essentially means that they capture slightly different characteristics of market risk. Also intuitive is the fact that utility measures are moderately negatively related to risk metrics (which should be the case according to equation (3.9)).

Table 3.1a: Descriptive statistics of independent variables

	Community Strengths	Diversity Strengths	Employment Strengths	Environment Strengths	Product Strengths	Community Concerns	Diversity Concerns	Employment Concerns	Environment Concerns	Product Concerns
Mean	0.0755	0.1187	0.1040	0.0517	0.0433	0.0371	0.0563	0.0725	0.0809	0.1253
Median	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Maximum	1.000	0.8571	0.8000	0.8000	0.7500	0.7500	1.000	0.7500	1.000	1.000
Minimum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Std. Dev.	0.1459	0.1585	0.1489	0.1078	0.1020	0.0970	0.1649	0.1387	0.1521	0.1999
Observations	6986	6986	6986	6986	6986	6986	6986	6986	6986	6986

Table 3.1b: Descriptive statistics of independent variables (continued)

	Aggregate Strengths	Aggregate Concerns	LOG(MV)	MTBV	DY	TDCE
Mean	0.0786	0.0743	8.91	3.70	1.89	1.38
Median	0.0571	0.0500	8.84	2.56	1.63	0.62
Maximum	0.5614	0.6833	12.16	24.05	7.44	20.97
Minimum	0.000	0.000	6.11	0.01	0.00	0.00
Std. Dev.	0.0775	0.0926	1.22	3.67	1.68	2.76
Observations	6986	6986	6986	6986	6986	6986

Table 3.1c: Descriptive statistics of dependent variables

	Beta	HR Beta	BL Beta	St.Dev.	Semi-St.Dev.	CE (γ=2)	CE (γ=5)	CE (γ=20)
Mean	1.016	1.024	1.031	0.047	0.047	-0.001	-0.006	-0.046
Median	0.955	0.967	0.955	0.040	0.040	0.000	-0.002	-0.015
Maximum	2.967	2.876	3.181	0.155	0.151	0.013	0.009	0.002
Minimum	-0.139	-0.187	-0.312	0.017	0.017	-0.038	-0.078	-0.899
Std. Dev.	0.565	0.576	0.641	0.025	0.025	0.008	0.013	0.116
Skewness	0.805	0.678	0.748	1.884	1.749	-1.780	-2.881	-5.609
Sum	7094.287	7150.178	7204.331	326.659	329.533	-10.221	-41.641	-320.066
Observations	6986	6986	6986	6986	6986	6986	6986	6986

Note: Log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is dividend yield , tdce is the total debt to common equity ratio; HR Beta and BL Beta refer to the Harlow-Row and Bawa and Lindenberg betas; CE refers to certainty equivalents with absolute risk aversion (γ) in parenthesis.

Table 3.2a: Pearson product-moment correlations

	AGGS	COMS	DIVS	EMPS	ENVS	PRODS	AGGC	COMC	DIVC	EMPC	ENVC	PRODC
AGGS	1.000											
COMS	0.576	1.000										
DIVS	0.705	0.308	1.000									
EMPS	0.595	0.074	0.205	1.000								
ENVS	0.477	0.083	0.177	0.139	1.000							
PRODS	0.508	0.085	0.198	0.230	0.158	1.000						
AGGC	0.245	0.070	0.286	0.076	0.208	0.057	1.000					
COMC	0.155	0.035	0.154	0.101	0.123	0.021	0.523	1.000				
DIVC	0.164	0.098	0.221	0.038	0.028	0.053	0.609	0.160	1.000			
EMPC	0.096	-0.024	0.145	0.016	0.088	0.058	0.595	0.204	0.264	1.000		
ENVC	0.134	-0.039	0.047	0.103	0.305	0.017	0.588	0.306	0.086	0.229	1.000	
PRODC	0.190	0.109	0.270	0.006	0.105	0.026	0.701	0.220	0.260	0.194	0.223	1.000

Table 3.2b: Pearson product-moment correlations (continued)

	Beta	HR Beta	BL Beta	St.Dev.	Semi-St.Dev.	CE (γ=2)	CE (γ=5)	CE (γ=20)
Beta	1.000							
HR Beta	0.943	1.000						
BL Beta	0.888	0.926	1.000					
St.Dev.	0.499	0.471	0.447	1.000				
Semi-	0.483	0.476	0.478	0.938	1.000			
CE (γ=2)	-0.185	-0.157	-0.225	-0.595	-0.475	1.000		
CE (γ=5)	-0.087	-0.078	-0.058	-0.363	-0.183	0.882	1.000	
CE (γ=20)	-0.071	-0.063	-0.037	-0.327	-0.142	0.858	0.996	1.000

COMS and COMC are community strengths(s) and community concerns(c) respectively, DIV is used for the diversity indicator, ENV for the environment indicator, EMP for the employment indicator, PSQ for the product safety and quality indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is dividend yield , tdce is the total debt to common equity ratio; HR Beta and BL Beta refer to the Harlow-Row and Bawa and Lindenberg betas; CE refers to certainty equivalents with absolute risk aversion (γ).

Table 3.2c displays the mean values of the individual component measures categorised by supersector. This information could be useful in attempting to identify what type of social/environmental dimension is considered more prominent for each company according to the object of its core operation. By comparing the supersector mean[59] values of each component to the respective means for the entire sample, one can gain insight about the relevant size of each. As expected, the significance attributed to each type of social action is different among the various sectors as shown by the variability of the relevant mean values.

In particular, industries where employees are said to cope with intensive and hazardous occupations such as Automobiles, Resources, Construction materials, Oil and Gas, Telecommunications, Industrial goods are where Employment and/or Diversity issues have distinctly high scores either in terms of KLD strengths or concerns or both. Environmental issues on the other hand have higher mean values in sectors arguably considered to be the "usual suspects" when it comes to pollution and industrial wastes: Automobiles, Basic resources, Chemicals, Construction materials, Utilities, Oil and Gas and Industrial goods. The Product safety/quality and Community dimensions appear to be most prominent in those supersectors where it is beneficial for the firm to establish a corporate image and brand name that are associated with a sense of commitment, security and stability, predominantly in Financial services, Banking, Insurance and Telecommunications.

It is also noteworthy that on several occasions, the sector which is characterised by a high mean value in the strengths indicator of a certain dimension is also characterised by a significant rating in the respective concerns indicator. For example, the Automobiles, Basic Resources and and Chemicals industries have scores that surpass the cross-industrial sample averages in both Environmental strengths and concerns. The same applies for the Telecommunications, Travel and Leisure and Automobiles supersectors when focusing on Diversity issues. The simultaneously high performance of a given set of firms with regard to the strengths and concerns on the same dimension of social actions raises the question of whether this constitutes a genuine effort from the side of the companies to correct their wrong-doings or an attempt to ingratiate alarmed stakeholders. Although this question is a very interesting and important one, it goes beyond the scope of this study. However, this observation reinforces the correctness of the decision not to

[59] Due to the discrete nature of the normalised KLD ratings, the mean values are more intuitive and insightful than the respective median values of each component.

create a social measure that would accumulate both strengths and concerns. Doing so would lead to a loss of valuable information since firms that have, for example, high scores in both Environmental strengths and concerns would appear to have a total score approximately equal to zero if a measure of "strengths minus concerns" was applied.

Figure 3.2 is also of interest since it provides the reader with information concerning the time evolution of the strengths and concerns indicators for each individual social component. A necessary reminder is that all of the normalised scores depicted in the figure have a scale ranging between 0 and 1 (vertical axis) so they could be thought of as percentage terms with 0 signifying the absolute absence of every component of the strengths/concerns indicator of interest and 1 indicating the highest possible performance.[60] The various series of strengths indicators follow very different paths through time. Community strengths are gradually declining after 1993, Diversity and Employment are constantly on the rise (with the exception of a small downturn of the latter between 2002 and 2005), while Environment and Product strengths remain at very low average levels from the very beginning of the establishment of KLD until 2008. On the other hand, the picture is very similar when it comes to the dynamic evolution of social concerns. With the sole exception of the Environment dimension, the rest of the indicators have low cross-sectional mean values at the beginning of the 1990s and are steadily increasing with time. The Product safety/quality and Employment indicators increase at a greater average rate than the Community and Diversity components. It should be stated that because the strengths and concerns indicators of the same social issues do not constitute the flip sides of the same coin, no safe conclusions can be drawn from the comparison of the respective levels of the two through time.

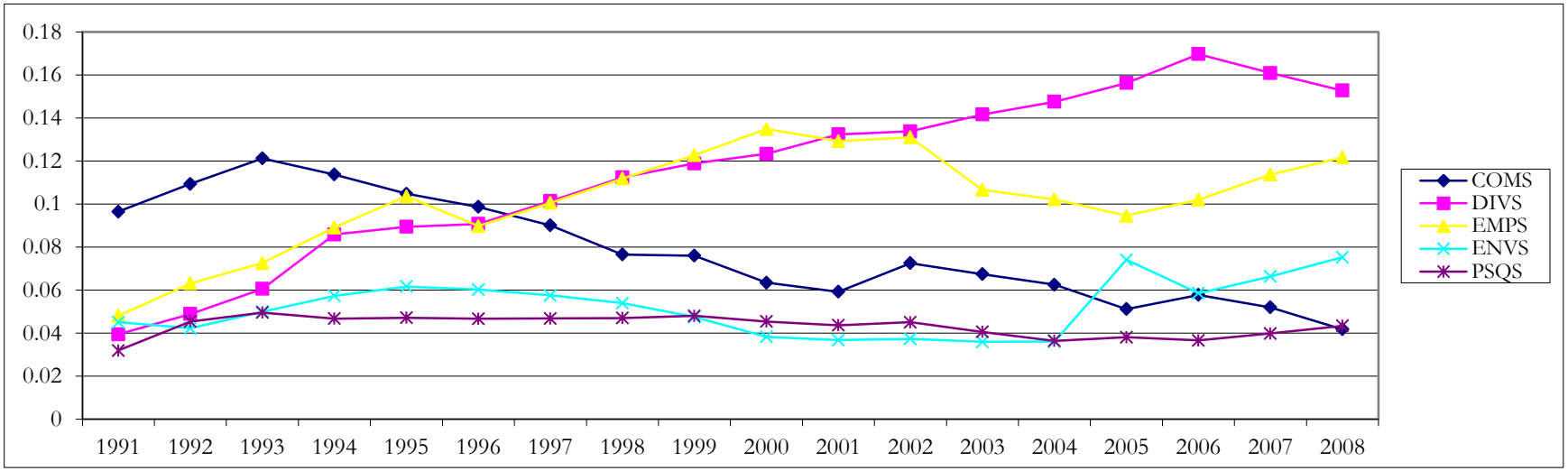
[60] Notice that "highest" only means "best" in the case of the strengths indicators but exactly the opposite in the case of concerns.

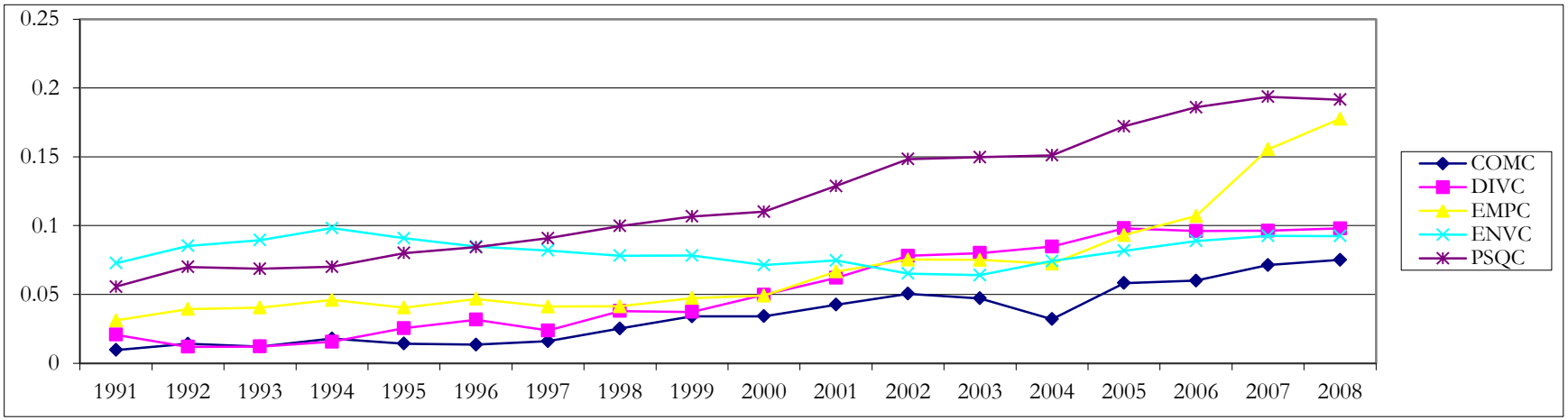
Table 3.2c: Mean values of normalised KLD scores by industry										
	Automobiles	Banks	Basic Resources	Chemicals	Construction Materials	Finance	Food & Beverage	Healthcare	Industrial Goods	Insurance
COMS	4.26	21.07	5.81	6.13	3.15	18.13	10.57	7.68	3.68	9.45
DIVS	15.34	16.73	3.16	7.56	2.04	17.58	17.42	14.47	6.90	10.98
EMPS	19.11	11.13	15.79	8.79	8.57	9.74	8.59	9.67	8.98	8.47
ENVS	10.52	0.66	11.07	11.44	5.88	0.29	4.46	5.07	6.5	0.46
PRODS	5.00	2.82	2.58	6.32	0.63	7.42	1.48	5.64	6.37	1.06
COMC	5.03	8.13	5.26	3.02	2.31	3.85	3.36	1.63	4.09	1.22
DIVC	14.07	5.79	3.32	2.53	2.52	9.89	6.07	3.59	6.35	10.26
EMPC	12.96	3.10	13.01	7.88	8.19	2.66	8.52	2.90	8.97	2.85
ENVC	19.88	0.00	27.24	26.85	16.53	0.06	9.51	6.21	11.19	0.49
PRODC	16.30	12.26	4.7	12.65	15.97	21.15	13.36	28.23	10.82	16.04
Observations	185	363	271	257	119	273	305	612	1040	307

Table 3.2c (continued): Mean values of normalised KLD scores by industry									
	Media	Oil & Gas	Perishable Household	Real Estate	Retail	Technology	Telecoms	Travel	Utilities
COMS	6.61	3.03	11.73	0.69	7.42	3.66	12.05	3.03	7.56
DIVS	15.18	4.02	13.93	2.98	11.88	15.81	22.82	18.17	9.96
EMPS	2.33	14.03	8.89	1.67	7.39	18.42	9.93	12.25	4.94
ENVS	3.14	8.06	4.57	0.28	1.82	4.78	0.29	3.82	11.55
PRODS	8.86	1.48	2.90	0.00	3.37	6.84	3.60	3.61	1.04
COMC	1.23	13.10	2.90	0.00	1.60	1.80	4.68	1.16	6.52
DIVC	2.91	5.07	2.64	2.08	12.90	1.32	15.11	12.14	3.12
EMPC	8.52	12.89	4.92	3.47	10.79	6.45	10.25	8.09	6.87
ENVC	0.82	20.89	4.01	2.31	0.98	1.66	2.28	1.54	16.74
PRODC	6.28	9.44	10.11	4.86	11.55	5.22	21.94	7.80	14.03
Observations	223	355	569	72	593	833	139	173	433

Note: COMS and COMC are community strengths(s) and community concerns(c) respectively, DIV is used for the diversity indicator, ENV for the environment indicator, EMP for the employment indicator, PSQ for the product safety and quality indicator.

Figure 3.2: Time Evolution of averaged KLD Strengths and Concerns respectively





Note: COMS and COMC are community strengths(s) and community concerns(c) respectively, DIV is used for the diversity indicator, ENV for the environment indicator, EMP for the employment indicator, PSQ for the product safety and quality indicator.

3.5.2 Main results

The estimates of the averaged fixed effects and slope coefficients of the "individual components model" are provided in Table 3.3. Each column of Table 3.3 represents a different estimation of model (3.10) with the dependent variable (alternative risk or utility measure) listed at the top of each column. Overall, there appears to be a negative but insignificant relationship between the various corporate social strengths and systematic financial risk. Not a single slope coefficient between any of the five strength components and any of the betas has a p-value smaller than 0.10. The same applies when total risk measures are used, with the exception of Community strengths which appear to decrease the standard deviation of weekly returns (β=-0.0069) in a statistically significant way (p-value=0.0135) and Employment strengths, which are also significantly related to total risk but in a positive way (although they are related to systematic risk in a negative and insignificant way). This last finding could be rationalised by observing that some of the indicators of employment strengths have a financially ambiguous nature since they lead to immediate costs for the company with the expectation of medium to long term economic benefits. For example, significant cash profit sharing and strong retirement benefits are characteristically supportive of this line of reasoning (and both are used by KLD as can be seen in Figure 3.1). Although such practices are obviously costly for the firm, they are expected to cause an easier attraction of superior quality employees, higher personnel retention ratios, decreased costs of staff training and improved employee loyalty. Results are very similar when certainty equivalents of stock returns are used as dependent variables, with the findings being largely insignificant, the exception being Employment Strengths which, consistent with the above results with regards to their relationship with risk, are negatively associated with investor utility, for average and high levels of risk aversion. This last finding is in contrast to the conclusions of Edmans (2011) who found a positive relationship between employee satisfaction and the risk adjusted returns. However, Edmans uses the "100 Best Companies to Work for in America" as his CSP measure (which does not escape the criticism of halo effects) and risk adjusted returns as a performance metric which makes the results of the two studies rather incomparable.

When looking at the lower half of Table 3.3, it is noticeable that the link between the individual concerns components and risk is stronger than the respective link between the strength counterparts and market risk. Community, Employment and Environment concerns are all significantly positively related with systematic risk (slope coefficients of 0.1622, 0.1906 and 0.1680 respectively) and the former two also have positive slope coefficients when regressed against the standard and semi-standard

deviation of returns. Not only that, but these coefficients are approximately 10 times greater than most of the estimated coefficients between the array of risk metrics and social/environmental strengths. This observation provides strong support for hypothesis 2 which stated that the effect of CSP concerns on financial risk would have a greater impact than that of CSP strengths and is in accordance with Lankoski's (2009) findings that the economic impacts were more positive for CSP issues that reduce negative externalities (KLD concerns in this case) than for those that generate positive externalities (KLD strengths in this study). This weak negative (moderate positive) association between the individual KLD strength (concern) components and financial risk verify the findings of the Salama et al. (2011) study that focuses on a longitudinal data sample of firms from the UK. The results are also consistent with those of previous research with the same purpose but highly different datasets and methodologies such as Spicer (1978), Aupperle et al. (1985), McGuire et al. (1988), Orlitzky and Benjamin (2001).

Focusing on utility measures, most of the results are statistically insignificant, but Employment concerns are significantly negatively associated with certainty equivalents, indicating that while implementing socially responsible practices towards employees may be excessively costly, being socially irresponsible in the same respect may lead to decreased levels of investor utility.

Table 3.3: Fixed effects regressions of the individual components model

	Beta	HR Beta	BL Beta	St.Dev.	Semi-St.Dev.	CE (γ=2)	CE (γ=5)	CE (γ=20)
c	1.1901	1.4963	0.8264	-0.0019	-0.0091	0.0429	0.0537	0.2269
	(0.000)***	(0.000)***	(0.000)***	(0.7331)	(0.1044)	(0.000)***	(0.000)***	(0.000)***
β_{coms}	-0.0429	-0.0569	-0.0014	-0.0069	-0.0065	-0.0001	0.0012	0.0168
	(0.4856)	(0.3771)	(0.9852)	(0.0135)**	(0.025)**	(0.931)	(0.4465)	(0.2706)
β_{divs}	-0.0873	-0.0538	-0.0714	0.0026	0.0006	0.0011	0.0001	-0.0181
	(0.1779)	(0.4285)	(0.3651)	(0.382)	(0.8405)	(0.3248)	(0.9561)	(0.258)
β_{emps}	-0.086	-0.0837	-0.0892	0.011	0.0109	-0.0008	-0.0035	-0.0485
	(0.1631)	(0.2009)	(0.2342)	(0.000)***	(0.000)***	(0.4252)	(0.0285)**	(0.000)***
β_{envs}	0.0272	0.0342	0.1095	0.0027	0.0019	-0.0014	-0.0013	0.0084
	(0.7137)	(0.6618)	(0.2297)	(0.3879)	(0.5570)	(0.2549)	(0.4641)	(0.5716)
β_{psqs}	-0.1452	-0.1164	-0.0931	0.0014	0.0025	0.0001	0.0003	0.0187
	(0.1571)	(0.2650)	(0.4474)	(0.7267)	(0.5563)	(0.9604)	(0.8958)	(0.3617)
β_{comc}	0.1622	0.1755	0.1327	0.009	0.0083	-0.0003	-0.0011	0.0023
	(0.0422)**	(0.0395)**	(0.1634)	(0.0101)**	(0.0227)**	(0.8319)	(0.5846)	(0.905)
β_{divc}	0.0342	0.0303	0.0104	-0.0017	-0.0019	0.0001	0.0004	0.0045
	(0.4595)	(0.5275)	(0.8478)	(0.4299)	(0.3799)	(0.9309)	(0.7437)	(0.6736)
β_{empc}	0.1906	0.1271	0.1307	0.0138	0.0117	-0.001	-0.0035	-0.0312
	(0.000)***	(0.0333)**	(0.0514)*	(0.000)***	(0.000)***	(0.2624)	(0.0125)**	(0.0135)**
β_{envc}	0.1680	0.2416	0.1046	-0.0043	-0.0039	0.0037	0.0055	0.0366
	(0.0434)**	(0.0066)***	(0.2892)	(0.1957)	(0.2811)	(0.0025)***	(0.0044)***	(0.0396)**
β_{psqc}	-0.0456	-0.0181	-0.0848	0.0001	-0.0015	0.0005	0.0001	-0.0156
	(0.3339)	(0.7130)	(0.1351)	(0.9849)	(0.4994)	(0.5431)	(0.9957)	(0.1768)
$\beta_{log(mv)}$	-0.0274	-0.0623	0.0145	0.0039	0.0048	-0.0047	-0.0061	-0.0247
	(0.039)**	(0.000)***	(0.3638)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
β_{mtbv}	3.6966	3.9515	7.3365	1.2710	1.4955	-0.3688	-0.6776	-2.3554
	(0.2006)	(0.1870)	(0.0366)**	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
β_{dy}	0.0176	0.0196	0.0224	0.0033	0.0031	-0.0003	-0.0015	-0.0182
	(0.0169)**	(0.011)**	(0.0108)**	(0.000)***	(0.000)***	(0.0047)***	(0.000)***	(0.000)***
β_{tdce}	0.0154	0.0134	0.0068	0.0006	0.0002	0.0001	0.0001	-0.0031
	(0.0028)***	(0.0104)**	(0.2726)	(0.0274)**	(0.5690)	(0.4391)	(0.9726)	(0.0533)*
Adj.R^2	0.3504	0.3162	0.2684	0.3502	0.3254	0.2179	0.2577	0.1750

Notes: Cell entries are parameter estimates; p-values in parentheses; each column corresponds to the output of a different fixed effects regression; all dependent variables have been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comc} are the slope coefficients for the community strengths and community concerns indicators respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employment indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is dividend yield and tdce is the total debt to common equity ratio; entries of last row are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Moving on to Table 3.4, which presents the output of the estimation of model (3.11), there appears to be a statistically significant negative association between the aggregate measure of social strengths and firm beta (equal to -0.2940, significant at the 5% significance level) and a positive relationship between aggregate concerns and all risk metrics applied (slope of 0.3630 for beta, 0.3760 for Harlow and Row downside beta and 0.0185 for standard deviation, all significant at the 1% significance level). The fact that a great array of risk metrics verifies the positive relationship between risk and aggregate CSP concerns but the same does not happen for aggregate strengths further reinforces hypotheses 1b and 2. Also, since the statistically significant estimated slope coefficients are of either similar or greater absolute value than those of the individual component models, it appears that the effect of CSP on market risk is not necessarily better captured when disaggregated measures of social performance are used. However, all the results of the "aggregate models" that use utility measures as dependent variables are statistically insignificant, a finding that enhances the idea that disaggregated data may prove to be more useful in relevant research as *"various aspects may have differential impacts depending on the nature of the firm's business"* (Brammer, Brooks and Pavelin, 2006, p. 103). Overall, the financial risk impact of corporate social performance is not masked when the aggregate measures replace the individual components, so the rationale of Godfrey et al. (2009) that a multidimensional measure of social performance will likely conceal the wealth-enhancing effects of disaggregated CSP aspects is not verified in this case.

As is depicted in Table 3.5, an increase (decrease) of the "concerns leading to direct costs" component leads to a corresponding increase (decrease) of all the risk measures and this result is statistically robust at standard significance levels with the sole exception of the Bawa and Lindenberg beta. Thus hypothesis 3 is strongly supported and indeed this type of concern that results in losses of corporate funds through the imposition of fines and penalties is strongly positively related to both total and systematic risk. In general, the results of the models using utility measures follow the respective results of the models using measures of total risk, especially as risk aversion increases. This is intuitive because of the estimation of the certainty equivalents according to equation (3.9) and is in support of hypothesis 5b.

Table 3.4: Fixed effects regressions of the aggregated components model

	Beta	HR Beta	BL Beta	St.Dev.	Semi-St.Dev.	CE (γ=2)	CE (γ=5)	CE (γ=20)
c	1.1981	1.4931	0.8426	-0.0047	-0.0111	0.0427	0.0542	0.2395
	(0.000)***	(0.000)***	(0.000)***	(0.3792)	(0.0411)**	(0.000)***	(0.000)***	(0.000)***
β_{aggs}	-0.2940	-0.2400	-0.1320	0.0130	0.0110	-0.0010	-0.0040	-0.0440
	(0.0471)**	(0.1191)	(0.4672)	(0.0511)*	(0.1109)	(0.7365)	(0.3371)	(0.2145)
β_{aggc}	0.3630	0.3760	0.1590	0.0185	0.0125	0.0015	-0.0020	-0.0390
	(0.000)***	(0.000)***	(0.2052)	(0.000)***	(0.0112)**	(0.4250)	(0.5037)	(0.1133)
$\beta_{log(mv)}$	-0.0288	-0.0618	0.0120	0.0042	0.0050	-0.0047	-0.0061	-0.0260
	(0.0272)**	(0.000)***	(0.4445)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
β_{mtbv}	3.6470	3.7993	7.2500	1.2730	1.5050	-0.3705	-0.6795	-2.3489
	(0.2058)	(0.2026)	(0.0385)**	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
β_{dy}	0.0188	0.0206	0.0234	0.0034	0.0031	-0.0004	-0.0015	-0.0183
	(0.0102)**	(0.0074)***	(0.0075)***	(0.000)***	(0.000)***	(0.0046)***	(0.000)***	(0.000)***
β_{tdce}	0.0153	0.0134	0.0068	0.0006	0.0001	0.0001	0.0000	-0.0032
	(0.003)***	(0.01)**	(0.2726)	(0.0281)**	(0.6129)	(0.4554)	(0.9907)	(0.0482)**
Adj.R^2	0.3495	0.3157	0.2680	0.3457	0.3219	0.2176	0.2567	0.1731

Table 3.5: Fixed effects regressions of the "significant controversies concerns" model

	Beta	HR Beta	BL Beta	St.Dev.	Semi-St.Dev.	CE (γ=2)	CE (γ=5)	CE (γ=20)
c	1.1798	1.4717	0.8198	-0.0065	-0.0129	0.0433	0.0553	0.2499
	(0.000)***	(0.000)***	(0.000)***	(0.2181)	(0.0168)**	(0.000)***	(0.000)***	(0.000)***
β_{scc}	0.1344	0.1491	0.0171	0.0100	0.0060	0.0022	0.0010	-0.0077
	(0.0323)**	(0.0236)**	(0.8186)	(0.000)***	(0.0361)**	(0.0203)**	(0.5333)	(0.5991)
$\beta_{log(mv)}$	-0.0281	-0.0604	0.0144	0.0045	0.0053	-0.0048	-0.0063	-0.0277
	(0.0278)**	(0.000)***	(0.3468)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
β_{mtbv}	3.3592	3.4829	6.8438	1.2263	1.4648	-0.3610	-0.6580	-2.1301
	(0.2430)	(0.2415)	(0.0498)**	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.0012)***
β_{dy}	0.0190	0.0207	0.0240	0.0034	0.0032	-0.0004	-0.0016	-0.0187
	(0.0098)***	(0.0071)***	(0.0062)***	(0.000)***	(0.000)***	(0.0022)***	(0.000)***	(0.000)***
β_{tdce}	0.0155	0.0138	0.0073	0.0006	0.0002	0.0001	0.0000	-0.0035
	(0.0024)***	(0.0078)***	(0.2343)	(0.0121)**	(0.4363)	(0.5673)	(0.8206)	(0.0272)**
Adj.R^2	0.3487	0.3149	0.2677	0.3448	0.3213	0.2177	0.2564	0.1727

Notes: Cell entries are parameter estimates; p-values in parentheses; each column corresponds to the output of a different fixed effects regression; all dependent variables have been winsorised at the 1% level; c is the average of the firm specific fixed effects; βaggs and βaggc are the slope coefficients for the aggregate strengths and aggregate concerns indicators respectively, dcc is used for the "direct cocts concerns" indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is dividend yield and tdce is the total debt to common equity ratio; entries of last row are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

For all 3 types of models, the goodness of fit statistics are very similar for the same dependent variables. The adjusted R-squares of the models using risk measures range from approximately 27% (for the Bawa and Lindeberg beta) up to approximately 35% (for beta and standard deviation) and all are compared favourably to the Salama et al. (2011) estimations of R-squares equal to 11.5% for the fixed effects regression and 24.3% for the random effects regression as well as to the McGuire et al (1988) results that are characterised by R-squares of 13.1% for the total market risk model and 17.5% for the systematic market risk model. The adjusted R-squares are smaller when utility measures are applied, as they these models appear to explain, at a maximum, approximately 26% of the variability of investor utility (for a moderate level of absolute risk aversion equal to 5).

3.5.3 Categorisation according to specialisation of social interests

Re-categorising firms according to the industrial super-sectors in which they operate and the respective theorised specialisation of social interests leads to the creation of firm-year observation samples in which the association between the respective social/environmental issues and financial risk is expected to be stronger, according to hypothesis 4. The industrial supersectors that are put in the same pool of influential stakeholder groups are presented in Figure 3.3. The reasoning behind this categorisation is reasonably straight forward, although one can always question its validity and argue in favour of a different taxonomy. In industries with high environmental impacts (such as chemicals, resources, oil and gas), there is likely to be a higher awareness of the environmental responsibility of the firms operating in them. In sectors where labour intensity, working conditions and safety are major issues, like construction materials and production of industrial goods and services, the treatment of employees will probably be of greater importance. For companies where brand reputation and client satisfaction is imperative (e.g. banks, financials, or healthcare), a strong performance in the product safety and quality category of social responsibility is frequently one of the main corporate objectives. Lastly, those firms wanting to generate a reputation that is associated with family values and commitment to local communities are inclined to orient their attention towards performing well in the respective CSP dimension. The descriptive statistics depicted on Table 3.2c are in alignment with this reasoning.

Figure 3.3: Industrial categorisation according to theorised specialisation of social interests of stakeholder groups

Community	Employees	Environmental Activists	Consumers
• Banks • Finance • Insurance • Perishable Household Goods • Real Estate • Telecoms	• Automobiles • Basic Resources • Construction Materials • Industrial Goods/Services • Oil and Gas • Travel and Leisure • Telecoms	• Automobiles • Basic Resources • Chemicals • Construction Materials • Industrial Goods/Services • Oil and Gas • Utilities	• Banks • Finance • Healthcare • Insurance • Telecoms • Utilities

Since the interest is now focused on the effects of specific dimensions of strengths and concerns, only model (3.10) is used, and the fixed effect panel regressions are run on the 4 different subsamples.[61] Following the same reasoning, reporting the output of the coefficients of all components for all subsamples does not provide any useful information, so only the coefficients of the dimension(s) of interest are reported for each subsample. In a nutshell, according to the output of the estimations provided in Table 3.6, Community strengths appear to be negatively related to total firm risk and Community concerns remain positively (but insignificantly) related to systematic risk. These results are in alignment with those that were estimated when the whole sample was used but the p-values associated with the estimates of the slopes of the individual components are not quite at the same level, being lower for strengths and higher for concerns.

When focusing on the subsample comprising of companies belonging to sectors in which employee issues are theorised to be notably important, the picture is not much different to that conveyed by the results of the entire sample. Both Employment and Diversity concerns are positively related to risk, when either total or systematic metrics are applied in the fixed effects regressions. The significance and algebraic value of the Diversity concerns estimates is significantly increased compared to the equivalent

[61] The same subsample was created for Employment and Diversity issues since the same type of stakeholders are likely to be interested in them and make demands of and claims on companies.

of the core analysis. Furthermore, there are now indications that higher Diversity strengths lead to slightly elevated investor utility while poor performance in the area of Diversity concerns has the contrary effect.

The conclusions drawn when examining the results of the analyses of the Environmental activists and Consumers samples are similar to one another. The majority of the relevant estimated slopes remain statistically insignificant (with the exception of Environmental concerns) but they now have signs that confirm to the strategic view of Corporate Social Responsibility. Specifically, Environmental strengths are now negatively related to both systematic and total risk measures as are Product Safety and Quality strengths. The respective slopes of the concerns components are very similar in size and identical in sign to those of the original estimates depicted in Table 3.3. Interestingly, for the vast majority of regressions run in the framework of these subsamples, the goodness of fit statistics compare unfavourably to those of the estimations created by the study of the initial sample, although they are still of significant size.

Table 3.6: Fixed effects regressions of subsamples created by matching stakeholders with supersectors according to alleged salience

	Beta	HR Beta	BL Beta	St.Dev.	Semi-St.Dev.	CE (γ=2)	CE (γ=5)	CE (γ=20)
Community								
β_{coms}	-0.1989	-0.2054	-0.1975	-0.0207	-0.0205	0.0044	0.0099	0.0928
	(0.0619)*	(0.0586)*	(0.1281)	(0.000)***	(0.000)***	(0.0082)***	(0.000)***	(0.0021)***
β_{comc}	-0.0543	0.0137	0.1000	-0.0006	-0.0054	-0.0011	-0.0006	0.0002
	(0.7482)	(0.9360)	(0.6218)	(0.9535)	(0.5665)	(0.7146)	(0.9129)	(0.9974)
Adj.R^2	0.3571	0.3290	0.2413	0.2578	0.2328	0.1701	0.2130	0.2265
Employees (diversity)								
β_{divs}	0.1531	0.1824	0.0874	-0.0021	-0.0027	0.0049	0.0052	0.0062
	(0.2122)	(0.1677)	(0.5636)	(0.6880)	(0.6328)	(0.0131)**	(0.0792)*	(0.8036)
β_{divc}	0.1687	0.1588	0.2254	0.0032	0.0030	-0.0029	-0.0035	-0.0104
	(0.0247)**	(0.0499)**	(0.0114)	(0.2606)	(0.3261)	(0.0084)***	(0.0241)**	(0.3978)
Adj.R^2	0.2976	0.2619	0.2442	0.3799	0.3385	0.2436	0.2975	0.2262
Employees (employment issues)								
β_{emps}	-0.1454	-0.1981	-0.1434	0.0104	0.0096	-0.0028	-0.0049	-0.0387
	(0.1349)	(0.0589)*	(0.2114)	(0.0049)***	(0.0165)**	(0.0508)*	(0.0164)**	(0.0061)***
β_{empc}	0.1211	0.1185	0.1158	0.0103	0.0091	0.0003	-0.0020	-0.0297
	(0.1903)	(0.2356)	(0.2859)	(0.0021)***	(0.0109)**	(0.8088)	(0.3138)	(0.0756)*
Adj.R^2	0.2976	0.2619	0.2442	0.3799	0.3385	0.2436	0.2975	0.2262
Environmental Activists								
β_{envs}	-0.0604	-0.0571	-0.0347	-0.0009	-0.0030	-0.0002	0.0009	0.0229
	(0.5437)	(0.6014)	(0.7777)	(0.8158)	(0.4777)	(0.9017)	(0.6726)	(0.2299)
β_{envc}	0.1949	0.2826	0.1792	-0.0021	-0.0025	0.0034	0.0039	0.0140
	(0.0719)*	(0.1942)	(0.0866)	(0.5589)	(0.5638)	(0.0398)**	(0.1068)	(0.5646)
Adj.R^2	0.3516	0.3176	0.2917	0.3959	0.3494	0.2136	0.2642	0.1745
Consumers								
β_{psqs}	-0.4566	-0.3443	-0.1530	-0.0009	0.0027	-0.0035	-0.0027	0.0081
	(0.0509)*	(0.1189)	(0.5713)	(0.9174)	(0.7662)	(0.2875)	(0.6040)	(0.8761)
β_{psqc}	0.0577	0.1180	0.0839	0.0057	0.0040	0.0003	-0.0018	-0.0464
	(0.4386)	(0.1241)	(0.3562)	(0.1157)	(0.3030)	(0.8202)	(0.3990)	(0.0439)**
Adj.R^2	0.3721	0.3317	0.2568	0.2461	0.2208	0.1470	0.1753	0.1440

Notes: Cell entries are parameter estimates; p-values in parentheses; each column corresponds to the output of a different fixed effects regression; all dependent variables have been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comc} are the slope coefficients for the community strengths and community concerns indicators respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employment indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is dividend yield and tdce is the total debt to common equity ratio; entries of last row are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Overall, when categorising firms according to the sphere of influence of particular stakeholder groups, the results do not appear to be startlingly different from those originating from the analysis on the entire S&P 500 cross-industrial sample in terms of economic or statistical significance (as was stated in hypothesis 4, but some of the signs of the insignificant slope coefficients which were counterintuitive and contradicted the stakeholder theorists hypotheses are corrected with this refinement process. Thus, it seems that in spite of the different firm characteristics and the considerable industrial variability of the longitudinal sample, the stronger intuitive results remain intact even under the spectrum of a more focused analysis while some of the non-significant results that were ill-explained by the strategic view of CSR are accounted for. The validity of the core analysis is actually reinforced in this respect.

3.5.4 Moderating effects of volatility conditions

During the development of the hypotheses that this study examines, it was stated that the overall volatility of the stock markets may be an important moderating factor in the relationship between CSP and financial risk. To test this assertion, the panel data sample was split into two smaller subsamples according to the average level of stock return volatility for a yearly period. Figure 3.4 clearly shows that average weekly stock return volatility remains within a range between 3% and a little more than 5% for most years of the sample but spikes up to 6.5% and higher for the periods 1999-2001, attributable to the burst of the "dot-com" bubble, and 2008-2009, when the downturn in the US real estate market lead to a global economic crisis. So firm-year observations from these two periods are stacked together and then structured appropriately in the same way as the original sample was.

Figure 3.4: Average weekly volatility of year by year S&P 500 samples

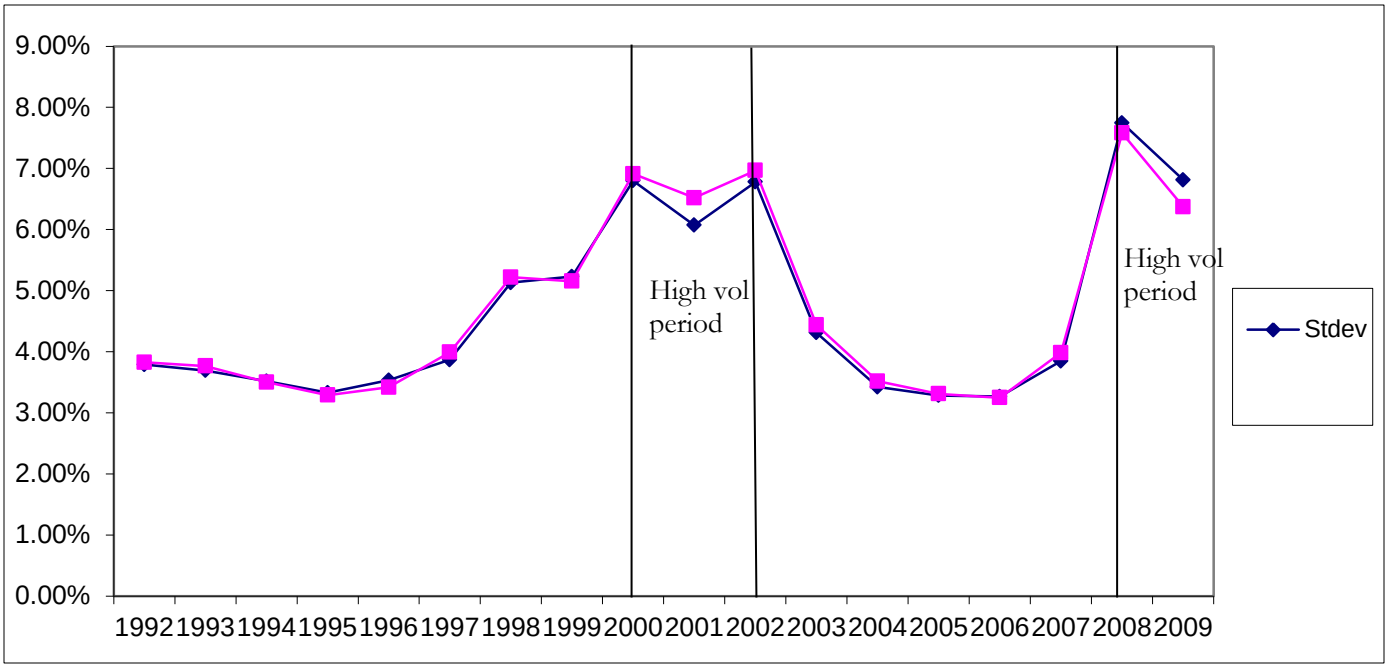


Table 3.7 presents the estimation of equation (3.10) for the "high volatility" sample. The statistically significant results are once more very similar to those produced by the core analysis of the initial sample, revealing a positive relationship between Employment/Environment concerns and financial risk. The slope coefficients between these concerns components and the various risk measures are often 3 times greater than the ones estimated when the entire longitudinal sample was used. For example when beta is treated as the dependent variable, the slope coefficients estimated in the initial analysis are 0.1906 for Employment concerns and 0.1680 for Environment concerns while the respective values for the "high volatility sample" are 0.3395 and 0.3174 respectively. No significant results are found when utility metrics are used as dependent variables.

