Master Thesis

Business Administration – Financial Management

Does the corporate social performance of a company effects its Cost of Equity?

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Management Summary

In recent years Corporate Social Performance is getting more and more attention from society and governments. It also is becoming getting more important a competitive factor. Focus on Corporate Social Performance (CSP) raises the question whether it pays off to invest in CSP. This thesis tries to contribute to this discussion by examining the effect of Corporate Social Performance on the Cost of Equity for U.S. companies.

The relation between CSP and the Cost of Equity is based on two different theories. The Good Management (and reputation) theory states that there is a high correlation between good management practice and CSP, simply because attention to CSP areas improves relationships with key stakeholder groups, resulting in better overall performance and thus Cost of Equity. The Slack Resources Theory, on the other hand, states that better financial performance potentially results in the availability of slack (financial and other) resources that provide the opportunity for companies to invest in areas of social performance.

How well a company is doing in Corporate Social Responsibility can be expressed by its Corporate Social Performance (CSP). Following prior studies, the CSP score is estimated by making use of the Kinder, Lydenberg and Domini (KLD) social ratings database. These ratings consist of 74 issues in 22 different themes. For each of these issues a binary score (0/1) is assigned, which results in a composite score when all the issues are added up to each other.
The company's Cost of Equity is estimated by the average of four models, two of which are based on the Residual Income Valuation Model and two models based on the Abnormal Earnings Growth Model. The four models are the models by Claus and Thomas (2001), Gebhardt, Lee, and Swaminathan (2001), Ohlson and Juettner-Nauroth (2005) and Easton (2004).

The sample of 489 companies is examined by regressing the CSP score on the Cost of Equity estimates, while controlling for return variability, book-to-market ratio, size and type of industry. The results of the regression analysis show support for the hypothesis that companies with higher Corporate Social Performance have a significantly lower Cost of Equity. Since Corporate Social Performance has a relatively high negative correlation with the book-to-market ratio, it further can be concluded that the market values companies which invest in CSP higher than companies who invest less in CSP, which also leads to a lower Cost of Equity. In addition, large companies show a smaller Cost of Equity than small companies, but the effect is not as strong as the book-to-market ratio.
Furthermore, regression results show a strong positive relation between the book-to-market ratio and the Cost of Equity, which can be the result of link between market value and Cost of Equity. The results further present a positive relation between the Cost of Equity and the size of a company. A similar relation also holds between Cost of Equity and the return variability, when higher return variability results in a lower Cost of Equity.

The results further lead to the conclusion that there are significance differences between the industries in the sample, which may be the result of a more capital intensive industry (as supported by high book-to-market ratios) or a different attitude towards innovation and CSP. Furthermore, from the result can be concluded that for companies who have high CSP the Cost of Equity decreases faster than that the increase in the Cost of Equity for companies with low CSP scores.

Overall, this study provides support for managers to invest in CSP activities. These investments are not only good for society, but also lowers the Cost of Equity and therefore the financing costs of the company.

Preface

Dear reader,

From the beginning of my studies, I have been interested about the field of finance, because finance, at first hand, seems to be clear. It is about numbers. But what I found out in the past few years is that finance can be very misleading. It can provide numbers who do not say anything, because the story and interpretations behind the numbers is not clear. This is what I find intriguing.

The same holds for the concept of Corporate Social Responsibility. Everybody is talking about it, but what is it? And what does it mean in practice? Companies can talk about it, but when you don't know the real story, it can be misleading. Mostly, it is influenced by the emotion and perception of the people involved, since there are no 'hard measures' of CSR. Or are there?

Finance and Corporate Social Responsibility. At first, it looks to be apart. But, when you look better, they both have more in common. With this thesis I will to find an answer on how they work together and whether the CSR adds value to a company. More precise, whether a higher level of CSR adds value to the company by means of the Cost of Equity.

Is it a fairy tale that it really adds value to a company? Or is it as Kaiser Wilhelm II said in the beginning of the 20th century:

"Morality is all very well but what about the dividends?"

I hope you will enjoy reading this thesis.

Kind regards,

Mark Kuulman

1 Introduction

Financial management always has been about making trade-offs. A euro invested in a certain project cannot be spent on another project: It can only be spend once. That is why companies try to find ways to use their scarce money optimally. And that means making choices about what the money is spent on.