Table 3.7: Fixed effects regressions of the individual components model when sampling for periods of high volatility

	Beta	HR Beta	BL Beta	St.Dev.	Semi-St.Dev.	CE (γ=2)	CE (γ=5)	CE (γ=20)
c	-0.2735	0.2446	-0.6215	0.0194	-0.0003	0.0785	0.0901	0.2725
	(0.3422)	(0.4166)	(0.0417)**	(0.1701)	(0.9813)	(0.000)***	(0.000)***	(0.0161)**
β_{coms}	-0.1462	-0.2265	-0.2393	0.0143	0.0159	-0.0039	-0.0091	-0.1121
	(0.4154)	(0.2296)	(0.2128)	(0.1363)	(0.1028)	(0.2554)	(0.1430)	(0.1202)
β_{divs}	0.3778	0.2845	0.2485	0.0084	0.0044	-0.0032	-0.0061	-0.0579
	(0.0072)***	(0.0632)*	(0.1179)	(0.2438)	(0.5776)	(0.2828)	(0.2311)	(0.2832)
β_{emps}	0.0666	0.1428	0.1244	0.0008	0.0023	0.0011	-0.0023	-0.1041
	(0.6365)	(0.3392)	(0.4262)	(0.9138)	(0.7521)	(0.6960)	(0.6505)	(0.04)**
β_{envs}	-0.0092	-0.0104	-0.0205	-0.0082	-0.0115	0.0029	0.0054	0.0357
	(0.9528)	(0.9512)	(0.9044)	(0.2834)	(0.1461)	(0.3888)	(0.3195)	(0.5021)
β_{psqs}	0.2295	0.1050	0.0933	-0.0012	-0.0012	0.0012	0.0017	-0.0006
	(0.2742)	(0.6403)	(0.6940)	(0.9006)	(0.9036)	(0.7981)	(0.8144)	(0.9924)
β_{comc}	-0.0766	-0.0506	-0.0473	-0.0138	-0.013	0.0029	0.0085	0.1096
	(0.6240)	(0.7673)	(0.7846)	(0.0969)*	(0.1323)	(0.3483)	(0.1264)	(0.0842)*
β_{divc}	0.0836	0.0709	0.0799	-0.0024	-0.0033	-0.0004	0.0007	0.0161
	(0.4013)	(0.5114)	(0.4674)	(0.6395)	(0.5279)	(0.8340)	(0.8316)	(0.6461)
β_{empc}	0.3395	0.2352	0.2488	0.0142	0.0073	0.0012	-0.0023	-0.0577
	(0.0022)***	(0.0458)**	(0.0353)**	(0.0055)***	(0.1784)	(0.5957)	(0.5202)	(0.1312)
β_{envc}	0.3174	0.4966	0.4767	0.0002	0.0030	0.0045	0.0054	0.026
	(0.0525)*	(0.007)***	(0.011)**	(0.9759)	(0.7236)	(0.1661)	(0.3056)	(0.6428)
β_{psqc}	0.1644	0.1223	0.1826	0.0054	0.0020	-0.0029	-0.0055	-0.0602
	(0.1089)	(0.2745)	(0.1143)	(0.3069)	(0.7237)	(0.1904)	(0.1347)	(0.1275)
$\beta_{log(mv)}$	0.0971	0.0441	0.1319	0.0035	0.0060	-0.0091	-0.0107	-0.0310
	(0.0019)***	(0.1738)	(0.000)***	(0.021)**	(0.000)***	(0.000)***	(0.000)***	(0.0113)**
β_{mtbv}	19.3738	17.8449	18.5876	1.1377	1.4048	-0.1091	-0.4468	-2.0502
	(0.000)***	(0.0012)***	(0.001)***	(0.000)***	(0.000)***	(0.3123)	(0.0141)**	(0.2486)
β_{dy}	0.0967	0.0929	0.1108	0.0036	0.0032	0.0001	-0.0014	-0.0241
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.6907)	(0.0059)***	(0.000)***
β_{tdce}	0.0165	0.0195	0.0201	0.0005	-0.0001	-0.0004	-0.0005	-0.0047
	(0.1370)	(0.0955)*	(0.0818)*	(0.4350)	(0.8909)	(0.1240)	(0.2411)	(0.3472)
Adj.R^2	0.5056	0.4481	0.4496	0.4721	0.4095	0.3147	0.3456	0.2175

Notes: Cell entries are parameter estimates; p-values in parentheses; each column corresponds to the output of a different fixed effects regression; all dependent variables have been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comc} are the slope coefficients for the community strengths and community concerns indicators respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employment indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is dividend yield and tdce is the total debt to common equity ratio; entries of last row are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

The results of the estimation of model (3.10) when the "low volatility" sample is used are provided in Table 3.8. The picture is now very different. It is the strengths components that produce more pronounced results, with Diversity and Employment being significantly negatively related to risk (the former to both total and systematic risk, the latter only to systematic risk), while concerns produce results that are less significant and more spuriously distributed across the various risk metrics. Community and Environment concerns show some signs of significant positive association with the various betas.

When these results are jointly taken into account, it appears as if, especially in times of financial distress, social and environmental corporate concerns are priced by the market and lead to higher levels of stock price volatility for companies that 'do wrong', while in times of economic euphoria, or at least times of no significant general economic hazards, the importance of CSP strengths becomes more pronounced and is able to reduce the levels of a firm's stock market risk. To put it differently, these results seem to provide evidence that the market encourages a "slack resources" type of firm behaviour (Waddock and Graves, 1997) during good times as CSP strengths have stronger wealth-protective effects then. On the other hand, it appears that the market concentrates more on CSP concerns during bad times, when it penalises the companies that are being socially irresponsible more severely through higher financial risk.

It should also be noted that the adjusted R-squares of the estimated models for the high volatility periods are all considerably higher compared to those of the regressions of the original sample with a range between 40.9% and 50.6% when risk is used as a dependent variable. The fact that the usual winsorisation process is applied in the dataset before the model estimations are made helps to ensure that this observation is not likely to be an artefact of the volatility outliers that are bound to exist in these circumstances. A more intuitive explanation is that the importance of CSP (and the set of control variables) as a determinant of stock risk increases in times of economic turbulence.

It could be argued that because both market crises happened in the latter half of the entire sample (2000-2002 for the dot-com bubble and 2008-2009 for the credit crisis), the results coming from the sample splits into high and low volatility periods might in fact reflect a changing external environment in respect to societal expectations of firms.[62] In order to examine this assertion, I choose to split my sample in the middle of its time-series dimension and create two subsamples: one from 1992 to 2000

[62] I would like to thank an anonymous referee of the Financial Management journal for this observation. A paper based on this work was submitted and accepted at the journal as of April 2011.

and one from 2001 to 2009 (the dates refer to the financial data, the CSP variables being lagged by a year). I then repeat the original analysis and compare the earlier period results with those coming from the low volatility sample and the later period results with those of the high volatility sample. Despite the fact that these pairs of samples have many firm-year observations in common they do not really lead to similar conclusions. The coefficient estimates coming from the 1990s and 2000s subsamples are generally insignificant, small in size and often take different signs from the ones estimated when the entire dataset is split according to the levels of overall volatility. So it appears that the inferences that are drawn based on the splitting of our panel into high and low volatility periods are not influenced by a changing external environment with regard to CSP.

The general issue of endogeneity becomes more topical when discussing the results of the analyses of the volatility subsamples. It has been stated that in order to account for the potential existence of a contemporaneous, bidirectional association between CSP and firm risk, I lagged the independent variables that are used in the various models. However, in an attempt to address the possibility that there is a two-way lead-lag effect between the two variables of concern, I estimate alternative models in which systematic risk is the lagged independent variable and the various individual components of social strengths and concerns are the regressands. I do so for our entire panel dataset as well as for the high volatility and low volatility periods subsamples. The results of this robustness test strongly indicate that there is no economically significant evidence of a relationship running between systematic risk and subsequent CSP. The algebraic values of the estimated slope coefficients are particularly low and their statistical significance lower (or at most comparable in size) with that of the results of the main analysis. The same applies when aggregate strengths and aggregate concerns are used as dependent variables. The results of these tests are reported at the appendix of the chapter.

Table 3.8: Fixed effects regressions of the individual components model when sampling for periods of low volatility

	Beta	HR Beta	BL Beta	St.Dev.	Semi-St.Dev.	CE (γ=2)	CE (γ=5)	CE (γ=20)
c	1.5515	1.8693	1.0936	0.0517	0.0457	0.0214	0.0191	0.0386
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.0167)**
β_{coms}	-0.0258	-0.0385	0.0415	0.0010	0.0009	-0.0007	-0.0006	0.0032
	(0.7001)	(0.5867)	(0.6425)	(0.5301)	(0.6385)	(0.3851)	(0.5610)	(0.6217)
β_{divs}	-0.2336	-0.1777	-0.2098	-0.0057	-0.0053	0.0009	0.0017	0.0103
	(0.0021)***	(0.0266)**	(0.0326)**	(0.0036)***	(0.0194)**	(0.3755)	(0.1613)	(0.1833)
β_{emps}	-0.1664	-0.2017	-0.1758	0.0026	0.0015	0.0009	0.0005	-0.0041
	(0.028)**	(0.0124)**	(0.0654)*	(0.1567)	(0.4948)	(0.3086)	(0.6325)	(0.4944)
β_{envs}	0.1065	0.1203	0.1650	0.0042	0.0042	-0.0013	-0.0021	-0.0082
	(0.2330)	(0.1967)	(0.1476)	(0.0479)**	(0.0851)*	(0.1992)	(0.0886)*	(0.3096)
β_{psqs}	-0.2909	-0.2041	-0.1378	-0.0008	-0.0001	-0.0015	-0.0013	0.0120
	(0.0230)**	(0.1110)	(0.3825)	(0.7939)	(0.9742)	(0.3176)	(0.4653)	(0.4214)
β_{comc}	0.2305	0.2293	0.1442	0.0015	0.0018	0.0013	0.0011	-0.0034
	(0.0212)**	(0.0339)**	(0.2428)	(0.5274)	(0.5051)	(0.2463)	(0.4408)	(0.6731)
β_{divc}	-0.0055	-0.0087	-0.0388	-0.0011	-0.0010	-0.0007	-0.0005	0.0035
	(0.9206)	(0.8782)	(0.5628)	(0.3941)	(0.5136)	(0.2447)	(0.4990)	(0.4468)
β_{empc}	0.1099	0.0840	0.1345	-0.0023	-0.0031	-0.0009	-0.0004	0.0073
	(0.1508)	(0.3011)	(0.1559)	(0.2104)	(0.1616)	(0.3587)	(0.7249)	(0.4343)
β_{envc}	0.1770	0.2215	0.0722	0.0000	0.0000	0.0034	0.0033	-0.0005
	(0.0818)*	(0.0399)**	(0.5527)	(0.9892)	(0.9921)	(0.000)***	(0.0083)***	(0.9511)
β_{psqc}	-0.0830	-0.0286	-0.1290	-0.0039	-0.0053	0.0013	0.0019	0.0058
	(0.1359)	(0.6239)	(0.0646)*	(0.006)***	(0.0016)***	(0.0507)*	(0.0244)**	(0.3897)
$\beta_{log(mv)}$	-0.0496	-0.0884	0.0022	-0.0015	-0.0008	-0.0024	-0.0024	-0.0061
	(0.0021)***	(0.000)***	(0.9139)	(0.000)***	(0.0828)*	(0.000)***	(0.000)***	(0.000)***
β_{mtbv}	-0.7391	-1.1290	6.5707	0.7846	0.9586	-0.2130	-0.3544	-1.9886
	(0.8347)	(0.7605)	(0.1488)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
β_{dy}	-0.0482	-0.0383	-0.0396	-0.0013	-0.0009	0.0000	0.0000	-0.0017
	(0.000)***	(0.000)***	(0.0013)***	(0.000)***	(0.0074)***	(0.9807)	(0.8523)	(0.1700)
β_{tdce}	0.0125	0.0116	0.0044	-0.0001	-0.0003	0.0001	0.0002	0.0004
	(0.0523)*	(0.0747)*	(0.5905)	(0.4967)	(0.0867)*	(0.1318)	(0.1265)	(0.6704)
Adj.R^2	0.3163	0.2779	0.2244	0.4885	0.419	0.1631	0.2577	0.2657

Notes: Cell entries are parameter estimates; p-values in parentheses; each column corresponds to the output of a different fixed effects regression; all dependent variables have been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comc} are the slope coefficients for the community strengths and community concerns indicators respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employment indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is dividend yield and tdce is the total debt to common equity ratio; entries of last row are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

3.5.5 Robustness tests and additional analyses

3.5.5.1 Additional/Alternative control variables[63]

As was noted in section 4, there is a series of variables that if not incorporated in the model specifications, could lead to biased estimations of regression intercepts and slope coefficients. Two such control variables, whose details have already been discussed, are R&D intensity and firm funding liquidity. Dropping all firm-year observations for which the value of R&D expenditures is missing, and thus R&D intensity cannot be calculated, would lead to a huge loss of information, reducing the data sample to approximately 60% of its previous size. Instead, R&D intensity is set equal to zero when the value is missing, a not uncommon practice in relevant empirical research (Benson, Davidson and Wang, 2011). The sample will, however, be reduced to 5,979 firm-year observations (dropping about 1,000 from the entire dataset) due to missing values of funding liquidity.

When estimating specifications 11, 12 and 13 with the additional inclusion of R&D intensity, all results remain unchanged. The signs, values and statistical significance of the estimations of the coefficients as well as the goodness of fit statistics are remarkably close to those of the original specifications. The inclusion of the current ratio on top of R&D intensity, and the subsequent dropping of approximately 1,000 observations, also leads to very similar results, with most of the concerns components (Community, Diversity, Environment and Employment, Aggregate concerns and concerns leading to direct losses) being significantly positively connected with financial risk (especially the systematic metrics).

In addition, because of the different capital structures between firms operating in sectors with fundamentally dissimilar characteristics, alternative measures of financial leverage are used in the specifications of the basic models. Specifically, the total debt to common equity ratio is interchanged with the total debt to total sales and total debt to total assets ratios. The results remain qualitatively unchanged.

[63] The statistical tables containing the results of this subsection are not reported but are available from the author upon request.

3.5.5.2 Quantile regression

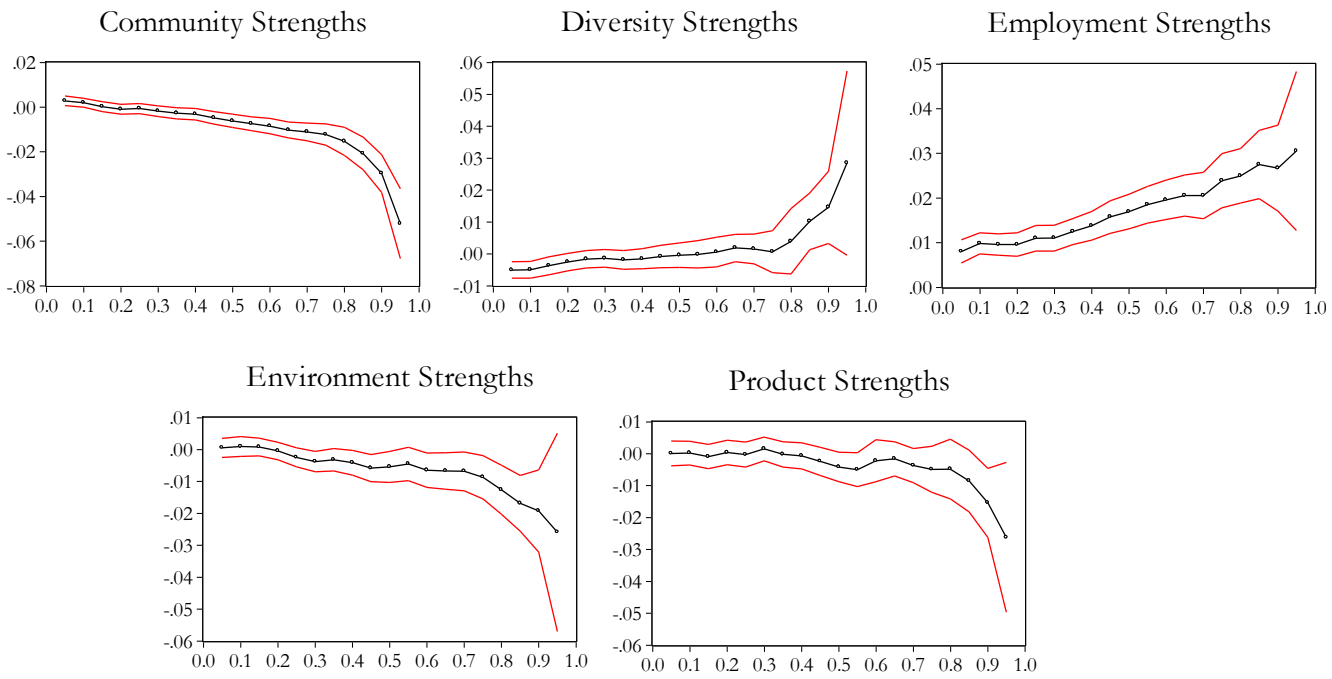
As an addition to the analysis that led to previous estimations, quantile regression is performed on model (3.10). Quantile regressions provide a much richer characterisation of the data. Instead of running regressions based on the conditional mean of a dependent variable given a set of independent variables (as is the approach in OLS estimations), the researcher can utilise quantile regressions to estimate the association between the variables of interest in different points (quantiles) of the conditional distribution of Y given X. In this study, this is interpreted as looking at the strength of the association between financial risk and CSP at different points of the conditional distribution of the risk metric of choice. In addition, quantile regression methods produce estimators which can be consistent under weaker stochastic assumptions than least-square types of methods (Cameron and Trivedi, 2005, p.85), so they constitute semiparametric approaches. It must be noted that the most appropriate way to implement such an estimation in the framework of a panel data set, would be through the application of robust penalised quantile regression estimators (Koenker, 2004). Recognising this limitation, the results presented here constitute only a rule of thumb of the actual variability of the relationship between CSP and risk.

Due to the extremely large number of results that this approach produces, only the standard deviation of weekly stock returns will be used as a risk metric and only the individual components will be used as independent variables (along with the relevant control variables in model (3.10) which are of no intrinsic interest and as such will not be presented). The regression is run on 19 different quantiles of the conditional distribution of standard deviation, starting at the 5^{th} percentile, continuing by increasing 5% at a time until the 95^{th} percentile. The Huber Sandwich method of coefficient covariance is applied along with the Epanenchnicov Kernel sparsity estimation and the Hall-Sheather bandwidth method. The maximum number of iterations for convergence is set to 500 (although a much higher number of maximum iterations was also used and shown not influence the results).

The figures of the quantile processes of the estimated slope coefficients of the CSP components are very interesting. The quantile scale is depicted on the horizontal axis with the quantile values (estimated slopes) on the vertical axis. The 95% confidence interval boundaries are also plotted around the estimates and provide a glimpse of the magnitude of the standard errors of the estimates at every point. The association between Community strengths and the standard deviation of returns appears to become more and more negative for higher levels of firm risk. In practical terms, this could be interpreted to mean that the wealth-protective effects of a company's positive posture towards local

communities would be more pronounced for those companies whose stocks are more volatile. The pictures that are presented for Environment and Product strengths are very similar while the opposite is true for Diversity and Employment strengths, whose association with risk becomes more and more positive for higher levels of risk; a result which reinforces the original findings from the panel data estimations for the coefficients of these components.

Figure 3.5: Quantile Process Estimates for strength components (95% confidence interval)

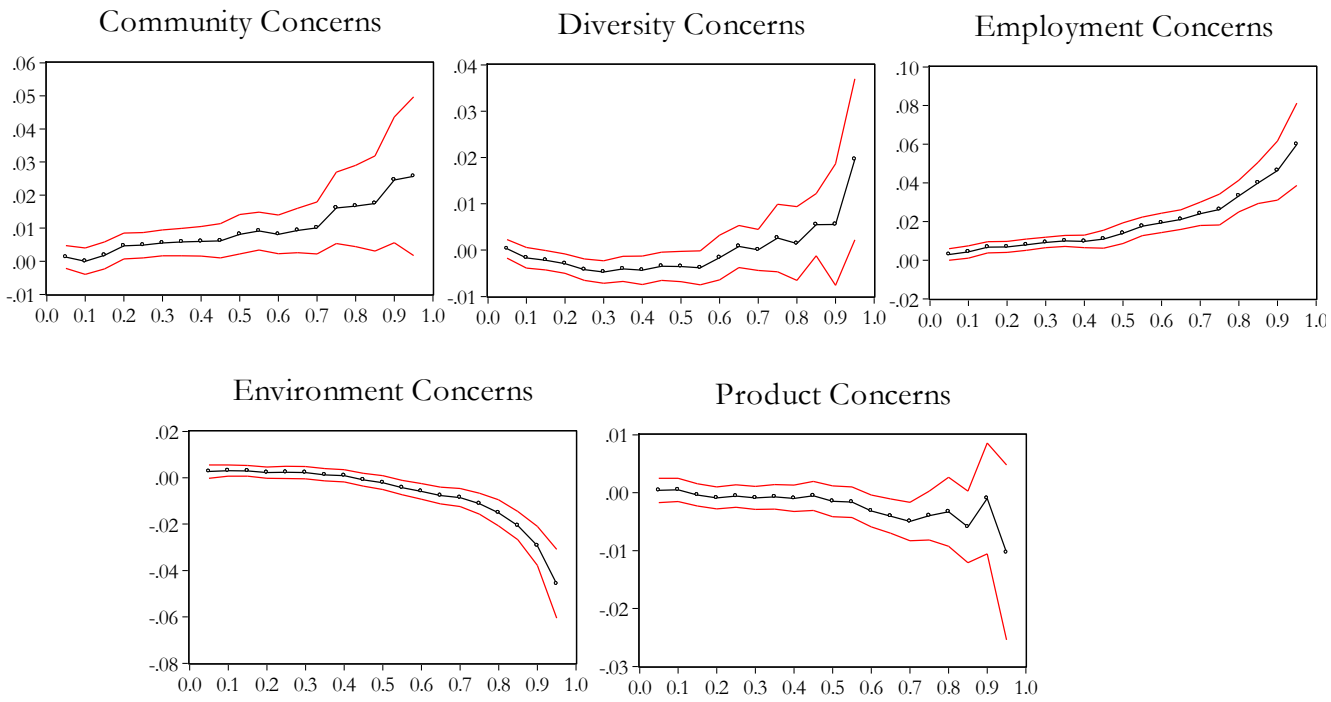


Note: Quantiles of the conditional distribution of the standard deviation of returns are on the X axis and slope estimates on the Y axis.

Looking at the quantile processes of the various concerns components, the increasingly positive relationship between Community and Employment concerns and risk is evident. The same could be said for the quantile process of risk given Diversity concerns though the relationship going towards the negative in the first percentiles before rapidly increasing and becoming positive. These findings show that the impact of these types of concerns on financial risk increases along with the level of risk itself. As for the Environmental and Product Safety/Quality concerns, their links with standard deviation appear to be very stable and close to zero for the low and intermediate percentiles but become lower

towards the higher quantiles (where the confidence intervals are much wider, however, and thus the estimation is questionable). This last observation could mean that for the "riskier" firms, expenditures towards the purpose of the implementation of practices that would reduce these sort of concerns would be considered a misallocation of corporate resources, exactly because those firms may face other, non-CSP problems which are considered by the market to be the true sources of the firms' risk and as such are more pressing and important.

Figure 3.6: Quantile Process Estimates for concern components (95% confidence interval)



Note: Quantiles of the conditional distribution of the standard deviation of returns are on the X axis and slope estimates on the Y axis.

3.5.5.3 Extension to smaller firms

Up to this point, this study has concentrated on the relationship between CSP and financial risk solely within the framework of the large, highly visible firms listed in the S&P 500 Composite Index. It would be intriguing to take a glimpse at how the results change in the presence of much smaller companies in the sample. The analysis is likely to lead to somehow different conclusions for a number of reasons.

First of all, because smaller companies tend to be less visible, especially those that are not listed on the NYSE (Baker et al., 1999), it is much harder for stakeholders to accumulate enough information about their practices and programs in order to make solid judgements about the social performance. Those stakeholders that are well informed are usually very close to the firm, their interests and beliefs in alignment with those of the corporate entity, a fact that could greatly influence their opinion concerning the social/environmental effects of various firm practices and activities. In addition, even if stakeholders are informed about the actions of smaller firms, the impact of these actions on society and the environment as a whole is likely to be much smaller than that of larger companies. For example, there are studies indicating that small businesses perceive their probable magnitude of consequences towards the environment to be negligible (Lepoutre and Heene, 2006 p. 260).

Furthermore, a lack of resources is considered an important factor that is hampering small and medium sized companies' abilities to engage in social responsible behaviour or even sometimes refraining from irresponsible behaviour. Taking the previous discussion into consideration, the reasonable ex ante expectation is that stakeholders' demands are less strict when it comes to the social performance of smaller firms compared to their demands of the larger antagonists. To test this assertion, the entire KLD sample of firms observed between 2003 and 2008 is used. In these years, KLD expanded its data universe to include the 3,000 largest US companies by market capitalisation. A significant number of firm-year observations are dropped due to lack of data availability or extremely low trading volume which could create "thin trading" issues which influence the estimation of the financial risk measures. This process results in the construction of a sample containing 3,605 cross-sections in a period of 6 years for a total of 13,937 firm-year observations.

In the case of this sample, there is no self-evident stock index to choose as a representative market proxy that should be used in the calculation of the systematic risk metrics (unlike the S&P 500, which was the obvious choice as the market proxy for the S&P 500 firms). To deal with this issue, a value-weighted market index is constructed on a year by year basis, using the percentage returns of the stocks of the firms for which all relevant information is available. In every other respect, the structuring of the data, calculation of risk and utility measures and model specification remain identical to those applied in the S&P 500 sample.

The selection of the appropriate econometric estimation is a problematic issue for this sample. Intuition suggests that the random effects model (GLS estimation) seems to be more fitting, since the variability of firm characteristics is probably sufficient to consider each observation as a random draw

from the population of US companies. However, Hausman tests strongly reject the null hypothesis of the random effects model not being misspecified (p-values are usually zero to three decimal places) not leaving much to disagree about. Thus, I select to estimate a fixed effects model and focus on how its results compare with those from the S&P 500 sample. The details of the fixed effects model's estimation have already been discussed in Subsection 3.4.3.

The estimations depicted in Table 3.9 show that the Community, Diversity and Product strength components are significantly negatively linked with most risk metrics. Environment Strengths are also negatively related to market risk but these results are insignificant. Employment strengths, however, remain positively associated with total risk as was the case for the S&P 500 sample of firms. At the other end of the spectrum, Diversity and Employment concerns have positive slope coefficients when most risk measures are used as dependent variables. However, the exact opposite is true for Environmental concerns and Product safety/quality concerns. There are various ways that this last observation can be explained.

Having a closer look at the results of the Environment and Product concerns, it appears possible that the financial effects of these particular CSP dimensions (in the framework of a data sample consisting predominantly of small and medium sized firms) offer protection mainly from idiosyncratic risks which are not fully captured by the risk metrics employed in this study. This may explain why although both types of concerns are significantly negatively related with systematic risk measures, they are at the same time positively related to total risk measures. An unobserved wealth-destructive effect arising from the increase of the idiosyncratic risk components that Environment and Product concerns induce would resolve the above mentioned discrepancy.

Alternatively, it could be that stakeholders recognise the challenges of limited resources (Tilley, 2000) and significant viability issues with which small and medium size firms are faced, combined with the minor individual impact of their social/environmental practices, and thus do not take action against certain types of irresponsible corporate behaviour. More specifically, Lepoutre and Heene (2006) argue that there is pressure for CSR actions by small firms with reference to their elationships with their internal stakeholders but not so much with their external ones: *"The imperative for socially responsible action is therefore mostly felt with regard to internal stakeholders and in a much lower level with regard to external stakeholders and the natural environment compared to larger firms"* (p.261) which would explain why, according to the findings of this study, there seems to be a higher level of financial risk associated with higher Employment and Diversity concerns but not with Environmental and Product concerns.

Overall, it appears that when smaller firms are included in the sample, the market is more willing to reward firms that are socially responsible than penalise firms that are socially irresponsible, the precisely converse conclusion of that inferred from the S&P 500 sample. In this respect, the market seems to behave towards smaller firms like a parent behaves towards his young offspring: rewards its good deeds and forgives its shortcomings. As has been mentioned, this can be attributed to:

a) Myopic internal stakeholders due to their proximity as well as interest and ethical alignment with the firm (more so than the case is for larger corporations which arguably tend to be more impersonal).

b) Potential magnitude of consequences of small firm social irresponsibility is negligible in certain dimensions (especially with regard to the Environment).

c) Recognition of the significant viability issues and lack of corporate resources which characterise smaller firms.

Table 3.9: Fixed effects regressions of the individual components model when small capitalisation firms are included in the sample

	Beta	HR Beta	BL Beta	St.Dev.	Semi-St.Dev.	CE (γ=2)	CE (γ=5)	CE (γ=20)
c	3.0169	3.2295	1.8114	0.0777	0.0349	0.0630	0.0459	-0.6541
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
β_{coms}	-0.1062	-0.1080	-0.2150	-0.0190	-0.0170	0.0054	0.0105	0.0945
	(0.3626)	(0.3720)	(0.1506)	(0.0198)**	(0.0187)**	(0.0363)**	(0.0354)**	(0.4524)
β_{divs}	-0.2271	-0.1830	-0.1780	0.0155	0.0136	-0.0053	-0.0092	-0.1370
	(0.0244)**	(0.0706)*	(0.1456)	(0.0058)***	(0.0089)***	(0.0059)***	(0.0125)**	(0.1593)
β_{emps}	-0.1050	-0.0510	0.0184	0.0376	0.0331	-0.0061	-0.0170	-0.2460
	(0.2442)	(0.5764)	(0.865)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.0018)***
β_{envs}	-0.1037	-0.0440	-0.0240	-0.0064	-0.0043	0.0029	0.0084	0.2445
	(0.3080)	(0.6885)	(0.8537)	(0.2989)	(0.4674)	(0.1716)	(0.0336)**	(0.0099)***
β_{psqs}	-0.3817	-0.3800	-0.3990	-0.0018	-0.0025	0.0001	-0.0020	-0.1300
	(0.018)**	(0.0179)**	(0.0354)**	(0.8214)	(0.7368)	(0.9790)	(0.7277)	(0.4321)
β_{comc}	-0.1190	-0.1840	-0.1380	0.0105	0.0076	-0.0003	-0.0012	0.0507
	(0.2587)	(0.085)*	(0.2827)	(0.1453)	(0.2436)	(0.8978)	(0.8059)	(0.6920)
β_{divc}	0.1489	0.1510	0.1521	0.0109	0.0096	-0.0014	-0.0051	-0.1760
	(0.0455)**	(0.0429)**	(0.0806)*	(0.0091)***	(0.0082)***	(0.2842)	(0.0901)*	(0.0427)**
β_{empc}	0.0006	-0.0480	0.0024	0.0423	0.0384	-0.0077	-0.0190	-0.3110
	(0.9926)	(0.4886)	(0.9767)	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
β_{envc}	-0.2644	-0.2870	-0.4160	0.0100	0.0074	0.0047	0.0057	0.1166
	(0.0346)**	(0.029)**	(0.0079)***	(0.2216)	(0.3309)	(0.0841)*	(0.2978)	(0.4089)
β_{psqc}	-0.1940	-0.1530	-0.1760	0.0122	0.0118	-0.0012	-0.0045	-0.0370
	(0.0100)***	(0.0517)*	(0.0582)*	(0.0101)**	(0.0076)***	(0.4392)	(0.1747)	(0.6788)
$\beta_{log(mv)}$	-0.2491	-0.2811	-0.0866	-0.0043	0.0015	-0.0089	-0.0071	0.0865
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.0792)*	(0.000)***	(0.000)***	(0.000)***
β_{mtbv}	14.2131	15.6157	18.0980	-1.5925	-1.2621	-0.0124	0.3696	13.6154
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.8934)	(0.0466)**	(0.0136)**
β_{dy}	0.0370	0.0343	0.0575	0.0069	0.0064	-0.0011	-0.0029	-0.0426
	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
β_{tdce}	0.0191	0.0169	0.0182	0.0047	0.0038	-0.0010	-0.0025	-0.0605
	(0.0032)***	(0.0097)***	(0.0219)**	(0.000)***	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Adj.R^2	0.3668	0.3600	0.2890	0.3845	0.3497	0.2403	0.2516	0.2280

Notes: Cell entries are parameter estimates; p-values in parentheses; each column corresponds to the output of a different fixed effects regression; all dependent variables have been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comc} are the slope coefficients for the community strengths and community concerns indicators respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employment indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is dividend yield and tdce is the total debt to common equity ratio; entries of last row are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

3.6. Summary

This study investigates the relationship between corporate social performance and financial risk per se, using a wide array of measures to capture both, for an extensive panel data sample of US companies between the years 1992 and 2009. In addition, the association between CSP and investor utility is examined. The main finding is that most of the individual social strength components (Community, Diversity, Employment, Product safety and quality) are negatively but insignificantly associated with systematic firm risk while most of the individual social concern components (Community, Employment, Environment) are significantly positively related to measures of systematic and total risk. The fact that the use of both conventional and downside risk measures leads to the same conclusions adds convergent validity to the analysis. Utility measures lead to results of great variability and small statistical significance in accordance with the fact that there is no clear consensus in the literature that researches the wealth-enhancing effects of CSP. Even with the additional inclusion of higher moments (skewness and kurtosis), it appears that the risk/return trade-off is such that no clear utility gain or loss can be realised by investing in firms characterised by different levels of social and environmental performance.

The results of aggregate strength and concern measures are aligned with those of the individual components and their impacts on risk are actually more pronounced. Furthermore, socially irresponsible actions that lead to significant controversies and even the imposition of fines and penalties on the firm are strongly positively related to all measures of risk. Creating subsamples of firms according to a specialisation of social interests with respect to the industrial sector that each firm operates shows that the magnitude of the risk effects of the Community and Environmental dimensions of CSP do not become more pronounced in this framework of analysis.

Interesting conclusions are also drawn when I try to investigate how the general conditions of market volatility moderate the CSP-risk relation. In comparison with the results of the main part of this study, it becomes more visible that in times of small or moderate levels of volatility, firms that engage in socially responsible behaviour are characterised by lower levels of market risk while during times of high volatility, firms that are socially irresponsible are associated with higher levels of financial risk. Lastly, when using a wider sample consisting primarily of small and medium sized firms, individual strength components are more strongly negatively related to risk and individual concern components are less strongly positively (or

even negatively) related to risk, compared to the main results. One interpretation of these findings is that the market is more willing to reward smaller firms that are socially responsible than penalise those that are socially irresponsible because it recognises the barriers to corporate behaviour that are set by the limitation of resources they face.

By concentrating on an under-researched question, this study manages to uncover new pieces of the CSP-CFP puzzle. The finding that corporate social performance affects the ability of a company to cope with adverse systemic economic shocks should be considered by firm managers when they make strategic business decisions and private or institutional investors when they are trying to identify the optimal asset allocation of their wealth. The latter is especially true for those institutional investors (pension funds, life assurance companies) that have significantly predictable outflows to beneficiaries and want to invest in shares that are not very volatile. Future research may use this study as a starting point to examine the mediating and moderating effects of other factors in the CSP-risk relation, such as the interactions between social/environmental strengths and concerns and their potential impact on financial risk and returns, or concentrate on revealing the nature of the idiosyncratic elements of risk that are affected by socially/environmentally responsible and irresponsible behaviour.

4.The Effects of Corporate Social Performance on the Cost of Corporate Debt and Credit Ratings

4.1 Introduction

In the previous chapter, it was argued that not enough empirical research has be conducted with regard to what was called the "backdoor mechanism" connecting corporate social performance and corporate financial performance, i.e. the fact that superior CSP may lead to a reduction of financial risk. It was supported that a company which is consistently socially/environmentally responsible (or at least less irresponsible) should enjoy financial benefits in the form of fewer downward adjustments and less volatility in its share price (compared to less socially responsible, or more irresponsible, firms). Several possible reasons were given in favour of this view. According to a strictly economic rationale, high levels of CSP can be associated with low financial risk through lower probabilities of suffering legal prosecutions and fines, less stringent regulatory controls, more stable relations with the government and the financial community (McGuire et al., 1988), and a more supportive attitude on the part of employees and communities during times of crisis. Also, there could be a signaling effect so that high CSP is considered to be a sign of superior management skills, thus indicating a firm which is likely to be characterised by financial stability (Waddock and Graves, 1997). Lastly, there is Godfrey's (2005) argument, according to which, better protection of corporate reputational and relational wealth is achieved by higher degrees of CSP. The overall view that was taken was that negative corporate social/environmental actions can induce stakeholders to reciprocate in ways that are likely to harm the bottom line of the respective firms whereas proactive, beneficial social/environmental actions may protect companies from such damaging economic impacts.

The validity of this assertion could be tested in the framework of equity or debt markets alike. Chapter 3 focused solely on the impact of CSP on systematic firm risk (captured by standard and downside risk metrics) with regards to publicly traded firm shares. However, the bond market could prove to be just as or even more suitable for conducting such an investigation. The US corporate debt market is a very large (approximately $7.5 trillion outstanding market debt during the fourth quarter of 2010 versus a market capitalisation of $16 trillion for the

Russell 3000 equity index), very active (with an average daily trading volume between $14.1 and $19.7 billion for the period January to December 2010 versus $47.5 billion traded on average in the New York Stock Exchange every day for the same period) and dynamic market (with new bond issuance reaching $1,063 billion during 2010 versus only $262 billion total equity issued in the same year).[64] So it has all the essential elements that make up a developed market, rich in informational content. Furthermore, because, in general, companies need to refinance themselves in the debt market more frequently than in the equity market (due to the limited maturity of short and medium term bonds), the former offers a more suitable environment for socially aware groups to implicitly exercise stakeholder activism and the company will have to meet their demands or suffer the incurred higher costs of debt.

The credit market is also more of an institutional investor's arena in comparison to the equity market. Approximately 86% of US corporate bonds are institutionally owned while the equivalent percentage for US equity is about 64%.[65] Greater institutional participation is a desirable property for CSP-CFP research for two reasons. Firstly, institutional investors are better informed than private investors and because of this it is more likely that they will take under consideration a complicated issue such as CSR when allocating the wealth they manage. Secondly, high institutional participation decreases free float bonds (i.e. increases the concentration of bonds in particular investors), thus making it easier for bondholders to 'discipline' firm management when they need to (Menz, 2010) by simply selling (or even short selling) the respective corporate bonds, thus increasing the cost of debt for the transgressing firms. It should also be mentioned that non-public companies also issue bonds, opening a new sample to CSP-CFP research that could not be studied when investigating the phenomenon in the equity market.

An additional, strong incentive for orienting my research in this direction is that seminal work in the literature of corporate bond pricing (Collin-Dufresne et al.,2001; Elton et al., 2001) has shown that the explanatory power of the variables that we know to influence corporate spreads is rather limited. Perhaps one of the missing pieces of this empirical asset pricing puzzle is the impact of CSP. Recognising all the aforementioned qualities, this study compliments the analyses conducted in the previous chapter and attempts to advance

[64] Data come from the Securities Industry and Financial Markets Association's (SIFMA) publicly available records and Bloomberg.

[65] Data come from the 2010 national data book of the US Census Bureau. The percentages refer to domestic investors only. There is a number of foreign investors in both markets but the database does not make any distinction between households and institutions in their case so actual percentages could be different.

academic knowledge concerning the CSP-CFP link by concentrating on the corporate debt market and investigating whether CSP is a determinant of corporate spreads and bond ratings.

There are also important practical implications for corporate decision makers. Debt financing is the only way that private firms can finance themselves through external funding. Even for public firms, the cost of debt is a crucial variable with regard to their long term viability and profitability. For many firms, debt financing is preferable to equity financing for several reasons. Funds acquired though debt financing are usually less costly for the firm as interest paid on debt is tax deductible, i.e. there is a debt tax shield at the corporate level (Jensen, 1986). In addition, debt financing can frequently be less complicated and more cost-efficient as firms do not have to comply with a long series of government laws and regulations (and in the case of the US, state laws and regulations as well) as in the equity financing case. Similarly, debt financing does not require firms to suffer, at least to the same extent, the periodic informational costs towards shareholders (mailings, issuance of corporate reports, holding of shareholder meetings) that are unavoidable for public firms. Hence it is imperative for corporate managers to know what the determinants of the cost of debt financing are, as well as in which direction and by how much they affect this cost. This study contributes in this respect, as I investigate the extent to which corporate social performance can influence corporate spreads and the credit quality of bonds.

Compared to the very limited amount of work that has been done in this area, this is the first piece of research that looks at both the differential impact of disaggregated measures of corporate social performance as wells as the combined effect of various CSP dimensions on fixed-income instruments. It is also one of only two studies to use an extensive longitudinal dataset to test these effects on both the corporate cost of debt and the credit ratings assigned to the corporate bonds and control for a wide array of financial variables (relevant to the issuing form and the bond itself). In addition, emphasis is placed on revealing some of the particularities in the link between CSP and cost of debt, concerning its temporal variation, the alleged moderating effects of market volatility conditions, the role of investment horizon and the operational nature of the issuing firm.

The remainder of this chapter is structured as follows: section 2 provides a brief overview of related empirical works as well as a description of the conceptual framework of this study. A detailed account of the methodological details concerning the estimation of CSP and credit risk measures, data collection, model specification and applied econometrics is given in

section 3. The results of the various panel regressions are presented in section 4. Section 5 contains the conclusions of the study and suggestions for future research.

4.2. Related literature and development of hypotheses

4.2.1 Existing empirical work on the relationship between CSP and credit risk

I have already noted that there has been a very limited number of studies within the wider CSP-CFP literature, especially in recent years, that attempt to research the link between CSP and financial risk per se. This holds as a general observation but is especially true in the context of research that draws data from the debt market instead of the equity market.

One of the very few related studies that is conducted within the framework of corporate debt is that of Menz (2010), who looks at the European corporate bond market using Corporate Sustainability Assessment of the Sustainable Asset Management Research (SAM) as his source for CSP data and finds that, ceteris paribus, the risk premium for socially responsible firm bonds does not significantly differ from that of less responsible corporations. His longitudinal analysis makes use of nearly 500 bonds whose characteristics are observed over a period of 38 months. On the other hand, Schneider (2010) offers evidence in the framework of the US pulp and paper and chemicals industries according to which environmental performance is one of the determinants of bond pricing. He also points out that significant clean-up and compliance costs may lead firms to bankruptcy which means that they would be in part rolled over to bondholders and other creditors of the firm. Schneider's study deliberately targets a single dimension of CSP in only two industries but this leads to a very small data sample which comprises only 48 firms and 244 firm-year observations. Arguably, this restricts the validity of the inferences that can be made based on his analyses.

Similarly, Bauer and Hann (2010) also focus solely on the environmental dimension of CSR but use information from a much larger, cross-industrial sample of US public corporations. Treating environmental strengths and concerns as different conceptual and empirical constructs, they document that the former are associated with a lower cost of debt and the latter are linked with both a higher corporate yield spread and lower credit ratings. Frooman, Zietsma and McKnight (2008) reach similar conclusions when using a multidimensional measure of CSP (incorporating community relations, diversity issues, employee issues, attitude

towards the environment, product safety and quality, corporate governance and human rights) and show that there is an inverse relationship between default risk (captured by Moody's ratings) and CSP. However, they use a single year of data (2006) to conduct their cross-sectional analysis and their research is not focused on the effects of CSP in bond markets, as they interchange between using various measures of financial risk, including firm beta, standard deviation of returns and volatility of corporate earnings among others. In addition, there is the study of Goss and Roberts (2011) which is also relevant as it investigates the impact of CSR on debt markets but concentrates on the cost of bank loans rather than bond yields. Their findings are mixed and suggest that *"low-quality borrowers that engage in discretionary CSR spending face higher loan spreads and shorter maturities, but lenders are indifferent to CSR investments by high-quality borrowers"*.

Lastly, there is the study of Derwall and Koedijk (2009) which also looks into the CSP-CFP link on the bond market, but unlike previous papers, it focuses on the portfolio instead of the firm level of analysis of the relationship. The authors attempt to measure the difference in performance between socially responsible investing (SRI) funds (either bond funds or balanced funds) and their matched conventional fund counterparts, over the period 1987 to 2003. The matching criteria include fund age, end-of-period fund size and investment objective. Their results indicate that the performance of SRI bond funds is very similar to that of conventional bond funds, while SRI balanced funds modestly outperform the respective conventional ones by 1.3%. So the conclusions reached are similar to those of studies comparing SRI and conventional equity funds or portfolios (Kurtz, 1997; Statman, 2000), according to which there is no material difference in the performance of the two.

These papers, to the author's best knowledge, constitute the only studies that have been conducted in this specific part of empirical CSP-FP research and their limitations include: use of small samples, often cross-sectional or from few industries, examining a single facet of CSP, sometimes not distinguishing between positive and negative corporate social/environmental actions and not controlling for the effect of potentially important financial factors. This study attempts to fill some of the gaps and account for most of the limitations of previous research. It utilises an extensive cross-industrial longitudinal dataset of US bonds for the years between 1991 and 2008, creating a sample consisting of several thousand firm-year observations. The size and heterogeneity of this sample are both desirable and uncommon features in the literature. As in the previous chapter, the study draws social/environmental data from the Kinder Lydenberg Domini (KLD) STATS database, one

of the most reliable and widely used sources of CSP data, having several considerable advantages over alternative CSP measures (Waddock and Graves, 1997; Sharfman, 1996). Apart from allowing for the use of a large, heterogeneous sample as discussed, it permits an investigation of the impact that many different dimensions of CSR have on bond pricing instead of a single one (environmental issues being a notable example as in the studies of Bauer and Hann, 2010 and Schneider, 2010). Furthermore, it goes beyond quantifying the effects of CSP on corporate spreads to searching for a similar link with respect to the bond ratings assigned by professional rating agencies (something that only Bauer and Hann (2010) have done before) and to uncovering some of the finer points of these associations with regard to optimal investment timing and bond characteristics.