In recent years, a new field is getting more attention from companies and subsequent financial management. The growing focus on the moral behaviour of companies has led to more pressure on companies to take their responsibility for their role in society. Companies, who did not do well and got attention as a result of their unethical behaviour, were taunted in the media. This pressure has led to the development of responsibility reports and new, tighter rules and regulations. Nowadays, companies are expected by society and governments to invest in corporate social actions. Of course, all these investments require money and therefore add a new dimension to the financial trade-off.

Corporate Social Responsibility as a growing risk factor

Social acceptance and Corporate Social Responsibility (CSR) have become increasingly important over the last decade and this topic firstly entered the top 10 business risks last year in the Ernst & Young Business Risk Report. It stated that in the current business climate, where there are continuing reputational threats and a rising political tolerance, companies will need to act carefully to maintain (or rebuild) the trust of the public (Ernst & Young, 2010).

Since companies are still trying to find the best way to spend their money, it is the question how good it is to invest in Corporate Social Responsibility and what the consequences of these decisions are. Some companies state that it costs too much money to invest in CSR, whereas others claim that it is beneficial in the long run. Still, it is not clear what the precise effects of CSR are and the debate about this topic is very lively (Demacarty, 2009).

Focus area: the United States of America

In the field of CSR, the United States of America (U.S.) have been 'ahead' of others countries (Business and Sustainable Development, 2010). Many of the U.S.-based companies and institutions are involved in the development and implementation of social actions, regulations and reporting. Companies in the U.S. are monitored more extensively on these actions in comparison to other countries. This monitoring is executed by governmental institutions, as well as private initiatives. The information about CSR is very extensive and also easy accessible. These facts lead to the focus on U.S.-based companies instead of other countries.

The choice for only taking U.S.-based companies also stems from the fact that the data that will be used for constructing a CSP score (which will be introduced in chapter 2), is based on information which are mostly available for companies in the U.S.

1.1 Research Question

This research will try to find an answer on the following research question:

What is the effect of Corporate Social Performance on the Cost of Equity of listed companies in the U.S.?

This question involves two different topics in the field of Business Administration. The first one, Corporate Social Performance (CSP), is the ethical issue of companies taking their responsibility. At times, it is considered to be a 'soft' concept. This largely has to do with the fact that there is no clear definition of what exactly is part of the concept of CSP and what it is not (Demacarty, 2009).
The second topic, the Cost of Equity, plays a large role in business and especially in financial management. The concept of Cost of Equity has been modelled by several researchers. Still, there is no consensus about what is the right way to estimate the Cost of Equity.
Et al.
The sub questions are therefore:

I. What is Corporate Social Performance?
II. Why is it important?
III. How can Corporate Social Performance be estimated?
IV. What is the Cost of Equity?
V. How can the Cost of Equity be estimated?
VI. What is the effect of Corporate Social Performance on financial performance?

1.1.1 Relevance

The Cost of Equity is a key figure in financial management. It represents investors' required rate of return on corporate investments and thus is a key input in companies' long-term investment and financing decisions. Examining the link between CSP and the Cost of Equity could help managers understand the effect of CSP investment on companies' financing costs, and could have implications for decision making with regards to CSP.

The next chapters of the thesis are structured as follows: chapter 2 provides a literature review on theories and insights around Corporate Social Performance and the Cost of Equity. Form this literature review, the hypothesis, research methodology and control variables for the model are developed in chapter 3. The data that is used for the analysis will be described in chapter 4. The results of the analysis are provided in chapter 5, which will lead to the conclusion and discussion in chapter 6.

2 Literature Review

The literature will provides background information Corporate Social Performance (CSP) and the Cost of Equity. The literature review starts with the concept of CSP, including the development of CSP through time. Literature has proposed different methods for estimating the CSP of companies. These methods will be discussed in this section 2.1 (Research question I, II and III).
In the second part, 2.2, the theory about Cost of Equity will be examined. This section starts with a description of what Cost of Equity is and is followed by a discussion of different models for estimating the Cost of Equity (Research question IV and V).
In section 2.3, the relation between Corporate Social Performance and the Cost of Equity will be discussed (Research question VI). The hypothesis leading from this review is stated in section 2.4.

2.1 Corporate Social Performance

This section will to try answer sub question I and II by discussing the theory behind the concept of Corporate Social Responsibility (CSR). This starts with a short description of the development of CSR through and its importance for companies now and in the future. This also aims at providing a definition of CSR that can be used for the research at hand. Therefore, the term Corporate Social Performance (CSP) will be introduced as an alternative to CSR. In the following part, the method for operationalizing CSR by making use of the KLD Index will be introduced. This method has been used and similar recent literature and will be used later in this research for scoring the companies on their CSR.