4.2.2 Conceptual framework

As was mentioned in the introduction to this chapter, the principal view taken in the relationship between CSP and credit risk/corporate spreads/bond ratings follows the reasoning that I elaborated on Chapter 3. Arguably, there are stakeholders who attempt to infer a firm's underlying corporate character and moral colouration according to its CSP record. If this perception of corporate character is deemed to be one of a trustworthy and cooperative partner, then it can result in significant competitive advantage (Jones, 1995). So, it is supported that a firm which goes beyond the requirements of law and is proactively responsible in its interactions with society and its treatment of the natural environment is more likely to improve customer loyalty, increase employee attraction and retention rates as well as productivity, will find it easier to lobby for government and state tax breaks and finally will have a superior access to capital (in the equity or debt market) compared to a firm that does not care about its social posture.

Similarly, a firm that is found to behave irresponsibly in a given dimension of its corporate social performance risks a higher probability of a series of negative events occurring and having a significant impact such as product boycotts, employees going on strike or withholding best efforts, imposition of fines, penalties, government sanctions, punitive damages and associated litigation costs. In addition, significant harm could be done in less explicit ways, coming from the destruction of the firm's reputational wealth and the loss of valuable relational capital with regard to the primary stakeholders with which it has created long-lasting business relationships (Godfrey, 2005). All this could lead to a higher cost of debt for the transgressing corporation. In the most notable relevant historical examples, the effects

of corporate social irresponsibility on credit ratings and bond spreads were staggering. As Menz (2010) notes, for a period of years, engineering firm ABB faced several thousand claims concerning asbestos contamination which lead to heavy litigation and clean-up expenses, and resulted in a reduction of the firm rating from investment grade (AA-) to speculative grade (B+). More recently, the oil spill incident in the Gulf of Mexico lead to the BP bond with about three years to maturity being traded with a spread of about 7.6% (June 9th, 2010), well above the average spread of "junk bonds" at the time. A few days later, the rating agency Fitch slashed the firm's rating from AA to BBB. So the firm's reputational damage was quickly transformed to an important liquidity issue which could have escalated to a significant solvency and viability issue. Finally, as Bauer and Hann (2010) note, significant environmental liabilities can create insurmountable risks for a firm, making it tempting for its management team to consider filing for strategic bankruptcy in an attempt to avoid them. The same rationale can be extended to consumer and employee safety issues or to equal opportunity/treatment cases. Given this, the default probability and loss severity of bondholders' investments in firms that tend to expose themselves to such types of risks are higher than those of the respective investments in corporations that proactively shield themselves against such hazards.

So, under this view, the strategic management of the firm's relationships with its stakeholders (through the application of CSR principles and practices) can lead to the avoidance of, or at least limited corporate exposure to, various types of risks (operational risk, market risk, liquidity risk, default risk) and the creation of a sustainable long term competitive advantage (Hillman and Keim, 2001). Analogously, irresponsible firm behaviour with regard to society or the natural environment increases the firm's exposure to the aforementioned risks and can significantly hurt its bottom line. However, there are additional reasons for why CSP may have an impact on a firm's credit ratings and cost of debt. According to the seminal work of Jensen and Meckling (1976) concerning managerial behaviour and agency costs, there is a significant agency problem affecting both the shareholders and creditors of a firm in that the managers may take decisions against the objective of firm value maximisation, either because they are acting in their self-interest or because they are incompetent. The integration and effective managing of a highly complex issue such as CSR in a firm's operations could convince stakeholders of the management teams' competence and trustworthiness, thus limiting the potential hazards arising from agency risks and lowering the firm's costs of debt and equity. This signalling effect is in the core of the framework of the "good management" theory (Waddock and Graves, 1997).

As Ashbaugh-Skaife et al. (2006) note, there is another type of agency conflict by bondholders and it is in relation to shareholders. This has to do with the asymmetric payoffs accruing from a corporate bond. As Merton (1973) has shown, these payoffs can be replicated by taking a long position in the firm's assets and a short position in a call option on the same assets (i.e. a synthetic short put on the firm's assets strategy). This means that, ceteris paribus, the potential losses of a bondholder are the entire amount he has invested whereas the potential gains are capped. Shareholders on the other hand, have an unlimited theoretical upside. So shareholders have a greater incentive to push managers towards undertaking riskier (and potentially more rewarding) projects while bondholders would like to avoid significant risks and ensure their fixed contractual claims on the firm's present and future cash flows. That is why it can be argued that it is even more crucially important for bondholders to be able to discern good managers from bad ones when choosing where to allocate their wealth and so the "good management" reasoning may have a greater observable impact in the bond market. The essence of all the above is that competent and trustworthy managers will engage in CSR practices and avoid corporate transgressions while the exact opposite is true for incompetent and untrustworthy managers. So, according to all the arguments presented above, the principal hypotheses being tested in this study are:

Hypothesis 1: Firms with more social and environmental strengths have lower credit spreads (lower cost of debt financing) and higher corporate bond ratings (lower default risk).

Hypothesis 2: Firms with more social and environmental concerns have higher credit spreads (higher cost of debt financing) and lower corporate bond ratings (higher default risk).

The advice of Griffin and Mahon (1997) that CSP-CFP related empirical research should be confined to particular dimensions of CSP that are especially important for specific industries (and interested stakeholders) is relevant in this study just as it was for the investigation conducted in Chapter 3. Although there is merit to this suggestion, it would lead to great losses in the cross-sectional and serial variation in the characteristics of the longitudinal sample of this study and a detrimental decrease in the power of the statistical tests conducted. However, in order to address the issue to some extent, the effect of specific dimensions of CSP on firms that operate in industries considered risky in the same dimensions will be explored. The ex ante expectation is:

Hypothesis 3: The association between particular dimensions of corporate social performance and credit risk is more pronounced for firms that operate in industries considered risky in that dimension.

For example, one would expect that the link between a firm's environmental performance or employee issues and credit risk would be stronger when focusing on the Oil and Gas sector rather than the entire longitudinal sample of corporate bonds.

The temporal variation of the relationship between CSP and credit risk is also of interest. It is common ground that corporate social responsibility/performance issues have with time become more prominent. The attention that various media pay to such themes has increased and so have the societal expectations and demands with regard to corporate activities. According to leading PR firm Edelman, *"topics related to CSR represent more than one post every 10 seconds, slightly less than 1% of all posts in the blogosphere"* .[66] In addition, a survey[67] conducted in 2010 by Do Well Do Good, LLC with more than 1,000 respondents found that 88% of consumers believe that companies should try to accomplish their business goals while still trying to improve society and the environment. Furthermore, 83% of consumers think that companies should support charities and nonprofits with financial donations. Faced with these new pressures, firms have to reorient their perspective and business operation and it appears that there are aware of this. The UN Global Compact–Accenture CEO Study conducted is based on a 2010 survey of more than 750 CEOs. Overall, 93% of them see sustainability as an important factor to their firm's future success. Perhaps the most demonstrative figures showing the increasing public awareness of CSR issues come from the socially responsible investing (SRI) movement. According to the US Social Investment Forum, in 1995 there were just 55 SRI funds with $12 billion assets under their management whereas in 2010 there were 250 socially screened mutual funds in the US with total assets of $316.1 billion. This translates to a 455% increase in the number of SRI funds and a staggering 2,634% increase in the (nominal) value of the assets of these funds. Given the aforementioned evolutions and trends, it seems reasonable to expect that given the increasing levels of general attention and investment interest awarded to corporate social performance, the link between CSP and CFP has increased over time. In the framework of this study:

Hypothesis 4: The impact of corporate social performance on corporate spreads has strengthened over time.

Another way to look at the dynamics of the CSP-credit risk relationship through time is under the framework employed in Chapter 3 where the moderating effects of the market volatility

[66] "Corporate social responsibility and sustainability in the blogosphere", last accessed July, 5th 2011 at: http://www.edelman.com/expertise/practices/csr/documents/csrblogsheperefinal.pdf

[67] "The Do Well Do Good Public Opinion Survey on Corporate Social Responsibility", last accessed July, 5th 2011 at: http://dowelldogood.net/?page_id=688

conditions were investigated. The rationale behind looking for the existence of such effects is based on seminal works in financial economics concerning the counter-cyclicality of investor risk aversion and risk premia in financial assets according to habit formation models (Abel, 1990; Constantinides, 1990; Cambell and Cochrane 1999). In connection to the CSP-CFP literature, Orlitzky and Benjamin (2001), in their meta-analysis of the link between CSP and firm risk, note the tendency of investors in times of general market turmoil to instinctively move from seeking to increase their portfolio returns to looking to avoid bearing significant risks. This observation should, arguably, hold irrespective of whether one focuses on the equity or debt markets. Thus:

Hypothesis 5: The impact of corporate social performance on corporate spreads is more pronounced in times of high market volatility.

It is also possible that the impact of CSP on credit spreads will differ according to the time horizon of an investment. Prior literature has argued that the financial effects of the various dimensions of corporate social performance are more likely to accrue in the long run through *"effective stakeholder management -relations with primary stakeholders to include customers, employees, suppliers, community residents and the environment- (which) constitute intangible, socially complex resources that may enhance firms' ability to outperform competitors"* (Hillman and Keim, 2001, p.127). Moreover, Cox, Brammer and Millington (2004) provide empirical evidence which shows that long-term institutional investor[68] holdings in firms are positively related to corporate social performance, thus corroborating similar earlier findings by Graves and Waddock (1994). As noted previously, institutional participation is greater in the bond market compared to the equity market so the differential effects of the time horizon of investment should be easier spotted in studies focusing on the impact of CSP on bonds rather than stocks. Hence, assuming that a significant proportion of bond investors follow a "buy and hold" strategy:

Hypothesis 6: The impact of corporate social performance on corporate spreads is more pronounced in bonds of longer maturities.

I will now proceed to systematically describe the methodological details concerning the analyses conducted in order to test the previous hypotheses.

[68] Long-term institutional investors include pension funds, life assurance funds and charitable funds.

4.3. Methodology

4.3.1 Corporate social performance measures

Given that KLD is again my database of choice with regard to social and environmental corporate data and the conceptual framework of this study is parallel to the one examined in the investigation of the CSP-risk link in the equity market, my CSP measures will remain the same. I still focus on those qualitative business issues that can be explicitly connected to particular stakeholder groups which, through their actions, can influence the social posture, profile and activities of the firms (Hillman and Keim, 2001). These are : i) Community issues, ii) Diversity issues, iii) Employee relations, iv) Environmental issues, v) Product safety and quality. I also follow the findings of Mattingly and Berman (2006) as well as Lankosky (2009) concerning the conceptual and empirical differences between positive and negative corporate social/environmental actions as well as their differential economic impact and keep the strengths and concerns dimensional components separate (i.e., I do not subtract concerns from strengths but construct separate measures). In order to create these measures, I simply add the scores of the indicators which comprise each social dimension of positive or negative corporate actions (strengths and concerns in the KLD language respectively). Only the respective omnipresent indicators are used in the construction of each of the individual components in order to have measures with time invariant characteristics which can validly be used in the entire time span of the dataset (1991 to 2008).

Also in accordance with the approach of Chapter 3, I construct the "aggregate strengths" and "aggregate concerns" measures by adding the scores of the relevant individual components across all five CSP dimensions of interest and dividing the sum by five so that the estimated slope coefficients can be comparable across different models. As was explained before, the rationale for using these measures in addition to the individual CSP components has to do with the attempt to investigate whether interdimensional measures of CSP will strengthen the observed empirical link between corporate responsibility/irresponsibility and firm financial performance (exactly because they draw on information relevant to various facets of these concepts) or whether, on the contrary, they are not truly informative as they mask the more subtle, finer-grained characteristics which different aspects of CSP have on CFP (Godfrey et al., 2009).

4.3.2 Cost of debt and credit quality measures

I use three different key variables that capture aspects of corporate cost of debt and credit risk in order to test the relevance of corporate social performance for bond investors: corporate spreads, corporate bond ratings and a dummy variable equal to 1 when the bond is speculative grade and 0 when it is investment grade. The corporate spread is one of the de facto market measures of the cost of debt financing and the credit risk for firms. By definition, the corporate spread of a given bond at a given point in time is equal to the yield of the bond minus the yield of a sovereign bond which is identical to the corporate bond in every characteristic (maturity, coupon rate, frequency of payments per year) except for credit risk. Although simple enough as a concept, the calculation of the corporate spreads is problematic, especially when trying to do so for a very large and heterogeneous sample of bonds, due to a variety of practical limitations. The limitations arise from the fact that an extensive set of benchmark sovereign yield curves covering the entire spectrum of maturities and coupon rates relevant to the corporate bond sample are needed for each point in time that the spreads have to be calculated. This is clearly infeasible as there are only a given number of sovereign bonds with specific characteristics being traded concurrently. Even if one ignores the coupon effect and focuses on the matter of maturity, the issuing authority (the US Treasury in the case of this study) would have to issue a full spectrum of bonds with different maturities at regular intervals so that the relevant bond prices and the treasury yield curve can be observed at these intervals.

So, since the yield curve cannot be observed in the market, it has to be estimated. Broadly, there are two different approaches to yield curve modeling: Spline-based methods and parametric form methods. Spline-based methods are more flexible, can account for a great deal of security-specific issues (liquidity premia, demand for deliverability into futures contracts and others) and provide a very good fit in terms of pricing the existing securities. Parametric methods on the other hand are more rigid, involve a smaller number of parameters, impose more smoothness on the shape of the curve but tend not to provide as good a fit as the splined-based methods do. Given that the focus of this study is on identifying whether CSP is a determinant of credit risk, the smoothness of the curve is a more desirable characteristic compared to the issue-specific fit of the data and the parametric approach seems like the reasonable choice. Thus, I elect to use the dataset of Gurkaynak, Sack and Wright (2007) who construct daily US Treasury yield curves from 1961 onwards using the extension by Svensson (1994) of the functional form proposed by Nelson and Siegel (1987) in their seminal study. This approach assumes that the forward rate curves are

governed by a total of six parameters and allows for a second "hump" in the curve, whereas the Nelson-Siegel approach required only four parameters and allowed for a single "hump". The functional form of the zero-coupon yield for a bond with maturity n according to the Svensson approach is given by:

$$y_t(n) = \beta_0 + \beta_1 \frac{1-\exp(-\frac{n}{\tau_1})}{\frac{n}{\tau_1}} + \beta_2[\frac{1-\exp(-\frac{n}{\tau_1})}{\frac{n}{\tau_1}} - \exp(-\frac{n}{\tau_1})] + \beta_3[\frac{1-\exp(-\frac{n}{\tau_2})}{\frac{n}{\tau_2}} - \exp(-\frac{n}{\tau_2})] \quad (4.1)$$

where β_0 is the long run level of interest rates, β_1 is the short-term component of interest rates, β_2 determines the location of the first hump of the curve, β_3 determines the location of the second hump of the curve and τ is the decay factor whose value determines how quickly interest rates will converge to the level of β_0.

Apart from applying a well known yield curve estimation method that is suitable for the purpose of this study, an additional advantage coming from using the dataset of Gurkaynak et al. (2007) is that they use off-the-run issues to construct the curves, so the synthetic Treasury securities are likely to have liquidity which is closer to that of corporate bonds than it would have been if on-the-run issues were used (as is the norm). So it is a dataset especially appropriate when trying to estimate credit spreads. I use the estimated zero-coupon yield curves that comprise synthetic zero coupon Treasuries for maturities ranging from one to thirty years with single year intervals. I use linear interpolation to calculate the yields of the synthetic treasuries with maturities that fall exactly six months in between the estimated ones. This is necessary as the majority of the bonds is my sample are traded in the US and pay coupons semiannually. Next, I back out the implied discount factors from the treasury zero-yields:

$$df_n = \frac{1}{(1+y_n)^n} \quad (4.2)$$

where n is the number of coupon periods until maturity[69], y_n is the yield to maturity of the bond and df_n is the respective discount factor.

Then, I create synthetic Treasuries with identical payments (adjusting for coupon rates and number of payments per year) and maturities matched to the nearest integer, thus eliminating any distortions arising from differences in duration and convexity between the corporate

[69] Although the bond itself does not pay any coupons, the convention concerning the payment frequency of the market where it is traded has to be followed.

bond and the original sovereign bond. At this point, I can price the synthetic Treasury bond using the discount factors calculated in equation (4.2) and subsequently estimate the respective yields. In the cases where a bond has a time to maturity greater than 30 years, it is assumed that the discount factor remains constant after year 30 (i.e. the yield curve flattens out, a very common assumption). I can then deduce these yields from the yields of the corresponding corporate bonds and I have the credit spread. I repeat this process for monthly intervals and average the spreads for a given bond during a given year. I take the logarithm of this mean to adjust for the significant positive skewness in the yield spread distribution and use it as the dependent variable in my models. Because I use off-the run treasuries in the calculation of the spreads (and because yield curve fitting is not a perfect science), there are a few instances of AAA rated corporate bonds that are shown to have spreads that are marginally negative. These observations are removed from the sample as they are void of meaning and cannot be log-transformed.

The second dependent variable I employ is the bond rating. Credit ratings are forward-looking opinions that rating agencies have about the credit risk of firms and individual debt issues. I standardise the S&P bond issue rating classifications according to the schedule depicted in Table 4.1. This ordered ranking scale ranges between 1 (for the lowest rated bonds) and 8 (for the highest rated bonds) and is very similar to the one used by Ashbaugh-Skaife, Collins and LaFond (2006). Whenever a bond rating changes during the course of a given year, its various rating scores are averaged and rounded to the nearest integer. The third and last dependent variable I use is a dummy variable equal to 1 when the bond is speculative grade and 0 when it is investment grade. Although less informative than either of the previous two variables, this binary measure clearly answers the interesting question of whether higher CSP values are connected with a higher probability of particular corporate bonds being perceived as assets of speculative or investment grade. Furthermore, the threshold separating investment grade corporate debt and corporate bonds rated as speculative issues is significant in terms of implied default rates and, subsequently, bond prices and yields. According to aggregated statistics[70], the cumulative historic default rate up to 2007 for corporate bonds rated BBB by S&P (Baa by Moody's) was 10.29% (4.64%) and increased to the troublesome 29.93% (19.12%) for bonds rated BB (Ba). There are no readily available cumulative historic yields directly associated with these rating classes but it is unquestionable that for a given firm, this perceived deterioration in its rating will lead to an analogous increase in its cost of debt financing. Hence, focusing on the impact that corporate social performance has on a

[70] Municipal Bond Fairness Act, 2008

Table 4.1: Recoding bond credit ratings

S&P Rating	Rating code assigned	Grade	Rating description
AAA	8	Investment	Extremely strong capacity to meet financial commitments
AA+	7	Investment	Very strong capacity to meet financial commitments
AA	7	Investment	Very strong capacity to meet financial commitments
AA-	7	Investment	Very strong capacity to meet financial commitments
A+	6	Investment	Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances
A	6	Investment	Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances
A-	6	Investment	Strong capacity to meet financial commitments, but somewhat susceptible to adverse economic conditions and changes in circumstances
BBB+	5	Investment	Adequate capacity to meet financial commitments, but more subject to adverse economic conditions
BBB	5	Investment	Adequate capacity to meet financial commitments, but more subject to adverse economic conditions
BBB-	5	Investment	Considered lowest investment grade by market participants
BB+	4	Speculative	Considered highest speculative grade by market participants
BB	4	Speculative	Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions
BB-	4	Speculative	Less vulnerable in the near-term but faces major ongoing uncertainties to adverse business, financial and economic conditions
B+	3	Speculative	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments
B	3	Speculative	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments
B-	3	Speculative	More vulnerable to adverse business, financial and economic conditions but currently has the capacity to meet financial commitments
CCC+	2	Speculative	Currently vulnerable and dependent on favorable business, financial and economic conditions to meet financial commitments
CCC	2	Speculative	Currently vulnerable and dependent on favorable business, financial and economic conditions to meet financial commitments
CCC-	2	Speculative	Currently vulnerable and dependent on favorable business, financial and economic conditions to meet financial commitments
CC	2	Speculative	Currently highly vulnerable
C	1	Speculative	Currently highly vulnerable obligations and other defined circumstances
D	1	Speculative	Payment default on financial commitments

Note: Rating descriptions come from the official site of Standard & Poor's and can be found at : http://www.standardandpoors.com/ratings/definitions-and-faqs/en/us#def_1.

corporate bond's grade can be information that is particularly useful and important for firm mangers and fixed income investors alike.

4.3.3 Control variables

A series of additional explanatory variables are included in the models specified based on the existing literature concerning the determinants of credit spreads and corporate bond ratings as well as research examining the effect of corporate governance and CSP facets on credit risk (including inter alia Ashbaugh-Skaife et al., 2006; Bhojraj and Sengupta, 2003; Collin-Dufresne et al., 2001; Elton et al., 2001; Ziebart and Reiter, 1992). This set of variables can be taxonomised in two broad categories: factors that control for firm characteristics and factors that control for issue characteristics.

4.3.3.1 Firm characteristics

Firm size is used as a control variable because, in general, larger firms tend to face lower business and financial risks and are therefore expected to have bonds with lower credit spreads and higher ratings. The logarithm of the firm's market capitalisation is used as a proxy for firm size. Higher leverage (captured by the total debt to common equity ratio) is thought to be associated with higher default risk as firms that accumulate more debt may find it harder to service it at a future date. The same logic applies to the interest coverage ratio (equal to the ratio of the firm's earnings before interest and taxes, i.e. EBIT, over its interest expenses) which should be positively linked with ratings and negatively with spreads. Return on assets (ROA) is another accounting-based ratio (equal to EBIT over total assets) which demonstrates the efficiency with which the firm uses its resources and assets and its ability to produce profit in order to cover its debt obligations. The market to book value ratio is also employed and as noted in Chapter 3, its reciprocal is thought to be associated with the distress factor of Chan and Chen (1991). Firm liquidity (proxied by the current ratio, which is equal to a firm's book value of current assets over the book value of its current liabilities) demonstrates the ability of the firm to remain solvent in the short run. In addition, I follow the findings of McWilliams and Siegel (2000) and use Research and Development intensity (captured by the R&D expenditure over total sales ratio for a given firm at a given year) which has been found to moderate the relationship between CSP and CFP in general and can be hypothesised to play a similar role in the link between CSP and credit risk in particular given the riskiness that comes with investing in R&D in order to produce innovative products

and services. Lastly, I use the Industry Classification Benchmark (ICB) taxonomy at its second level of analysis, which categorises companies according to the supersector in which they operate and construct a series of dummy variables to account for the heterogeneity of risk attributes among the various industries. Empirical studies have shown that firms from different industry sectors have different risk premia in the bond markets despite receiving identical ratings by the ratings agencies (Longstaff and Schwartz, 1995).

4.3.3.2 Bond characteristics

Additional control variables are included in the models in order to make the empirical results robust to factors specific to the particular corporate bonds that are used in the analyses. Years to maturity is used as bonds with longer maturity are expected to have higher default risk given that there is a greater degree of difficulty and unpredictability when it comes to the forecasts of profitability and solvency of firms in the more distant future. Squared maturity is also included to account for a non-linear effect that the variable might have on credit spreads and bond ratings. The dissimilarity of coupon payments and maturities within the sample of corporate bonds leads to differences in duration and convexity which may also moderate the link between CSP and credit risk. Duration is the standard measure of a bond's interest rate risk whereas convexity is a measure of the curvature characterising a bond's price-yield relationship and it is a desirable property for bond investors. Both are therefore utilised. The nominal amount issued for each bond represents economies of scale in underwriting which could make the variable inversely related to bond spreads and positively linked with credit ratings. Amount issued could also be thought of as a proxy for bond liquidity (a distinct concept from firm liquidity). Lastly, whenever the log of spread is used as the regressand, a dummy variable for each of the scores of the ordinal bond rating scale is incorporated in the models. By construction of the scale, a higher rating should be associated with lower credit risk if the opinions of the rating agency are priced in the bond markets. I use this series of dummy variables instead of the scale itself because its ordinal nature is incompatible with the linear nature of the panel regression models I apply and thus the values of the slope coefficients would be devoid of meaning.[71] It could be argued that the rating agencies assess the creditworthiness of bond issues by looking at, among other things, the factors that are explicitly incorporated in this study as control variables so the additional inclusion of the rating score dummy variables is unnecessary. However, it has been shown by Sufi (2009) that

[71] For example, a bond issue with a credit score of 2 is not expected to have half the credit risk of a bond with a credit score of 1.

issuers are more reluctant to lend to an issuer who has no rating at all. In other words, there is inherent value in a firm and its bonds being rated by an agency and that is why bond ratings have to be explicitly incorporated in this study in addition to all the previous variables.

4.3.4 Sample construction

As has been discussed, information on the corporate social responsibility and irresponsibility of firms is given by the KLD STATS database. I make use of the entire sample of firms covered by KLD in the period from 1991 to 2008. This includes all the firms listed in the S&P 500 Composite Index and the ones listed in the Domini 400 Social Index. In addition, since 2001, KLD has expanded its coverage universe to incorporate the largest 1000 US companies in terms of market value (Russell 1000 index), an expansion which advanced further in 2003 with the inclusion of the 3000 largest US firms Russell (3000 index).

I then use Thomson Reuters Datastream to gather all the necessary financial information on all the corporate bonds that were issued by the firms included in the above sample and were traded in organised bond markets at some point in the 1991-2008 period as well as for the bond issuers themselves. I exclude banks and financial institutions from the sample given that each of them issues several hundreds of bonds and their inclusion would dominate the sample, thus significantly decreasing its cross-industrial variability. Next, I exclude all floating rate notes, index-linked bonds, convertible bonds, exchangeable bonds, hybrids, preferred bonds, perpetual bonds, private placements, sinking fund provisions, bonds with embedded options or warrants and bonds with any other nonstandard characteristic. In other words, I only focus on straight, zero coupon or fixed rate corporate bonds with time to maturity at least one year during the calendar year in which the observation is collected. I also exclude all bonds with an issuance volume less than 100 million dollars in order to avoid illiquidity and "thin trading" issues. For the same reason, I eliminate bonds when there are gaps in the times series of their yields of more than 10 days within the one year rolling window that I am looking at, or when their yield to maturity appears to be negative.

Lastly, I do not include government sponsored enterprises (GSEs) in my analysis, as their bonds essentially tend to be considered more sovereign than corporate. This is especially true in the cases of Fannie Mae and Freddie Mac, which have been placed in a state of conservatorship due to the real estate crisis of 2008. Following this elimination process, I match the CSP data with the relevant financial data on a year by year basis, and after

accounting for all of the missing information, I am left with a sample which comprises of 12,433 bond-year observations coming from a total of 3,240 bonds issued by 742 different firms, spanning 17 different supersectors (Automobiles & Parts, Basic Resources, Chemicals, Construction & Materials, Food & Beverage, Healthcare, Industrial Goods & Services, Insurance, Media, Oil & Gas, Personal & Household Goods, Real Estate, Retail, Technology, Telecommunications, Travel & Leisure, Utilities) and traded at some point within the period from 1991 to 2008. I elect to use this unbalanced panel data sample to perform my analyses as the alternative of extracting a balanced subsample of data from it would lead to a huge loss in efficiency (Baltagi and Chang, 1994).

4.3.5 Model specification

As has been discussed in the previous subsections of the study, the general forms of the models that are estimated are:

$$Spread_{i,t} = f(CSP_{i,t-1},\ firm\,characteristics_{i,t-1}, bond\ characteristics_{i,t-1}) \quad (4.3)$$

$$RScore_{i,t} = f(CSP_{i,t-1},\ firm\,characteristics_{i,t-1}, bond\ characteristics_{i,t-1}) \quad (4.4)$$

$$Speculative_{i,t} = f(CSP_{i,t-1},\ firm\,characteristics_{i,t-1}, bond\ characteristics_{i,t-1}) \quad (4.5)$$

where $RScore_{i,t}$ is the bond rating score associated with bond i in year t and $Speculative_{i,t}$ is the dummy variable equal to 1 when the bond is of speculative grade and 0 when it is of investment grade. CSP measures alternate between the set of individual components (strengths and concerns for all five qualitative business issues of interest) and the aggregate strengths and concerns approach. The firm characteristics and bond characteristics used have been described in Subsection 4.3.3. Firm characteristics are the same across all models. The same is true for all bond characteristics except for bond rating scores which are not used in equations (4.4) and (4.5).

Consistent with my previous work on the empirical link between CSP and systematic equity risk, the independent variables are lagged in all models. This is done for several reasons. Firstly, the primary scope of this study is the examination of the causal relationship between CSP and credit risk where CSP is the cause and subsequent levels of credit spreads and bond ratings are the effect. Furthermore, lagging the CSP measures and control variables helps this study escape the alleged endogeneity problems and simultaneity bias that may arise due to a contemporaneous bidirectional causality existing between CSP and credit risk. Also, the common practice on the part of KLD is actually to assemble the various

social/environmental corporate data at the end of each calendar year, and compile them into spreadsheets at the beginning of the next year. So lagging my CSP variables helps to ensure that the social ratings for each firm were public knowledge at time *t* and had already started to become incorporated in the markets in the form of informative prices (Godfrey et al. 2009). Thus, when I use CSP measures and financial control variables from the end of year *t-1*, I start collecting bond yield data from the fourth week of year *t* and use bond ratings reported in year *t*.

4.3.6 Panel data econometrics

In Chapter 3, I argued in favour of the use of fixed effects in the estimation of the panel regressions concerning the CSP-risk relationship. In the framework of this study, I will follow a different approach. I elect to use two-way clustering (i.e. clustering by both cross-sections and time) in order to adjust for residuals that are correlated both across bonds and time and estimate robust standard errors that will lead to valid inferences. This is analogous to the approach I used in Chapter 3, the difference being that in that case I used a combination of a parametric approach (cross-sectional fixed effects) and a diagonal White coefficient covariance estimator (adjusted for panel data) to ensure the robustness of my estimates. Clustering in both dimensions is equally reasonable given that in this multivariate regression framework, some regressors vary mainly by bond while others vary over time. The use of multiple bonds per firm that are concurrently traded makes it highly probable that both types of dependences arise. As Thompson (2011) notes, two-way clustering reduces estimation bias in such instances. Furthermore, the inclusion of completely time invariant variables (amount of bond issuance, supersector dummy variables) actually makes two-way clustering preferable to fixed effects as in the case of the latter method of estimation, these variables would be implicitly captured by the intercept and could not be directly incorporated in the model specified. This was not necessary in the previous chapter because it was not the case that there was a control variable that was, according to theory, critical that it is explicitly used in the model's estimation as is the case for the proxy of bond liquidity in this study. Thus, I apply two-dimensional clustering in my panel regressions following the method suggested by Cameron, Gelbach, and Miller (2006) and Thomson (2011). The ordered probit models on bond rating scores and the binary models on the speculative grade dummy are estimated in the panel framework by using random effects, following Frechette (2001), whose method has been shown to be reliable and time-efficient.

4.4 Results

4.4.1 Descriptive Statistics

Table 4.2 contains the essential descriptive statistics (mean values, standard deviations, minimum and maximum values) for the key independent, dependent and control variables (excluding the various dummy industry variables). Looking at the CSP measures, the picture is similar to that observed in Chapter 3. Their mean values are very low due to the absence of many of the indicators from which each individual component has been constructed. They are characterised by a good degree of variability, however, (coming mainly from the cross-sectional rather than the time-series dimension) which is depicted in their standard deviation values that are of significant size, especially when the relevant values of the CSP measures themselves are taken into consideration. All of them have minimum values equal to zero but only in two cases (diversity concerns and product safety and quality concerns) are there instances of firm year observations that have scores equal to unity (an unsurprising observation given the fact that in order for a firm to have a score of one in any CSP measure during a given year, all the relevant indicators have to be present).

Corporate credit spreads have a mean value of approximately 2.91% and are also characterised by a great degree of variability as their standard deviation is equal to 4.12% with a minimum value of merely 0.014% (for AAA rated bonds) and a staggering maximum of 125.8% (for D or CCC rated bonds which the market essentially prices as already defaulted). The bond rating score statistics are in accordance with the credit spreads. The sample covers the entire spectrum of rating scores from the lowest possible score of 1 up to the highest of 8. The average bond-year observation has a score close to 5, representing the lowest tier of investment grade bonds (from BBB- to BBB+). The standard deviation of the rating scores is approximately equal to 1.12. As for the set of control variables used in the sample, a note has to be made concerning the great degree of heterogeneity characterising the firm-year observations of the sample in all aspects. That is why all of the accounting-based ratios are winsorised at the 1% level in the empirical analyses that are conducted so that the outliers do not significantly affect, model estimates.

Table 4.2: Summary statistics of key variables					
Variable	**Obs.**	**Mean**	**Std.**	**Min**	**Max**
community strengths	12433	0.049	0.117	0.000	0.750
diversity strengths	12433	0.117	0.165	0.000	0.857
employment strengths	12433	0.083	0.148	0.000	0.800
environment strengths	12433	0.059	0.121	0.000	0.600
product safety and quality	12433	0.031	0.089	0.000	0.750
community concerns	12433	0.052	0.111	0.000	0.750
diversity concerns	12433	0.093	0.204	0.000	1.000
employment concerns	12433	0.112	0.176	0.000	0.750
environment concerns	12433	0.099	0.159	0.000	0.667
product safety and quality	12433	0.158	0.222	0.000	1.000
aggregate strengths	12433	0.068	0.0799	0.000	0.453
aggregate concerns	12433	0.103	0.107	0.000	0.683
amount issued	12433	328515	261326	100000	4000000
convexity	12433	47.630	51.097	0.518	302.691
duration	12433	5.750	3.431	1.000	17.390
interest coverage ratio	12433	6.781	90.001	-4285.714	2767.380
leverage	12433	0.992	9.445	-398.244	122.546
liquidity	12433	1.338	0.953	0.000	13.260
maturity	12433	9.862	11.110	1.000	99.000
market to book value	12433	2.683	12.116	-233.933	625.201
firm market value	12433	17109.5	30639.9	40.5	466180.0
research and development	12433	0.018	0.292	-0.340	22.840
return on assets	12433	0.084	0.086	-1.109	0.650
Speculative dummy	12433	0.288	0.453	0.000	1.000
yield spread	12433	2.909%	4.122%	0.014%	125.795%
rating score assigned	12433	4.894	1.189	1.000	8.000

It is worth having a look at the variability of credit spreads and bond rating scores across the various supersectors, which is depicted in Table 4.3. The Food and Beverage, Industrial Goods and Healthcare sectors have the lowest mean spread values (1.71%, 2.35% and 2.36% respectively), while the Automobiles and Telecommunications sectors have the highest ones (6.25% and 5.36%), although the Automobiles value may not be representative of the credit risk of the sectors given the small numbers of observations available. The picture is similar when looking at bond rating scores. Food and Beverage, Industrial Goods and Healthcare along with Insurance are the only the only supersectors with an average rating score greater than 5. At the other end of the spectrum, Telecommunications is the only supersector with an average rating score less than 4. The vertical validity of using corporate credit spreads and credit rating scores interchangeably as measures of credit risk is also verified by Table 4.4. It is easily noticeable that as the ratings score (representative of creditworthiness) goes up, the

mean spread invariably goes down. Not only that, but the marginal effect of a unit decrease in the credit score increases as we move towards the riskier bonds. This is true for all rating score changes except for the transition from a score of 4 to a score of 3, which causes smaller change in average spread than that of the transition from a score of 5 to a score of 4. But even this is reasonable because a bond that is downgrade from a score of 5 to a score of 4 has fallen down the "credit cliff" and has become a financial instrument of speculative grade (see Table 4.1 for the recoding of S&P bond ratings to credit scores). This particular observation reinforces the rationale used for the application of the speculative dummy variable as a regressand in some of the estimated models.

Table 4.3: Mean spread and rating score by supersector

Supersector	Observations	Mean spread	Mean rating
Automobiles & Parts	162	6.25%	4.38
Basic Resources	426	3.17%	4.55
Chemicals	404	2.49%	4.84
Construction & Materials	218	2.75%	4.85
Food & Beverage	764	1.71%	5.54
Healthcare	858	2.36%	5.42
Industrial Goods	2277	2.35%	5.05
Insurance	638	2.79%	5.60
Media	359	3.72%	4.35
Oil & Gas	1247	2.59%	4.63
Personal & Household Goods	936	3.06%	4.90
Real Estate	737	3.60%	4.94
Retail	1165	2.91%	4.78
Technology	408	3.57%	4.70
Telecommunications	412	5.36%	3.83
Travel & Leisure	518	3.85%	4.25
Utilities	904	2.87%	4.86

Table 4.4: Mean spread by rating score

Rating score	Observations	Mean spread
1	6	31.73%
2	339	9.53%
3	1654	5.24%
4	1582	4.07%
5	4972	2.40%
6	3293	1.54%
7	439	1.09%
8	148	0.96%

Lastly, Table 4.5 provides the Pearson product-moment correlation coefficients for the financial variables of interest. Overall, these correlations are not high enough to warrant concern about the induction of multicollinearity in the regression analyses that follow with the exception of the maturity-duration-convexity triplet of variables. Because of the unique economic intuition behind each of these concepts, I elect to use all three of them in my main model specifications and then iteratively drop two of them each time in order to check the robustness of my results. Indeed, all results remain fundamentally unchanged in terms of the sign, size and statistical significance of the slope coefficients of the key independent variables.

Table 4.5: Correlation matrix

	amount issued	convexity	duration	interest coverage	leverage	liquidity	maturity	market to book value	market value	rdts	roa	speculative dummy	yield spread
convexity	0.016												
duration	0.015	0.969											
interest coverage	-0.001	0.011	0.008										
leverage	0.009	0.008	0.008	-0.002									
liquidity	-0.055	-0.058	-0.052	0.027	-0.021								
maturity	-0.014	0.872	0.829	0.006	0.003	-0.033							
market to book value	0.009	0.020	0.016	0.008	0.547	0.011	0.009						
market value	0.270	0.215	0.185	0.039	-0.006	-0.065	0.147	0.064					
rdts	0.014	0.011	0.012	-0.010	-0.004	0.081	0.01	0.032	0.034				
roa	-0.011	0.11	0.097	0.138	0.065	0.066	0.063	0.153	0.219	-0.047			
speculative dummy	-0.066	-0.264	-0.226	-0.032	-0.014	0.218	-0.191	-0.065	-0.286	-0.022	-0.217		
yield spread	-0.011	-0.126	-0.125	-0.039	-0.017	0.047	-0.037	-0.046	-0.148	-0.01	-0.246	0.350	
rating score	0.096	0.291	0.249	0.042	0.013	-0.158	0.199	0.091	0.513	0.029	0.292	-0.829	-0.393

Note: rdts stands for the research and development to total sales ratio; roa stands for return on assets.

4.4.2 The impact of CSP on credit spreads and bond ratings

Tables 4.6 and 4.7 contain the key results of the empirical analysis. In particular, Table 4.6 depicts the effects of corporate social performance on the credit spread of corporate bonds. The impact of the individual dimensions of CSP as well as their aggregate effect (separate for social and envi-ronmental strengths and concerns) is investigated in different models. In order to maintain some mode of brevity in the presentation of the results, the series of supersector and bond rating score dummy variables have not been included in this or the following tables, although they were a part of the respective model specifications. The estimated coefficients are reported with the respective p-values in parentheses. Adjusted R-squared is also reported as a goodness of fit measure for every model. It is generally important to use adjusted R-squared instead of simple R-squared as a goodness of fit statistic in these models as R-squared does not take into account the loss of degrees of freedom associated with the addition of the multitude of control variables employed and would in this way be erroneously inflated.

According to the estimates of the individual CSP dimensions modelled, it appears that community and product safety and quality strengths are significantly negatively related to bond spreads, as are diversity concerns. Employment concerns on the other hand are shown to be positively linked with the cost of corporate debt. Although the sign and statistical significance of the estimates provide straightforward indications as to the qualitative nature of the relationship between CSP and credit spreads, the economic significance of the results is not equally obvious. Because the dependent variable has been log transformed in order to account for its positive skewness (as it is non-negative by definition and estimation), the interpretation is not the same as it is for the slope coefficients of standard linear regressions (where the coefficient represents the change in the regressor for a unit change in the regressand, ceteris paribus). Instead, it can be easily shown with simple algebraic calculations that in this case, when the independent variable of interest changes by unity and all other independent variables remain constant, the percentage change of the dependent variable is equal to the exponent of the calculated coefficients minus one.

So the results show that if a firm completely changes its social posture in terms of its beneficial practices towards local community residents (going from a state where there were no indications in this respect to one where all of the indicators comprising community strengths are now present), it can decrease its corporate spread by 43.4%[72] from its previous level. Similarly, a unit increase in product safety and quality strengths can lead to an

[72] Equal to exp(-0.5698) – 1.

economically and statistically significant decrease in its cost of debt by approximately 30.3%. On the other hand, the impact that employee dissatisfaction has on debt financing can be detrimental for a corporation since an increase in employee concerns can lead to a maximum increase of the credit spread by 88.2% up from its previous level. The only aspect of the results that goes against hypothesis 1 comes from the diversity concerns component. It appears that an increase in this type of corporate social controversy actually reduces a firm's cost of debt. However, this is the least economically important result as the reduction cannot surpass 14.7%. The multidimensional CSP measures also support hypothesis 1 as the aggregate strengths coefficient is significantly negatively linked to the dependent variable and aggregate concerns are positively related to spreads. For a large, longitudinal, cross-industrial sample such as is the one used in this study, it is important for this type of variables to qualitatively confirm the principal hypothesis concerning the investigated CSP-CFP connection. In this case, the high level conclusion that can be drawn is that overall, corporate social responsibility is inversely related to corporate bond spreads while corporate social irresponsibility is positively associated with spreads.

Perhaps the reported estimates look excessively high to the reader at first glance. However, putting them into context reveals more about their true magnitude. First of all, by construction, the various measures of corporate social responsibility and irresponsibility used in this study have a minimum value of zero and a maximum value of one (taking various discrete values in between those, depending on how many indicators comprise its component of strengths or concerns). So a change of a unity only happens when a firm goes from having no indications of particular societal/environmental strengths or concerns to displaying all of them. This is a drastic change in a firm's perspective, practices, activities, policies and even goals, making it time-consuming and possibly costly. So it is unlikely to empirically observe such a U-turn occurring from one year to the next for a given firm. Secondly, I have tried to emphasise that these figures represent credit spread changes compared to the current level of the bond's spread. So even a unit increase in community strengths for a firm that has issued a AA rated bond (which has a spread of about 1% according to table 4.4) will be expected to result in the bond's spread being reduced by approximately 40 basis points (0.43 x 0.96%). For a BBB rated bond, the same change in community strengths should lead to a decrease of about 1% (going down from the mean spread of 2.40% to 1.40%). This represents a significant change than should not by any means be ignored by investors and firm managers, but not as remarkable as the regression output initially suggests.

Table 4.6: The effect of CSP on corporate spreads

independent variables	ln(spread)	ln(spread)
constant	2.5950***	2.5931***
	(0.000)	(0.000)
community strengths	-0.5698**	
	(0.007)	
diversity strengths	0.0674	
	(0.595)	
employment strengths	0.165	
	(0.083)	
environment strengths	0.2893	
	(0.148)	
product safety and quality strengths	-0.3606**	
	(0.004)	
community concerns	0.2246	
	(0.080)	
diversity concerns	-0.1591***	
	(0.001)	
employment concerns	0.6325***	
	(0.000)	
environment concerns	-0.0089	
	(0.941)	
product safety and quality concerns	-0.1062	
	(0.102)	
aggregate strengths		-0.2385*
		(0.028)
aggregate concerns		0.4464*
		(0.032)
firm size	0.0053	0.0116
	(0.867)	(0.733)
market to book value	0.0049	0.0056
	(0.055)	(0.069)
leverage	0.0009	0.0001
	(0.818)	(0.997)
interest coverage ratio	0.0004	0.0003
	(0.518)	(0.652)
return on assets	-1.0446***	-1.0323***
	(0.001)	(0.001)
amount of bond issuance	-0.0009	-0.0007
	(0.660)	(0.549)
maturity	0.1131***	0.1169***
	(0.000)	(0.000)
squared maturity	-0.0007***	-0.0008***
	(0.000)	(0.000)
duration	0.0179	0.0192
	(0.452)	(0.432)
convexity	-0.0134***	-0.0139***
	(0.000)	(0.000)
research and development intensity	-0.8946	-0.9094*
	(0.117)	(0.019)
liquidity	0.0490***	0.0533***
	(0.000)	(0.000)
adjusted R^2	44.76%	42.91%

Note: Table contains estimates of pooled OLS regressions with two-way clustered standard errors; p-values in parentheses; ICB supersector dummy variables and bond rating dummy variables were also used but their output is not reported for the sake of parsimony; * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$.

The overall sensibility and goodness of fit of the models are also reinforced by the rest of the table's contents. Return on assets, maturity, squared maturity and convexity are the control variables that are statistically significant and they all have the expected signs in relation to credit spreads (positive for maturity and negative for the others). Bonds issued by more profitable firms, with lower maturity and more convex yield curves are associated with lower credit spreads. The negative but algebraically small coefficient for squared maturity, combined with that of the positive estimate for maturity, seems to tell a story consistent with that of a corporate spread curve that is generally increasing in maturity but slightly inverts towards its right end. The only result that is not really intuitive is the positive relationship depicted between the firm liquidity measure (current ratio) and credit spreads. However, given that this ratio is really important only for low maturity bonds and that the value of estimate is low (if the current ratio goes from 0 to 100%, then the bond spread is expected to increase by approximately 1.05 times), this does not really hamper the validity of the model. Adjusted R-squares are above 40% both in the case of the individual dimensions and for the aggregate CSP metrics.

Table 4.7 contains the estimations of the econometric models concerning the relationship between CSP and credit ratings. The results are consistent whether one looks at the coefficients of the models where the dependent variable is the recoded bond rating score or the dummy variable which indicates that a bond is of speculative grade or not. It appears that there is a strong positive link between the community, employment, environment and product safety and quality measures of corporate social performance and the credit quality of bond issues. At the other end of the spectrum, there is a robust negative relationship between the employee controversies that a firm is involved with and its fixed income creditworthiness. There are also hints pointing towards product safety and quality concerns being associated with higher credit ratings and diversity concerns being related with a lower probability of bonds being of investment grade (reinforcing the results coming from the spread regressions), but both of the respective coefficients are less statistically significant than the ones mentioned before and they are not qualitatively verified across the two different models. The aggregate strengths and aggregate concerns measures of CSP also verify the general picture that is formed, with the former being strongly positively and the latter significantly negatively related to credit quality.

Table 4.7: The effect of CSP on credit ratings

independent variables	rating	rating	speculative	speculative
community strengths	1.0244***		-5.0240***	
	(0.000)		(0.000)	
diversity strengths	0.3768		-0.4641	
	(0.060)		(0.47)	
employment strengths	1.9998***		-3.0707***	
	(0.000)		(0.000)	
environment strengths	1.5283***		0.0278	
	(0.000)		(0.963)	
product safety and quality strengths	1.8342***		-4.8176***	
	(0.000)		(0.000)	
community concerns	-0.3281		-1.3646	
	(0.153)		(0.054)	
diversity concerns	-0.0689		-0.9619*	
	(0.600)		(0.013)	
employment concerns	-1.0511***		3.1519***	
	(0.000)		(0.000)	
environment concerns	0.1806		-1.0755	
	(0.360)		(0.127)	
product safety and quality concerns	-0.2627*		-0.0765	
	(0.036)		(0.858)	
aggregate strengths		7.3159***		-9.5225***
		(0.000)		(0.000)
aggregate concerns		-2.0379***		1.8534*
		(0.000)		(0.015)
firm size	1.5062***	1.4758***	-2.4550***	-2.2118***
	(0.000)	(0.000)	(0.000)	(0.000)
market to book value	0.0109	0.0116	0.0344	0.0421*
	(0.184)	(0.183)	(0.097)	(0.022)
leverage	-0.0412***	-0.0417***	0.0784**	0.0570*
	(0.000)	(0.000)	(0.003)	(0.014)
interest coverage ratio	0.0004	0.0016	-0.0009	-0.0025
	(0.764)	(0.49)	(0.78)	(0.425)
return on assets	1.8964***	1.9441***	-4.2700***	-4.0064***
	(0.000)	(0.000)	(0.000)	(0.000)
amount of bond issuance	0.0007	0.0009***	-0.0006***	0.0001***
	(0.327)	(0.001)	(0.000)	(0.000)
maturity	0.0087	0.0162	0.7637***	0.6444***
	(0.654)	(0.42)	(0.000)	(0.000)
squared maturity	-0.0001	-0.0002	-0.0208***	-0.0176***
	(0.461)	(0.354)	(0.000)	(0.000)
duration	0.2482***	0.2380***	-0.9957***	-0.8553***
	(0.000)	(0.000)	(0.000)	(0.000)
convexity	-0.0095***	-0.0073**	0.0044	0.0035
	(0.000)	(0.002)	(0.727)	(0.753)
research and development intensity	12.3707***	0.117	-8.1779*	-6.6439*
	(0.000)	(0.145)	(0.036)	(0.036)
liquidity	-0.1985***	-0.1353**	0.3377***	0.2736***
	(0.000)	(0.004)	(0.000)	(0.000)
pseudo-R^2	15.89%	15.15%	41.53%	40.80%

Note: Table contains estimates of panel ordered probit and probit regressions with robust standard errors; p-values in parentheses; ICB supersector dummy variables were also used but their output is not reported for the sake of parsimony; * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$.

I employ McFadden's pseudo R-squared as a goodness of fit measure for these models. This is calculated as:

$$R^2 = 1 - \frac{\ln L(M_{\text{full}})}{\ln L(M_{\text{intercept}})} \qquad (4.6)$$

where L is the estimated likelihood, M_{full} is the estimated model and $M_{\text{intercept}}$ is a model comprising of the intercept only. The principal idea behind this measure is to see how much of an improvement the fitted model yields over the null model. The models where the speculative dummy variable is the regressand have pseudo R-squared statistics equivalent to the respective statistics of the credit spread regressions (higher than 40%). On the other hand, for the models concerning the bond rating categories, these statistics fall to about 15%. S&P use an incredibly extensive array of quantitative and qualitative factors in order to assign credit ratings to specific firms and financial assets. This array includes variables and issues relevant to country risk, industry characteristics, company position, marketing, technology utilised, cost efficiency, strategic and operational management competence, capital structure, corporate governance, liquidity, diversification factors, organizational and corporate culture to name a few.[73] So it is not surprising that the overall explanatory power of the set of independent variables used in this study is limited in this respect.

Similar to the results in Table 4.6, the output of these estimations (coming from random effects ordered probit regressions) cannot be instantaneously fully understood. The sign of the estimated coefficient and the relevant p-value do provide clear suggestions about the relationship between CSP and credit ratings as evident from the discussion in the previous paragraph. However, for a more detailed understanding of the associations investigated, the odds of being assigned into a higher (or lower) rating category must be inferred from the coefficients. Table 4.a, placed in the appendix, contains the relevant estimates and shows the significant magnitude of the individual and aggregate CSP measures on the probability of a bond receiving a higher rating. The odds ratios have been calculated using the approximation suggested by Amemiya (1981).

The empirical results presented so far can be directly compared, at least in part, with those of only two other studies: the paper of Bauer and Hann (2010) and that of Menz (2010). As has been already mentioned, Bauer and Hann find a significant negative relationship between environmental strengths and corporate bond spreads and a positive link between

[73] For an in-depth assessment of the corporate ratings criteria applied by S&P, the interested reader is directed to: http://www2.standardandpoor.com/spf//pdf/fixedincome/corporateratings_052007.pdf

environmental concerns and the cost of debt (vice-versa for credit quality). However, the only similar observation I have made with regard to the environmental dimension of CSP is that between environmental strengths and bond ratings (which is shown to be positive). There are methodological differences between the two studies that might explain the different observable outcomes. Firstly, the environmental concerns measures are not identically constructed, despite both of them being based on the KLD social database. I have focused solely on omnipresent environmental indicators so that environmental concerns are made of the Hazardous Waste, Regulatory Problems, Ozone Depleting Chemicals, Substantial Emissions, Agricultural Chemicals and Other Concerns whereas Bauer and Hann ignore Ozone Depleting Chemicals and incorporate Climate Change. Furthermore, there are differences in the datasets that are used. Both are extensive and cross-industrial but in the sample used by Bauer and Hann, almost 42% of the observations comes from the Manufacturing industry and an additional 19.3% comes from the Transportation, Communication, Electric, Gas and Sanitary Services industry (the classifications are based on SIC division). Aggregating the observations of all the relevant supersectors in my study results in a total of approximately 37% of the entire sample. Given that these industries tend to be amongst the most significant with regard to the respective firms environmental impact, it can be argued that the consistency of the Bauer and Hann sample is such that makes it easier to detect a stronger relationship between environmental management and the cost of corporate debt. Lastly, I have constructed the yield spreads myself in an effort to minimise any model risk that may arise and used a yield curve database that is especially appropriate for this purpose whereas Bauer and Hann utilise the spreads that are readily available from the Mergent Fixed Income Securities Database.

On the other hand, the overall association between CSP and yield spreads within the framework of corporate bonds of European firms is shown to be insignificant by Menz (2010) while both aggregate strengths and aggregate concerns are shown to be material in the determination of US firms bond spreads in this study. This could be interpreted as an indication that the European bond markets are lagging the American one with regard to the incorporation of CSP in bond valuation. It should also be noted that the Sustainable Asset Management dataset that Menz uses incorporates both economic and social criteria in the assessment of firms and does not discriminate between positive and negative corporate social actions. Both of these characteristics limit the informational value of the CSP indicator utilised.

However, the results are compatible with the majority of the CSP-CFP literature that focuses on equity markets. On the whole, there are significant indications in favour of a mild positive link between the two concepts (Margolis and Walsh, 2003; Orlitzky, Schmidt and Rynes, 2003). The relationship between CSP and financial risk in particular has also been shown to be of importance. Studies such as those of Aupperle, Carroll and Hatfield (1985), McGuire, Sundgren and Schneeweis (1988) and Orlitzky and Benjamin (2001), although methodologically dissimilar, show that increased CSP can lead to lower financial risk (usually measured as firm beta or standard deviation of the firm's stock returns). Sharfman and Fernando (2008) also show that improved environmental risk management is associated with a lower cost of equity capital. My own work in this area, presented in Chapter 3, verifies the above referenced studies and suggests, amongst other things, that community and aggregate strengths are negatively related, while employment and aggregate concerns are positively related to equity risk. The same qualitative conclusions seem to hold between these CSP measures and credit risk. So both markets appear to exhibit indications of incorporation of CSP in the informative prices of the relevant financial assets.

4.4.3 CSP dimensions and respective high risk industries

In a manner similar to the tactic employed in Subsection 3.5.3, I split my longitudinal sample according to the industry in which the bond issuing firms operate. Specifically, I argue that different dimensions of corporate social performance are especially relevant to specific industries where the nature of their business is such that it makes the firms susceptible to increased scrutiny by interested stakeholders and the mass media. According to hypothesis 3, this complimentary path of analysis should help zoom in the part of CSP which is more significant for the viability and financial success of each given firm and as such should be more pronounced in the pricing of corporate debt in fixed income markets.

I use the Industry Classification Benchmark (ICB) taxonomy at its second level of analysis (i.e. supersectors). Commitment to local communities is expected to be especially important for operational and/or reputational reasons in the insurance, household goods, real estate and telecommunications industries. The automobiles, basic resources, construction materials, industrial goods and services, oil and gas, travel and leisure, and telecommunications industries are theorised to be the most labour intensive and related to various health and safety issues. Also, the automobiles, basic resources, chemicals, construction materials, industrial goods and services, oil and gas and utilities industries are amongst the most

frequently targeted by environmental activists due to the significant environmental impact of the firms operating in them. Lastly, in the healthcare, insurance, telecommunications and utilities sectors, where consumer satisfaction and brand reputation is imperative, product safety and quality is thought to be especially crucial.

I repeat my analysis relating to corporate spreads for each subsample of bond-year observations. Similar to the respective results of Bauer and Hann (2010) as well as the relevant results of the CSP-equity risk analysis presented in Chapter 3, it appears that the hypothesised increase in the strength of the relationship between CSP and the cost of debt when categorising firms according to their industry is not detected. In fact, it is easily noticeable in Table 4.8 that these results corroborate the principal findings of the main part of the analysis, as community strengths and product safety and quality strengths are negatively related to spreads, and employee concerns are positively related to spreads across most (if not all) subsamples. The same is not true for the negative link between diversity concerns and cost of debt, which appears to arise solely from the "environmentally susceptible" sample of firms. The empirical results relevant to the bond issues' credit quality are also very consistent across the categories produced by the industrial resampling of the dataset and can be found in Table 4.b of the appendix.

Table 4.8: The effect of CSP on corporate spreads: high risk industries for each CSP dimension

	Community	Employees	Environmental activists	Consumers
independent variables	ln(spread)	ln(spread)	ln(spread)	ln(spread)
constant	-1.2073	-0.3574	1.9665***	-0.3718
	(0.061)	(0.312)	(0.000)	(0.326)
community strengths	-0.7358*	-0.5785*	-0.5476*	-0.4293*
	(0.021)	(0.012)	(0.016)	(0.034)
diversity strengths	0.1641	0.044	-0.1332	-0.6207***
	(0.380)	(0.711)	(0.373)	(0.000)
employment strengths	0.2619	0.3500***	0.2657**	0.5740**
	(0.132)	(0.000)	(0.003)	(0.004)
environment strengths	0.5914	0.0157	-0.0035	0.5608*
	(0.126)	(0.920)	(0.977)	(0.010)
product safety and quality strengths	-0.6861*	-0.8449***	-0.7065***	-0.2024
	(0.044)	(0.000)	(0.000)	(0.472)
community concerns	0.3493	0.2367	0.1945	0.5184*
	(0.324)	(0.207)	(0.194)	(0.030)
diversity concerns	-0.0837	-0.0418	-0.2864**	-0.1485
	(0.298)	(0.607)	(0.007)	(0.116)
employment concerns	0.1339	0.8254***	0.8784***	0.8414**
	(0.543)	(0.000)	(0.000)	(0.001)
environment concerns	-0.6856	0.0987	0.0465	-0.7098*
	(0.076)	(0.357)	(0.606)	(0.044)
product safety and quality concerns	-0.1479*	-0.3750***	-0.1823*	-0.0163
	(0.046)	(0.000)	(0.016)	(0.895)
firm size	0.0992	0.0025	-0.004	0.0397
	(0.141)	(0.938)	(0.878)	(0.228)
market to book value	0.0004	0.0024	0.0082**	-0.0078
	(0.998)	(0.535)	(0.002)	(0.297)
leverage	0.0042	-0.0017	-0.0081***	0.0041
	(0.238)	(0.519)	(0.001)	(0.405)
interest coverage ratio	-0.0011	0.0036***	0.0024*	-0.0073**
	(0.060)	(0.000)	(0.036)	(0.010)
return on assets	-1.9904***	-1.1032**	-0.7529	-0.9519*
	(0.000)	(0.002)	(0.216)	(0.032)
amount of bond issuance	0.0001	0.0000	-0.0006	0.0004
	(0.476)	(0.423)	(0.149)	(0.585)
maturity	0.1763***	0.0988***	0.1017***	0.1153***
	(0.000)	(0.000)	(0.000)	(0.000)
squared maturity	-0.0012***	-0.0006***	-0.0007***	-0.0007***
	(0.000)	(0.000)	(0.000)	(0.000)
duration	-0.0753	-0.0049	0.0044	0.0078
	(0.194)	(0.877)	(0.844)	(0.824)
convexity	-0.0160***	-0.0107***	-0.0116***	-0.0133***
	(0.000)	(0.000)	(0.000)	(0.000)
research and development intensity	-10.0596***	-2.4362**	-2.7945***	0.2849
	(0.000)	(0.002)	(0.001)	(0.698)
liquidity	0.0179	0.044	0.0455	0.0035
	(0.483)	(0.110)	(0.247)	(0.914)
adjusted R^2	44.16%	50.90%	44.30%	45.91%

Note: The table contains estimates of pooled OLS regressions with two-way clustered standard errors; p-values in parentheses; Bond rating dummy variables were also used but their output is not reported for the sake of parsimony; * denotes p < 0.05, ** denotes p < 0.01, *** denotes p < 0.001.

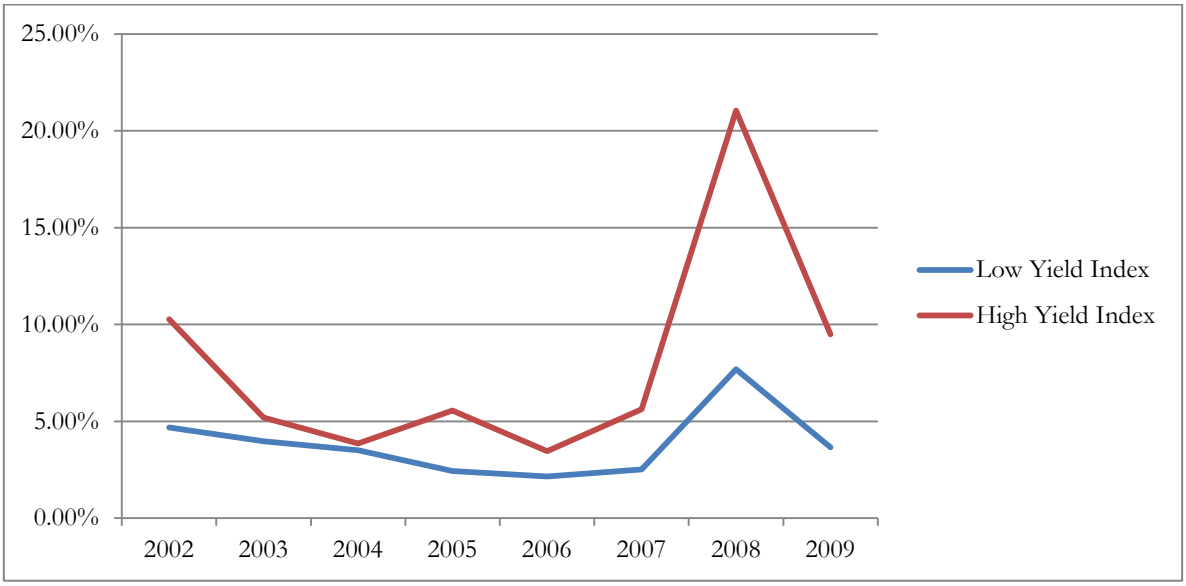
4.4.4 The dynamics in the link between CSP and cost of debt

I have argued that due to a significant increase in the awareness of CSP related issues on the part of the wider public as well as corporate agents, the link between CSP and the cost of debt has been reinforced over time. To test this assertion, I split my sample in two parts according to whether the particular bond-year observation comes from the 1991 to 1999 period or the 2000 to 2008 era. The empirical results do support hypothesis 4. Apparently, all the results discussed in Subsection 4.4.2 concerning the links between the individual dimensions of CSP and corporate bond spreads are verified in the 2000-2008 period, while none of those can be observed in earlier times as all the respective coefficients (community strengths, product safety and quality strengths, employment concerns, diversity concerns) are statistically insignificant as can be seen in Table 4.9 Of equal importance is the fact that the multidimensional CSP measures also agree with the results coming from the regressions of the entire sample. So, overall the relationship between corporate social performance and corporate spreads appears to have become stronger over time. It must, however, be noted that this discovery is not entirely robust as more than 90% of the entirety of the bond-year observations used in the study are relevant to the 2000-2008 period and the nature of the sample is varying so that there are more small firms in the second period.

Also of interest is the potential moderating effect that volatility conditions have on the relationship between CSP and corporate spreads. The ex ante expectation is that during times of economic hazard and financial distress, investors become more risk averse and as such more actively seek to reduce their exposure to various financial risks. The hypothesised risk-reducing characteristics of improved levels of corporate social responsibility (or reduced levels of corporate social irresponsibility) should lead investors to have a stronger appetite for a "flight to CSR quality" and thus the pricing of financial assets should reflect these characteristics in a more distinct way than during periods of bullish markets. In order to assess the overall volatility conditions of the US corporate bond market, a reliable respective index is needed. Unfortunately, the availability of such indices is limited. Most US bond indices are comprised of a mixture of sovereign and corporate bonds as well as mortgage-backed securities (the Merrill Lynch domestic master is one such example). Purely corporate bond indices on the other hand are almost always separated into high yield (speculative grade) and low yield (investment grade) indices. I use the Bloomberg/FINRA Active US Corporate Bond Indices comprised of the most frequently traded US fixed coupon corporate bonds. These indices are only available since 2002. Figure 4.1 shows that the annualised mean daily

volatility of the returns for both indices follow a similar pattern over time. It appears that volatility in this time window is generally higher in 2002 (the post dot-com bubble period) and 2008-2009 (the real estate downturn and credit crunch era).

Figure 4.1: The volatility of US corporate bond indices over time



So I construct two additional subsamples. The first one consists of bond year observations coming from years 2002, 2008 and 2009 (with CSP data lagging by one year) and the second one comprising of observations from the years 2003 to 2006. The results of the regressions that are run on these subsamples are presented in Table 4.10 and do not lend support to hypothesis 5. There is no clear indication that corporate social strengths or concerns and bond spreads are more significantly related (in either the economic or statistical sense) during times of high market volatility. Although there is some variation in the individual components models, no distinct pattern emerges with regard to differences in the results. The models that concentrate on aggregate CSP verify this observation as in both cases, multidimensional corporate social strengths are found to be negatively but insignificantly related to the cost of debt while concerns are positively and significantly related to spreads. It appears that bond market investors do not materially alter their behaviour with respect to CSP according to market conditions. The same type of analysis has been replicated using credit quality as the dependent variable and the results (placed in Table 4.c in the appendix) are fully aligned with those relevant to the CSP-spreads link. However, given the small number of years that are, by necessity, included in these subsamples, one could question the capacity to generalise the observed outcomes.

Table 4.9: The effect of CSP on corporate spreads over time

	1991-1999		2000-2008	
independent variables	ln(spread)	ln(spread)	ln(spread)	ln(spread)
constant	2,8413**	2,1819***	-0.5296	-0.6930
	(0.002)	(0.000)	(0.195)	(0.106)
community strengths	0.253		-0.5800**	
	(0.441)		(0.007)	
diversity strengths	-0.2433		0.0654	
	(0.790)		(0.615)	
employment strengths	1.0519		0.1569	
	(0.102)		(0.116)	
environment strengths	-1.9926*		0.3013	
	(0.010)		(0.155)	
product safety and quality strengths	-0.2981		-0.3607**	
	(0.754)		(0.006)	
community concerns	0.4926		0.1965	
	(0.515)		(0.141)	
diversity concerns	0.5683		-0.1641***	
	(0.074)		(0.000)	
employment concerns	0.1982		0.6432***	
	(0.792)		(0.000)	
environment concerns	-1.4628***		-0.0002	
	(0.000)		(0.998)	
product safety and quality concerns	0.1271		-0.1131	
			(0.093)	
aggregate strengths		-0.0924		-0.2324*
		(0.912)		(0.039)
aggregate concerns		-1.1182		0.4322*
		(0.147)		(0.044)
firm size	-0.1561**	-0.0912	0.0052	0.0113
	(0.009)	(0.053)	(0.876)	(0.751)
market to book value	0.0543**	0.0465**	0.0044	0.0051
	(0.002)	(0.009)	(0.105)	(0.112)
leverage	0.0078	0.0135	0.0016	0.0005
	(0.496)	(0.519)	(0.710)	(0.915)
interest coverage ratio	-0.0005	-0.0034	0.0004	0.0002
	(0.942)	(0.765)	(0.534)	(0.681)
return on assets	-0.4079	0.3171	-1.0523***	-1.0414**
	(0.716)	(0.790)	(0.001)	(0.001)
amount of bond issuance	0.0000*	0.000	0.000	0.000
	(0.026)	(0.205)	(0.723)	(0.596)
maturity	0.6170***	0.4898***	0.1131***	0.1169***
	(0.000)	(0.000)	(0.000)	(0.000)
squared maturity	-0.0085***	-0.0058**	-0.0007***	-0.0008***
	(0.000)	(0.004)	(0.000)	(0.000)
duration	-0.6255***	-0.4762**	0.0211	0.0221
	(0.000)	(0.001)	(0.391)	(0.383)
convexity	-0.0245	-0.0239	-0.0136***	-0.0141***
	(0.100)	(0.120)	(0.000)	(0.000)
research and development intensity	-6.2136**	-5.8927*	-0.819	-0.8528*
	(0.003)	(0.035)	(0.166)	(0.032)
liquidity	0.1213	0.1773	0.0466***	0.0512***
	(0.363)	(0.059)	(0.000)	(0.000)
adjusted R^2	60.23%	55.78%	44.45%	42.53%

Note: Table contains estimates of pooled OLS regressions with two-way clustered standard errors; p-values in parentheses; ICB supersector dummy variables and bond rating dummy variables were also used but their output is not reported for the sake of parsimony; * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$.

Table 4.10: CSP and corporate spreads: the volatility effect				
	High volatility period		Low volatility period	
independent variables	ln(spread)	ln(spread)	ln(spread)	ln(spread)
constant	2.4849***	2.4590***	0.1914	0.0956
	(0.000)	(0.000)	(0.655)	(0.835)
community strengths	-0.1864*		-0.6287***	
	(0.040)		(0.000)	
diversity strengths	-0.045		0.3815***	
	(0.503)		(0.000)	
employment strengths	0.1800		-0.1078	
	(0.087)		(0.178)	
environment strengths	-0.0544		-0.0092	
	(0.645)		(0.955)	
product safety and quality strengths	-0.2678**		-0.1598	
	(0.007)		(0.248)	
community concerns	0.0295		0.1427	
	(0.630)		(0.340)	
diversity concerns	-0.1140*		0.1009*	
	(0.025)		(0.024)	
employment concerns	0.1827**		0.2843*	
	(0.002)		(0.024)	
environment concerns	0.1584**		0.0383	
	(0.005)		(0.782)	
product safety and quality concerns	0.0324		-0.1862***	
	(0.437)		(0.000)	
aggregate strengths		-0.2254		-0.1943
		(0.384)		(0.148)
aggregate concerns		0.1827*		0.3690*
		(0.026)		(0.034)
firm size	-0.0476*	-0.043	-0.0149	-0.0118
	(0.039)	-0.076	(0.541)	(0.671)
market to book value	0.0011	0.001	-0.0048	-0.0024
	(0.651)	-0.694	(0.461)	(0.683)
leverage	0.0015	0.0018	0.0069	0.004
	(0.621)	-0.568	(0.379)	(0.609)
interest coverage ratio	0.0003	0.0001	0.0019	0.0018
	(0.548)	-0.767	(0.067)	(0.073)
return on assets	-0.2013	-0.219	-0.7339***	-0.7351***
	(0.420)	-0.396	(0.000)	(0.000)
amount of bond issuance	-0.0000*	-0.0000*	0.000	0.000
	(0.041)	-0.049	(0.286)	(0.188)
maturity	0.1146***	0.1181***	0.0328*	0.0316
	(0.000)	(0.000)	(0.043)	(0.090)
squared maturity	-0.0007***	-0.0008***	-0.0002	-0.0002
	(0.000)	(0.000)	(0.196)	(0.288)
duration	0.0291	0.0276	0.0065	0.008
	(0.250)	-0.282	(0.766)	(0.742)
convexity	-0.0128***	-0.0130***	-0.0036**	-0.0035**
	(0.000)	(0.000)	(0.001)	(0.007)
research and development intensity	-10162	-0.8873	-0.2169	-0.6926
	-0.054	(0.079)	(0.712)	(0.147)
liquidity	0.0268*	0.0333***	0.0580**	0.0540*
	(0.015)	(0.001)	(0.007)	(0.035)
adjusted R^2	59.91%	59.58%	53.64%	52.45%

Note: Table contains estimates of pooled OLS regressions with two-way clustered standard errors; p-values in parentheses; ICB supersector dummy variables and bond rating dummy variables were also used but their output is not reported for the sake of parsimony; * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$.

4.4.5 Investment horizon and the link between CSP and credit spreads

To further extend our understanding of the relationship between CSP and yield spreads, I will attempt to check how this link varies according to bond maturity, which will be used as a proxy for investment horizon (thus implicitly assuming that "buy and hold" strategies are implemented by investors). Prior literature within the CSP-CFP research field has argued that the financial benefits of CSR generally accrue in the long run (Hillman and Keim, 2001) and that long term-term institutional investors show an appetite for higher CSP performance in the firms that they invest in (Graves and Waddock, 1994; Cox et al., 2004). According to the results of the regressions that are contained in Table 4.11, this view seems to be supported. Only in the case of corporate bonds with maturities of 20 years or more are the estimated slope coefficients relevant to the aggregate strengths and concerns significantly related to the cost of corporate debt, signifying that these variables are more strongly connected within a long-term investment framework. So it appears that SRI practitioners also believe in the arguments which suggest that the economic fruits of the consistent, strategic applications of CSR principles can be reaped for the firm (and its stakeholders) primarily in the long run. This analysis also stands as a robustness check for the core results of this study and is generally reassuring as the signs of the coefficients of interest remain stable across the entire spectrum of bond maturities (negative for social strengths and positive for controversies) and are consistent with the hypothesised links between CSP and credit spreads.

4.4.6 Additional analyses

In this subsection, I conduct some supplemental analyses in order to reinforce the findings coming from the main part of this chapter. Firstly, it would be interesting to split my sample in yet another different way in order to gain some insight concerning the variability of the CSP-spreads association according to the rating category to which the bond issues belongs. Tables 4.11 and 4.12 contain the results of the relevant regressions for the various categories of investment grade bonds and speculative grade bonds respectively. I only use the aggregate CSP measures as I am focusing on additional high-level inferences that can be drawn. The main conclusion that can be drawn is that CSP is especially important in the cases of highly rated bonds (A+ to A-) or very low rated bonds (CCC+ or lower) where the relationship between corporate social activities/practices and cost of debt is verified in a significant way. Clearly, due to the very high yields of the low rated bonds, it is the issuers of these assets that

can benefit the most, in absolute terms, from the significant reductions in the cost of debt than can materialise mainly through proactive involvement in CSR practices.

Table 4.11: The effect of CSP on corporate spreads with regard to investment horizon

Years to maturity:	5 or less	5 to 10	10 to 20	more than 20
independent variables	ln(spread)	ln(spread)	ln(spread)	ln(spread)
constant	-0.5838	2.9880***	0.9139	0.9349
	(0.2330)	(0.0010)	(0.100)	(0.093)
aggregate strengths	-0.0199	-0.3131	-0.2365	-0.5655**
	(0.908)	(0.142)	(0.156)	(0.004)
aggregate concerns	0.5421	0.4056	0.148	0.4465**
	(0.124)	(0.065)	(0.411)	(0.004)
firm size	0.0018	0.0393	0.0598	0.0152
	(0.961)	(0.251)	(0.095)	(0.690)
market to book value	0.0031	0.0090*	0.001	0.0002
	(0.399)	(0.016)	(0.784)	(0.975)
leverage	0.0032	-0.0025	-0.0043	-0.0018
	(0.439)	(0.448)	(0.190)	(0.690)
interest coverage ratio	-0.0004	0.0011*	0.0024	-0.0012
	(0.574)	(0.018)	(0.387)	(0.449)
return on assets	-0.8856**	-0.9074***	-0.5146	0.6161
	(0.009)	(0.000)	(0.177)	(0.159)
amount of bond issuance	0.0001	0.0000	-0.0002	0.0000*
	(0.606)	(0.332)	(0.255)	(0.016)
maturity	-0.9635***	-0.1384	0.0225	0.0887***
	(0.000)	(0.579)	(0.791)	(0.000)
squared maturity	0.2270***	0.0367**	0.0046	-0.0005***
	(0.000)	(0.004)	(0.100)	(0.000)
duration	1.7163***	0.6939**	0.0497	-0.0049
	(0.000)	(0.007)	(0.085)	(0.943)
convexity	-0.3654***	-0.1220***	-0.0264***	-0.0106**
	(0.000)	(0.000)	(0.000)	(0.004)
research and development intensity	-1.6176**	-0.506	-0.5138	0.0006
	(0.008)	(0.294)	(0.454)	(0.999)
liquidity	0.0444*	0.0273**	0.0402	0.0587*
	(0.012)	(0.004)	(0.234)	(0.049)
adjusted R^2	43.96%	57.62%	60.30%	53.51%

Note: Table contains estimates of pooled OLS regressions with two-way clustered standard errors; p-values in parentheses; ICB supersector dummy variables and bond rating dummy variables were also used but their output is not reported for the sake of parsimony; * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$.

Table 4.12: Effect of CSP on corporate spreads: investment grade bonds

Bond ratings:	AAA to AA-	A+ to A-	BBB+ to BBB-
independent variables	ln(spread)	ln(spread)	ln(spread)
constant	-1.9972	-0.8838	0.3465
	(0.051)	(0.206)	(0.477)
aggregate strengths	0.1765	-0.6256***	-0.1748
	(0.805)	(0.000)	(0.424)
aggregate concerns	-0.4914	0.9074**	0.3311
	(0.304)	(0.002)	(0.266)
firm size	0.12	0.0494	-0.0004
	(0.343)	(0.362)	(0.992)
market to book value	-0.0261	0.0013	0.0093
	(0.424)	(0.802)	(0.336)
leverage	0.1772	0.0036	0.0025
	(0.115)	(0.548)	(0.864)
interest coverage ratio	0.0005	0.0006	-0.0001
	(0.671)	(0.697)	(0.802)
return on assets	-2.2876**	0.2276	-0.8925*
	(0.002)	(0.776)	(0.021)
amount of bond issuance	0.000	0.000	0.000
	(0.621)	(0.951)	(0.436)
maturity	0.1118**	0.1240***	0.1307***
	(0.005)	(0.000)	(0.000)
squared maturity	-0.0007*	-0.0008***	-0.0009***
	(0.016)	(0.000)	(0.000)
duration	0.0588	0.0618	0.0620*
	(0.464)	(0.078)	(0.027)
convexity	-0.0125*	-0.0163***	-0.0195***
	(0.032)	(0.000)	(0.000)
research and development intensity	-0.6377	0.819	-2.5340**
	(0.774)	(0.220)	(0.001)
liquidity	0.3085**	-0.0045	0.0597***
	(0.005)	(0.918)	(0.000)
adjusted R^2	30.93%	26.31%	18.21%

Note: Table contains estimates of pooled OLS regressions with two-way clustered standard errors; p-values in parentheses; ICB supersector dummy variables and bond rating dummy variables were also used but their output is not reported for the sake of parsimony; * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$.

Table 4.13: Effect of CSP on corporate spreads: speculative grade bonds

Bond ratings:	BB+ to BB-	B+ to B-	CCC+ to D
independent variables	ln(spread)	ln(spread)	ln(spread)
constant	0.5883	0.7648***	4.1063***
	(0.070)	(0.000)	(0.000)
aggregate strengths	0.8609	-0.9838	-1.5374
	(0.171)	(0.088)	(0.089)
aggregate concerns	-0.6085	0.0648	1.4784**
	(0.189)	(0.811)	(0.006)
firm size	0.0415	0.0145	0.0216
	(0.129)	(0.708)	-0.752
market to book value	-0.0053	0.0049	-0.0062
	(0.678)	(0.601)	(0.201)
leverage	0.0125	-0.0017	0.0038
	(0.296)	(0.740)	(0.281)
interest coverage ratio	0.0003	0.0006	0.0021
	(0.974)	(0.757)	(0.808)
return on assets	-1.3827***	-1.0176***	-0.6649
	(0.000)	(0.000)	(0.122)
amount of bond issuance	0.000	-0.0001*	0.0002
	(0.655)	(0.028)	(0.816)
maturity	0.2087***	0.3036***	0.0374
	(0.000)	(0.000)	(0.299)
squared maturity	-0.0025*	-0.0035	-0.0004
	(0.020)	(0.083)	(0.292)
duration	-0.0159	-0.1352	-0.2705
	(0.861)	(0.199)	(0.122)
convexity	-0.0264***	-0.0369**	0.0071
	(0.000)	(0.001)	(0.663)
research and development intensity	-4.0067*	-0.6038	-3.0696*
	(0.020)	-0.403	(0.041)
liquidity	0.0475	-0.0147	0.1248
	(0.085)	(0.590)	(0.154)
adjusted R^2	15.81%	27.36%	34.28%

Note: Table contains estimates of pooled OLS regressions with two-way clustered standard errors; p-values in parentheses; ICB supersector dummy variables and bond rating dummy variables were also used but their output is not reported for the sake of parsimony; * denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$.

Lastly, because I include multiple bonds per firm in my sample with some of them being traded concurrently, there exists a theoretical possibility that the CSP effect of those firms that issue many bonds dominate those of firms that issue few or one bond and thus the results of this study cannot be reasonably generalised. To account for this potential limitation, I repeat the core part of the analysis regarding the impact of CSP on the corporate cost of debt, bond ratings and credit quality using only the single, most liquid bond per firm traded in a given year. The proxy I use for bond liquidity is the nominal amount issued. The final dataset comprises 3,826 bond-year (or firm-year, it makes no difference in this case) observations. The respective results are depicted in Tables 4.d and 4.e in the appendix and are very similar to those presented earlier from the regression of the entire sample. The only material difference is that although the aggregate strengths and aggregate concerns variable remain, respectively, negatively and positively connected to spreads, the first connection is statistically insignificant. However, the same variables are significantly related to corporate ratings in a fashion consistent with hypotheses 1 and 2.

4.5. Summary

To the author's best knowledge, the study presented in this chapter is the first to look into the differential impact that various dimensions of corporate social performance have on the pricing of corporate debt as well as the assessment of the credit quality of specific bond issues. The analysis, based on an extensive dataset comprising of more than 3,000 bonds issued by 742 firms operating in 17 different industries, suggests that support for local communities, higher levels of marketed product safety and quality characteristics and avoidance of controversies regarding the firm's workforce can materially reduce the risk premia associated with corporate bonds and thus decrease the cost of corporate debt. Diversity concerns are shown to be negatively related to credit spreads but not in an economically highly significant way. These findings appear to be fairly robust across sectors, irrespective of the systematic variation of the operational risks relevant to each of them.

Aggregate CSP metrics are also employed and the results clearly demonstrate that, overall, corporate benevolence is rewarded and corporate social/environmental transgressions are penalised through lower and higher corporate bond yield spreads respectively. The same conclusions can be drawn when focusing on either the bond rating assigned to a specific debt issue or the probability of it being considered to be of investment grade or speculative grade. The results of these analyses are, in principal, even stronger than those coming from the regression of CSP on credit spreads. It appears that higher levels of corporate social performance can lead to improved credit quality and lower perceived credit risk.

Additional novel contributions arise from the significant efforts that are made to uncover the finer characteristics connecting corporate social performance and bond valuation. The temporal dynamics of the relationship between CSP and corporate spreads are explored and it is found that this link has strengthened over time, an observation we can attribute to the increasing public awareness and media coverage of CSR-related issues. It is also revealed that bond market participants who apply social responsible investing principles tend to adhere to the academic consensus which suggests that the financial benefits produced from CSR accrue mainly in the long run as the link between CSP and yield spreads is more significantly negative for longer maturity bonds. However, overall volatility conditions are not shown to influence the relationship examined in any material way. Lastly, a look at the variability of the CSP-spreads association across credit rating categories provides some indications which suggest that this association is stronger for the high and very low rated bonds.

The findings of the study are clear and potentially of great use to different interest parties. Firm managers should be aware of the impact that their company's social posture has on the cost of debt financing and the credit quality of its bond issues. Applying efficient, strategic management of the relationships between the corporation and specific stakeholder groups can help in drawing cheaper funds from the fixed income markets. Proactive application of CSR principles can also help avoid instances where a significant controversy concerning firm activities impacting the wider society or the environment lead to overwhelming liquidity squeezes and possible viability issues as in the case of BP and the Gulf oil spill incident. Furthermore, bond market participants and proponents of SRI strategies, especially those with longer investment horizons, not only gain insights which suggest the existence of a significant negative relationship between CSP and corporate spreads (and a positive one between CSP and credit quality) but also, that this relationship is more pronounced in bonds with higher maturities. Future research may focus on examining the relationship in different bond markets or looking at the portfolio level equivalent of this analysis and specifying which type of screens (positive or negative and for which CSP dimensions) produce the most successful investment strategy in fixed-income funds.

5. The Interactive Financial Effects of Corporate Social Responsibility and Irresponsibility

5.1 Introduction

In the previous chapters, I argued that one reason for the variability of results and lack of consensus in the empirical literature studying the link between CSP and CFP could be in part attributed to the focus on the wealth-enhancing rather than wealth-protective effects of CSP. This view spans from a line of reasoning suggesting that, to a certain extent, scholars may have been looking for the wrong kind of relationship between the two notions. In an effort to remedy this shortcoming, special attention was given to the effect that corporate social performance has on financial risk, investor utility, corporate spreads and credit ratings.

A different, and possibly even more fundamental, critique of existing CSP-CFP studies relates to the issue of the appropriate measurement of the key concepts, especially corporate social performance itself. There are many important aspects within this issue: The orientation of the CSR/CSP measures towards outcomes, processes and programs (Waddock and Graves, 1997) or corporate reputation (Brammer, Brooks and Pavelin, 2006b); its focus and cover of one or more social issues (Hillman and Keim, 2001); whether aggregation or not of different CSP dimensions (Ruf et al., 1998) will strengthen or weaken its measurable impact on firm financial performance; whether positive and negative social action should be combined in empirical research or not.

With one notable exception (Mattingly and Berman, 2006), the last dilemma has received the least amount of attention. The plurality of CSP-CFP studies have employed a CSP measure that aggregates across positives (e.g. a creditable record of philanthropy) and negatives (e.g. a shameful record of pollution). Doing so loses information (and, I will argue, valuable information) about the composition of each firm's CSP, and implies a highly restrictive view of the manner in which positives and negatives are perceived when, as is commonly found, both are associated with a single firm. Such aggregation implies that relevant audiences (investors, consumers, employees or other stakeholders) view a mixed picture of a firm's CSP according to some simple arithmetic that additively combines the good and the bad. Therefore, this method implicitly offers only simplistic answers to the questions: 'How does

positive social action alter the financial effect of negative social action?' and 'How does negative social action alter the financial effect of positive social action?'

To put it differently, if a company does 'good' in order to compensate for something 'bad', will it also do 'well' (or at least better) in financial terms? Alternatively, if a company invests in CSR to create a strong reputation concerning its social responsibility, but is also involved in socially irresponsible activities, will the overall financial impact turn out to be positive or negative? This study will make an attempt to offer original empirical answers to these types of questions, which involve the potentially moderating role that corporate social responsibility (irresponsibility) has on the financial effects of corporate social irresponsibility (responsibility).

Investigation of whether and how the co-existence of social strengths and concerns for a given firm modifies the effect that each has on corporate financial performance is potentially informative for both academics and practitioners. Evidence of such interactive effects would provide scholars of the relationship between CSP and CFP with both further explanation of the lack of empirical consensus that emerged from the host of previous studies that have overlooked these interactions, and novel insights into the importance of appropriately operationalising positive and negative aspects of CSP in future studies to capture their distinct yet related impacts. Illuminating the manner in which a firm's mixed picture of CSP is viewed in-the-round is potentially instructive for managers seeking to formulate a CSR strategy that not only augments a firm's social contributions but also efficiently builds reputation, manages its relationships with key stakeholder groups and improves financial performance. Lastly, this study will provide lessons for the practice of socially responsible investment (SRI), and particularly the social criteria and screens that are most appropriate (and likely to bring the highest returns) when many commonly-held stocks are associated with firms that exhibit both positive and negative CSP indicators.

The remainder of this chapter is structured as follows: section 2 provides the theoretical background which constitutes the basis of the empirical study. The characteristics of the dataset used and the details of the methodology applied are discussed in section 3. Section 4 presents the results of the various analyses and the robustness tests that have been performed whereas section 5 draws conclusions and makes suggestions for future research.