2.1.1 Introduction

Corporate Social Performance gained attention in the late 1990's after some incidents in society. As a result the public became more aware and sensitive to the social of companies. Bolwijn and Kumpe (1998) mention CSR in a historical perspective as the next stage in their model about the development of the fit between markets and companies: these are called the competitive factors. Bolwijn and Kumpe (1998) distinguish four different stages of competitive development, which all add up to each other:

1 The efficient company (after the Second World War)
By means of separation of labour, automation and economies of scales, companies can boost and control their production. The focus is on lowering the production price.

2 The quality company (from the beginning of the sixties)
The consumer has got, as a reaction to the efficient stage, an aversion from the concepts quantity, unity and standardization. This results in the emergence of quality as new market demand, in addition to the low price from the first stage.

3 The flexible company (from the late seventies)
Competition between companies became tougher and companies tried to change the 'battle' by acquiring a better market position. Flexibility became the new demand, in addition to low price and quality.

4 The innovative company (from the late eighties)
Technological renewal became the new spearhead for strengthening the competition power when economical health was increasing rapidly in the late eighties. Fast production and product renewal became the market demand.

Fisscher et al. (2001) added to this model a fifth stage, the responsible company, starting at the end of the 20th century:

5 The responsible company (from the late nineties)
Fisscher et al. (2001) pose that since the late nineties, customers are getting more demanding towards companies. Besides the demands from the previous stages, companies have to take their own responsibility; inside the organization as well as outside. This means that taking care of the stakeholders of a company is no longer a 'noncommittal' choice: It becomes a necessary condition for a company to survive in the current field of competition. This fifth stage starts a new phase in the development of market demands. After low costs, quality, flexibility, and unique products, a company has to take responsibility for the way it acts in order to obtain and keep the favour of the customer: the start of CSR (Fisscher et al., 2001).

The model of Bolwijn and Kumpe (1998) does not describe exactly what has happened through time, but it provides an overview in the development of the theory about competitive factors and subsequent the stages derived from this thinking. The model provides a logical reasoning for the focus on Corporate Social Responsibility as a new demand towards companies.

2.1.2 Corporate Social Performance
But what is Corporate Social Performance? In the debate on CSR, many participants have their own view or idea on what CSR is (Demacarty, 2009). A widely applied and accepted definition of CSR is the one from the World Business Council for Sustainable Development (WBCSD), who defines CSR as:

"[...] the continuing commitment by business to behave ethically and contribute to economic development while improving the quality of life of the workforce and their families as well as of the local community and society at large" (World Business Council for Sustainable Development , 2010)

The first part of this definition shows the duality of CSR. On one hand there is a commitment to behave ethically towards society, while on the other hand a more business-like approach of economic development and the aim for making profit is stressed. These two parts are typically united in the concept of CSR. The last part of the definition states that 'people' are a concern for businesses. Not only "the workforce and their families" but also "the local community and society at large".

Another definition of CSR is provided by McWilliams and Siegel (2001), who describe CSR as:

"[...] actions that appear to further some social good, beyond the interest of the company and that which is required by law." (McWilliams & Siegel, 2001, p. 117)

McWilliams and Siegel (2001) stress the fact that a company goes beyond the minimum legal requirements and that the aim of CSR is to contribute to the welfare of its key stakeholders. CSR can be regarded as a comprehensive set of policies and practices, which are not only implemented in the company itself, but also in the supply chains. It typically involves all stakeholders (McWilliams and Siegel, 2001).

As can be seen from these two definitions, there is not one right answer on the question on what CSR is. There are different definitions, which all focus on a different aspect a very broad concept. Using Corporate Social Responsibility therefore still leaves room for interpretation and discussion. It is too 'vague' for measuring the level of responsibility of a company, which is one of the goals of this thesis. According to Van Oosterhout and Heugens (2006), CSR cannot be observed directly. CSR is just the mechanism that forces companies to take action. This mechanism can be split in two parts: 1) the recognition of a given social responsibility, and 2) its attempt to meet that responsibility. Van Oosterhout and Heugens (2006) state that these mechanisms cannot be measured, but the actions that are taken as a result from the attempts, can. These actions indicate how well a company is doing on the field of CSR and is referred to as Corporate Social Performance (Van Oosterhout & Heugens, 2006, Van Beurden & Gössling, 2008). By using the concept of Corporate Social Performance instead of Corporate Social Responsibility, it is clear that the result of social actions is meant and thus can be measured. The use of the term 'performance' attaches to the goal of finding how well a company is doing on the field of CSR:

"per·form·ance [*U, C] how well or badly you do sth; how well or badly sth works"* (Oxford Advanced Learner's Compass, 2003)

The concept of CSP will be further discussed in the next section, where authors have made attempts for estimating the CSP of a company.

2.1.3 Estimating Corporate Social Performance

It takes much time and money to find all relevant data to determine the Corporate Social Performance of companies. The question always remains: is this all the information and is it complete? Even when the information on CSP of a company is complete, it is difficult to weigh and compare these findings and information.
Several authors (Dhaliwal, Eheitzman, & Li, 2006; Chen, Chen, & Wei, 2009; Hail & Leuz, 2006) have coped with these issues by making use of CSP screens. This concept of CSP screens is discussed in the following section.

Corporate Social Performance Screens

The mostly used approaches for defining CSP focus only on one issue such as pollution control, corporate crime or corporate philanthropy. The single issue approaches limit themselves to one aspect of what is actually a multi-issue construct and therefore not useful for research aimed at CSP as a whole
Since CSP is considered to be broader and multi-issue, authors have tried to found alternatives that are based heavily on the use of the Fortune Magazine Corporate Reputation Survey, other survey data or content analysis of annual corporate documents (Scharfman, 1996). Each of these approaches has tried to look at the overall CSP construct in different ways. But, those studies also have their strengths and limits (Scharfman, 1996).
One of the used multi-issue measures are reports, filled in by respondents in the company. This data is limited by the use of single respondents and by some of the biases to which self-reported data are susceptible (e.g. a social desirability bias).
Another measure called 'content analysis' analyses written statements of corporations. In this method, a researcher is less vulnerable to self-report bias. While corporate statements are self-serving, proper content analysis methods can reduce the bias. However, the validity of content analyses depends on the coding scheme adopted by the researcher. The more questionable the scheme, the more the research is open to criticism. (Scharfman, 1996)
In an effort to overcome many of the problems with the methods mentioned above, researchers have turned to a different source of data: the use of social (or CSP) ratings. Social rating agencies seek to make company's environmental and societal effects more transparent (Chatterji, Levine, & Toffel, 2007).

There are several CSP rating agencies. Each of them is connected to a CSP index. Every index includes a certain amount of companies which all score above average on their own CSP rating. The indices are constructed for investors who want to put their money in social investments. Before a company can enter the CSP index it is rated on its CSP activities. The CSP ratings differ per index and are constructed another way. In appendix 1 the three largest CSP indices in the USA are described: the FTSE4Good, the Dow Jones Sustainability Index, and the Kinder, Lydenberg & Domini Social Rating Index.

The KLD social rating score

Many of the studies of the last years have used the Kinder, Lydenberg and Domini (KLD) social ratings as estimation for CSP (for example, Waddock and Graves, 1997, Dhaliwal, 2006, Chen, Chen and Wei., 2009). The KLD data is perceived as "widely accepted by practitioners and academics as an objective measure of corporate social responsibility, being referenced in over 40 peer reviewed articles." (Goss & Roberts, 2011, p. 1806). Furthermore, the KLD data is considered "the de facto research standard at this moment" and "the best currently available to scholars'' (Waddock, 2003, p. 369 & 371).

The KLD rating exists of 73 issues in 22 themes in the following four categories:

- Environmental rating
    - Climate change
    - Products and services

    - Operations and management
    - Other strengths and concerns
- Social rating
    - Community
    - Diversity
    - Employee relations
    - Human rights
    - Product
    - Other strengths and concerns
- Governance rating
    - Reporting
    - Structure
    - Other strengths and concerns
- Controversial business involvement
    - Adult entertainment
    - Alcohol
    - Contraceptives
    - Firearms
    - Gambling
    - Military
    - Nuclear power
    - Tobacco

Each of the themes above contains a number of issues (indicators) that include both positive and negative ratings (who are called strengths and concerns). A 'strength' is a topic for which a company has made and implemented socially responsible policies. Examples of strengths are: donating over 1.5% of trailing three-year net earnings before taxes (NEBT) to charity; a company has a long-term, well-developed, company-wide quality program; or women, minorities, and/or the disabled hold four seats or more on the board of directors (KLD Research & Analytics, 2006).
A concern, on the other hand, is a topic for which the company has not made policies about or has acted socially irresponsible. For example, when a company is involved in significant accounting-related controversies; a company has no women on its board of directors or among its senior line managers; or a company's liabilities for hazardous waste sites exceed $50 million (KLD Statistics, 2006).