5.2 Background and theory

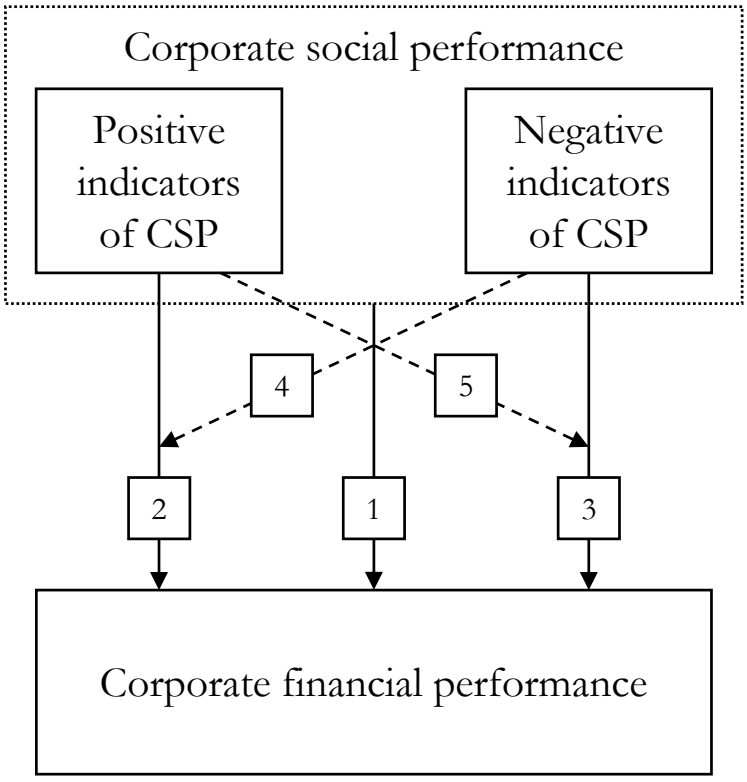
The starting point for my argument is that stakeholders – those who affect or are affected by a firm's activities (Freeman, 1984) – have preferences that cause (at least some of) them to (at least to some degree) favour relationships with firms that exhibit better CSP, i.e. consumers are more willing to pay for such firms' products; employees are more willing to work for such companies, investors are more willing to own the firm's shares, and so on. In this way, stakeholders care about CSP in a manner that potentially translates into their behaviour within the stakeholder-firm relationship. As CFP is determined by the character of a company's interactions with stakeholders, then to the extent that stakeholders' behaviours towards firms are affected by perceived CSP, financial performance is affected by stakeholders' judgments regarding social performance.

CSP is multidimensional. It spans numerous social and environmental issues – from carbon emissions to equal opportunities in hiring, from community projects to product safety and so on and, for each type of issue, it encompasses both the potential for firms to demonstrate strength – e.g. support charities that restore aquatic environments and facilitate employee volunteering – or expose weakness – e.g. receive regulatory sanctions for excessive pollution and sustain child labour in supply chains. It is therefore possible for a single firm to offer a complex and conflicting picture regarding its CSP. Not only might a firm exhibit strengths in some dimensions of CSP and weaknesses in another, it might also show both positive and negative indicators pertaining to the same dimension of CSP, e.g. environmental performance. Indeed, commonly-cited metrics (including those employed in the study presented in this study) suggest that it is common for large firms to offer just this kind of mixed picture to its stakeholders. Therefore, stakeholders that wish to behave towards a firm in a manner that is contingent upon their perception of that firm's CSP must commonly form a view that takes into account the existence of conflicting indicators.

As mentioned above, previous studies have overlooked the potential importance of the composition of CSP across positives and negatives by ruling out such interactive effects by assumption. The commonly-employed method of estimating the financial effects of some aggregate measure of CSP is illustrated in Figure 5.1 by the arrow labeled 1. The emergent recent trend for the financial effects of positive and negative indicators to be separately estimated is shown by the arrows labeled 2 and 3. In this study, I wish to broaden the purview

to permit the capture of the effects of positives being viewed in light of negatives and vice versa – as illustrated by the dotted arrows (indicating moderating effects) labeled 4 and 5.

Figure 5.1: The relationships between CSP and CFP that are commonly-tested in the extant literature (1, 2 and 3) and those tested in this study (4 and 5; moderating effects shown as dotted arrows)



Next, I will offer two alternative views of how stakeholders perceive positives in light of negatives and vice versa. According to the first, stakeholders' responses to CSP indicators are such that positive financial effects of positive indicators are negatively moderated by negative CSP indicators, and negative financial effects of negative indicators are positively moderated by positive CSP indicators – I refer to this as *reciprocal dampening*. According to the second, stakeholders' responses to CSP indicators are again influenced by the composition of CSP across positives and negatives, but in a different manner. In this view, one expects negative financial effects from a mix of positive and negative CSP indicators, and positive effects on CFP otherwise, whether all indicators are positive or negative – I refer to this as *rewarding uniformity*.

5.2.1. Reciprocal dampening

Towards an understanding of how stakeholders proceed in light of such firm-level complexity in CSP, Barnett (2007) introduces the notion of Stakeholder Influence Capacity, and argues that part of the heterogeneity in the financial returns of CSR can be attributed to stakeholders' efforts to discern positive social actions that arise from genuine regard for social welfare (which are worthy of reputational reward) from corporate activities motivated by self-interest (which are worthy of reputational penalty). This implies that stakeholders' perceptions of CSR can be critically influenced by their judgments regarding the underlying motives that inform corporate decision-making (Godfrey, 2005). If so, it is expectable that negative corporate social actions influence assessments of positive social actions, thus limiting (or possibly even reversing) the financial effects of the latter. Stakeholders may view the presence of some negative social impact as diagnostic of a disregard for social welfare on the part of the firm. Such an inference among stakeholders may persist despite apparently countervailing evidence of positive social impacts by the firm in other spheres (Barnett, 2007). Somewhat similarly, stakeholders may view the presence of some negative social impact less unfavorably than otherwise were the same firm to also exhibit a current and/or prior record of creditable contributions to social welfare. Stakeholders may view that lesser reputational punishments are in order in such a case, just as in common law the *mens rea* doctrine promotes the use of character witnesses (who speak to the good character of the defendant rather than the circumstances of the alleged offence) as a device to lessen judgments of guilt (Godfrey, 2005).

There are, however, very few studies, conceptual or empirical, dedicated to the investigation of interactions between corporate social responsibility and corporate social irresponsibility (CSI) at the firm-level. Indeed, to the author's knowledge, there is no previous research that focuses upon the financial impact of any such interactions and only a few investigate the manner in which stakeholders' judgements of CSP balance of positives and negatives. For example, Pomering and Dolnicar (2009) study consumer awareness of CSR activities and point out that *"...better context may amount to little if claimed CSR initiatives are perceived as inconsistent with other facets of the business that reflect its values and ethics"* (p.285). Vanhamme and Grobben (2009) study the ways in which CSR can help counter the effects that negative publicity (caused by some sort of firm transgression) has on corporate reputation. They also highlight the role of motivation in this process, along with that of CSR history. In addition, Yoon et al. (2006) provide evidence which supports that CSR activities may have a beneficial, neutral or

negative effect on a company's image depending on whether the sincerity of its motives in relation to these activities is determined to be genuine, ambiguous or insincere, respectively. Lastly, perhaps the most thematically related study of all comes from Kotchen and Moon (2007) who claim that firms engage in CSR simply to offset the impact of their negative social and environmental actions. Their empirical analysis generally supports this assertion, especially when looking within the community relations and environmental dimensions of CSP.

These studies provide further impetus to the idea that stakeholders judge a firm's CSP in a manner that perceives positive indications in light of negative indications, and perceives negative indications in light of positive indications. Following the arguments proposed by Godfrey (2005) and Barnett (2007), it can be argued that stakeholders' behaviour is influenced by character-like judgments of firms, and particularly the degree to which corporate decision-making is guided by a genuine regard for social welfare. Any such tendency would ensure that the effects of CSP on stakeholder behaviour and, therefore, CFP are critically influenced by the manner in which CSP is composed of positives and negatives. More specifically, stakeholders would tend to view any positive indicators of CSP as a stronger informational basis from which to infer good corporate character if they are not accompanied by negative CSP indicators for the same firm. Also, stakeholders would tend to view any negative indicators of CSP as a stronger informational basis from which to infer a disregard for social welfare if not accompanied by positive CSP indicators for the same firm. Given this, and the resulting effects on the returns to the firm from its stakeholder relationships, I propose that the financial effects of positive and negative indicators moderate each other as described in the following hypothesis:

Hypothesis 1a:Negative indicators of CSP negatively moderate the financial effects of positive CSP indicators.

Hypothesis 1b:Positive indicators of CSP positively moderate the financial effects of negative CSP indicators.

These moderating effects are illustrated in Figure 5.1 as dotted arrows labeled 4 and 5, respectively.

It should be pointed out that the phrasing of these hypotheses indicates a moderating relationship between CSR and CSI-CFP on the one hand and CSI and CSR-CFP on the other. This need not necessarily be the case for every category of corporate social performance but it makes the empirical analysis more wide-ranging. Another issue of great importance concerns the exact matching of pairs of social strengths and concerns that may moderate the financial effects of one another. A reasonable starting point would be to

investigate such moderating effects for positive and negative actions of the same social/environmental dimension. However, there is the theoretical possibility (supported by evidence from a few empirical studies as I will demonstrate) that firms try to insure against the financial effects of their own CSI by investing in non-corresponding CSR (i.e. positive social action of a different dimension). Thus:

Hypothesis 2: There are specific cases of non-corresponding CSR and CSI where one may influence the financial impact of the other.

Furthermore, Vanhamme and Grobben (2009) underline the importance of the consistent application of CSR principles (i.e. CSR history) and find that companies with a lengthier involvement in CSR matters are more effective in applying successful crisis communication management and negating the impacts of negative publicity. Consistency in corporate social performance helps the firm improve its levels of social legitimacy[74], create trustworthiness and credibility among the public and help build a stronger reputation which reduces stakeholder scepticism concerning the underlying motives and overall moral character of the firm. The same reasoning is reflected in the work of Barnett (2007) who argues that due to the existence of the notion of stakeholder influence capacity, different firms obtain different financial outcomes from the application of CSR because stakeholders respond to firm actions in a way depended on the unique firm history. In other words: "*stakeholders draw from their prior knowledge of a firm when they assess the implications of new information generated by that firm's CSR activities"* (Barnett, 2007, p.803). Similarly, Godfrey (2005) argues that one of the conditions that needs to be met in order for a firm to generate moral capital is a consistency in the pattern of philanthropic activity (although the rationale can be extended to many CSP dimensions) which *"avoids the appearance of ingratiation, since it provides counterfactual evidence that decision makers engage in philanthropy on an opportunistic or capricious basis; it shows that the commitment by a firm to doing good continues through time"* Godfrey (2005, p.795). Generated moral capital can act as firm insurance of certain intangible assets and should therefore be depicted in the corporation's financial well-being. So, in the framework of this study, it appears plausible to state:

Hypothesis 3: Consistent positive (negative) social action will reduce the financial impact of sporadic negative (positive) social action.

[74] *"...which ensues if the company's institutional actions are compatible with the broader social norms of the community"*, (Vanhamme and Grobben, 2009, p.274).

5.2.2 Rewarding uniformity

In taking a view of a firm's CSP, stakeholders might make the least favourable judgments of firms that exhibit a mix of positives and negatives. To support such a view, I will employ an argument forwarded by Godfrey (2005) and extend its application beyond corporate philanthropy to encompass CSP in general. Godfrey argued that stakeholders, *"assess interactions between the firm and stakeholders… that reflect some degree of 'moral coloration' by individual actors, managers and leaders within the firm"* (p.783) and *"from these morally colored activities and contexts, stakeholders impute moral values, principles and character elements that compose a moral reputation"* (p.783). He proposes that an act of corporate philanthropy will positively affect such a reputational assessment only if stakeholders infer that the charitable donation is suitably motivated. More specifically, he argues that the critical question is: *"Does the philanthropic activity at hand represent a genuine manifestation of the firm's underlying intentions, vision and character, or is the activity designed to ingratiate the firm among the impacted community?"* (p.784) Crucially, that a firm's philanthropy is judged not to be genuinely motivated impacts negatively on the firm's moral reputation, despite the expectable benefits in regards of the charitable cause. This is because *"ingratiation is illicit and morally negative because it involves deception; honorable acts belie dishonorable motives and the goal of the ingratiator is to be seen as good without actually being good"* (p.784).

This characterisation of stakeholders' reputational judgments of firms' social responsibility and irresponsibility applies not only to philanthropic acts but also to any corporate action that carries potential implications for assessments of whether or not a firm's decision-making is governed by a genuine regard for social welfare. Therefore, I will apply Godfrey's arguments to stakeholders' assessments of CSP in toto, and specifically to assessments in the light of CSP indicators that are: uniformly positive; a mix of positives and negatives; uniformly negative. In the first case, positive reputational inferences from positive CSP indicators are not undermined by negative indicators. This promotes a tendency among stakeholders to view the firm as being genuinely socially responsible as they have exhibited no tendency to mix CSR initiatives with deleterious impacts on society that stakeholders might view as diagnostic of decision-making that lacks a regard for social welfare. In the second case, a mixed picture threatens just such inferences, whereby a firm that demonstrates creditable CSR in some aspects does not precipitate reputational rewards because these positives are viewed in light of negatives that critically influence stakeholders' judgments of corporate character. The presence of negative indicators threatens the inference that the firm's positives in CSP are the fruit of ingratiating attempts to mitigate the reputational effects of, and/or distract attention from, its tendency (and apparent willingness) to otherwise impose harms on society.

In the third case, there are negative CSP indicators and no positive indicators. While it seems that such a firm demonstrates the worst possible CSP, they do not attract inferences of ingratiation and the accompanying damage to corporate reputation among stakeholders. Indeed, as in this case firms also avoid the costs often associated with measures that result in positive CSP indicators (such as community programs, pollution controls, health and safety measures and so on), the financial implications of a negative CSP indicator might be better (or less bad) when accompanied by other negative indicators rather than indicators of positive social actions – as the latter threaten inferences of deceptive, ingratiating and morally negative corporate behaviour. Also, it could be that this type of firms appeal neither to pure profit-seeking investors (who view CSP as value-destroying) nor to those socially responsible investors who simply choose to screen out firms with social and environmental concerns. Thus the demand for the stocks of these firms could, in theory, be less than the firms that generate either strictly positive or strictly negative indications with regard to their CSP.

The implied relatively poor performance of mixed compared to uniform CSP – either positive or negative – is somewhat consistent with the U-shaped relationship between corporate philanthropy and CFP imputed by Brammer and Millington (2008) from their study of UK firms over the period 1990-1999. In that study, the hypothesised curvilinear relationship is supported by references to two alternative routes to competitive advantage – low-cost and differentiation – and to the likelihood that firms will perform relatively poorly if they prosecute a strategy that falls some way between the two (Porter, 1980). Brammer and Millington argue that as *"improved social responsibility often requires an increase in direct costs, one route to competitive advantage could arise from the avoidance of these costs… Firms that make moderate levels of investment in social performance neither save the resources for alternative investments nor achieve differentiation in the eyes of stakeholders, and, in consequence, exhibit relatively poor financial performance"* (p.1329). In the study, Brammer and Millington found that firms that donated relatively small or large amounts (compared to the amounts predicted by firm size, industry and other control variables) enjoyed better CFP than those whose donations lay between the two extremes. More specifically, their comparisons of the top and bottom 10 percentiles of giving with the middle 20 percentiles demonstrated, *"that firms with both unusually high and low social performance have higher financial performance than other firms with unusually poor social performers doing best in the short run, and unusually good social performers doing best over longer time horizons"* (p.1341).

To reflect these arguments, I will test the following hypotheses:

Hypothesis 4a: The financial effects of positive CSP indicators in the absence of negative CSP indicators are more positive than those in the presence of both positive and negative indicators.

Hypothesis 4b: The financial effects of negative CSP indicators in the absence of positive CSP indicators are more positive than those in the presence of both positive and negative indicators.

Lastly, there is the issue of whether this phenomenon (or rather, set of phenomena) should be studied at the firm or portfolio level. The generic CSP-CFP literature comprises many empirical papers that try to establish the nature of the relationship between the two concepts either at the level of individual stocks (Waddock and Graves, 1997) or at the level of portfolios of assets (Barnett and Salomon, 2006; Statman and Glushkov, 2009). However, since there is no conceptual hint that would prompt an empiricist towards one direction or the other in relation to the particular theme of this study, both avenues will be explored. After having described the main features of the theoretical framework of the current study, I proceed to elaborate on the specifics of the dataset and methodology.

5.3. Data and method

5.3.1 CSP data

Consistent with my work so far, I will continue to employ the Kinder, Lydenberg and Domini database as my primary source of corporate social performance information in my effort to create the company specific social metrics of interest. The multiple merits of using the KLD database when conducting empirical research on the business case for CSR have been extensively outlined in Chapter 2 and need not be repeated here. Nevertheless, a brief discussion of the appropriateness of KLD in direct relation to the particular issue that is investigated seems warranted at this point.

One obvious advantage of KLD is that it distinguishes between positive and negative social actions and practises by separately rating firms on a variety of strengths and concerns. Without a CSP measure that differentiates between CSR and CSI activities, an empirical study such as this would be impossible to perform. As has been noted before, Mattingly and Berman (2006) have observed that within the taxonomy of the KLD database, social strengths and concerns are both conceptually and empirically distinct (which is a desirable property for the purpose of this study). Furthermore, by covering several dimensions of CSP, KLD allows for an investigation between the impact of the interactions of corresponding and

non-corresponding social strengths and concerns on the financial effect of one another (so that hypothesis 2 can be tested). Additionally, the fact that the KLD database covers the entire 1991-2008 period also permits the researcher to study the role of CSP history in this framework (hypothesis 3). Moreover, by using KLD, it is possible to test this moderation phenomenon at the firm level or at the portfolio level by creating CSP score-sorted portfolios.[75]

KLD is of course not a perfect data source for CSP in general and for the purpose of this study in particular. Many of the papers that have been referenced so far stress the role of the assessment of corporate motives by stakeholders. KLD is a CSR database which focuses on implemented programmes, processes and outcomes and not on corporate reputation which would, arguably, incorporate an assessment of motives. Reputation indices and relevant surveys may be more appropriate when one tries to assess the general public's (or particular stakeholders) opinion of a firm's actions. However, such indices concentrate solely on one end of the CSP ladder and report the "best" firms, i.e. the top social and environmental performers. In addition, the absolute number of reported companies is much smaller than the equivalent number of firms available from KLD. So using a reputation index would result in a sample that is much smaller and skewed towards the top CSR performers.

One last advantage of the KLD database is the fact that it is created by an objective, independent rating agency. In general, people tend to be sceptical about firms that aggressively publicise their positive social actions[76] (a phenomenon that could be attributed to what is known as the *"self-promotor's paradox"* (Jones and Pittman, 1982)). They perceive it as an attempt on the part of the firm to defend its moral character by using CSR as an instrument for this purpose which makes the firm appear manipulative. However, if the source of information is not the company itself but rather an objective third party, it becomes less probable that the firm will appear at the eyes of the stakeholders as self-serving or manipulative. This makes KLD a source of information that many interested stakeholder parties would turn to in order to assess a firm's social responsibility *and* its underlying motives.

[75] Using a similar approach to the one that Brammer, Brooks and Pavelin (2006) employed.

[76] Alsop (2002) provides a variety of such examples. Yoon et al. (2006) even argue that this backfire effect could be avoided by spending more on CSR per se than on CSR advertising.

5.3.2 Interaction terms

As in my previous work, I focus on the omnipresent indicators of the qualitative business issues of interest (Community, Diversity, Employees, Environment, Product Safety and Quality). In order to capture the alleged interactions between KLD strengths and concerns I construct a series of terms. Using the individual components estimated in the previous chapter, I calculate the interaction terms given by the formula

$$INS_{it} = Strength_{it} \times Concern\,DummyVariable_{it} \quad (5.1)$$

which, clearly, takes the value of the score of the strengths indicator when the respective concerns indicator is non-zero and a value of zero when the dummy variable of concerns is zero (i.e. there is no such concern for that particular firm on that particular year). Each of these terms used in the framework of a regression analysis with CFP as the dependent variable, should capture whether the presence of a particular concern will influence the financial impact of a particular strength. Equivalently, the interaction term given by the formula

$$INC_{it} = Concern_{it} \times Strength\,DummyVariable_{it} \quad (5.2)$$

takes the value of the score of the concerns indicator when the respective strengths indicator is non-zero and a value of zero when the dummy variable of strengths is zero. Each of these terms used in the framework of a regression analysis with CFP as the dependent variable, should capture whether the presence of a particular strength will influence the financial impact of a particular concern.

The issue concerning the appropriate "matching" of strengths and concerns has been raised. The starting point is to investigate the moderating phenomenon within each CSP dimension (i.e. for corresponding strengths and concerns). Kotchen and Moon (2007) find evidence that supports the existence of within-category relationships between KLD strengths and concerns, especially for the community relations and environment dimensions. However, they do not investigate whether these interactions have any effect on the financial performance of firms. Thus there are five pairs of corresponding strengths and concerns where one may influence the financial impact of the other as depicted in the upper panel of Figure 5.2. In order to examine the assertion of Godfrey, Hatch and Hansen (2010) that *"social risks may lead to investments in non-corresponding CSRs when investment CSRs are ineffective for insurance purposes"* (p.334), I estimate some further interaction terms between KLD strengths and concerns of different dimensions. Instead of being agnostic about the issue and attempting to examine all

the different combinations of strengths and concerns of different categories (which could potentially lead to atheoretical data mining), I narrow my focus to those cases where previous research has provided hints of evidence indicating that there may in fact be a relationship between particular positive and negative social action(s). Godfrey et al. (2010) bring forward empirical results according to which some firms seek to offset negative impacts to the environment and/or consumers by strongly investing in local communities. They fittingly call firms that implement such practices "umbrella riders". The authors use the KLD database in their study and so the obvious choices of relevant measures are Community strengths, Environment concerns and Product safety/quality concerns. The respective interaction terms are:

$$COMENV\_INC_{it} = Env.Concern_{it} \times Com.Strength\,DummyVariable_{it} \quad (5.3)$$

$$COMPRO\_INC_{it} = \Pr od.Concern_{it} \times Com.Strength\,DummyVariable_{it} \quad (5.4)$$

Brammer and Millington (2008) also show that companies operating in consumer oriented or environmentally damaging industries spend a greater amount in charitable donations than firms in other sectors. To incorporate this observation in the current study, a measure of corporate philanthropy has to be created first, ideally from the KLD database, so that all parts of the analysis are comparable. Looking at the definitions of the multiple social strength indicators across all CSP dimensions, it is evident that the ones that fall under some notion of corporate philanthropy are Charitable Giving (COM-str-A in KLD STATS), Innovative Giving (COM-str-B), Non-US Charitable Giving (COM-str-F), Support for Housing (COM-str-C), Support for Education (COM-str-D), Benefits to Economically Disadvantaged (PRO-str-C). I exclude Non-US Charitable Giving and Support for Education because no data are available for either before 1994. Apparently, a KLD measure of corporate philanthropy will predominantly comprise Community strength indicators (3 out of 4 in this instance). So Godfrey et al. (2010) and Brammer and Millington (2008) verify one another as they find evidence that investment in community and charitable giving, respectively, may be used by firms in order to reduce the negative impact of environmental damages and product safety/quality controversies. The relevant formulae for the calculation of the interaction terms will be identical to the ones given above except that philanthropy will take the place of community strengths. These pairs of non-corresponding KLD strengths and concerns are depicted in the lower panel of Figure 5.2.

Figure 5.2: Outline of interactions examined between positive and negative social/environmental actions.

Interaction between		
Corresponding CSR and CSI		
Strengths		**Concerns**
Community	↔	Community
Diversity	↔	Diversity
Employees	↔	Employees
Environment	↔	Environment
Product safety/quality	↔	Product safety/quality
Non-corresponding CSR and CSI		
Strengths		**Concerns**
Community	→	Environment
Community	→	Product safety/quality
Philanthropy	→	Environment
Philanthropy	→	Product safety/quality

Note: In the non-corresponding strengths and concerns pairs, only the impact of CSR on the financial effects of CSI is examined in accordance with the findings of Godfrey et al. (2010) and Brammer and Millington (2008).

5.3.3 Financial performance measures, control variables and econometrics

The financial impact caused by the reputational interaction between CSR and CSI could materialise through either the front-door or backdoor mechanism connecting CSP with CFP, or both. In order to account for this, financial performance measures capturing return and risk will be used in the following analyses. Specifically, annual returns in excess of the risk free rate (3 month US T-bill rate), the standard deviation of weekly returns, firm beta and the certainty equivalent for a "typical" investor[77] will be the dependent variables in the various regressions. All variables are constructed by using Datastream' s Total Return Index.[78]

[77] Assuming a negative exponential utility function and an absolute risk aversion of 5. The extension of the calculation of the relevant certainty equivalent to higher moments is applied here, as in the previous chapter.

[78] To account for dividend payouts, stock splits and other such corporate decisions that influence stock prices.

In the model specifications where risk or utility is the dependent variable, the same set of control variables that was applied in the previous chapter becomes relevant. In particular, the logarithm of market capitalisation (used as a proxy for firm size), the market to book value ratio which differentiates "growth" from "value" stocks, dividend yield, the total debt to common equity ratio (proxy for financial leverage) and the R&D to total sales ratio (R&D intensity) are included in these specifications. The details of the calculations of these variables and the rationale behind their use are extensively given in Chapter 3 and need not be repeated once more. On the other hand, whenever the impact of the CSR-CSI interactions on excess return is investigated, a Fama-French (1993) set of controls is used (beta, logarithm of market capitalisation and market to book value ratio) augmented by Carhart's (1997) momentum factor[79] and R&D intensity (following McWilliams and Siegel, 2000).

The issues involved with the appropriate application of panel data econometrics were given the same attention as in the previous empirical chapter. As before, the fixed effects approach is more intuitive and is shown to be preferable compared to the random effects and pooled OLS methods as Hausman tests and redundant fixed effects tests respectively indicate (having p-values equal to zero to three decimal places). To account for heteroskedasticity in the cross-sectional dimension, the appropriate diagonal White coefficient covariance estimator (adjusted for panel data) is applied and provides robust standard errors.

5.3.4 Firm level analysis

Given the discussion in the previous sections of this chapter, the general form of the regression models in the panel data framework of the current study is

$$CFP_{it} = \alpha_i + \sum_j \beta_j CSR_{jit\text{-}1} + \sum_j \beta_j CSIR_{jit\text{-}1} + \sum_j \beta_j INS_{jit\text{-}1} + \sum_j \beta_j INC_{jit\text{-}1} + \sum_k Control_{kit\text{-}1} + \varepsilon_{it} \quad (5.5)$$

for j=1 to 5 and k=1 to the total number of control variables used, where CFP_{it} is the excess return, risk or utility measure for firm i in year t, a_i is the time invariant intercept of firm i, the β_j is the slope coefficient of factor j, $CSR_{jit\text{-}1}$ and $CSI_{jit\text{-}1}$ are the measures of positive and negative corporate social/environmental actions respectively, $IN_{jit\text{-}1}$ is the interaction term of interest, $Control_{kit\text{-}1}$ stands for each of the control variables that are used in each case (according to which is the dependent variable), all referring to firm i in year $t\text{-}1$, and ε_{it} is the respective disturbance term.

[79] Estimated as the one year lag of the average of weekly stock returns.

The levels of CSR and CSI are incorporated in the analysis because the comparison of their slope coefficients with those of the relevant interaction terms could help in drawing valuable inferences. For example, assume that in a regression where excess return is the dependent variable, the coefficient of environmental strengths is equal to 0.62 while the coefficient of the term capturing the moderation that the presence of environmental concerns has on the financial impact of environmental strengths is equal to 0.35. Both coefficients are positive but that of the interaction term is algebraically smaller than that of the relevant CSR level. So one interpretation could be that although the relationship between positive corporate social actions with regard to the environment and returns is positive, negative social action will decrease this positive financial effect (though not invert it and make it negative). However, the inclusion of the level terms in the regressions could lead to a reduction in the explanatory power of the interaction terms within the framework of each model and make them statistically insignificant. To account for this, additional fixed effect regressions without the CSR and CSI terms will be performed.

A different approach is also implemented at the firm level of analysis. The original sample is subdivided into several subsamples according to whether in a particular CSP dimension the company is shown to be involved only in positive activities, only in negative ones or both. Overall, there will be 19 different subsamples (5 different CSP dimensions times 3 different sorts of firms for each plus 4 subsamples for the non-corresponding pairs of KLD strengths and concerns). Panel fixed effects and Pooled OLS Carhart regressions are then run on each subsample.[80] The data for the excess market return (R_m-R_f), Small Minus Big portfolio returns (SMB), High Minus Low portfolio returns (HML) and Momentum factors are taken from Kenneth French's online data library. Comparisons of the resulting alphas for these different pools of firms calculated from the regression analyses is a different way to investigate whether CSR and CSI influence the financial impact of one-another.

In an effort to make this last part of the firm level analysis more robust, I will attempt to discover whether the differences in excess returns among the subsamples relevant to the same social/environmental dimension are statistically significant. For example, in order to test whether the difference in the alphas generated in the subsample including firms that have indications of community strengths but not of community concerns, I use the following

[80] Redundant fixed effects F-tests produce p-values well over 0.10 indicating strong support for the null hypothesis of the redundancy of these effects. Thus, pooled OLS is more suitable for the Carhart regressions and it is their output that will be reported.

model:

$$R_{it} = \alpha_{it-1} + \alpha'_{it-1}SD_{it-1} + \beta_1(R_{mt-1} - R_{ft-1}) + \beta_2 SMB_{t-1} + \beta_3 HML_{t-1} + \beta_4 MOM_{t-1}$$
$$+\beta_5(R_{mt-1} - R_{ft-1})SD_{t-1} + \beta_6 SMB_{t-1}SD_{t-1} + \beta_7 HML_{t-1}SD_{t-1} + \beta_8 MOM_{t-1}SD_{t-1} + \varepsilon_{it} \qquad (5.6)$$

where R_{it} is the excess return of firm *i* in year *t*, R_{mt-1} is the lagged market return, R_{ft-1} the risk free rate, *SMB* is the small-minus-big factor, *HML* is the high-minus-low factor, *MOM* the momentum factor and *SD* is a dummy variable that takes a value of 1 if firm *i* belongs in the "community strengths only" sample of firms in year *t-1*, and takes a value of 0 if it belongs in the "community concerns only" sample (firms that have mixed indications in terms of community CSP are excluded). Then it is easy to notice that when *SD*=0, the excess return is equal to *a* and when *SD*=1, the excess return is equal to *a*+*a'*. So *a'* is actually the difference between the excess returns of the "community strengths only" and "community concerns only" subsamples and testing its statistical significance is the main point of this analysis. Clearly, this method can be (and is) applied to test the difference between "strengths/concerns only" and "mixed indications" subsamples for all five of the individual component subsamples.

It would also be of interest to make a direct comparison between the results that are produced by following this methodology and those that occur when using a CSP measure which aggregates strengths and concerns of the same social dimension (arrow labelled 1 in Figure 5.1). In order to perform such a task, I first calculate one aggregate measure for each of the community, diversity, employment, environment and product dimensions of CSP. I then sort the entire longitudinal sample according to the value of each of the aggregate measures, using one at a time, and I create three dummy variables that are used to reveal in which tertile of these ordered distributions each firm-year observation falls in (thus there is a total of 3x5=15 such dummy variables). Then I apply the methodology mentioned above and use equation (5.6), only this time the comparison is made between the different tertiles of the sorted samples.

5.3.5 Portfolio level analysis

To gain a more in depth perspective of the phenomenon investigated, I further explore it at the level of portfolios of firms by expanding the last part of the previous analysis. Although the firm level analysis is revealing as to the course of action that the management team of a firm should take with regard to corporate social responsibility, portfolio level analysis is more relevant for investors engaging in SRI by trusting their capital to mutual funds that apply

positive or negative social screens during their stock picking process and form "ethical investment portfolios". The discussions concerning which type of screens (positive/negative and in which dimension) are more appropriate to apply as well as what is the optimal level of intensity of those screens are closely tied with the nature of the moderating effects that this study examines.

In order to conduct the portfolio level analysis, I use the same type of categorisation mentioned in Subsection 3.3.4 and separate the sample according to firm involvement only in CSR, only in CSI or both, for every social and environmental dimension and the for the non-corresponding CSP pairs of strengths and concerns. However, this is done on a year-to-year basis and in this way 19 different portfolios are constructed and their constituents (even the number of constituents for each portfolio) change every year. Both equally-weighted and value-weighted portfolio returns are calculated and conclusions are drawn by comparing the time-series averages of returns for each portfolio. Because mean portfolio returns can sometimes be hard to interpret, the overall return of an individual who would invest a monetary unit in 1991 in a single portfolio and then roll over his investment every year until 2008 is calculated in every case. Equivalently, the compound annual growth rate (CAGR) for each portfolio is estimated.

5.4 Results

5.4.1 Results at the individual firm level of analysis

The main focus of this study lies on the companies listed in the S&P 500 Composite Index for the years between 1991 and 2008 (inclusive). The unbalanced panel data sample used in the following analyses is essentially identical to the one used in the previous chapter. It comprises 6,986 firm-year observations, coming from 769 different firms over a period of 18 years. As has been noted before, samples of such size, heterogeneity and span are scarcely encountered in empirical CSP-CFP research, even less so in studies that try to investigate the moderating or mediating effects that certain variables may have in this relationship. The only limitation of this dataset is that the inferences that are drawn are relevant only for large, public US firms. Tables 5.1a and 5.1b contain the descriptive statistics of the interaction terms. The mean values of all interaction terms are very small; an unsurprising observation, given that they have zero values for the vast majority of firm-year observations due to the way they are calculated. It is also easily noticeable that the interaction terms relevant to the same social dimension are very highly correlated (Pearson product-moment correlations exceed 80%) while correlations of the same objects across different social dimensions do not exceed 25%.

Tables 5.2 to 5.5 contain the output (coefficients, p-values and adjusted R-squares) for the main part of the firm level analysis. These results refer to fixed effects regressions for specifications that include only the interaction terms of the corresponding positive and negative social actions for the five CSP dimensions of interest, for specifications that include the levels for the individual components of firm CSP[81] and for specifications between specific types of interaction terms relevant to non-corresponding KLD strengths and concerns. Each table refers to econometric estimations of the same models (with a few changes in the set of control variables where appropriate) but for a different kind of regressand. Specifically, Table 5.2 depicts the impact of CSP interactions on average weekly excess returns; utility[82] is the common regressand in Table 5.3; Tables 5.4 and 5.5 capture the effects of the interaction terms on risk, proxied by firm beta (systematic risk) and the standard deviation of weekly returns (total risk) respectively.

[81] The rationale for these specifications has been provided in subsection 5.3.4.

[82] The certainty equivalent of an investor with an absolute risk aversion of 5 and a negative exponential utility function, derived from the distribution of weekly returns.

Irrespective of which factor is used as the dependent variable, the big picture that is formed when looking at this set of tables is clear and the conclusions drawn are evident. The vast majority of the estimated slope coefficients of the interaction terms are statistically insignificant even at the 90% confidence interval. This is generally true for models that incorporate CSP levels and those that do not, for specifications that include interaction terms for corresponding or non-corresponding KLD strengths and concerns. When the excess return is the regressand, the "envsi" term (moderation of environmental concerns on environmental strengths) has a coefficient which is significant at the 5% level, which is also positive but small in size (0.0044). In the non-corresponding social actions, the slope of "comenv" is negative, significant and has a higher absolute value than the "coms" coefficient[83], indicating that the presence of environmental concerns enhances the negative impact that community strengths have on a firm's returns. Only the "empsi" coefficient is statistically significant in Table 5.3. It is also negative and algebraically lower than the "emps" coefficient. Tables 5.4 and 5.5 verify the results of Chapter 3 concerning the relationship between the levels of CSP and financial risk but do not reveal much within the framework of this study as once more almost all the coefficients of the interaction terms are found to be insignificant and are not shown to impact a firm's systematic or total risk. Overall, it becomes apparent that regardless of whether one looks for a moderating effect between CSR and CSI in regards to returns, risk or utility, no consistent, significant relationship is detected at the firm level of analysis. This could either be interpreted as a proof of the complete absence of any financial interactive effects between positive and negative corporate social action or as an indication of the ineffectiveness of the models applied so far to uncover such interactions. Opting for the second interpretation, I will make additional efforts to investigate the issue of interest through alternative methodological paths.

[83] The detrimental effect of community aspects on returns is also documented by Brammer et al. (2006).

Table 5.1a: Descriptive statistics of interaction terms

	COMSI	DIVSI	EMPSI	ENVSI	PSQSI	COMCI	DIVCI	EMPCI	ENVCI	PSQCI
Mean	0.0116	0.0241	0.0269	0.0293	0.0154	0.0103	0.0397	0.0285	0.0365	0.0220
Maximum	0.750	0.860	0.800	0.800	0.750	0.750	1.000	0.750	1.000	1.000
Minimum	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Std. Dev.	0.0644	0.0979	0.0910	0.0867	0.0645	0.0557	0.1426	0.0934	0.1138	0.1004
Observations	7082	7082	7082	7082	7082	7082	7082	7082	7082	7082

Table 5.1b: Pearson product-moment correlations of interaction terms

	COMSI	DIVSI	EMPSI	ENVSI	PSQSI	COMCI	DIVCI	EMPCI	ENVCI	PSQCI
COMSI	1									
DIVSI	0.2141	1								
EMPSI	0.1032	0.2065	1							
ENVSI	0.0377	0.0964	0.1110	1						
PSQSI	0.0928	0.1711	0.1540	0.1147	1					
COMCI	0.8828	0.2165	0.1265	0.0780	0.0836	1				
DIVCI	0.1765	0.8512	0.2090	0.0793	0.1443	0.1909	1			
EMPCI	0.1137	0.2123	0.8486	0.1191	0.1525	0.1440	0.2237	1		
ENVCI	0.0296	0.0991	0.1154	0.8275	0.1204	0.0652	0.0766	0.1307	1	
PSQCI	0.1544	0.2273	0.1646	0.1116	0.8632	0.1270	0.1953	0.1665	0.1552	1

Notes: COMSI is the interaction term of the community dimension calculated according to equation (5.1). DIVSI, EMPSI, ENVSI, PSQSI are the equivalent terms for diversity, employment, environment, product safety and quality. Analogously, COMCI, DIVCI, EMPCI, ENVCI, PSQCI are the interaction terms calculated according to equation (5.2).

Table 5.2: Fixed effects output when excess return is the regressand

c	0.0410	(0.0000)***	**c**	0.0422	(0.0000)***	**c**	0.0495	(0.0000)***	**c**	0.0491	(0.0000)***
β_{comsi}	-0.0009	(0.7718)	β_{coms}	-0.0015	(0.0908)*	β_{comenv}	-0.0033	(0.0172)**	β_{compro}	-0.0002	(0.8747)
β_{divsi}	-0.0001	(0.9427)	β_{divs}	0.0015	(0.1241)	β_{beta}	0.0004	(0.1847)	β_{beta}	0.0004	(0.1876)
β_{empsi}	-0.0023	(0.2273)	β_{emps}	0.0013	(0.1793)	$\beta_{log(mv)}$	-0.0053	(0.0000)***	$\beta_{log(mv)}$	-0.0053	(0.0000)***
β_{envsi}	0.0026	(0.1108)	β_{envs}	-0.0026	(0.0709)*	β_{mtbv}	-0.1613	(0.0017)***	β_{mtbv}	-0.1606	(0.0018)***
β_{psqsi}	-0.0009	(0.7586)	β_{psqs}	-0.0007	(0.6762)	$\beta_{momentum}$	-0.1519	(0.0000)***	$\beta_{momentum}$	-0.1511	(0.0000)***
β_{comci}	0.0010	(0.7665)	β_{comc}	0.0002	(0.8428)	β_{rdts}	-0.0039	(0.4244)	β_{rdts}	-0.0041	(0.4117)
β_{divci}	-0.0001	(0.9297)	β_{divc}	0.0010	(0.2778)	**Adj.R^2**	0.2207		**Adj.R^2**	0.2194	
β_{empci}	0.0018	(0.3299)	β_{empc}	0.0018	(0.0539)*						
β_{envci}	-0.0013	(0.3471)	β_{envc}	0.0020	(0.0966)*	**c**	0.0431	(0.0000)***	**c**	0.0441	(0.0000)***
β_{psqci}	-0.0002	(0.9184)	β_{psqc}	0.0006	(0.3594)	$\beta_{phisenv}$	0.0030	(0.4416)	$\beta_{phispro}$	0.0016	(0.4010)
β_{beta}	0.0003	(0.1649)	β_{comsi}	0.0003	(0.9302)	β_{beta}	0.0006	(0.3960)	β_{beta}	0.0006	(0.3949)
$\beta_{log(mv)}$	-0.0045	(0.0000)***	β_{divsi}	-0.0010	(0.6128)	$\beta_{log(mv)}$	-0.0045	(0.0000)***	$\beta_{log(mv)}$	-0.0046	(0.0000)***
β_{mtbv}	-0.1654	(0.0000)***	β_{empsi}	-0.0031	(0.1105)	β_{mtbv}	-0.2732	(0.0065)***	β_{mtbv}	-0.2832	(0.0046)***
$\beta_{momentum}$	-0.1591	(0.0000)***	β_{envsi}	0.0044	(0.0234)**	$\beta_{momentum}$	-0.1642	(0.0065)***	$\beta_{momentum}$	-0.1630	(0.0069)***
β_{rdts}	0.0039	(0.2730)	β_{psqsi}	-0.0011	(0.7272)	β_{rdts}	-0.0045	(0.7041)	β_{rdts}	-0.0041	(0.7243)
Adj.R^2	0.1837		β_{comci}	-0.0001	(0.9873)	**Adj.R^2**	0.1726		**Adj.R^2**	0.1726	
			β_{divci}	-0.0011	(0.4815)						
			β_{empci}	0.0006	(0.7458)						
			β_{envci}	-0.0023	(0.1190)						
			β_{psqci}	-0.0004	(0.8399)						
			β_{beta}	0.0003	(0.1778)						
			$\beta_{log(mv)}$	-0.0046	(0.0000)***						
			β_{mtbv}	-0.1584	(0.0000)***						
			$\beta_{momentum}$	-0.1535	(0.0000)***						
			β_{rdts}	0.0033	(0.3517)						
			Adj.R^2	0.1856							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively constructed using formulae $IN_{it} = Strength_{it} \times Concern\ DummyVariable_{it}$ and $IN_{it} = Concern_{it} \times Strength\ DummyVariable_{it}$, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.3: Fixed effects output when utility is the regressand

c	0.0410	(0.0000)***	**c**	0.0542	(0.0000)***	**c**	0.0641	(0.0002)***	**c**	0.0638	(0.0000)***
β_{comsi}	-0.0009	(0.7718)	β_{coms}	0.0007	(0.6722)	β_{comenv}	-0.0040	(0.1017)	β_{compro}	-0.0007	(0.7595)
β_{divsi}	-0.0001	(0.9427)	β_{divs}	0.0003	(0.8738)	$\beta_{log(mv)}$	-0.0072	(0.0000)***	$\beta_{log(mv)}$	-0.0072	(0.0000)***
β_{empsi}	-0.0023	(0.2273)	β_{emps}	-0.0019	(0.2837)	β_{mtbv}	-0.7560	(0.0000)***	β_{mtbv}	-0.7508	(0.0000)***
β_{envsi}	0.0026	(0.1108)	β_{envs}	-0.0023	(0.364)	β_{dy}	-0.0014	(0.0000)***	β_{dy}	-0.0014	(0.0000)***
β_{psqsi}	-0.0009	(0.7586)	β_{psqs}	-0.0001	(0.9652)	β_{tdce}	0.0001	(0.6892)	β_{tdce}	0.0001	(0.7350)
β_{comci}	0.0010	(0.7665)	β_{comc}	-0.0018	(0.4158)	β_{rdts}	0.0014	(0.8833)	β_{rdts}	0.0012	(0.8986)
β_{divci}	-0.0001	(0.9297)	β_{divc}	0.0023	(0.2016)	**Adj.R^2**	0.2983		**Adj.R^2**	0.2979	
β_{empci}	0.0018	(0.3299)	β_{empc}	-0.0018	(0.2737)						
β_{envci}	-0.0013	(0.3471)	β_{envc}	0.0055	(0.0115)**	**c**	0.0473	(0.0000)***	**c**	0.0464	(0.00004)***
β_{psqci}	-0.0002	(0.9184)	β_{psqc}	0.0000	(0.9963)	$\beta_{phisenv}$	0.0105	(0.1972)	$\beta_{phispro}$	0.0004	(0.9102)
$\beta_{log(mv)}$	0.0003	(0.1649)	β_{comsi}	0.0037	(0.6113)	$\beta_{log(mv)}$	-0.0051	(0.0000)***	$\beta_{log(mv)}$	-0.0049	(0.00004)***
β_{mtbv}	-0.0045	(0.0000)***	β_{divsi}	0.0002	(0.9627)	β_{mtbv}	-0.2756	(0.3047)	β_{mtbv}	-0.3517	(0.1833)
β_{dy}	-0.1654	(0.0000)***	β_{empsi}	-0.0062	(0.0631)*	β_{dy}	-0.0018	(0.0131)**	β_{dy}	-0.0017	(0.0182)**
β_{tdce}	-0.1591	(0.0000)***	β_{envsi}	0.0034	(0.3049)	β_{tdce}	0.0000	(0.9703)	β_{tdce}	0.0000	(0.9266)
β_{rdts}	0.0039	(0.2730)	β_{psqsi}	0.0018	(0.7388)	β_{rdts}	-0.0148	(0.4951)	β_{rdts}	-0.0126	(0.5569)
Adj.R^2	0.2580		β_{comci}	-0.0008	(0.9094)	**Adj.R^2**	0.0972		**Adj.R^2**	0.0938	
			β_{divci}	-0.0029	(0.3233)						
			β_{empci}	0.0015	(0.6532)						
			β_{envci}	-0.0019	(0.4129)						
			β_{psqci}	-0.0004	(0.9159)						
			$\beta_{log(mv)}$	-0.0061	(0.0000)***						
			β_{mtbv}	-0.6782	(0.0000)***						
			β_{dy}	-0.0015	(0.0000)***						
			β_{tdce}	0.0000	(0.9376)						
			β_{rdts}	-0.0123	(0.0715)*						
			Adj.R^2	0.2580							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively constructed using formulae $IN_{it} = Strength_{it} \times Concern\ DummyVariable_{it}$ and $IN_{it} = Concern_{it} \times Strength\ DummyVariable_{it}$, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.4: Fixed effects output when firm beta is the regressand

c	1.1013	(0.0000)***	**c**	1.1265	(0.0000)***	**C**	1.3228	(0.0000)***	**c**	1.3323	(0.0000)***
β_{comsi}	-0.4731	(0.0489)**	β_{coms}	0.0301	(0.6394)	β_{comenv}	0.0166	(0.8841)	β_{compro}	0.0763	(0.3914)
β_{divsi}	-0.1778	(0.1803)	β_{divs}	-0.0462	(0.5036)	$\beta_{log(mv)}$	-0.0455	(0.012)**	$\beta_{log(mv)}$	-0.0468	(0.0101)**
β_{empsi}	-0.0888	(0.5108)	β_{emps}	-0.1063	(0.1164)	β_{mtbv}	10.9938	(0.0035)***	β_{mtbv}	11.1358	(0.0031)***
β_{envsi}	0.1677	(0.1989)	β_{envs}	-0.0787	(0.4112)	β_{dy}	0.0020	(0.8423)	β_{dy}	0.0015	(0.8812)
β_{psqsi}	-0.0552	(0.7935)	β_{psqs}	-0.0945	(0.4115)	β_{tdce}	0.0179	(0.0071)***	β_{tdce}	0.0175	(0.0084)***
β_{comci}	0.2273	(0.3875)	β_{comc}	0.3193	(0.0004)***	β_{rdts}	1.5239	(0.0000)***	β_{rdts}	1.5281	(0.0000)***
β_{divci}	0.1252	(0.1757)	β_{divc}	0.0605	(0.4004)	**Adj.R^2**	0.3981		**Adj.R^2**	0.3982	
β_{empci}	0.2348	(0.0769)*	β_{empc}	0.1357	(0.0452)**						
β_{envci}	0.0518	(0.6427)	β_{envc}	0.1138	(0.2319)	**C**	1.2602	(0.0026)***	**c**	1.3850	(0.0024)***
β_{psqci}	-0.1074	(0.4364)	β_{psqc}	-0.0440	(0.3799)	$\beta_{phisenv}$	-0.0294	(0.9030)	$\beta_{phispro}$	0.1321	(0.3737)
$\beta_{log(mv)}$	-0.0238	(0.0541)*	β_{comsi}	-0.4702	(0.0553)*	$\beta_{log(mv)}$	-0.0384	(0.3877)	$\beta_{log(mv)}$	-0.0540	(0.2722)
β_{mtbv}	2.4775	(0.3828)	β_{divsi}	-0.1862	(0.1865)	β_{mtbv}	-15.8517	(0.1217)	β_{mtbv}	-15.3587	(0.1257)
β_{dy}	0.0182	(0.0122)**	β_{empsi}	-0.0655	(0.6413)	β_{dy}	0.0288	(0.1409)	β_{dy}	0.0251	(0.2056)
β_{tdce}	0.0170	(0.00008)***	β_{envsi}	0.2400	(0.1061)	β_{tdce}	0.0219	(0.1164)	β_{tdce}	0.0213	(0.1217)
β_{rdts}	1.6891	(0.0000)***	β_{psqsi}	-0.0188	(0.9311)	β_{rdts}	0.2394	(0.7135)	β_{rdts}	0.2416	(0.7114)
Adj.R^2	0.3554		β_{comci}	-0.0301	(0.9121)	**Adj.R^2**	0.3687		**Adj.R^2**	0.3696	
			β_{divci}	0.0719	(0.5219)						
			β_{empci}	0.1360	(0.3363)						
			β_{envci}	-0.0215	(0.8575)						
			β_{psqci}	-0.0726	(0.6077)						
			$\beta_{log(mv)}$	-0.0264	(0.0468)**						
			β_{mtbv}	3.1043	(0.2818)						
			β_{dy}	0.0168	(0.0213)**						
			β_{tdce}	0.0159	(0.002)***						
			β_{rdts}	1.6829	(0.0000)***						
			Adj.R^2	0.3572							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively constructed using formulae $IN_{it} = Strength_{it} \times Concern\ DummyVariable_{it}$ and $IN_{it} = Concern_{it} \times Strength\ DummyVariable_{it}$, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.5: Fixed effects output when standard deviation of returns is the regressand

c	-0.0085	(0.1015)	**c**	-0.0031	(0.5687)	**c**	-0.0091	(0.2422)	**c**	-0.0089	(0.2516)
β_{comsi}	-0.0073	(0.5632)	β_{coms}	-0.0054	(0.0573)*	β_{comenv}	0.0032	(0.4571)	β_{compro}	0.0003	(0.9447)
β_{divsi}	-0.0020	(0.7790)	β_{divs}	0.0035	(0.2663)	$\beta_{log(mv)}$	0.0051	(0.0000)***	$\beta_{log(mv)}$	0.0051	(0.0000)***
β_{empsi}	0.0074	(0.1786)	β_{emps}	0.0100	(0.0008)***	β_{mtbv}	1.3403	(0.0000)***	β_{mtbv}	1.3354	(0.0000)***
β_{envsi}	0.0069	(0.1487)	β_{envs}	0.0015	(0.7289)	β_{dy}	0.0030	(0.0000)***	β_{dy}	0.0030	(0.0000)***
β_{psqsi}	-0.0070	(0.4402)	β_{psqs}	0.0045	(0.3089)	β_{tdce}	0.0004	(0.2749)	β_{tdce}	0.0004	(0.2611)
β_{comci}	0.0017	(0.8919)	β_{comc}	0.0133	(0.0006)***	β_{rdts}	-0.0045	(0.7718)	β_{rdts}	-0.0043	(0.7783)
β_{divci}	0.0022	(0.6288)	β_{divc}	-0.0032	(0.3067)	**Adj.R^2**	0.3691		**Adj.R^2**	0.3690	
β_{empci}	0.0091	(0.1050)	β_{empc}	0.0128	(0.0000)***						
β_{envci}	-0.0030	(0.4496)	β_{envc}	-0.0044	(0.2535)	**c**	-0.0113	(0.5819)	**c**	-0.0060	(0.7853)
β_{psqci}	0.0023	(0.6935)	β_{psqc}	0.0004	(0.8474)	$\beta_{phisenv}$	-0.0128	(0.3236)	$\beta_{phispro}$	0.0041	(0.5383)
$\beta_{log(mv)}$	0.0047	(0.0000)***	β_{comsi}	-0.0039	(0.7604)	$\beta_{log(mv)}$	0.0051	(0.0189)**	$\beta_{log(mv)}$	0.0043	(0.0661)*
β_{mtbv}	1.2027	(0.0000)***	β_{divsi}	-0.0061	(0.401)	β_{mtbv}	-0.0690	(0.8773)	β_{mtbv}	0.0330	(0.9434)
β_{dy}	0.0035	(0.0000)***	β_{empsi}	0.0009	(0.8697)	β_{dy}	0.0025	(0.0231)**	β_{dy}	0.0024	(0.0379)**
β_{tdce}	0.0007	(0.0070)***	β_{envsi}	0.0059	(0.3052)	β_{tdce}	0.0008	(0.3248)	β_{tdce}	0.0007	(0.3792)
β_{rdts}	0.0365	(0.0012)***	β_{psqsi}	-0.0095	(0.3049)	β_{rdts}	0.0249	(0.4439)	β_{rdts}	0.0225	(0.4847)
Adj.R^2	0.3470		β_{comci}	-0.0105	(0.4017)	**Adj.R^2**	0.2037		**Adj.R^2**	0.2027	
			β_{divci}	0.0060	(0.2603)						
			β_{empci}	0.0009	(0.8803)						
			β_{envci}	-0.0032	(0.4550)						
			β_{psqci}	0.0008	(0.8911)						
			$\beta_{log(mv)}$	0.0039	(0.0000)***						
			β_{mtbv}	1.2615	(0.0000)***						
			β_{dy}	0.0033	(0.0000)***						
			β_{tdce}	0.0006	(0.0261)**						
			β_{rdts}	0.0339	(0.0027)***						
			Adj.R^2	0.3513							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively constructed using formulae $IN_{it} = Strength_{it} \times Concern\ DummyVariable_{it}$ and $IN_{it} = Concern_{it} \times Strength\ DummyVariable_{it}$, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

5.4.2 The effect of history on CSP interactions

It has been asserted that stakeholders' assessments of the motivations behind corporate social/environmental actions play a crucial role in the determination of the effect(s) of these actions on the firm's bottom line (Godfrey, 2005; Yoon et al., 2006). In this respect, there is evidence that consistent application of positive CSP through the years can increase its effectiveness in offsetting negative publicity and bad reputation caused by certain events (Vanhamme and Grobben, 2009). To test this claim, the impact of the history of CSP interactions on firm financial performance will be investigated.

Additional interaction terms are constructed which capture the impact of a given, past (1 ,2 or 3 years) KLD concern on a subsequent KLD strength and vice versa. This is captured in the following equations:

$$INS_{jit} = Strength_{it} \times Concern\ DummyVariable_{i,t-j} \quad (5.7)$$

$$INC_{jit} = Concern_{it} \times Strength\ DummyVariable_{i,t-j} \quad (5.8)$$

where j=1, 2 or 3 according to how far back one wants to look at the CSP track record of the firm. After calculating these terms, I run several regressions against all the financial variables (excess returns, utility, beta, standard deviation) previously employed. Firstly, the interaction terms using the 1 year CSP history of the firm are used as the sole regressors (plus the usual control variables). Then the terms using the 2 year history are added on top of the previous ones and lastly the 3 year interaction terms are added as well. Tables 5.6 to 5.9 contain the output of these regressions according to the type of dependent variable that is used. Before continuing with the comments on these results, it should be mentioned that there is an alternative way of calculating the interaction terms using CSP history. The aggregate impact of a given KLD concern for 1 and 2 or 1,2 and 3 years back on a given KLD strength could be calculated so that:

$$INS_{2it} = Strength_{it} \times (Concern\ DummyVariable_{i,t-1} + Concern\ DummyVariable_{i,t-2}) \quad (5.9)$$

$$INS_{3it} = Strength_{it} \times (Concern\ DummyVariable_{i,t-1} + Concern\ DummyVariable_{i,t-2} + Concern\ DummyVariable_{i,t-3}) \quad (5.10)$$

However, using the terms coming from equations (5.7) and (5.8) is completely analogous with this latest approach[84] and has the additional benefit of being able to separate the impact of earlier and later CSP history on financial performance. Tables 5.6 to 5.9 contain results that are exactly as revealing as the ones coming from the main part of the firm level analysis. Very few interaction terms are found to be significantly related with any of the regressands. The few that are significantly related have fairly small slope coefficients and they are relevant to different CSP dimensions. Furthermore, comparing interaction terms that capture earlier versus later CSP history does not provide any solid conclusions. So Vanhamme and Grobben's (2009) findings are not verified by this investigation as no consistent pattern is detected in the relation between the financial impact of CSR-CSI interactions and CSP history.

[84] If we add the 1 and 2 year history interaction terms coming from equation 5.7 and take out $Strength_t$ as a common factor, we have the interaction term of equation 5.9.

Table 5.6: Effect of CSP interactions history (1, 2 and 3 years) on excess returns

c	0.0412	(0.0000)***	**c**	0.0586	(0.0000)***	**c**	0.0404	(0.0000)***
β_{comsi1}	0.0004	(0.8384)	β_{comsi1}	0.0029	(0.5626)	β_{comsi1}	0.0014	(0.5237)
β_{divsi1}	0.0002	(0.8557)	β_{divsi1}	0.0015	(0.6666)	β_{divsi1}	-0.0007	(0.6785)
β_{empsi1}	-0.0007	(0.5769)	β_{empsi1}	-0.0031	(0.2795)	β_{empsi1}	-0.0011	(0.4610)
β_{envsi1}	0.0015	(0.2196)	β_{envsi1}	0.0023	(0.5019)	β_{envsi1}	0.0015	(0.4139)
β_{psqsi1}	-0.0015	(0.4811)	β_{psqsi1}	0.0015	(0.7854)	β_{psqsi1}	-0.0022	(0.4130)
β_{comci1}	0.0008	(0.6780)	β_{comci1}	-0.0008	(0.8771)	β_{comci1}	0.0014	(0.5944)
β_{divci1}	0.0000	(0.9893)	β_{divci1}	-0.0010	(0.7789)	β_{divci1}	0.0004	(0.7942)
β_{empci1}	0.0000	(0.9678)	β_{empci1}	-0.0058	(0.0510)*	β_{empci1}	-0.0001	(0.9293)
β_{envci1}	-0.0002	(0.8166)	β_{envci1}	0.0020	(0.3260)	β_{envci1}	0.0003	(0.7879)
β_{psqci1}	0.0009	(0.4936)	β_{psqci1}	0.0002	(0.9644)	β_{psqci1}	0.0011	(0.5217)
β_{beta}	0.0003	(0.1527)	β_{comsi2}	-0.0009	(0.8190)	β_{comsi2}	-0.0025	(0.3235)
$\beta_{log(mv)}$	-0.0045	(0.0000)***	β_{divsi2}	0.0022	(0.4967)	β_{divsi2}	0.0029	(0.2280)
β_{mtbv}	-0.1641	(0.0000)***	β_{empsi2}	0.0006	(0.8126)	β_{empsi2}	0.0038	(0.0627)*
$\beta_{momentum}$	-0.1588	(0.0000)***	β_{envsi2}	0.0009	(0.7839)	β_{envsi2}	0.0017	(0.4102)
β_{rdts}	0.0039	(0.2755)	β_{psqsi2}	-0.0036	(0.4533)	β_{psqsi2}	-0.0014	(0.6420)
Adj.R^2	0.1835		β_{comci2}	0.0012	(0.8048)	β_{comci2}	-0.0006	(0.8116)
			β_{divci2}	-0.0006	(0.8634)	β_{divci2}	0.0007	(0.6610)
			β_{empci2}	0.0019	(0.5067)	β_{empci2}	0.0021	(0.2365)
			β_{envci2}	-0.0056	(0.0034)***	β_{envci2}	0.0010	(0.5188)
			β_{psqci2}	0.0019	(0.4791)	β_{psqci2}	0.0010	(0.6127)
			β_{beta}	-0.0065	(0.0000)***	β_{comsi3}	0.0007	(0.6970)
			$\beta_{log(mv)}$	-0.4947	(0.0000)***	β_{divsi3}	-0.0022	(0.2839)
			β_{mtbv}	-0.0016	(0.0000)***	β_{empsi3}	-0.0054	(0.0020)***
			$\beta_{momentum}$	-0.0002	(0.2555)	β_{envsi3}	-0.0037	(0.0087)***
			β_{rdts}	-0.0169	(0.0131)**	β_{psqsi3}	0.0020	(0.3809)
			Adj.R^2	0.1828		β_{comci3}	0.0000	(0.9936)
						β_{divci3}	-0.0013	(0.1222)
						β_{empci3}	-0.0037	(0.0039)***
						β_{envci3}	-0.0031	(0.0213)**
						β_{psqci3}	-0.0007	(0.6622)
						β_{beta}	0.0003	(0.1251)
						$\beta_{log(mv)}$	-0.0044	(0.0000)***
						β_{mtbv}	-0.1709	(0.0000)***
						$\beta_{momentum}$	-0.1544	(0.0000)***
						β_{rdts}	0.0029	(0.4143)
						Adj.R^2	0.1881	

Notes: Entries are parameter estimates; p-values in parentheses; the dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively, constructed using formulae $IN_{jit} = Strength_{it} \times Concern\ DummyVariable_{i,t-j}$ and $IN_{jit} = Concern_{it} \times Strength\ DummyVariable_{i,t-j}$, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.7: Effect of CSP interactions history (1, 2 and 3 years) on utility								
c	0.0583	(0.0000)***	**c**	0.0586	(0.0000)***	**c**	0.0582	(0.0000)***
β_{comsi1}	0.0025	(0.5718)	β_{comsi1}	0.0029	(0.5626)	β_{comsi1}	0.0039	(0.4288)
β_{divsi1}	0.0030	(0.2771)	β_{divsi1}	0.0015	(0.6666)	β_{divsi1}	0.0020	(0.5743)
β_{empsi1}	-0.0027	(0.2730)	β_{empsi1}	-0.0031	(0.2795)	β_{empsi1}	-0.0036	(0.2039)
β_{envsi1}	0.0027	(0.2238)	β_{envsi1}	0.0023	(0.5019)	β_{envsi1}	0.0013	(0.7104)
β_{psqsi1}	-0.0009	(0.8409)	β_{psqsi1}	0.0015	(0.7854)	β_{psqsi1}	0.0016	(0.7663)
β_{comci1}	0.0000	(0.9929)	β_{comci1}	-0.0008	(0.8771)	β_{comci1}	-0.0005	(0.9337)
β_{divci1}	-0.0015	(0.3667)	β_{divci1}	-0.0010	(0.7789)	β_{divci1}	-0.0006	(0.8707)
β_{empci1}	-0.0042	(0.0631)*	β_{empci1}	-0.0058	(0.0510)*	β_{empci1}	-0.0057	(0.0520)*
β_{envci1}	-0.0010	(0.5890)	β_{envci1}	0.0020	(0.3260)	β_{envci1}	0.0018	(0.3772)
β_{psqci1}	0.0013	(0.6367)	β_{psqci1}	0.0002	(0.9644)	β_{psqci1}	0.0010	(0.7605)
$\beta_{log(mv)}$	-0.0065	(0.0000)***	β_{comsi2}	-0.0009	(0.8190)	β_{comsi2}	-0.0082	(0.1417)
β_{mtbv}	-0.4986	(0.0000)***	β_{divsi2}	0.0022	(0.4967)	β_{divsi2}	-0.0035	(0.4837)
β_{dy}	-0.0016	(0.0000)***	β_{empsi2}	0.0006	(0.8126)	β_{empsi2}	0.0041	(0.2722)
β_{tdce}	-0.0002	(0.2641)	β_{envsi2}	0.0009	(0.7839)	β_{envsi2}	0.0038	(0.3221)
β_{rdts}	-0.0164	(0.0157)**	β_{psqsi2}	-0.0036	(0.4533)	β_{psqsi2}	-0.0090	(0.1352)
Adj.R^2	0.2229		β_{comci2}	0.0012	(0.8048)	β_{comci2}	-0.0035	(0.4981)
			β_{divci2}	-0.0006	(0.8634)	β_{divci2}	-0.0007	(0.8449)
			β_{empci2}	0.0019	(0.5067)	β_{empci2}	0.0051	(0.1088)
			β_{envci2}	-0.0056	(0.0034)***	β_{envci2}	-0.0026	(0.3829)
			β_{psqci2}	0.0019	(0.4791)	β_{psqci2}	-0.0013	(0.7433)
			$\beta_{log(mv)}$	-0.0065	(0.0000)***	β_{comsi3}	0.0090	(0.0322)**
			β_{mtbv}	-0.4947	(0.0000)***	β_{divsi3}	0.0061	(0.1505)
			β_{dy}	-0.0016	(0.0000)***	β_{empsi3}	-0.0046	(0.1583)
			β_{tdce}	-0.0002	(0.2555)	β_{envsi3}	-0.0040	(0.1130)
			β_{rdts}	-0.0169	(0.0131)**	β_{psqsi3}	0.0067	(0.1247)
			Adj.R^2	0.2227		β_{comci3}	0.0075	(0.0562)*
						β_{divci3}	-0.0001	(0.9632)
						β_{empci3}	-0.0058	(0.0193)**
						β_{envci3}	-0.0035	(0.1618)
						β_{psqci3}	0.0038	(0.2670)
						$\beta_{log(mv)}$	-0.0065	(0.0000)***
						β_{mtbv}	-0.4983	(0.0000)***
						β_{dy}	-0.0016	(0.0000)***
						β_{tdce}	-0.0002	(0.2945)
						β_{rdts}	-0.0164	(0.0164)**
						Adj.R^2	0.2252	

Notes: Entries are parameter estimates; p-values in parentheses; the dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively constructed using formulae $IN_{jit} = Strength_{it} \times Concern\ DummyVariable_{i,t-j}$ and $IN_{jit} = Concern_{it} \times Strength\ DummyVariable_{i,t-j}$, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.8: Effect of CSP interactions history (1, 2 and 3 years) on firm beta								
c	1.0556	(0.0000)***	c	1.0609	(0.0000)***	c	1.0696	(0.0000)***
β_{comsi1}	-0.1104	(0.4448)	β_{comsi1}	-0.1679	(0.2978)	β_{comsi1}	-0.2046	(0.1994)
β_{divsi1}	-0.1240	(0.1777)	β_{divsi1}	-0.0708	(0.5590)	β_{divsi1}	-0.0893	(0.4593)
β_{empsi1}	0.0961	(0.3238)	β_{empsi1}	0.2293	(0.0405)**	β_{empsi1}	0.2211	(0.0499)**
β_{envsi1}	0.1859	(0.0567)*	β_{envsi1}	0.1489	(0.2811)	β_{envsi1}	0.1948	(0.1595)
β_{psqsi1}	-0.0296	(0.8385)	β_{psqsi1}	-0.2154	(0.2458)	β_{psqsi1}	-0.2184	(0.2408)
β_{comci1}	-0.1959	(0.1920)	β_{comci1}	-0.2818	(0.1646)	β_{comci1}	-0.2882	(0.1612)
β_{divci1}	0.0701	(0.2687)	β_{divci1}	-0.1521	(0.1715)	β_{divci1}	-0.1715	(0.1238)
β_{empci1}	0.0399	(0.6527)	β_{empci1}	0.0350	(0.7702)	β_{empci1}	0.0353	(0.7663)
β_{envci1}	0.1408	(0.1028)	β_{envci1}	0.0603	(0.5406)	β_{envci1}	0.0452	(0.6470)
β_{psqci1}	0.0038	(0.9687)	β_{psqci1}	-0.0430	(0.7374)	β_{psqci1}	-0.0707	(0.5850)
$\beta_{log(mv)}$	-0.0218	(0.1017)	β_{comsi2}	0.0997	(0.4471)	β_{comsi2}	0.1463	(0.4119)
β_{mtbv}	-1.2314	(0.6727)	β_{divsi2}	-0.1009	(0.3572)	β_{divsi2}	0.1009	(0.5284)
β_{dy}	0.0252	(0.00009)***	β_{empsi2}	-0.2357	(0.0207)**	β_{empsi2}	-0.1376	(0.3416)
β_{tdce}	0.0255	(0.0000)***	β_{envsi2}	0.0345	(0.7980)	β_{envsi2}	-0.1785	(0.2536)
β_{rdts}	1.8221	(0.0000)***	β_{psqsi2}	0.2879	(0.0756)*	β_{psqsi2}	0.4264	(0.0442)**
$Adj.R^2$	0.3732		β_{comci2}	0.1187	(0.5090)	β_{comci2}	0.4000	(0.0458)**
			β_{divci2}	0.2548	(0.0172)**	β_{divci2}	0.2708	(0.0195)**
			β_{empci2}	-0.0156	(0.8893)	β_{empci2}	-0.1646	(0.1904)
			β_{envci2}	0.1397	(0.1342)	β_{envci2}	0.2414	(0.0607)*
			β_{psqci2}	0.0344	(0.7564)	β_{psqci2}	0.0863	(0.5531)
			$\beta_{log(mv)}$	-0.0225	(0.0903)*	β_{comsi3}	-0.0590	(0.6888)
			β_{mtbv}	-1.2071	(0.6788)	β_{divsi3}	-0.2161	(0.1173)
			β_{dy}	0.0253	(0.00009)***	β_{empsi3}	-0.0983	(0.4412)
			β_{tdce}	0.0252	(0.0000)***	β_{envsi3}	0.2752	(0.0126)**
			β_{rdts}	1.8430	(0.0000)***	β_{psqsi3}	-0.1591	(0.3177)
			$Adj.R^2$	0.3742		β_{comci3}	-0.4684	(0.0009)***
						β_{divci3}	-0.0040	(0.9519)
						β_{empci3}	0.2545	(0.0065)***
						β_{envci3}	-0.1169	(0.2824)
						β_{psqci3}	-0.0434	(0.7152)
						$\beta_{log(mv)}$	-0.0231	(0.0838)*
						β_{mtbv}	-1.1693	(0.6888)
						β_{dy}	0.0239	(0.0018)***
						β_{tdce}	0.0245	(0.0000)***
						β_{rdts}	1.8296	(0.0000)***
						$Adj.R^2$	0.3764	

Notes: Entries are parameter estimates; p-values in parentheses; the dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively constructed using formulae $IN_{jit} = Strength_{it} \times Concern\ DummyVariable_{i,t-j}$ and $IN_{jit} = Concern_{it} \times Strength\ DummyVariable_{i,t-j}$, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.9: Effect of CSP interactions history (1, 2 and 3 years) on standard deviation of returns								
c	-0.0098	(0.0906)*	**c**	-0.0106	(0.0687)*	**c**	-0.0109	(0.0608)*
β_{comsi1}	-0.0058	(0.4654)	β_{comsi1}	-0.0006	(0.9468)	β_{comsi1}	-0.0019	(0.8287)
β_{divsi1}	-0.0099	(0.0357)**	β_{divsi1}	-0.0069	(0.2591)	β_{divsi1}	-0.0093	(0.1326)
β_{empsi1}	0.0027	(0.5128)	β_{empsi1}	0.0041	(0.3912)	β_{empsi1}	0.0041	(0.3929)
β_{envsi1}	0.0011	(0.7791)	β_{envsi1}	0.0015	(0.7989)	β_{envsi1}	0.0014	(0.8134)
β_{psqsi1}	0.0022	(0.7569)	β_{psqsi1}	-0.0020	(0.8257)	β_{psqsi1}	-0.0033	(0.7191)
β_{comci1}	0.0006	(0.9312)	β_{comci1}	0.0036	(0.7020)	β_{comci1}	0.0051	(0.5892)
β_{divci1}	0.0044	(0.1524)	β_{divci1}	0.0028	(0.6349)	β_{divci1}	0.0019	(0.7502)
β_{empci1}	0.0117	(0.0025)***	β_{empci1}	0.0158	(0.0021)***	β_{empci1}	0.0162	(0.0018)***
β_{envci1}	0.0040	(0.2200)	β_{envci1}	-0.0030	(0.4075)	β_{envci1}	-0.0041	(0.2724)
β_{psqci1}	-0.0043	(0.3463)	β_{psqci1}	0.0033	(0.5565)	β_{psqci1}	0.0030	(0.5974)
$\beta_{log(mv)}$	0.0048	(0.0000)***	β_{comsi2}	-0.0083	(0.2416)	β_{comsi2}	-0.0028	(0.7638)
β_{mtbv}	0.9096	(0.0000)***	β_{divsi2}	-0.0048	(0.3947)	β_{divsi2}	0.0177	(0.0393)**
β_{dy}	0.0037	(0.0000)***	β_{empsi2}	-0.0023	(0.5933)	β_{empsi2}	-0.0034	(0.5896)
β_{tdce}	0.0009	(0.0010)***	β_{envsi2}	-0.0011	(0.8518)	β_{envsi2}	0.0018	(0.7838)
β_{rdts}	0.0412	(0.0003)***	β_{psqsi2}	0.0054	(0.4929)	β_{psqsi2}	0.0058	(0.5615)
Adj.R^2	0.3147		β_{comci2}	-0.0042	(0.6106)	β_{comci2}	0.0010	(0.9087)
			β_{divci2}	0.0021	(0.7190)	β_{divci2}	0.0060	(0.3351)
			β_{empci2}	-0.0051	(0.2957)	β_{empci2}	-0.0085	(0.1241)
			β_{envci2}	0.0131	(0.0001)***	β_{envci2}	0.0145	(0.0041)***
			β_{psqci2}	-0.0102	(0.0289)**	β_{psqci2}	-0.0046	(0.4883)
			$\beta_{log(mv)}$	0.0048	(0.0000)***	β_{comsi3}	-0.0065	(0.3659)
			β_{mtbv}	0.8926	(0.0000)***	β_{divsi3}	-0.0254	(0.0006)***
			β_{dy}	0.0038	(0.0000)***	β_{empsi3}	0.0012	(0.8291)
			β_{tdce}	0.0009	(0.0009)***	β_{envsi3}	-0.0052	(0.2504)
			β_{rdts}	0.0425	(0.0002)***	β_{psqsi3}	-0.0004	(0.9607)
			Adj.R^2	0.3158		β_{comci3}	-0.0124	(0.0779)*
						β_{divci3}	-0.0044	(0.1742)
						β_{empci3}	0.0058	(0.1620)
						β_{envci3}	-0.0010	(0.8218)
						β_{psqci3}	-0.0064	(0.2756)
						$\beta_{log(mv)}$	0.0050	(0.0000)***
						β_{mtbv}	0.8699	(0.0000)***
						β_{dy}	0.0036	(0.0000)***
						β_{tdce}	0.0009	(0.0009)***
						β_{rdts}	0.0396	(0.0006)***
						Adj.R^2	0.3187	

Notes: Entries are parameter estimates; p-values in parentheses; the dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively constructed using formulae $IN_{jit} = Strength_{it} \times Concern\ DummyVariable_{i,t-j}$ and $IN_{jit} = Concern_{it} \times Strength\ DummyVariable_{i,t-j}$, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

5.4.3 Pooled OLS Carhart regressions and portfolio level analysis

This subsection presents the results produced by the implementation of the methodologies described in the last paragraphs of Subsections 5.3.4 and 5.3.5. Essentially, these methodologies provide alternative yet complimentary avenues for exploring whether positive corporate social actions will influence the financial impact of negative corporate social actions and vice versa. The previous regression analyses, applied to a very large cross-industrial set of panel data, incorporated moderating terms between KLD strengths and concerns in order to capture such influences. An equally intuitive but perhaps more direct way of researching such moderating effects is to simply separate pools and portfolios of firms according to their record of both CSR and CSI (so that firms that have uniformly positive indications of CSP are separated from firms that have uniformly negative indications of CSP and from firms that produce mixed indications of CSP) and compare the financial performance of these pools or portfolios. This process has the additional advantage of being better able to identify whether the moderation between social/environmental corporate strengths and concerns can lead to a non-linear relationship between CSP and financial returns at the firm or portfolio level. Furthermore, it is not dependent on the rationale concerning the construction of interaction terms, as do the previous analyses.

In contrast with the empirical outcomes discussed previously, these courses of action produce results that are statistically significant and illuminating. All of the longitudinal pools of firm-year observations except for the one containing firms with positive KLD community strengths and concerns are found to have significant estimated abnormal returns (alphas). A comparison of these returns for pools relevant to the same CSP dimension depicts a U-shaped relationship between CSP and financial performance as can be seen in Table 5.10. Groups of firm-year observations that are shown to have positive social action without the corresponding indications of negative social action have the highest abnormal returns, followed by those firms that do the exact opposite (i.e. those that are shown to be uniformly negative in terms of their CSP). Those pools containing observation of firms that are shown to be both socially responsible and irresponsible in the same dimension are almost invariably characterised by the lowest returns compared to the other two types of pools. The only exception to this observation comes from the environmental dimension of CSP where the "strengths only" pool has a lower alpha than that of either the "concerns only" pool or the "strengths and concerns" pool.

The pools that investigate the financial effect of an "umbrella rider" strategy display its ineffectiveness. If a firm that has been shown to be irresponsible in terms of its treatment of the natural environment or product safety and quality chooses to engage in support for local communities or charitable giving, it will not be able to increase its financial returns according to these results. If anything, the opposite seems to hold (i.e. a decrease of abnormal returns). Although the Fama-French factors plus Carhart's momentum factor are shown to be small in size and sometimes statistically insignificant, this output is overall in agreement in terms of size, sign and importance of the coefficients with the findings of Galema, Plantinga and Scholtens (2008) who also make use of this model in their study. Taken together, these results strongly indicate that firms that are "caught in-between" doing good and bad tend to underperform not only socially responsible firms but also those firms that are clearly shown to engage in negative social action. This observation is in line with the rationale of Godfey (2005) and Pomering and Dolnicar (2009) who stress the importance of the assessment of motivation behind corporate activities. So it is possible that firms that are found to be both socially responsible and irresponsible in various aspects of the same social dimension are deemed to be inconsistent social/environmental actors that attempt to ingratiate particular stakeholder groups and are consequently penalised in financial markets. In other words, the "rewarding uniformity" framework appears to receive support in contrast to the "reciprocal dampening" hypothesis.

Lastly, the results that occur from the utilisation of equation (5.6) are particularly interesting and revealing. Table 5.11 verifies the statistical significance of the differences between the excess returns of "strengths only" subsamples and the excess returns of "mixed indications" subsamples. In all CSP dimensions except for the environmental one, the "strengths only" sample outperforms the respective "mixed indications" sample in an economically and statistically significant way. It is also worth noticing that the outperformance in the previously mentioned pairs of samples (ranging from 5.43% to 16.46%) is invariably higher than the differences between the excess returns of the "strengths only" and the "concerns only" samples (which are in favour of the "strengths only" samples and range between 2.49% to 7.69% - again, with the single exception of the environmental dimension). Lastly, the "concerns only" samples also outperform the respective "mixed indications" samples but this observation is less strong both in economic and statistical terms than the one occurring from the comparison of "uniformly positive" and "mixed indications" samples. Again, all of these facts taken together point towards a moderately strong support for the "rewarding uniformity" framework that was developed earlier.

Table 5.12 contains the output of the results that occur from applying the same model but this time to test the size and significance of the differences in the performances of different tertiles of the entire longitudinal sample that is iteratively sorted according to the size of each of the aggregate measures of CSP. It is easily noticeable that the differences in the alphas of the various subsamples are algebraically much lower than those depicted in Table 5.11. Furthermore, they tend to change signs from one CSP dimension to the other and all but two are statistically insignificant even at the 10% level. This provides support for the view that because CSP strengths and concerns are conceptually and empirically distinct concepts (Mattingly and Berman, 2006) , they should not be aggregated as they are likely to mask some of the finer points of the relationship between CSP and CFP and lead to less informative or even misleading conclusions.

The portfolio level analysis generally reinforces the aforementioned findings. The annual mean returns of the year-by-year portfolios are highest for the "strengths only" portfolios (either equally or value-weighted) in the case of community, diversity and employment dimensions and very similar for the environment and product safety/quality dimensions as is depicted in Tables 5.13 and 5.14. Yearly portfolios that contain fewer than 10 stocks are excluded from the analysis as they may produce misleading signals because of small numbers of constituent securities.[85] Since the standard errors for these mean returns are usually higher in the case of the "strengths and concerns" portfolios[86], other methods of assessing the differences in the performances of different portfolios are explored.

Specifically, I calculate what will be the total proceeds of an investor who places 1 dollar in each portfolio in 1991 and rolls over each investment until 2008. In the case that for a certain year a portfolio of a certain type does not have at least ten stocks, it is assumed that the investor will choose to invest either in US T-bills (earning the risk free rate). Equivalently, the compound annual growth rate is also calculated in each case. When the risk free rate is preferred as an alternative investment, the conclusions are exactly the same as they were when looking at portfolio mean returns. The "community strengths and concerns" (COMSC) portfolio earns approximately 6% less than the "community strengths only" (COMS) portfolio and 4.7% less than the "community concerns only" portfolio (COMC). The respective numbers are 6.3% and 2.5% for diversity portfolios and 5.3% and 3.5% for

[85] However, even when reducing the screening intensity so that portfolios of as few as 3 stocks are included, the qualitative results remain largely the same as the ones reported here in terms of portfolio mean returns.

[86] An unsurprising result given the fact that the exclusion of portfolios due to a small number of stocks is more common in the case of the "strengths and concerns" portfolios compared to the other two.

employee relations portfolios. Evidently, "strength only portfolios" also outperform "concerns only" portfolios, but not by much. CAGRs for portfolios relevant to the environmental and product safety/quality dimensions are very similar, with differences no greater than 0.8% in each case. The same applies for the non-corresponding strengths and concerns portfolios. The mean returns/CAGRs of the "environment concerns only" and "product safety/quality concerns only" portfolios are similar to, and often a bit smaller than, the returns of the "umbrella riders".

The general conclusion that can be drawn from the pooled regressions and an examination of the historic mean returns of certain portfolios is that in most cases, a U-shaped relationship makes its appearance, with firms that engage in both positive and negative social actions underperforming firms that are either just "good" or just "bad" in a specific social/environmental area. This is intuitive when taking into consideration all the arguments concerning the genuine motivation of corporations in relation to their activities. It seems that Godfrey's (2005) rationale about the hazardous effects of firms' ingratiating attempts and the backfire effect of insincerity mentioned by Yoon et al. (2006) are both empirically verified by this part of the analysis. Another way to think about these results is that firms having neither strong CSR nor strong CSI cannot benefit from the product differentiating aspects of the former or the cost saving opportunities that may come with the latter and thus find themselves at a competitive disadvantage. Similar findings are those of Brammer and Millington (2008), who find that firms with very high or very low levels of charitable giving are performing better than those firms that are "stuck in the middle". Furthermore, Barnett and Salomon (2006) also detect a curvilinear, U-shaped relationship between screening intensity and returns at the portfolio level, i.e. funds that use few or many social screens outperform those that use a moderate number of screens. They also test and verify the existence of a U-shaped link between corporate social and financial performance at the firm level (Barnett and Salomon, 2011) by concentrating on the association between CSP and accounting performance measures (return on assets and net income). The shape of this relationship remains unchanged even after controlling for firm size, R&D and advertising intensity, firm leverage and applying fixed firm and time effects. Lastly, Guney and Schilke (2010) provide evidence from cross-sectional analyses which reinforce the notion that there is a U-shaped relationship between market-based CFP measures and CSP. These conclusions are especially relevant in the case of the diversity and employee relations dimensions where all alternative assessments of the performance of the different portfolios (pooled regressions, mean returns, CAGRs) all point towards a U-shaped link between CSP and CFP. The same

cannot be stated for the other CSP dimensions as the results are not entirely consistent across different analyses: sometimes a U-shaped relationship is detected while for others this relationship is completely inverted or the returns of the comparable pools and portfolios are only marginally different.

Table 5.10: Pooled OLS Carhart regressions on groups of firms according to their involvement in positive/negative social action or both

Pools	A		Rm-Rf		SMB		HML		MOM	
COMS	19.75%	(0.0000)***	-0.0017	(0.0019)***	-0.0013	(0.1452)	-0.0016	(0.0111)**	-0.0032	(0.0000)***
COMSC	3.29%	(0.4221)	0.0006	(0.6183)	0.0025	(0.2697)	0.0016	(0.3843)	0.0032	(0.1276)
COMC	12.92%	(0.0000)***	-0.0039	(0.0000)***	0.0003	(0.7781)	0.0000	(0.9851)	-0.0044	(0.0002)***
DIVS	14.48%	(0.0000)***	-0.0017	(0.0000)***	-0.0020	(0.0017)***	-0.0006	(0.2321)	-0.0024	(0.0000)***
DIVSC	5.83%	(0.0176)**	-0.0026	(0.0161)**	0.0012	(0.3877)	0.0004	(0.7828)	-0.0011	(0.4736)
DIVC	11.99%	(0.0011)***	-0.0039	(0.0073)***	0.0040	(0.1133)	-0.0025	(0.1975)	-0.0015	(0.5209)
EMPS	14.85%	(0.0000)***	-0.0011	(0.0209)**	-0.0025	(0.0008)***	-0.0012	(0.0504)*	-0.0014	(0.0445)**
EMPSC	9.42%	(0.0000)***	-0.0049	(0.0000)***	-0.0025	(0.1210)	0.0013	(0.2434)	-0.0024	(0.0739)*
EMPC	10.73%	(0.0000)***	-0.0038	(0.0000)***	0.0005	(0.6771)	0.0019	(0.0314)**	-0.0018	(0.0775)*
ENVS	16.08%	(0.0000)***	-0.0022	(0.0012)***	-0.0013	(0.2714)	-0.0001	(0.8961)	-0.0030	(0.0087)***
ENVSC	16.56%	(0.0000)***	-0.0018	(0.0008)***	-0.0026	(0.03090)**	0.0002	(0.7538)	-0.0035	(0.0002)***
ENVC	18.44%	(0.0000)***	-0.0026	(0.0000)***	-0.0011	(0.1495)	-0.0014	(0.0403)**	-0.0053	(0.0000)***
PSQS	19.80%	(0.0000)***	-0.0026	(0.0010)***	-0.0042	(0.0009)***	-0.0027	(0.0065)***	-0.0035	(0.0054)***
PSQSC	6.36%	(0.0589)*	0.0001	(0.9058)	0.0000	(0.9839)	0.0031	(0.0537)*	0.0023	(0.1802)
PSQC	12.12%	(0.0000)***	-0.0023	(0.0000)***	0.0011	(0.1408)	0.0002	(0.7340)	-0.0015	(0.0164)**
COMENV	18.07%	(0.0000)***	-0.0017	(0.0397)**	-0.0049	(0.0002)***	0.0005	(0.5908)	-0.0036	(0.0013)***
COMPRO	9.25%	(0.0001)***	-0.0010	(0.1751)	0.0007	(0.6135)	0.0018	(0.0792)*	0.0006	(0.5941)
PHISENV	17.18%	(0.0000)***	-0.0018	(0.0354)**	-0.0037	(0.0068)***	0.0006	(0.5816)	-0.0031	(0.0065)***
PHISPRO	8.20%	(0.0009)***	-0.0008	(0.2977)	0.0014	(0.3399)	0.0016	(0.1304)	0.0011	(0.3190)

Notes: Entries are parameter estimates; p-values in parentheses; the dependent variable is the simple annual stock return and has been winsorised at the 1% level; COMS stands for a longitudinal pool of firms which have a positive score in community strengths and zero in community concerns; vice versa for COMC; COMSC includes firms that have positive scores in both community strengths and concerns; the notation is analogous for the other social dimensions; DIV is used for diversity, ENV for environment, EMP for employee relations, PSQ for the product safety and quality; COMENV includes firms that have positive scores in environmental concerns and community strengths(PHIS for philanthropy), COMPRO includes firms that have positive scores in environmental concerns and community strengths (PHIS for philanthropy), "α" stands for abnormal returns, Rm-Rf is the excess market return coefficient, SMB stands for Small Minus Big portfolio returns, HML stands for High Minus Low portfolio returns and MOM is the Momentum factor ; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.11: Sampling according to presence or absence of strengths and concerns

	Comparison of subsample alphas	
COM	Stengths-Strengths/Concerns	16.46%***
	Concerns-Strengths/Concerns	9.63%**
	Strengths-Concerns	6.83%**
DIV	Stengths-Strengths/Concerns	8.64%***
	Concerns-Strengths/Concerns	6.16%
	Strengths-Concerns	2.49%
EMP	Stengths-Strengths/Concerns	5.43%**
	Concerns-Strengths/Concerns	1.30%
	Strengths-Concerns	4.13% *
ENV	Stengths-Strengths/Concerns	-0.47%
	Concerns-Strengths/Concerns	1.88%
	Strengths-Concerns	-2.36%
PSQ	Stengths-Strengths/Concerns	13.44%***
	Concerns-Strengths/Concerns	5.75%
	Strengths-Concerns	7.69%***

Table 5.12: Sampling according to tertiles of aggregate CSP measures

	Comparison of subsample alphas	
COM	Top tertile-Bottom tertile	-1.06%
	Top tertile-Middle tertile	-2.66%
	Middle tertile-Bottom tertile	1.60%
DIV	Top tertile-Bottom tertile	-0.74%
	Top tertile-Middle tertile	0.28%
	Middle tertile-Bottom tertile	-1.02%
EMP	Top tertile-Bottom tertile	-2.02%
	Top tertile-Middle tertile	-0.50%
	Middle tertile-Bottom tertile	-1.52%
ENV	Top tertile-Bottom tertile	-2.05%
	Top tertile-Middle tertile	-1.11%
	Middle tertile-Bottom tertile	-0.94%
PSQ	Top tertile-Bottom tertile	0.42%
	Top tertile-Middle tertile	-3.28% *
	Middle tertile-Bottom tertile	3.69% **

Notes: Estimates are alphas based on four factor model pooled OLS regressions; COM stands for community; DIV is used for diversity, ENV for environment, EMP for employee relations, PSQ for the product safety and quality; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.13: Equally-weighted portfolios				
Portfolios	Mean return	Standard error	$1 investment gives ($R_f$)	CAGR (R_f)
COMS	12.43%	0.04738	5.96	10.42%
COMSC	6.82%	0.07265	2.18	4.41%
COMC	11.63%	0.04572	4.82	9.13%
DIVS	11.89%	0.04485	5.73	10.18%
DIVSC	5.67%	0.05879	2.00	3.92%
DIVC	9.90%	0.07074	3.06	6.41%
EMPS	11.99%	0.04252	5.97	10.44%
EMPSC	7.03%	0.04735	2.46	5.14%
EMPC	10.20%	0.04233	4.47	8.67%
ENVS	11.07%	0.04264	5.15	9.53%
ENVSC	11.27%	0.03856	5.57	10.01%
ENVC	10.61%	0.04016	4.90	9.22%
PSQS	11.50%	0.04571	5.39	9.81%
PSQSC	11.94%	0.04877	5.14	9.52%
PSQC	11.80%	0.04104	5.90	10.36%
COMENV	10.91%	0.04438	4.88	9.21%
COMPRO	11.35%	0.04593	5.12	9.50%
PHISENV	11.25%	0.04400	5.19	9.58%
PHISPRO	11.30%	0.04570	5.08	9.45%

Table 5.14: Value-weighted portfolios				
Portfolios	Mean return	Standard error	$1 investment gives ($R_f$)	CAGR (R_f)
COMS	10.60%	0.04699	4.53	8.75%
COMSC	4.93%	0.06690	1.88	3.57%
COMC	10.67%	0.05504	3.94	7.91%
DIVS	11.89%	0.04485	5.73	10.18%
DIVSC	4.21%	0.05416	1.77	3.23%
DIVC	4.92%	0.05077	2.11	4.24%
EMPS	11.07%	0.05134	4.70	8.97%
EMPSC	5.83%	0.04166	2.14	4.32%
EMPC	7.19%	0.03882	2.82	5.92%
ENVS	8.76%	0.04914	3.20	6.67%
ENVSC	8.22%	0.04076	3.29	6.84%
ENVC	10.72%	0.04166	4.94	9.28%
PSQS	9.40%	0.05041	3.57	7.33%
PSQSC	10.93%	0.05829	3.90	7.86%
PSQC	10.49%	0.04430	4.64	8.90%
COMENV	9.50%	0.04803	3.76	7.64%
COMPRO	9.76%	0.04939	3.83	7.74%
PHISENV	9.81%	0.04589	4.05	8.09%
PHISPRO	9.98%	0.04876	4.00	8.00%

Notes: COMS stands for a portfolio of firms which have a positive score in community strengths and zero in community concerns; vice versa for COMC; COMSC includes firms that have positive scores in both community strengths and concerns; the notation is analogous for the other social dimensions; DIV is used for diversity, ENV for environment, EMP for employee relations, PSQ for the product safety and quality; COMENV includes firms that have positive scores in environmental concerns and community strengths(PHIS for philanthropy), COMPRO includes firms that have positive scores in environmental concerns and community strengths (PHIS for philanthropy); $1 investment gives ($R_f$) assumes that when a portfolio of 10 stocks cannot be constructed the investor receives the risk free rate; CAGR stands for compound annual growth rate.

5.4.4 Further analyses

A number of additional analyses are performed in order to solidify the previous inferences, especially the ones coming from the firm level analysis where no consistently significant relationship was detected. The output for all of the following can be found in the appendix of the chapter unless otherwise mentioned. Firstly, every regression whose output is contained in Tables 5.2 to 5.5 is estimated again using a different type of interaction term. Specifically, in order to investigate if the presence of concerns influences the economic effect of strengths, the following formula is used:

$$INS_{it} = S_{it} - C_{it} \text{ if } S_{it} > C_{it} \text{ and } C_{it} > 0, \text{ else } INS_{it} = 0 \qquad (5.11)$$

where S stands for strengths and C stands for the corresponding or non-corresponding concerns and equivalently, in order to investigate if the presence of strengths influences the economic effect of concerns:

$$INC_{it} = C_{it} - S_{it} \text{ if } C_{it} > S_{it} \text{ and } S_{it} > 0, \text{ else } INC_{it} = 0 \qquad (5.12)$$

The intuition behind the calculation of these interactions is less straightforward than the previous one, but it has the additional benefit that it takes into account the magnitude of the absolute difference between the CSR and CSI of a particular firm. The conclusions of the earlier part of the firm level analysis remain unchanged.

It could be argued that what is material is not the absolute level of firm CSP but rather the level of firm CSP in comparison with a firm's industrial peers. To account for this, the same process is repeated, but in order to calculate the interaction terms coming from equations (5.1) and (5.2), the KLD scores in excess of the respective industrial means (Table 4.2c in the previous chapter) are used. No significant changes occur in the results. On another note, no measure of aggregate CSP was used in the central part of the analysis as the alleged interaction phenomenon seems too subtle and a wide-ranging measure of CSP would likely mask it. However, Tables 5.a to 5.d contain the output of model specifications focused on aggregate strengths and concerns, significant controversies concerns[87] and philanthropy, and use all the previous financial variables as regressands (excess returns, utility, beta, standard deviation). Once more, no solid link is detected in any case.

[87] See the definition in Chapter 3.

It was noted in Subsection 5.4.1 that the interaction terms relevant to same social dimension are highly correlated. In a finite sample (even a large one such as that used in this study), the presence of multicollinearity could lead to very high standard errors for coefficients, inflated adjusted R^2, even "wrong" signs and implausible magnitudes for coefficients (Greene, 2008, p.59). Although multicollinearity is usually an issue that concerns LS estimators in time-series analysis, it is not impossible for it to appear in a fixed effects estimation of a longitudinal dataset as in this case (Baltagi, 2005). In order to account for this factor, another set of fixed effect regressions is estimated, this time keeping the "strengths interactions" separate from the "concerns interactions". The results[88] are nearly identical to those contained in Tables 5.2 to 5.5. In addition, Table 5.e contains the output of the fixed effects Carhart regressions for the groups of firm-year observations categorized according to their positive/negative social activity or both. Although it was explained that the pooled OLS estimations are preferable, fixed effects are used as a robustness test and for the sake of comparability with all the other parts of the analysis (in which fixed effects is also used). Again, no significant changes are evident.

With regard to the analyses conducted on the different subsamples of firm-year observations, it should be noted that although the four-factor model employed does account for the variability of key financial characteristics within each pool, it does not make such an adjustment across different pools. So it could be argued that the heterogeneity of unaccounted yet important characteristics in the observations of each pool could be the primary driver of their differential financial performance and not corporate social performance as was argued. Tables 5.f and 5.g depict the mean values of the Fama-French and Carhart factors and the median values for the respective, firm-level, variables across the various subsamples. The similarity of the respective values between subsamples is evident in almost every case. Even in those instances where there are significant deviations between the average values of the groups compared, these deviations are not in a direction that could explain the observed differences in financial performance. For example, in the case of the market risk premium in the categorisation according to community related CSP, the uniformly CSP negative sample has a negative excess market return and the "mixed indications" subsample a positive one and despite this, the second subsample significantly outperforms the first. So, overall, it seems unlikely that such a criticism would hold. However, I conduct a simple test in order to add some robustness to my findings in this direction.

[88] Not contained in the appendix as they are repetitive and not illuminating. Available from the author upon request.

Specifically, I remove from my entire longitudinal sample the top 5% and bottom 5% firm-year observations in terms of beta, firm size and market to book value ratio. This creates a good framework for a comparison of subsamples that differ in terms of CSP and are otherwise fairly homogenous, but comes at a significant cost as my remaining sample consists of 5,308 observations. I reapply the methodology discussed on this truncated sample and compare the four-factor alphas that are produced from different pools once more. The results are contained in Table 5.h and corroborate the core part of the analysis as the U-shaped relationship between CSP and CFP is still present in all dimensions but the environmental one.

Lastly, in order to expand the framework of investigation of the interaction phenomenon to a different set of firms, the entire KLD sample from the years between 2003 and 2008 is utilised. In these years, KLD expanded its firm coverage to the constituents of the Russell 3000 index, i.e. covering the top 3,000 US firms in terms of market capitalisation. I exclude the constituents of the S&P 500 from the sample in order to focus on public firms of medium and small capitalisation. This unbalanced panel of data consists of a total of 7,941 observations coming from 2,496 different firms for a period of 6 years. The results are contained in Tables 5.i to 5.l and are not dissimilar to those coming from the S&P 500 sample of firms, as no particularly significant relationship stands out. There would be no point in replicating the portfolio level analysis for this dataset due to the brevity of the time-series dimension (T=6) which would almost certainly lead to insignificant results.

5.5 Summary

This study investigates the impact that positive social or environmental corporate actions have on the financial effects of negative/harmful social or environmental corporate actions. When considering the phenomenon at the firm level using multivariate regression analysis performed on a large longitudinal dataset, no statistically significant link is detected, irrespective of the type of interaction terms that are used, the characteristics of the data, whether one looks at absolute or industry relevant measures of CSP, different measures of financial performance, different dimensions of CSP and alternative details of model specification and estimation. The effect of CSP history as a factor that may influence the analysis is considered but no such evidence is brought forward.

However, when pools and portfolios of firms are constructed, a U-shaped relationship becomes noticeable, with firms that engage solely in CSR or CSI outperforming firms that engage in both. At the firm level, Carhart pooled OLS regressions reveal that the abnormal returns of firms that have positive scores in corresponding social strengths and concerns are lower than the abnormal returns of firms with positive scores only in social strengths or only in social concerns. This is true in every CSP dimension except for the environmental one. Additional analysis provides support to the "rewarding uniformity" hypothesis, according to which a firm is financially better off when following a consistent CSP posture (either good or bad, although good appears to be the most rewarding) and does not provide mixed indications within the same dimension of CSP. Furthermore, a direct comparison of the above analysis that takes into account the moderating effect that the common presence/absence of CSP strengths and concerns have on CFP with that of the aggregation of positive and negative corporate social activities indicates that the former approach is much more informative than the latter.

Historical mean returns and compound annual growth rates of both equally and value-weighted portfolios provide similar results for most CSP dimensions. This curvilinear relationship that is observed is in line with the findings of Barnett and Salomon (2006) concerning the link between the intensity of CSP screening criteria and fund performance, as well as those of Barnett and Salomon (2011) which verify the existence of the U-shaped relationship between CSP and accounting financial performance at the firm level, and with the conclusions of Brammer and

Millington (2008) concerning the curvilinear link between corporate charitable donations and firm financial performance.

The uniqueness of this investigation stems from the fact that no single published paper in the long and rich history of empirical CSP-CFP research has attempted to study the financial impact of the interactions between positive and negative corporate social actions. By doing so, this study provides a better understanding of the dynamics and nature of the moderating and mediating factors in the link between CSP and CFP. It's practical contribution comes from its findings which suggest that investors who incorporate CSP as a factor into their decision making process before allocating their wealth are better off investing in portfolios of firms that are shown to be either socially responsible or socially irresponsible (in terms of corresponding pairs of social strengths and concerns) than portfolios of firms that produce mixed CSP indications. In addition, it significantly reinforces the view that CSP strengths and concerns should not be combined in empirical research that investigates the CSP-CFP link. Future research could attempt to investigate this interaction phenomenon for different markets (Europe or the developing world for example) or concentrate on the identification of the impact of specific types of CSP-CSI interactions on CFP in particular industries.

6. Conclusions

6.1 Summary of the findings of the thesis

Over the last 40 years, an extensive amount of academic research has been conducted with regard to the empirical association between corporate social responsibility (or performance) and firm financial performance. The issue has received increasing attention due to the variety of different parties that find it to be both interesting and important. Corporate managers want to apply a strategy which can ensure the long-term viability and success of the firm and effectively manage the various operational and reputational risk exposures of the company. Individual and professional investors and other participants of the financial markets want to know as many details as possible concerning the factors that are incorporated as risk premia in the pricing of the financial assets that are being traded. Employees, local communities, environmentalists, consumers, non-governmental organisations and other stakeholders expect firms to benefit society in a series of ways and they would like to support that the type of corporate behaviour they are promoting is aligned with, or at least it is not detrimental to, the objective of increasing firm value, as this would provide a most convincing argument in favour of their purpose. Policy makers would like to adjust the severity of the corporate regulatory frameworks that are in place and provide appropriate incentives to promote a business world which not only efficiently creates products and services but also attempts to minimise the negative externalities towards societal groups and the natural environment. Academics and other professional researchers have an intriguing, controversial and interdisciplinary theme with significant practical implications for economic behaviour, business practices and society as a whole. Answering whether corporate social performance has a detectable financial impact and of what kind is material to all the aforementioned groups.

The purpose of this thesis is to contribute in this area in two principal ways. Firstly, by attempting to make appropriate considerations of the significant drawbacks and limitations plaguing a great part of the extant literature. These limitations are relevant to the datasets utilised, the CSP and FP measures that are theorised to be associated, the specification of the models that are estimated and the applied econometric methodology. Secondly, by trying to push forward into territories which have been rarely, if at all, explored by concentrating on identifying the value-protective

rather than value-enhancing characteristics of CSP, by looking into the effects of CSP in the corporate debt and equity markets, instead of only the latter, and by investigating the complex financial impact of the interactions between positive and negative corporate social action.

I use Chapter 2 as an introductory section for the empirical analyses that are conducted in the thesis. In this chapter, I present a very systematic review of the CSP-CFP literature and highlight the limitations as well as contributions of a great number of relevant studies that are considered to be important in this research area. The purpose of this chapter is to inform the reader about the motivation, theory, methodology and conclusions of empirical CSP-CFP investigations and better position the intended contributions of the work that is presented in the following chapters.

The study presented in Chapter 3 looks into the link between corporate social performance and financial risk per se, using an extensive longitudinal dataset comprised of almost seven thousand firm-year observations (coming from 769 different US companies over the course of 18 years). Different operationalisations of CSP are used and a wide array of equity risk metrics are applied (including standard and downside measures of both total and systematic risk). In addition, the link between CSP and the utility of investors with different levels of absolute risk aversion is investigated for the first time. The main findings of the analyses suggest that most of the individual components of corporate social strengths (those relevant to community, diversity, employment and product safety and quality issues to be specific) are negatively but insignificantly related to systematic equity risk while, on the other hand, most of the respective indicators of corporate social concerns (connected to community, environmental and employment issues) are positively and statistically significantly related to both total and systematic firm risk. The economic magnitude of these results is limited but not negligible. For example, a rapid reduction of employment concerns for a given firm at a given year is expected to reduce firm beta by approximately 0.2, thus decreasing the impacts of market shocks in the firm's share price. The results coming from regressions where aggregate CSP measures are used to corroborate my previous findings. Aggregate positive social actions, programs and policies are negatively linked to financial risk but less strongly so compared to the negative CSP indications association with risk. In addition, corporate controversies related to social issues than can lead to the imposition of fines and penalties are also shown to be strongly positively linked with a multitude of risk metrics. In spite of the fact that the utility measure used incorporates the skewness and kurtosis of the distribution of stock returns, in addition to the mean and standard deviation, no significant

relationship is found between CSP and utility (irrespective of the level of investor risk aversion assumed).

The moderating effects of the overall volatility conditions in the equity markets on the relationship between CSP and financial risk are also investigated and the inferences drawn are particularly revealing. It appears that in times of financial distress, the impact of CSP concerns on stock price volatility significantly increases while in times of small or moderate levels of market volatility, the risk decreasing effect of corporate actions with a positive societal output becomes more pronounced. In other words, the markets seem to focus on rewarding firms that "do good" in low volatility periods and penalise transgressing firms in high volatility periods. On another note, when extending the dataset to include firms of moderate and small market capitalisation, the results of the main analysis are nearly reversed as the corporate social strengths are then more strongly related to financial risk than corporate social concerns are. The most reasonable explanation for this is that the market realises the limitations that smaller firms face in their behaviour due to their resource constraints as well as the minimum impact that each individual small firm has on CSP dimensions such as the natural environment.

There are some important lessons that can be learned from the findings of this chapter. Firstly and most importantly, there are value-protective attributes of CSP that compliment the value-enhancing characteristics that it has. This calls for more and better research to be conducted on this rather neglected aspect of the relationship between CSP and CFP. Secondly, there is a differential financial impact between corporate social strengths and concerns. At least with regard to equity risk, concerns are generally found to be more important than strengths. Thirdly, the link between CSP and CFP is a dynamic one and market volatility is shown to be one of the factors that moderate this link. Fourthly, investor utility does not appear to be significantly influenced by CSP, at least when disregarding any non-financial utility that may come from socially responsible investing. Lastly, the market appears to be less aware or more lenient when pricing the social performance of smaller firms.

The CSP-financial risk connection is investigated within the framework of bond markets in Chapter 4. The study tries to quantify the effect of CSP on corporate bond spreads and credit ratings, something that an extremely limited number of papers have attempted to do in the past. Once more, a longitudinal dataset is used comprising of more than 3,000 bonds issued by 742

firms operating in 17 different industries. The empirical results show that supporting the communities where the firm operates, paying particular attention to the safety and quality characteristics of offered products and services, and avoiding controversial issues regarding the firm's relationship with its employees can reduce the cost of debt in an economically and statistically significant way. For example, a firm which alters its practices concerning its stance and provisions towards local communities can be expected to reduce its bond spreads even by 40% from their previous levels, which can translate from a few basis points (for the high quality, investment grade bonds) to about four percentage points (for the CCC or lower rate bonds). The output of the ordered probit regressions also indicates that improved CSP can lead to a higher probability of the bond being perceived as a high credit quality asset by the rating agencies. When using multidimensional measures of corporate social performance, the results are stronger and more pronounced: Overall, corporate social strengths lead to lower credit spreads and higher bond ratings assigned while corporate social concerns have the exact opposite impacts.

A series of additional analyses are conducted in order to help create a more precise picture of the link between CSP and credit risk. Splitting the entire sample in the middle of the time-series shows that the relationship between CSP and credit spreads has strengthened over time. This finding can be attributed to the constantly increasing public awareness and media coverage of CSR and socially responsible investing. Unlike the findings in the case of the equity market, volatility conditions are shown not to play a moderating role in the CSP-CFP association in the bond market. The core results are also found to be remarkably consistent when looking at subsamples of bond-year observations created according to the alleged salience of particular CSP dimensions in certain industries. The investment horizon can also be important in this connection, as bonds with longer maturities are the ones that exhibit the strongest link between CSP and corporate spreads, a result consistent with the literature suggesting that the financial effects of corporate social responsibility accrue predominantly in the long run.

In a nutshell, it is demonstrated that CSP affects the pricing of corporate bonds and the perceived level of associated credit risk. So it appears that the value-protective characteristics of CSP are not solely limited to the equity markets. Important findings also come when looking at the links investigated in greater detail. It is also found that the relationship between CSP and the cost of corporate debt has strengthened with time and is also more evident for longer maturity bonds that have either high or very low ratings. Market volatility and industrial specialisation on the

other hand are not shown to be important moderating factors in this framework. All of these characteristics are important pieces of information for firm managers and socially responsible investing practitioners alike.

Chapter 5 adds to the originality of the contributions of the thesis since it presents the first CSP-CFP study which examines the financial impacts of interactions that exist *within* CSP instead of focusing on exogenous factors that intervene between the two concepts and moderate their link. Specifically, I investigate to what extent positive social or environmental corporate actions, policies and programs can influence the nature and magnitude of the financial effects of actions indicative of corporate social irresponsibility, and vice versa. This is a highly interesting issue in the CSP-CFP area which has essentially received no attention so far and the conceptual subtleties that are inherent in it make its empirical testing a very challenging task.

Overall, the results are mixed. A wide array of complimentary analyses are conducted. When researching the phenomenon at the firm level on the entire dataset, no consistently significant interaction terms are observed in spite of the plethora of different CSP dimensions that are examined, the alternative estimations of the interaction terms, the diversity of the econometric methodologies that are applied as well as the focus on return, risk or utility measures. The inclusion of CSP history in the testing framework is shown not to alter these results. By contrast, when taking an alternative, arguably more suitable, route by looking at the differences in the financial performance of subsamples and portfolios of firms constructed solely on the basis of their constituents showing CSP indications that are uniformly positive, uniformly negative or mixed, a curvilinear (U-shaped) relationship becomes noticeable.

In particular, four-factor model regressions reveal that in every CSP dimension except for the environmental one, socially responsible firms outperform socially irresponsible firms and both outperform firms that are "caught in the middle" in terms of CSP. These results verify the "rewarding uniformity" hypothesis according to which stakeholders not only access the social performance of the firm but also its underlying motivations and are thus prone to penalise corporations that appear to use positive social actions as ingratiating instruments (and mixed indications of CSP could be considered to signal such motivations). To provide further useful insights that can be used in future research, a direct comparison is made between two different ways of assessing firm financial performance dependent on corporate social performance. The

first acknowledges the possible interacting effects between the presence/absence of social strengths and the financial impacts of social concerns (and vice versa) while the second ignores this possibility and is based on a CSP measure which is constructed by deducting the scores of concerns from the one of strengths. The first approach is shown to generate more informative results. In addition, several descriptive statistics (including mean returns and annual growth rates) for equally and value-weighted equity portfolios constructed based on the same principles as the aforementioned subsamples further reinforce the observed U-shaped link, especially so in the case of the employment and diversity dimensions of CSP.

The principal conclusions that can be drawn from the chapter have important implications for managers, investors and researchers. The most critical conclusion is that positive and negative social actions should be treated as conceptually and empirically distinct constructs and should not be amalgamated into monolithic measures of corporate social performance. Assessment of the impact of CSP and CFP is also dependent on this principle. Although not all results point in the same direction, there is evidence of a U-shaped link connecting CSP and CFP that can be attributed to stakeholder perceptions of both CSP and the motivations behind the implementation of CSR practices. So if firms want to reap the financial benefits that come with superior CSP, they have to do it by simultaneously attempting to minimise their social controversies and maximise their societal/environmental contributions. Participants of the SRI movement should also be aware of this finding when choosing the screening criteria for selecting the constituents of their portfolios.

Overall, this thesis brings forward evidence that supports the existence of a mildly positive, statistically significant link between CSP and financial risk, thus both contributing to the under-researched area looking at the value-protective effects of CSP and corroborating the meta-analyses and descriptive reviews of the CSP-CFP literature which also conclude in favour of an overall positive relationship between the two concepts. It is also shown that this relationship is not solely limited to the equity market but extends to the corporate bond market where CSP is shown to be a factor that is incorporated in the pricing of corporate debt and the assessment of the credit quality of firm bonds. Lastly, the interactive financial effects between different aspects of corporate social performance are quantified and the separation of social strengths and concerns in empirical research is shown to be the appropriate method to implement.

6.2 Suggestions for future research

Despite the rich history of empirical CSP-CFP research and the great, and constantly increasing, number of studies that have been conducted and published on the subject, there is still a great number of related issues that have not received an adequate amount of attention. Methodological contributions aside, this thesis has attempted to add novel insights to the literature in three different ways: By looking at the wealth-protective instead of the wealth-enhancing attributes of CSP, by extending the investigation of the CSP-CFP link beyond the equity and into the bond market and by researching some of interactions that may take place in this connection. Future research can also move along these lines in order to further enhance our understanding of the financial impacts of corporate social performance.

The first chapter purposefully focused on identifying the effect that CSP has on total and systematic risk. However, there is also the non-systematic component of equity risk which may very well also be affected by a firm's social posture. With the exception of the work of Luo and Bhattacharya (2009) as well as Godfrey, Merrill and Hansen (2009), no studies have been conducted in this direction. Researchers could use either regression analysis where some measure of idiosyncratic risk is the dependent variable[89] or event study analysis to concentrate on the effects that particular types of incidents related to social responsibility have on financial returns. Event study analysis could be performed in the framework of the equity or bond markets alike. Different measures of risk and alternative financial markets could also be explored. Academics could test whether CSP is also incorporated in the assessment of risk depicted by the implied volatility of equity options or examine whether it impacts on the value at risk of equity portfolios.

Although this thesis focused on the moderation of the financial effects caused by interactions within CSP, the relevant impacts of external factors should not be ignored. The stage of the economic cycle can be theorised to be very important, especially if one believes in the "slack resources" or at least the "virtuous cycle" hypotheses concerning the CSP-CFP association. Since, by definition, most companies tend to do better in boom years, if they do in fact mainly invest in CSR practices when they have resources to spare, it is reasonable to expect the CSP-CFP link to be stronger (at least in a contemporaneous sense) during times of economic prosperity. Equally

[89] For example, the residuals of the Fama-French or Carhart models could be used as a measure of idiosyncratic risk.

interesting themes would be the effects that the political cycle and media trends have on the financial impacts of CSP. If it is assumed that there are certain political parties and coalitions that promote CSR practices though tax incentives, regulatory frameworks and other types of legislation more than their political adversaries, then the financial benefits accruing from superior CSP would be expected to be greater in the years that these parties form the government. Lastly, popular knowledge suggests that media attention tends to divert from issue to issue as time passes. The financial impacts of different CSP dimensions may fluctuate in a way that is dependent on these media trends.

There are many other issues that fall in this research area that are worthy of consideration. The CSP-CFP relationship has been examined at the firm and at the portfolio level and the performance of standard stock indices has been compared to that of social stock indices. However, no emphasis has been given to the financial effects that the inclusion or deletion of a stock from a social index has. Given the great amount of visibility and institutional investors' attention that these indices and their constituents attract, it is plausible that the inclusion (deletion) of a stock in the index is associated with positive (negative) abnormal returns. Essentially, it remains to be seen whether the Domini 400 or FTSE4Good indices provide a "golden seal" to their constituents, just as the S&P 500 has shown to do (Kappou, Brooks and Ward, 2008).

Another intriguing subject that has not been investigated at all is if and how corporate social performance is priced in the market for corporate control. It can be argued that corporate social performance might be one of the incentives (or disincentives) for a firm being considered a potential target for a merger and acquisition and for the estimation of the acquiring premia. Operational as well as reputational synergies relevant to CSP that may be generated between the bidder and the target could have a material impact on the financial performance of the post-M&A organisation. For example, a large firm that has been involved in environmental controversies may want to benefit from the environmental policies and the "green image" that a smaller firm has built by attempting to acquire it instead of internally investing in marketing campaigns and alternative fuel usage practices. However, there is always the possibility that this tactic could backfire if it is perceived as an ingratiating attempt by environmental activists and the wider public. So there are delicate issues and trade-offs that need to be considered, making this particular issue very interesting for both the CSP-CFP and the corporate finance literatures.

A significant number of contributions have been made and some new subjects have been introduced in the literature in the last few years. Still, much more remains to be done. The core issues with regard to the financial effects of corporate social performance have yet to be satisfactorily and conclusively resolved and a host of themes concerning the dynamics, interactions and intricacies surrounding the CSP-CFP link have received minimal to no consideration at all so far. Novel ideas and robust methodologies, combined with measures based on the constantly improving datasets containing corporate social performance information, can significantly enhance our understanding of how, when and to what extent doing good can also lead to doing well in the business world. The potential implications for corporations, investors, various stakeholders groups and society as a whole are tremendous. In a cynical world, a pragmatic incentive for ethical corporate behaviour may be the only way towards a better society.

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Appendix to Chapter 3

3A. Extension of the mean-variance criterion to higher moments and the calculation of the certainty equivalent under a negative exponential utility function.

The utility function is given by

$$U(R) = 1 - \exp(-\gamma R), \gamma > 0 \qquad (3.13)$$

where R is the return of a risky investment and γ is the coefficient of absolute risk aversion. If we use the Taylor expansion at the fourth order about the expectation of the returns distribution μ and then apply the expectation operator we get:

$$E[U(R)] \approx U(\mu) + U^{'}(R)|_{R=\mu}\, \mathrm{E}[R-\mu] + \frac{1}{2}U^{''}(R)|_{R=\mu}\, \mathrm{E}[(R-\mu)^2] + \frac{1}{6}U^{'''}(R)|_{R=\mu}\, \mathrm{E}[(R-\mu)^3]$$

$$+ \frac{1}{24}U^{(4)}(R)|_{R=\mu}\, \mathrm{E}[(R-\mu)^4] \qquad (3.14)$$

We know according to the definition of the certainty equivalent that E[U(R)]=U(CE). Also, we are using the negative exponential function given by (3.14) so the respective derivatives at R=μ are

$U^{'}(\mu) = \gamma \exp(-\gamma\mu), U^{''}(\mu) = -\gamma^2 \exp(-\gamma\mu), U^{'''}(\mu) = \gamma^3 \exp(-\gamma\mu), U^{(4)}(\mu) = -\gamma^4 \exp(-\gamma\mu)$ so expression (15) becomes:

$$1 - \exp(-\gamma CE) \approx 1 - \exp(-\gamma\mu) - \gamma \exp(-\gamma\mu)\mathrm{E}[R-\mu] + \frac{1}{2}\gamma^2 \exp(-\gamma\mu)\mathrm{E}[(R-\mu)^2]$$

$$-\frac{1}{6}\gamma^3 \exp(-\gamma\mu)\mathrm{E}[(R-\mu)^3] + \frac{1}{24}\gamma^4 \exp(-\gamma\mu)\mathrm{E}[(R-\mu)^4] \qquad (3.15)$$

By definition, the second, third and fourth standardised moments are respectively

$\sigma^2 = \mathrm{E}[(R-\mu)^2], \tau = \sigma^{-3}\mathrm{E}[(R-\mu)^3] \text{ and } \kappa = \sigma^{-4}\mathrm{E}[(R-\mu)^4]$ and the term E[R-μ] is equal to zero for R=μ. So expression (16) can be written:

$$\exp(-\gamma CE) \approx \exp(-\gamma\mu) - \frac{1}{2}\gamma^2 \exp(-\gamma\mu)\sigma^2 + \frac{1}{6}\gamma^3 \exp(-\gamma\mu)\sigma^3\tau - \frac{1}{24}\gamma^4 \exp(-\gamma\mu)\sigma^4\kappa \text{ or}$$

$$\exp(-\gamma CE) \approx \exp(-\gamma\mu)\left(1 - \frac{1}{2}\gamma^2\sigma^2 + \frac{1}{6}\gamma^3\sigma^3\tau - \frac{1}{24}\gamma^4\sigma^4\kappa\right).$$

Taking logs and dividing by -γ : $CE = \mu + \ln\left(1 - \frac{1}{2}\gamma\sigma^2 + \frac{\tau}{6}\gamma^2\sigma^3 - \frac{\kappa}{24}\gamma^3\sigma^4\right)$

Because $\ln(1+x) \approx x$ when x is small, the above expression can also be written as: $CE = \mu - \frac{1}{2}\gamma\sigma^2 + \frac{\tau}{6}\gamma^2\sigma^3 - \frac{\kappa}{24}\gamma^3\sigma^4$, which is the formula applied in this study.

3B. Results of robustness tests concerning the causality of the relationship between CSP and financial risk.

Table 3.a: The effect of systematic risk on CSP (entire sample)

	COMS	DIVS	EMPS	ENVS	PSQS	COMC	DIVC	EMPC	ENVC	PSQC
α	0.2511	-0.3582	-0.0836	-0.0746	0.0399	-0.1539	-0.2942	-0.3232	-0.1091	-0.4744
	(0.0000)***	(0.0000)***	(0.0027)***	(0.0011)***	(0.0198)**	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000
β_{beta}	-0.0052	0.0045	-0.0026	0.0096	-0.0029	0.0012	0.0039	0.0115	0.0026	-0.0005
	(0.0592)*	(0.0890)*	(0.3469)	(0.0000)***	(0.0853)*	(0.5908)	(0.3314)	(0.0002)***	(0.2231)	(0.8961
$\beta_{log(mv)}$	-0.0205	0.0554	0.0208	0.0135	0.0014	0.0226	0.0395	0.0420	0.0209	0.0682
	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.4603)	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000
β_{mtbv}	-0.4547	-4.3027	1.1218	-3.4699	0.4871	-2.9853	-3.8960	-4.2655	-1.6540	-9.4625
	(0.5064)	(0.0000)***	(0.1012)	(0.0000)***	(0.2479)	(0.0000)***	(0.0000)***	(0.0000)***	(0.0020)***	(0.0000
β_{tdce}	0.0020	0.0042	-0.0024	0.0049	-0.0014	0.0039	0.0062	0.0053	0.0001	0.0139
	(0.1028)	(0.0004)***	(0.0555)*	(0.0000)***	(0.0583)*	(0.0001)***	(0.0004)***	(0.0001)***	(0.9313)	(0.0000
β_{dy}	0.0077	0.0001	0.0045	0.0035	-0.0019	-0.0027	0.0023	0.0105	0.0068	0.0080
	(0.0001)***	(0.9613)	(0.0267)**	(0.0357)**	(0.1204)	(0.1025)	(0.418)	(0.0000)***	(0.0000)***	(0.0028

Table 3.b: The effect of systematic risk on CSP (high volatility periods)

	COMS	DIVS	EMPS	ENVS	PSQS	COMC	DIVC	EMPC	ENVC	PSQC
α	0.2052	-0.2148	-0.0502	-0.1120	0.0453	-0.2158	-0.1710	-0.7355	-0.3581	-0.4876
	(0.0012)***	(0.0048)***	(0.5054)	(0.0587)*	(0.2958)	(0.0013)***	(0.129)	(0.0000)***	(0.0000)***	(0.0000)***
β_{beta}	0.0018	-0.0104	-0.0232	0.0244	0.0012	-0.0011	-0.0116	0.0333	0.0145	-0.0082
	(0.7741)	(0.1774)	(0.0026)***	(0.0000)***	(0.7924)	(0.8665)	(0.3126)	(0.0005)***	(0.0166)**	(0.4171)
$\beta_{log(mv)}$	-0.0163	0.0400	0.0210	0.0162	-0.0001	0.0276	0.0265	0.0848	0.0469	0.0687
	(0.0162)**	(0.0000)***	(0.0097)***	(0.0113)**	(0.9807)	(0.0001)***	(0.029)**	(0.0000)***	(0.0000)***	(0.0000)***
β_{mtbv}	1.8618	-5.9552	-0.1349	-5.3675	0.4779	-4.2250	-2.6080	-7.2799	-4.2848	-9.4725
	(0.0873)*	(0.0000)***	(0.9174)	(0.0000)***	(0.5225)	(0.0003)***	(0.1795)	(0.0000)***	(0.0000)***	(0.0000)***
β_{tdce}	-0.0026	-0.0006	-0.0031	0.0022	-0.0006	0.0062	-0.0007	-0.0001	0.0032	0.0115
	(0.2248)	(0.8179)	(0.2258)	(0.2659)	(0.6846)	(0.0064)***	(0.8588)	(0.9763)	(0.1111)	(0.0006)***
β_{dy}	0.0027	0.0156	0.0057	0.0101	0.0014	0.0128	0.0088	0.0266	0.0100	0.0217
	(0.4959)	(0.0014)***	(0.2342)	(0.0075)***	(0.618)	(0.0029)***	(0.2212)	(0.0000)***	(0.0084)***	(0.0006)***

Table 3.c: The effect of systematic risk on CSP (low volatility periods)										
	COMS	**DIVS**	**EMPS**	**ENVS**	**PSQS**	**COMC**	**DIVC**	**EMPC**	**ENVC**	**PSQC**
α	0.2394	-0.3775	-0.0517	-0.0574	0.0520	-0.1156	-0.3351	-0.2219	-0.0709	-0.4850
	(0.0000)***	(0.0000)***	(0.1027)	(0.0355)**	(0.0099)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.005)***	(0.0000)***
β_{beta}	-0.0095	0.0095	0.0034	0.0100	-0.0044	0.0029	0.0061	0.0086	-0.0002	0.0037
	(0.0036)***	(0.0012)***	(0.2675)	(0.0001)***	(0.0215)**	(0.231)	(0.1702)	(0.0097)***	(0.9368)	(0.3722)
$\beta_{log(mv)}$	-0.0185	0.0578	0.0159	0.0120	0.0004	0.0190	0.0436	0.0309	0.0169	0.0688
	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.8657)	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***	(0.0000)***
β_{mtbv}	-1.2981	-4.0998	1.5277	-3.0839	0.3625	-1.8950	-3.2763	-3.7431	-1.1337	-8.5069
	(0.1619)	(0.0000)***	(0.0767)*	(0.0000)***	(0.5086)	(0.0068)***	(0.0094)***	(0.0000)***	(0.0989)*	(0.0000)***
β_{tdce}	0.0040	0.0043	-0.0030	0.0052	-0.0018	0.0034	0.0085	0.0070	-0.0014	0.0135
	(0.0073)***	(0.0012)***	(0.0303)**	(0.0000)***	(0.0386)**	(0.0024)***	(0.0000)***	(0.0000)***	(0.2092)	(0.0000)***
β_{dy}	0.0080	-0.0027	0.0049	0.0007	-0.0029	-0.0093	0.0025	0.0066	0.0064	0.0072
	(0.0016)***	(0.2412)	(0.0362)**	(0.7305)	(0.0563)*	(0.0000)***	(0.4591)	(0.0109)**	(0.0007)***	(0.026)**

Notes for Tables 3.a to 3.c: Cell entries are parameter estimates; p-values in parentheses; each column corresponds to the output of a different fixed effects regression; α is the average of the firm specific fixed effects; coms and comc for the community strengths and community concerns indicators respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employment indicator, psq for the product indicator, log(mv) is the logarithm of market capitalization, mtbv is market-to-book value, dy is dividend yield and tdce is the total debt to common equity ratio; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 3.d: sampling between 1992 and 2000			
	Beta	**HR Beta**	**BL Beta**
α	2.126654	2.830932	1.855493
	(0.0000)***	(0.0000)***	(0.0000)***
β_{coms}	0.059668	0.049468	0.122732
	(0.4983)	(0.6036)	(0.3189)
β_{divs}	-0.342269	-0.304727	-0.38684
	(0.0059)***	(0.0213)**	(0.0185)**
β_{emps}	-0.150346	-0.1884	-0.324692
	(0.1798)	(0.113)	(0.0234)**
β_{envs}	-0.094511	-0.01521	0.061631
	(0.4779)	(0.9132)	(0.7231)
β_{psqs}	0.036077	0.18551	0.127796
	(0.8478)	(0.3298)	(0.5983)
β_{comc}	-0.217293	-0.276115	-0.343706
	(0.1758)	(0.0998)*	(0.0973)*
β_{divc}	-0.112992	-0.111061	-0.159122
	(0.2158)	(0.2635)	(0.1877)
β_{empc}	-0.056712	-0.1616	-0.066479
	(0.6433)	(0.2101)	(0.6705)
β_{envc}	0.03944	0.107098	-0.010721
	(0.7742)	(0.4564)	(0.9524)
β_{psqc}	-0.300707	-0.221669	-0.380792
	(0.0011)***	(0.0196)**	(0.0014)***
$\beta_{log(mv)}$	-0.1252	-0.214931	-0.087457
	(0.0000)***	(0.0000)***	(0.0148)**
β_{mtbv}	6.749856	12.80953	17.73642
	(0.2805)	(0.0472)**	(0.0244)**
β_{dy}	-0.031177	-0.016267	-0.035341
	(0.0228)**	(0.2551)	(0.0484)**
β_{tdce}	-0.045039	-0.045435	-0.063486
	(0.0003)***	(0.0002)***	(0.0000)***
Adj.R^2	31.16%	29.72%	17.86%

Table 3.e: sampling between 2001 and 2009			
	Beta	**HR Beta**	**BL Beta**
α	0.818654	1.072908	-0.055993
	(0.0000)***	(0.0000)***	(0.8136)
β_{coms}	-0.073873	-0.085389	-0.124115
	(0.4781)	(0.4262)	(0.3097)
β_{divs}	0.012808	0.046067	0.074806
	(0.8832)	(0.6138)	(0.4691)
β_{emps}	-0.086689	-0.034753	0.013894
	(0.2962)	(0.6911)	(0.8886)
β_{envs}	-0.08316	-0.08713	-0.048696
	(0.3415)	(0.3613)	(0.6589)
β_{psqs}	-0.164096	-0.209148	-0.160978
	(0.2108)	(0.1202)	(0.2965)
β_{comc}	-0.092285	-0.110826	-0.067007
	(0.3565)	(0.3014)	(0.5717)
β_{divc}	0.002377	-0.013881	0.005382
	(0.9659)	(0.808)	(0.9333)
β_{empc}	0.165354	0.067094	0.058721
	(0.0103)**	(0.3171)	(0.4343)
β_{envc}	0.104552	0.176246	0.056883
	(0.3353)	(0.1282)	(0.665)
β_{psqc}	-0.071515	-0.103708	-0.092873
	(0.2725)	(0.1249)	(0.2236)
$\beta_{log(mv)}$	0.014346	-0.011269	0.107047
	(0.5072)	(0.6161)	(0.0000)***
β_{mtbv}	14.7394	15.80839	14.98902
	(0.0003)***	(0.0001)***	(0.0019)***
β_{dy}	0.05511	0.051701	0.066585
	(0.0000)***	(0.0000)***	(0.0000)***
β_{tdce}	0.021064	0.015771	0.016304
	(0.0014)***	(0.0211)**	(0.0448)**
Adj.R^2	46.09%	43.25%	40.89%

Notes: Cell entries are parameter estimates; p-values in parentheses; each column corresponds to the output of a different fixed effects regression; all dependent variables have been winsorized at the 1% level; α is the average of the firm specific fixed effects; β_{coms} and β_{comc} are the slope coefficients for the community strengths(s) and community concerns(c) indicators respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employment indicator, psq for the product indicator, log(mv) is the logarithm of market capitalization, mtbv is market-to-book value, dy is dividend yield and tdce is the total debt to common equity ratio; entries of last row are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Appendix to Chapter 4

4A. Additional analyses of the impact of CSP on credit risk

Table 4.a: Effect of CSP on credit ratings (odds ratios)

	rating	rating	speculative	speculative
community strengthts	5.1502***		0.0003***	
	(0.000)		(0.000)	
diversity strengths	1.8274		0.4759	
	(0.060)		(0.47)	
employment strengths	24.5247***		0.0074***	
	(0.000)		(0.000)	
environement strengths	11.5338***		1.0455	
	(0.000)		(0.963)	
product safety and quality strengths	18.8162***		0.0004***	
	(0.000)		(0.000)	
community concerns	0.5916		0.1127	
	(0.153)		(0.054)	
diversity concerns	0.8956		0.2146*	
	(0.600)		(0.013)	
employment concerns	0.1860***		154.94***	
	(0.000)		(0.000)	
environement concerns	1.3350		0.1789	
	(0.360)		(0.127)	
product safety and quality concerns	0.6568*		0.8848	
	(0.036)		(0.858)	
aggregate strengths		121229.4***		0.0000***
		(0.000)		(0.000)
aggregate concerns		0.0384***		19.4032*
		(0.000)		(0.015)
firm size	11.1331***	10.6045***	0.0197***	0.0290***
	(0.000)	(0.000)	(0.000)	(0.000)
market to book value	1.0176	1.0187	1.0566	1.0697*
	(0.184)	(0.183)	(0.097)	(0.022)
leverage	0.9362***	0.9355***	1.1336**	1.0955*
	(0.000)	(0.000)	(0.003)	(0.014)
interest coverage ratio	1.0006	1.0026	0.9986	0.9960
	(0.764)	(0.49)	(0.78)	(0.425)
return on assets	20.7852***	22.4336***	0.0011***	0.0016***
	(0.000)	(0.000)	(0.000)	(0.000)
amount of bond issuance	1.0000	1.0000***	1.0000***	1.0000***
	(0.327)	(0.001)	(0.000)	(0.000)
maturity	1.0140	1.0263	3.3937***	2.8040***
	(0.654)	(0.42)	(0.000)	(0.000)
squared maturity	0.9998	0.9997	0.9673***	0.9722***
	(0.461)	(0.354)	(0.000)	(0.000)
duration	1.4875***	1.4635***	0.2033	0.2545***
	(0.000)	(0.000)	(0.000)	(0.000)
convexity	0.9849***	0.9884**	1.0071	1.0056
	(0.000)	(0.002)	(0.727)	(0.753)
research and development intensity	394496174.1***	1.2059	0.0000*	0.0000*
	(0.000)	(0.145)	(0.036)	(0.036)
liquidity	0.7279	0.8053**	1.7166***	1.5492***
	(0.000)	(0.004)	(0.000)	(0.000)
pseudo-R^2	15.89%	15.15%	41.53%	40.80%

Table 4.b: Effect of CSP on credit quality: high risk industries for each CSP dimension

	Community	Employees	Environmental activists	Consumers
	speculative	speculative	speculative	speculative
community strengthts	-2.8590*	-8.5611***	-4.1860*	-2.6324
	(0.039)	(0.000)	(0.013)	(0.088)
diversity strengths	-0.9190	0.8054	-3.6444**	-5.8086***
	(0.555)	(0.437)	(0.001)	(0.000)
employment strengths	-2.3292	-0.8796	-3.0099***	-4.0553***
	(0.228)	(0.247)	(0.000)	(0.001)
environement strengths	-2.9105	-0.9139	0.2852	-1.3413
	(0.075)	(0.371)	(0.711)	(0.344)
product safety and quality strengths	-10.1335*	-11.8916***	-15.8838***	0.1684
	(0.021)	(0.000)	(0.000)	(0.952)
community concerns	4.0145*	-4.0082***	-3.7754***	-0.9716
	(0.027)	(0.000)	(0.000)	(0.405)
diversity concerns	-0.4545	-1.4896*	-3.0168***	-4.0047***
	(0.697)	(0.018)	(0.000)	(0.000)
employment concerns	5.2253***	2.0557**	1.6072**	1.6303*
	(0.000)	(0.002)	(0.009)	(0.050)
environement concerns	0.8770	-0.8030	-0.0955	2.4020*
	(0.724)	(0.410)	(0.903)	(0.030)
product safety and quality concerns	2.2793*	-1.8237**	-1.6162**	0.5870
	(0.018)	(0.009)	(0.007)	(0.406)
firm size	-2.8966***	-2.1554***	-2.3627***	-1.4508***
	(0.000)	(0.000)	(0.000)	(0.000)
market to book value	0.0172	0.0338	0.0531**	0.1112***
	(0.500)	(0.182)	(0.005)	(0.000)
leverage	0.0012	-0.0110	-0.0252	-0.0485*
	(0.973)	(0.585)	(0.221)	(0.032)
interest coverage ratio	-0.0011	-0.0198	-0.0038	-0.1370***
	(0.770)	(0.147)	(0.625)	(0.000)
return on assets	-8.9280***	-0.7373	-0.9226	-2.9338
	(0.000)	(0.537)	(0.409)	(0.099)
amount of bond issuance	-0.0000	0.0000	0.0000***	0.0000*
	(0.994)	(0.164)	(0.000)	(0.026)
maturity	0.2589	1.2550***	1.1571***	0.6508**
	(0.423)	(0.000)	(0.000)	(0.007)
squared maturity	-0.0074	-0.0359***	-0.0323***	-0.0153*
	(0.412)	(0.000)	(0.000)	(0.016)
duration	-0.1086	-1.1660***	-1.5211***	-0.8159*
	(0.844)	(0.000)	(0.000)	(0.048)
convexity	-0.0243	-0.0325	0.0130	-0.0060
	(0.478)	(0.086)	(0.446)	(0.804)
research and development intensity	43.5982*	-7.3552	-6.8693	-24.0907***
	(0.025)	(0.290)	(0.298)	(0.000)
liquidity	0.3368**	0.3754**	0.5632***	0.2125
	(0.004)	(0.008)	(0.001)	(0.064)
pseudo-R^2	38.30%	43.21%	46.97%	34.53%

Table 4.c: Effect of CSP on credit quality: volatility effect				
Periods	High volatility		Low volatility	
	speculative	speculative	speculative	speculative
community strengthts	-7.6279***		-3.7490*	
	(0.000)		(0.031)	
diversity strengths	-0.3628		-6.3589***	
	(0.635)		(0.000)	
employment strengths	-2.7207**		-2.2613*	
	(0.001)		(0.040)	
environement strengths	3.3855***		-3.8276**	
	(0.000)		(0.006)	
product safety and quality strengths	-3.9919**		-10.3060***	
	(0.008)		(0.000)	
community concerns	1.7918*		-7.8946***	
	(0.039)		(0.000)	
diversity concerns	-1.2667**		-0.9028	
	(0.008)		(0.279)	
employment concerns	2.4824***		5.2192***	
	(0.000)		(0.000)	
environement concerns	-1.3015		0.0305	
	(0.094)		(0.980)	
product safety and quality concerns	0.4344		-1.3512	
	(0.393)		(0.088)	
aggregate strengths		-7.3535***		-17.8043***
		(0.000)		(0.000)
aggregate concerns		1.7535		0.154
		(0.069)		(0.906)
firm size	-2.2537***	-2.1572***	-2.4506***	-2.1598***
	(0.000)	(0.000)	(0.000)	(0.000)
market to book value	0.0522**	0.0593**	-0.3262***	-0.2201***
	(0.009)	(0.001)	(0.000)	(0.000)
leverage	0.0456	0.0379	0.6525***	0.4593***
	(0.061)	(0.087)	(0.000)	(0.000)
interest coverage ratio	-0.0071	-0.0094*	0.0004	-0.0017
	(0.092)	(0.044)	(0.940)	(0.727)
return on assets	-3.2442**	-3.4508**	-6.7233***	-5.7401***
	(0.005)	(0.002)	(0.000)	(0.000)
amount of bond issuance	0.0000***	0.0000***	0.0000**	0.0000**
	(0.000)	(0.000)	(0.002)	(0.001)
maturity	2.1371***	1.8101***	1.1123***	0.9204***
	(0.000)	(0.000)	(0.000)	(0.000)
squared maturity	-0.0360***	-0.0316***	-0.0346***	-0.0278***
	(0.000)	(0.000)	(0.000)	(0.000)
duration	-1.7958***	-1.5663***	-0.9969**	-0.7478*
	(0.000)	(0.000)	(0.009)	(0.015)
convexity	-0.0990***	-0.0774***	-0.0085	-0.0192
	(0.000)	(0.000)	(0.721)	(0.332)
research and development intensity	-18.0723***	-11.8779**	-16.2785**	-7.9508
	(0.000)	(0.001)	(0.008)	(0.125)
liquidity	0.3402***	0.3285***	0.7991***	0.5628***
	(0.000)	(0.000)	(0.000)	(0.000)
pseudo-R^2	34.63%	33.74%	21.53%	21.68%

Table 4.d: Effect of CSP on corporate spreads (one bond per firm)

	ln(spread)	ln(spread)
constant	2.6597***	2.7375***
	(0.000)	(0.000)
community strengthts	-0.6225**	
	(0.008)	
diversity strengths	0.0393	
	(0.765)	
employment strengths	0.2892*	
	(0.015)	
environement strengths	0.2067	
	(0.252)	
product safety and quality strengths	-0.2313	
	(0.365)	
community concerns	0.200	
	(0.224)	
diversity concerns	-0.019	
	(0.837)	
employment concerns	0.6891***	
	(0.000)	
environement concerns	-0.2735	
	(0.066)	
product safety and quality concerns	-0.0286	
	(0.713)	
aggregate strengths		-0.094
		(0.682)
aggregate concerns		0.6021*
		(0.016)
firm size	-0.0266	-0.0269
	(0.408)	(0.420)
market to book value	0.0071**	0.0077*
	(0.008)	(0.016)
leverage	0.0009	0.0002
	(0.873)	(0.964)
interest coverage ratio	0.0006	0.0006
	(0.298)	(0.300)
return on assets	-0.9797***	-1.0372***
	(0.000)	(0.000)
amount of bond issuance	0.0000	-0.0004
	(0.169)	(0.200)
maturity	0.1688***	0.1655***
	(0.000)	(0.000)
squared maturity	-0.0012***	-0.0012***
	(0.000)	(0.000)
duration	-0.0422	-0.0414
	(0.217)	(0.229)
convexity	-0.0166***	-0.0162***
	(0.000)	(0.000)
research and development intensity	-0.9893	-1.1407*
	(0.052)	(0.011)
liquidity	0.0433***	0.0473***
	(0.001)	(0.000)
adjusted R^2	46.75%	45.27%

Table 4.e: Effect of CSP on credit ratings (one bond per firm)				
	rating	rating	speculative	speculative
community strengthts	2.1408***		-3.7494*	
	(0.000)		(0.015)	
diversity strengths	1.3304**		-1.8224	
	(0.007)		(0.106)	
employment strengths	2.0291***		-2.4408*	
	(0.000)		(0.025)	
environement strengths	2.2489***		0.3198	
	(0.000)		(0.783)	
product safety and quality strengths	3.5411***		-4.0919	
	(0.000)		(0.053)	
community concerns	0.0459		0.3339	
	(0.937)		(0.785)	
diversity concerns	0.0002		-1.1591	
	(1.000)		(0.106)	
employment concerns	-1.0868**		1.7239*	
	(0.001)		(0.030)	
environement concerns	-0.6602		0.5864	
	(0.139)		(0.619)	
product safety and quality concerns	0.5638		-2.2835**	
	(0.091)		(0.006)	
aggregate strengths		10.4433***		-9.4885***
		(0.000)		(0.000)
aggregate concerns		-1.3388*		-1.9799
		(0.031)		(0.202)
firm size	1.8475***	1.8505***	-2.4650***	-2.3942***
	(0.000)	(0.000)	(0.000)	(0.000)
market to book value	0.0089	0.0050	0.0206	0.0328
	(0.452)	(0.621)	(0.521)	(0.305)
leverage	-0.0200	-0.0130	0.1075*	0.0851
	(0.125)	(0.273)	(0.031)	(0.072)
interest coverage ratio	0.0009	0.0002	0.0006	-0.0002
	(0.620)	(0.929)	(0.877)	(0.955)
return on assets	0.1575	0.0885	-20234	-21.427
	(0.764)	(0.863)	(0.113)	(0.082)
amount of bond issuance	-0.0000***	-0.0000***	0.0007***	0.0000***
	(0.000)	(0.000)	(0.000)	(0.000)
maturity	-0.0073	-0.0114	1.5492***	1.5054***
	(0.877)	(0.814)	(0.000)	(0.000)
squared maturity	-0.0001	-0.0001	-0.0350***	-0.0331***
	(0.716)	(0.895)	(0.000)	(0.000)
duration	0.3130***	0.3244***	-2.1786***	-2.0956***
	(0.000)	(0.000)	(0.000)	(0.000)
convexity	0.0030	0.0031	0.0117	0.0061
	(0.677)	(0.648)	(0.681)	(0.818)
research and development intensity	6.2383***	0.1138	-5.9536	-35.059
	(0.000)	(0.407)	(0.232)	(0.326)
liquidity	-0.0747	-0.0584	0.2430	0.2154
	(0.162)	(0.261)	(0.067)	(0.081)
pseudo-R^2	17.33%	16.93%	36.71%	35.98%

Notes to tables 4.a to 4.e: Table contains estimates of panel regressions with robust standard errors; p-values in parentheses; ICB supersector dummy variables were also used but their output is not reported for the sake of parsimony
* denotes $p < 0.05$, ** denotes $p < 0.01$, *** denotes $p < 0.001$.

Appendix to Chapter 5

5A. Additional analyses and robustness tests

Table 5.a: Output of alternative specifications when excess return is the regressand

c	0.0416	(0.0000)***	**c**	0.0417	(0.0000)***	**c**	0.0416	(0.0000)***
β_{aggs}	-0.0010	(0.7234)	β_{scc}	0.0014	(0.2694)	β_{phis}	-0.0014	(0.2285)
β_{aggc}	0.0016	(0.5317)	β_{scci}	0.0015	(0.1963)	β_{phisi}	-0.0009	(0.4608)
β_{aggsi}	-0.0010	(0.6638)	β_{beta}	0.0003	(0.1700)	β_{beta}	0.0003	(0.1557)
β_{aggci}	0.0021	(0.4033)	$\beta_{log(mv)}$	-0.0046	(0.0000)***	$\beta_{log(mv)}$	-0.0045	(0.0000)***
β_{beta}	0.0003	(0.1660)	β_{mtbv}	-0.1538	(0.0000)***	β_{mtbv}	-0.1671	(0.0000)***
$\beta_{log(mv)}$	-0.0045	(0.0000)***	$\beta_{momentum}$	-0.1537	(0.0000)***	$\beta_{momentum}$	-0.1594	(0.0000)***
β_{mtbv}	-0.1591	(0.0000)***	β_{rdts}	0.0032	(0.3594)	β_{rdts}	0.0035	(0.3246)
$\beta_{momentum}$	-0.1561	(0.0000)***	**Adj.R^2**	0.1860		**Adj.R^2**	0.1851	
β_{rdts}	0.0034	(0.3435)						
Adj.R^2	0.1848							

Table 5.b: Output of alternative specifications when utility is the regressand

c	0.0544	(0.0000)***	**c**	0.0555	(0.0000)***	**c**	0.0549	(0.0000)***
β_{aggs}	-0.0015	(0.7794)	β_{scc}	0.0021	(0.3340)	β_{phis}	0.0016	(0.4834)
β_{aggc}	-0.0004	(0.9226)	β_{scci}	-0.0013	(0.5399)	β_{phisi}	-0.0027	(0.2617)
β_{aggsi}	-0.0030	(0.5073)	$\beta_{log(mv)}$	-0.0063	(0.0000)***	$\beta_{log(mv)}$	-0.0062	(0.0000)***
β_{aggci}	-0.0004	(0.9365)	β_{mtbv}	-0.6543	(0.0000)***	β_{mtbv}	-0.6652	(0.0000)***
$\beta_{log(mv)}$	-0.0061	(0.0000)***	β_{dy}	-0.0015	(0.0000)***	β_{dy}	-0.0015	(0.0000)***
β_{mtbv}	-0.6768	(0.0000)***	β_{tdce}	0.0000	(0.8354)	β_{tdce}	0.0000	(0.9362)
β_{dy}	-0.0015	(0.0000)***	β_{rdts}	-0.0141	(0.0387)**	β_{rdts}	-0.0139	(0.0409)**
β_{tdce}	0.0000	(0.9726)	**Adj.R^2**	0.2573		**Adj.R^2**	0.2574	
β_{rdts}	-0.0138	(0.0428)**						
Adj.R^2	0.2573							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variables have been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{aggs} and β_{comsi} are the slope coefficients for the aggregate strengths and aggregate concerns impact on corresponding strengths interaction respectively, scc is used for the significant controversies concerns indicator, phis for philanthropy, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.c: Output of alternative specifications when beta is the regressand								
c	1.1541	(0.0000)***	**c**	1.1423	(0.0000)***	**c**	1.0883	(0.0000)***
β_{aggs}	-0.1571	(0.4284)	β_{scc}	0.1460	(0.1418)	β_{phis}	0.0598	(0.5046)
β_{aggc}	0.5150	(0.0067)***	β_{scci}	-0.0354	(0.7110)	β_{phisi}	-0.1294	(0.1645)
β_{aggsi}	-0.1022	(0.5580)	$\beta_{log(mv)}$	-0.0292	(0.0216)**	$\beta_{log(mv)}$	-0.0217	(0.0727)*
β_{aggci}	-0.1910	(0.3126)	β_{mtbv}	2.9970	(0.2958)	β_{mtbv}	1.9949	(0.4801)
$\beta_{log(mv)}$	-0.0299	(0.0213)**	β_{dy}	0.0176	(0.0155)**	β_{dy}	0.0198	(0.0063)***
β_{mtbv}	3.1766	(0.2689)	β_{tdce}	0.0160	(0.0018)***	β_{tdce}	0.0177	(0.0005)***
β_{dy}	0.0173	(0.0172)**	β_{rdts}	1.6717	(0.0000)***	β_{rdts}	1.6873	(0.0000)***
β_{tdce}	0.0157	(0.0022)***	**Adj.R^2**	0.3542		**Adj.R^2**	0.3540	
β_{rdts}	1.6555	(0.0000)***						
Adj.R^2	0.3550							

Table 5.d: Output of alternative specifications when standard deviation is the regressand								
c	-0.0053	(0.3213)	**c**	-0.0069	(0.1936)	**c**	-0.0091	(0.0786)*
β_{aggs}	0.0096	(0.2704)	β_{scc}	0.0045	(0.2468)	β_{phis}	-0.0096	(0.0139)**
β_{aggc}	0.0133	(0.0980)*	β_{scci}	0.0063	(0.0895)*	β_{phisi}	0.0054	(0.1975)
β_{aggsi}	0.0033	(0.6646)	$\beta_{log(mv)}$	0.0044	(0.0000)***	$\beta_{log(mv)}$	0.0048	(0.0000)***
β_{aggci}	0.0042	(0.5957)	β_{mtbv}	1.2241	(0.0000)***	β_{mtbv}	1.1552	(0.0000)***
$\beta_{log(mv)}$	0.0041	(0.0000)***	β_{dy}	0.0034	(0.0000)***	β_{dy}	0.0036	(0.0000)***
β_{mtbv}	1.2647	(0.0000)***	β_{tdce}	0.0006	(0.0126)**	β_{tdce}	0.0007	(0.0034)***
β_{dy}	0.0033	(0.0000)***	β_{rdts}	0.0375	(0.0009)***	β_{rdts}	0.0383	(0.0007)***
β_{tdce}	0.0006	(0.0283)**	**Adj.R^2**	0.3466		**Adj.R^2**	0.3458	
β_{rdts}	0.0374	(0.0009)***						
Adj.R^2	0.3471							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variables have been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{aggs} and β_{comsi} are the slope coefficients for the aggregate strengths and aggregate concerns impact on corresponding strengths interaction respectively, scc is used for the significant controversies concerns indicator, phis for philanthropy, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.e: Fixed effects Carhart regressions in groups of firms according to their involvement in positive/negative social action

Pools	α		Rm-Rf		SMB		HML		MOM	
COMS	22.54%	(0.0000)**	-0.0031	(0.0000)**	-0.0015	(0.0758)*	-0.0025	(0.0005)***	-0.0043	(0.0000)***
COMSC	6.29%	(0.1481)	-0.0006	(0.7558)	0.0010	(0.7212)	0.0010	(0.6707)	0.0011	(0.6954)
COMC	17.78%	(0.0000)**	-0.0055	(0.0000)**	-0.0019	(0.2290)	-0.0017	(0.2332)	-0.0083	(0.0000)***
DIVS	16.15%	(0.0000)**	-0.0030	(0.0000)**	-0.0017	(0.0109)**	-0.0012	(0.0364)**	-0.0034	(0.0000)***
DIVSC	6.74%	(0.0189)**	-0.0033	(0.0052)**	0.0010	(0.5521)	0.0000	(0.9916)	-0.0018	(0.3711)
DIVC	21.89%	(0.0003)**	-0.0088	(0.0002)**	0.0014	(0.7272)	-0.0061	(0.0523)*	-0.0091	(0.0212)**
EMPS	17.37%	(0.0000)**	-0.0026	(0.0000)**	-0.0025	(0.0009)***	-0.0020	(0.0064)***	-0.0027	(0.0043)***
EMPSC	15.24%	(0.0000)**	-0.0068	(0.0000)**	-0.0059	(0.0027)***	-0.0019	(0.2140)	-0.0067	(0.0010)***
EMPC	14.00%	(0.0000)**	-0.0061	(0.0000)**	-0.0006	(0.6677)	0.0006	(0.6082)	-0.0042	(0.0043)***
ENVS	18.77%	(0.0000)**	-0.0037	(0.0000)**	-0.0019	(0.1469)	-0.0013	(0.2775)	-0.0043	(0.0064)***
ENVSC	17.75%	(0.0000)**	-0.0027	(0.0000)**	-0.0030	(0.0126)**	-0.0001	(0.9052)	-0.0041	(0.0022)***
ENVC	20.46%	(0.0000)**	-0.0037	(0.0000)**	-0.0006	(0.5104)	-0.0019	(0.0174)**	-0.0066	(0.0000)***
PSQS	20.96%	(0.0000)**	-0.0033	(0.0005)**	-0.0040	(0.0017)***	-0.0033	(0.0036)***	-0.0041	(0.0061)***
PSQSC	10.06%	(0.0060)**	-0.0015	(0.2566)	-0.0015	(0.4591)	0.0015	(0.3882)	0.0001	(0.9490)
PSQC	14.31%	(0.0000)**	-0.0035	(0.0000)**	0.0010	(0.2145)	-0.0006	(0.3213)	-0.0031	(0.00003)**
COMENV	19.89%	(0.0000)**	-0.0028	(0.0088)**	-0.0051	(0.0004)***	0.0001	(0.9051)	-0.0044	(0.0047)***
COMPRO	12.43%	(0.0000)**	-0.0028	(0.0020)**	0.0004	(0.7955)	0.0005	(0.6571)	-0.0013	(0.3977)
PHISENV	19.15%	(0.0000)**	-0.0028	(0.0145)**	-0.0045	(0.0045)***	0.0002	(0.8501)	-0.0039	(0.0170)**
PHISPRO	11.60%	(0.0000)**	-0.0027	(0.0031)**	0.0011	(0.4617)	0.0001	(0.9045)	-0.0009	(0.5501)

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable is simple annual stock return and has been winsorised at the 1% level; COMS stands for a longitudinal pool of firms which have a positive score in community strengths and zero in community concerns; vice versa for COMC; COMSC includes firms that have positive scores in both community strengths and concerns; the notation is analogous for the other social dimensions; DIV is used for diversity, ENV for environment, EMP for employee relations, PSQ for the product safety and quality; COMENV includes firms that have positive scores in environmental concerns and community strengths(PHIS for philanthropy), COMPRO includes firms that have positive scores in environmental concerns and community strengths (PHIS for philanthropy), "α" stands for abnormal returns, Rm-Rf is the excess market return coefficient, SMB stands for Small Minus Big portfolio returns, HML stands for High Minus Low portfolio returns and MOM is the Momentum factor ; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.f: Medians of key financial variables for pools of observations				
	BETA	**ln(MV)**	**MTBV**	**N**
COMS	0.9426	9.0284	2.4520	1446
COMSC	1.0328	10.2599	2.3140	253
COMC	0.9518	9.2249	2.1520	701
DIVS	0.9608	9.1694	2.8830	2797
DIVSC	0.9579	10.1278	2.6090	519
DIVC	1.0116	8.8647	2.3140	236
EMPS	0.9706	9.0925	2.9920	2076
EMPSC	1.0672	9.4720	2.4950	671
EMPC	0.9436	8.9292	2.2490	1036
ENVS	0.8583	8.8874	2.6390	671
ENVSC	0.9019	9.1126	2.3970	837
ENVC	0.8291	8.9091	2.1770	1111
PSQS	1.0294	8.8294	2.9390	729
PSQSC	1.0148	10.1926	3.4830	402
PSQC	0.9071	9.2049	2.3880	2030

Table 5.g: Mean values of key financial variables for pools of observations					
	Rm-Rf	**SMB**	**HML**	**MOM**	**N**
COMS	8.8031	3.6990	2.9695	11.3158	1446
COMSC	2.1961	3.8937	3.3371	9.1521	253
COMC	-1.1201	3.3882	0.7018	10.7473	701
DIVS	4.3078	3.4303	2.7440	10.4404	2797
DIVSC	1.0623	4.4550	3.1619	8.6160	519
DIVC	1.1414	3.4126	1.7653	10.2611	236
EMPS	5.3682	3.6243	3.2164	11.3259	2076
EMPSC	-1.1439	3.4055	1.1314	10.4983	671
EMPC	1.2710	3.1014	1.0741	10.1312	1036
ENVS	5.7982	2.0297	1.4461	12.0246	671
ENVSC	5.0408	2.7489	1.0625	11.3649	837
ENVC	5.7195	3.5089	3.1343	10.8248	1111
PSQS	6.1835	3.3985	2.9900	11.7732	729
PSQSC	3.5439	3.4911	2.4738	10.4692	402
PSQC	3.2196	3.5733	2.2094	10.1040	2030

COMS stands for a longitudinal pool of firms which have a positive score in community strengths and zero in community concerns; vice versa for COMC; COMSC includes firms that have positive scores in both community strengths and concerns; the notation is analogous for the other social dimensions; DIV is used for diversity, ENV for environment, EMP for employee relations, PSQ for the product safety and quality. SMB stands for Small Minus Big portfolio returns, HML stands for High Minus Low portfolio returns and MOM is the Momentum factor. N stands for the number of observations per pool.

Table 5.h: Pooled OLS Carhart regressions in truncated pools of firms according to their involvement in positive/negative social action or both

Pools	a		Rm-Rf		SMB		HML		MOM	
COMS	16.44%	(0.000)***	-0.000238	(0.7339)	-0.008998	(0.000)***	0.00798	(0.000)***	-0.000796	(0.5512)
COMSC	9.74%	(0.0533)*	-0.001743	(0.3194)	-0.003883	(0.4588)	0.010389	(0.0133)**	0.000637	(0.9071)
COMC	10.98%	(0.000)***	-0.006768	(0.000)***	-0.002385	(0.4636)	0.009453	(0.000)***	-0.004803	(0.0749)*
DIVS	12.04%	(0.000)***	-0.003049	(0.000)***	-0.004551	(0.0009)***	0.006553	(0.000)***	-0.001827	(0.1231)
DIVSC	-1.82%	(0.6012)	-0.003912	(0.0008)***	0.00739	(0.0835)*	0.011422	(0.000)***	0.007158	(0.0604)*
DIVC	1.22%	(0.8202)	-0.00482	(0.079)*	0.005994	(0.264)	0.011601	(0.0136)**	0.004121	(0.4016)
EMPS	13.40%	(0.000)***	-0.001113	(0.047)**	-0.004267	(0.0092)***	0.004629	(0.0001)***	-0.001425	(0.3142)
EMPSC	3.21%	(0.3035)	-0.008249	(0.000)***	0.004276	(0.2524)	0.009463	(0.0001)***	-0.000725	(0.8251)
EMPC	7.93%	(0.0011)***	-0.006138	(0.000)***	-0.003338	(0.2201)	0.01066	(0.000)***	-0.001617	(0.4686)
ENVS	13.36%	(0.000)***	-0.003811	(0.0002)***	-0.007467	(0.0023)***	0.007506	(0.000)***	-0.003395	(0.0979)*
ENVSC	13.54%	(0.000)***	-0.004916	(0.000)***	-0.003992	(0.0559)*	0.007026	(0.000)***	-0.004079	(0.0219)**
ENVC	12.86%	(0.000)***	-0.003039	(0.000)***	-0.006206	(0.0007)***	0.008586	(0.000)***	-0.003283	(0.0372)**
PSQS	18.40%	(0.000)***	-0.003582	(0.0001)***	-0.009178	(0.0003)***	0.007062	(0.000)***	-0.005825	(0.0057)***
PSQSC	9.23%	(0.007)***	-0.003803	(0.0046)***	-0.003241	(0.3745)	0.010058	(0.0005)***	0.001269	(0.7105)
PSQC	11.60%	(0.000)***	-0.003432	(0.000)***	-0.003784	(0.0184)**	0.007684	(0.000)***	-0.002017	(0.1287)

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable is simple annual stock return and has been winsorised at the 1% level; COMS stands for a longitudinal pool of firms which have a positive score in community strengths and zero in community concerns; vice versa for COMC; COMSC includes firms that have positive scores in both community strengths and concerns; the notation is analogous for the other social dimensions; DIV is used for diversity, ENV for environment, EMP for employee relations, PSQ for the product safety and quality; COMENV includes firms that have positive scores in environmental concerns and community strengths(PHIS for philanthropy), COMPRO includes firms that have positive scores in environmental concerns and community strengths (PHIS for philanthropy), "α" stands for abnormal returns, Rm-Rf is the excess market return coefficient, SMB stands for Small Minus Big portfolio returns, HML stands for High Minus Low portfolio returns and MOM is the Momentum factor ; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.i: Small firms sample output when excess return is the regressand

c	0.0774	(0.0000)***	**c**	0.0781	(0.0000)***	**c**	0.0774	(0.0000)***	**c**	0.0774	(0.0000)***
β_{comsi}	0.0073	(0.6158)	β_{coms}	0.0124	(0.0090)***	β_{comenv}	-0.0137	(0.2054)	β_{compro}	-0.0075	(0.2518)
β_{divsi}	0.0022	(0.8629)	β_{divs}	-0.0058	(0.0358)**	β_{beta}	0.0002	(0.4893)	β_{beta}	0.0002	(0.4842)
β_{empsi}	-0.0116	(0.1211)	β_{emps}	-0.0066	(0.0053)***	$\beta_{log(mv)}$	-0.0113	(0.0000)***	$\beta_{log(mv)}$	-0.0114	(0.0000)***
β_{envsi}	-0.0143	(0.3312)	β_{envs}	0.0055	(0.2321)	β_{mtbv}	-0.1131	(0.1461)	β_{mtbv}	-0.1139	(0.1431)
β_{psqsi}	-0.0320	(0.2902)	β_{psqs}	0.0052	(0.3142)	$\beta_{momentum}$	-0.2129	(0.0000)***	$\beta_{momentum}$	-0.2127	(0.0000)***
β_{comci}	-0.0016	(0.9124)	β_{comc}	0.0032	(0.2999)	β_{rdts}	0.0005	(0.6042)	β_{rdts}	0.0005	(0.6049)
β_{divci}	-0.0008	(0.8885)	β_{divc}	-0.0009	(0.5965)	**Adj.R^2**	0.3998		**Adj.R^2**	0.3998	
β_{empci}	0.0114	(0.0747)*	β_{empc}	-0.0031	(0.0617)*						
β_{envci}	0.0157	(0.1425)	β_{envc}	0.0031	(0.4126)	**c**	0.0914	(0.0000)***	**c**	0.0926	(0.0000)***
β_{psqci}	0.0278	(0.2596)	β_{psqc}	-0.0007	(0.7669)	$\beta_{phisenv}$	-0.0079	(0.7684)	$\beta_{phispro}$	-0.0095	(0.5315)
β_{beta}	0.0002	(0.4707)	β_{comsi}	0.0023	(0.8733)	β_{beta}	-0.0007	(0.7644)	β_{beta}	-0.0007	(0.7778)
$\beta_{log(mv)}$	-0.0114	(0.0000)***	β_{divsi}	-0.0019	(0.8942)	$\beta_{log(mv)}$	-0.0132	(0.0000)***	$\beta_{log(mv)}$	-0.0133	(0.0000)***
β_{mtbv}	-0.1113	(0.1532)	β_{empsi}	-0.0072	(0.3551)	β_{mtbv}	0.8855	(0.2630)	β_{mtbv}	0.8954	(0.2556)
$\beta_{momentum}$	-0.2127	(0.0000)***	β_{envsi}	-0.0127	(0.4018)	$\beta_{momentum}$	0.0256	(0.8596)	$\beta_{momentum}$	0.0232	(0.8742)
β_{rdts}	0.0005	(0.6113)	β_{psqsi}	-0.0285	(0.3615)	β_{rdts}	-0.0475	(0.6725)	β_{rdts}	-0.0492	(0.6617)
Adj.R^2	0.3996		β_{comci}	-0.0022	(0.8798)	**Adj.R^2**	0.2680		**Adj.R^2**	0.2711	
			β_{divci}	0.0019	(0.7455)						
			β_{empci}	0.0125	(0.056)*						
			β_{envci}	0.0117	(0.3038)						
			β_{psqci}	0.0233	(0.3632)						
			β_{beta}	0.0001	(0.5953)						
			$\beta_{log(mv)}$	-0.0114	(0.0000)***						
			β_{mtbv}	-0.1130	(0.1486)						
			$\beta_{momentum}$	-0.2165	(0.0000)***						
			β_{rdts}	0.0006	(0.5615)						
			Adj.R^2	0.4018							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.j: Small firms sample output when utility is the regressand

c	0.0353	(0.0000)***	**c**	0.0364	(0.0000)***	**c**	0.0356	(0.0000)***	**c**	0.0356	(0.0000)***
β_{comsi}	0.0575	(0.1902)	β_{coms}	0.0143	(0.1439)	β_{comenv}	-0.0357	(0.1327)	β_{compro}	-0.0093	(0.6546)
β_{divsi}	0.0056	(0.9141)	β_{divs}	-0.0095	(0.0896)*	$\beta_{log(mv)}$	-0.0066	(0.0000)***	$\beta_{log(mv)}$	-0.0066	(0.0000)***
β_{empsi}	-0.0225	(0.4050)	β_{emps}	-0.0315	(0.0000)***	β_{mtbv}	0.4483	(0.0425)**	β_{mtbv}	0.4454	(0.0440)**
β_{envsi}	-0.0533	(0.1676)	β_{envs}	0.0154	(0.0785)*	β_{dy}	-0.0030	(0.0000)***	β_{dy}	-0.0030	(0.0000)***
β_{psqsi}	-0.0632	(0.2672)	β_{psqs}	-0.0101	(0.3148)	β_{tdce}	-0.0026	(0.0000)***	β_{tdce}	-0.0026	(0.0000)***
β_{comci}	-0.0218	(0.5826)	β_{comc}	0.0033	(0.6782)	β_{rdts}	-0.0016	(0.3924)	β_{rdts}	-0.0016	(0.3924)
β_{divci}	-0.0253	(0.3236)	β_{divc}	-0.0088	(0.1412)	**Adj.R^2**	0.2410		**Adj.R^2**	0.2409	
β_{empci}	-0.0064	(0.7863)	β_{empc}	-0.0213	(0.0000)***						
β_{envci}	0.0481	(0.0985)*	β_{envc}	0.0006	(0.9525)	**c**	-0.0071	(0.9409)	**c**	-0.0104	(0.9133)
β_{psqci}	0.0250	(0.5126)	β_{psqc}	0.0002	(0.9743)	$\beta_{phisenv}$	-0.1125	(0.3028)	$\beta_{phispro}$	-0.0141	(0.6960)
$\beta_{log(mv)}$	-0.0066	(0.0000)***	β_{comsi}	0.0615	(0.1385)	$\beta_{log(mv)}$	0.0020	(0.8795)	$\beta_{log(mv)}$	0.0021	(0.8755)
β_{mtbv}	0.4337	(0.0492)**	β_{divsi}	0.0089	(0.8615)	β_{mtbv}	0.2308	(0.9352)	β_{mtbv}	0.1617	(0.9556)
β_{dy}	-0.0030	(0.0000)***	β_{empsi}	0.0030	(0.9133)	β_{dy}	-0.0079	(0.0195)**	β_{dy}	-0.0078	(0.0207)**
β_{tdce}	-0.0026	(0.0000)***	β_{envsi}	-0.0478	(0.2228)	β_{tdce}	-0.0012	(0.7702)	β_{tdce}	-0.0004	(0.9320)
β_{rdts}	-0.0015	(0.4151)	β_{psqsi}	-0.0543	(0.3491)	β_{rdts}	0.1091	(0.5789)	β_{rdts}	0.0984	(0.6204)
Adj.R^2	0.2425		β_{comci}	-0.0301	(0.4270)	**Adj.R^2**	0.0095		**Adj.R^2**	0.0183	
			β_{divci}	-0.0172	(0.4960)						
			β_{empci}	0.0048	(0.8413)						
			β_{envci}	0.0427	(0.1601)						
			β_{psqci}	0.0231	(0.5572)						
			$\beta_{log(mv)}$	-0.0065	(0.0000)***						
			β_{mtbv}	0.3743	(0.0883)*						
			β_{dy}	-0.0029	(0.0000)***						
			β_{tdce}	-0.0025	(0.0000)***						
			β_{rdts}	-0.0013	(0.4632)						
			Adj.R^2	0.2484							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.k: Small firms sample output when firm beta is the regressand

c	2.9948	(0.0000)***	**c**	3.0031	(0.0000)***	**c**	3.0007	(0.0000)***	**c**	3.0017	(0.0000)***
β_{comsi}	0.0251	(0.9748)	β_{coms}	-0.1008	(0.6247)	β_{comenv}	-0.7713	(0.1259)	β_{compro}	-0.6411	(0.0903)*
β_{divsi}	-0.1054	(0.9178)	β_{divs}	-0.2924	(0.0653)*	$\beta_{log(mv)}$	-0.2640	(0.0000)***	$\beta_{log(mv)}$	-0.2641	(0.0000)***
β_{empsi}	0.3538	(0.5769)	β_{emps}	-0.2301	(0.1099)	β_{mtbv}	17.6840	(0.00003)***	β_{mtbv}	17.5855	(0.0003)***
β_{envsi}	-0.8077	(0.3498)	β_{envs}	-0.0284	(0.8981)	β_{dy}	0.0284	(0.00002)***	β_{dy}	0.0284	(0.0002)***
β_{psqsi}	0.4074	(0.7112)	β_{psqs}	-0.8574	(0.0119)**	β_{tdce}	0.0112	(0.1470)	β_{tdce}	0.0114	(0.1390)
β_{comci}	-0.9509	(0.1987)	β_{comc}	-0.0942	(0.5692)	β_{rdts}	0.0468	(0.3288)	β_{rdts}	0.0468	(0.3286)
β_{divci}	0.2204	(0.6405)	β_{divc}	0.1813	(0.2041)	**Adj.R^2**	0.3278		**Adj.R^2**	0.3279	
β_{empci}	-0.4966	(0.3966)	β_{empc}	0.0222	(0.8432)						
β_{envci}	0.5327	(0.4699)	β_{envc}	-0.2235	(0.3256)	**c**	3.9613	(0.0322)**	**c**	3.9556	(0.0338)**
β_{psqci}	-0.7355	(0.3758)	β_{psqc}	-0.3329	(0.0078)***	$\beta_{phisenv}$	-0.4219	(0.8273)	$\beta_{phispro}$	-0.1127	(0.8777)
$\beta_{log(mv)}$	-0.2628	(0.0000)***	β_{comsi}	0.0560	(0.9482)	$\beta_{log(mv)}$	-0.4063	(0.1119)	$\beta_{log(mv)}$	-0.4070	(0.1146)
β_{mtbv}	17.4200	(0.0004)***	β_{divsi}	0.2273	(0.8281)	β_{mtbv}	15.4962	(0.8091)	β_{mtbv}	15.7567	(0.8082)
β_{dy}	0.0282	(0.0002)***	β_{empsi}	0.5716	(0.377)	β_{dy}	0.0450	(0.3298)	β_{dy}	0.0460	(0.3093)
β_{tdce}	0.0117	(0.1321)	β_{envsi}	-0.7727	(0.3714)	β_{tdce}	0.0170	(0.8066)	β_{tdce}	0.0203	(0.7759)
β_{rdts}	0.0474	(0.3222)	β_{psqsi}	0.7575	(0.5074)	β_{rdts}	-1.6970	(0.7935)	β_{rdts}	-1.7454	(0.7888)
Adj.R^2	0.3275		β_{comci}	-0.6911	(0.3997)	**Adj.R^2**	0.5217		**Adj.R^2**	0.5216	
			β_{divci}	0.0723	(0.8819)						
			β_{empci}	-0.5136	(0.3885)						
			β_{envci}	0.7000	(0.3450)						
			β_{psqci}	-0.3277	(0.7083)						
			$\beta_{log(mv)}$	-0.2594	(0.0000)***						
			β_{mtbv}	16.6541	(0.00006)***						
			β_{dy}	0.0303	(0.0000)***						
			β_{tdce}	0.0123	(0.1134)						
			β_{rdts}	0.0484	(0.3099)						
			Adj.R^2	0.3288							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.

Table 5.l: Small firms sample output when standard deviation of returns is the regressand

c	0.0927	(0.0000)***	**c**	0.0907	(0.0000)***	**c**	0.0922	(0.0000)***	**c**	0.0923	(0.0000)***
β_{comsi}	-0.1254	(0.0866)*	β_{coms}	-0.0162	(0.2669)	β_{comenv}	0.0620	(0.0935)*	β_{compro}	-0.0029	(0.9268)
β_{divsi}	-0.0004	(0.9966)	β_{divs}	0.0165	(0.0445)**	$\beta_{log(mv)}$	-0.0054	(0.0000)***	$\beta_{log(mv)}$	-0.0054	(0.0000)***
β_{empsi}	0.0542	(0.1845)	β_{emps}	0.0643	(0.0000)***	β_{mtbv}	-1.6423	(0.0000)***	β_{mtbv}	-1.6386	(0.0000)***
β_{envsi}	0.1124	(0.0700)*	β_{envs}	-0.0202	(0.144)	β_{dy}	0.0070	(0.0000)***	β_{dy}	0.0070	(0.0000)***
β_{psqsi}	0.0130	(0.8473)	β_{psqs}	0.0012	(0.9281)	β_{tdce}	0.0048	(0.0000)***	β_{tdce}	0.0048	(0.0000)***
β_{comci}	0.0863	(0.1703)	β_{comc}	0.0048	(0.6711)	β_{rdts}	0.0024	(0.2913)	β_{rdts}	0.0024	(0.2913)
β_{divci}	0.0168	(0.6453)	β_{divc}	0.0181	(0.0275)**	**Adj.R^2**	0.3511		**Adj.R^2**	0.3510	
β_{empci}	0.0058	(0.8682)	β_{empc}	0.0427	(0.0000)***						
β_{envci}	-0.0688	(0.1060)	β_{envc}	0.0246	(0.0831)*	**c**	0.1267	(0.3664)	**c**	0.1346	(0.3420)
β_{psqci}	0.0394	(0.4657)	β_{psqc}	0.0061	(0.4315)	$\beta_{phisenv}$	0.2483	(0.1903)	$\beta_{phispro}$	0.0269	(0.6797)
$\beta_{log(mv)}$	-0.0055	(0.0000)***	β_{comsi}	-0.1365	(0.0488)**	$\beta_{log(mv)}$	-0.0154	(0.4264)	$\beta_{log(mv)}$	-0.0156	(0.4240)
β_{mtbv}	-1.6127	(0.0000)***	β_{divsi}	-0.0126	(0.8761)	β_{mtbv}	-2.9004	(0.5343)	β_{mtbv}	-2.7113	(0.5741)
β_{dy}	0.0069	(0.0000)***	β_{empsi}	0.0017	(0.9682)	β_{dy}	0.0141	(0.0059)***	β_{dy}	0.0139	(0.0081)***
β_{tdce}	0.0048	(0.0000)***	β_{envsi}	0.0955	(0.1190)	β_{tdce}	0.0065	(0.2923)	β_{tdce}	0.0047	(0.4856)
β_{rdts}	0.0022	(0.3198)	β_{psqsi}	0.0081	(0.9064)	β_{rdts}	-0.1230	(0.7140)	β_{rdts}	-0.1001	(0.7700)
Adj.R^2	0.3532		β_{comci}	0.0918	(0.1298)	**Adj.R^2**	0.0790		**Adj.R^2**	0.0614	
			β_{divci}	0.0006	(0.9865)						
			β_{empci}	-0.0173	(0.6246)						
			β_{envci}	-0.0734	(0.0832)*						
			β_{psqci}	0.0344	(0.5187)						
			$\beta_{log(mv)}$	-0.0057	(0.0000)***						
			β_{mtbv}	-1.4802	(0.0000)***						
			β_{dy}	0.0066	(0.0000)***						
			β_{tdce}	0.0046	(0.0000)***						
			β_{rdts}	0.0020	(0.3782)						
			Adj.R^2	0.3641							

Notes: Entries are parameter estimates; p-values in parentheses; dependent variable has been winsorised at the 1% level; c is the average of the firm specific fixed effects; β_{coms} and β_{comsi} are the slope coefficients for the community strengths and community concerns impact on corresponding strengths interaction respectively, div is used for the diversity indicator, env for the environment indicator, emp for the employee relations indicator, psq for the product indicator, log(mv) is the logarithm of market capitalisation, mtbv is market-to-book value, dy is the dividend yield, tdce is the total debt to common equity ratio and and rdts is R&D intensity; entries in the last rows are adjusted R-squared values for each regression; * , ** and *** denote significance at the 10%, 5% and 1% levels respectively.