A company can score one plus point (+1) for each strength it meets and a minus point (-1) for every concern the company serves. For every theme, a composite score can be made by adding the concern scores to the strength scores. The overall rating is the sum of all the themes. The maximum amount of strengths a company can have per theme differs from one to eight. Similar, the amount of concerns is between one and five, dependent of the theme.

In addition to the themes, the KLD rating also includes issues in the category ‘controversial business involvement’. As most studies in the literature do, the nine CSP issues from this category are excluded in the analysis, as no theory or evidence supports their roles in the CSP research (Turban and Greening 1996, Berman et al. 1999). The

nine CSP issues include abortion, adult entertainment, alcohol, contraceptives, firearms, gambling, military, nuclear power, and tobacco.

In appendix 3, an overview is provided of the strengths and concerns in the three remaining categories.

The validity of CSP Screens in general

The screening approach (i.e. the use of CSP screens) is broadly used among CSP researchers (Van Oosterhout & Heugens, 2006). This approach can be regarded as an external audit, in which the indexing company analyses all the processes within and outside the company under evaluation. Although there is not an external authority checking the audit process of the CSP rating companies, they are regarded as independent and useful for academic research (Van Oosterhout & Heugens, 2006).

The validity of the KLD index

The question is whether the KLD dataset could be used as a valid measure for CSP. This validity has been examined by Scharfman (1996), who presents the validity of using the KLD to other estimations of CSP.

Construct validity is the extent to which a scale measures what it is supposed to measure. Scharfman's (1996) method for measuring construct validity is to do a 'criterion validation'. In this form of validation, Scharfman (1996) correlates the results of the measure in question with some other known method of measuring the same construct. More precise, the study correlates different combinations of the KLD ratings with three other sets of measures of overall CSP. Two of them were extracted from the Fortune Corporate Reputation Survey data (Scharfman, 1996):

- 'Responsibility to the Community and the Environment' Fortune-score for each company over three years.
- The overall Fortune corporate reputation score for each company over three years.
- The number of times a company was part of a fund portfolio. The companies are from a holdings list of the best known "social choice" mutual funds.

The results of the correlations show that the KLD ratings outperform the other sets of measures and lead to the conclusion that "in any case, researchers interested in studying corporate social performance now can have confidence in the KLD measures and feel secure in the idea that the this new data does tap into the core of the social performance construct." (Scharfman, 1996, p. 295)

In addition, the research by Chatterji, Levine and Toffel (2007), in which they examine the extent to which KLD's ratings make transparent to stakeholders which companies are 'environmentally responsible', support the conclusions of Scharfman (1996). This research did not focus on the past performance, but also looked whether KLD's ratings can predict future environmental performance. In their results, Chatterji et al. (2007) state that the KLD environmental ratings do "a reasonable job of aggregating past environmental performance." (Chatterji, Levine, & Toffel, 2007, p. 25).

2.2 The Cost of Equity

In this section, the Cost of Equity is introduced together with models for estimating the Cost of Equity. This chapter starts with an overall defintion of Cost of Equity is. Based on prior studies, the Cost of Equity will be estimated by four different models. In order to introduce these models, section 2.2.1 provides an description of two accounintg based models, upon which the four models are based. This provides a foundation for the discussion of the four models for the estimation of the Cost of Equity in section 2.2.2.

The Cost of Equity of a company can be defined as the fair rate of return for investors (Brealey & Myers, 2008, p. 66). The word fair means the right trade-off between the risk profile of the company (i.e. the risk the investors are exposed to) and the return on the investment. The Cost of Equity represents the compensation that the market demands in exchange for owning the asset and bearing the risk of ownership. The return is based on comparison with other companies in the market.

Recent studies have used the Cost of Equity implied in current stock prices and analyst forecasts for the estimation of the Cost of Equity. This literature review will follow these studies in the discussion about the Cost of Equity, including the arguments presented for the use of these models.
The studies that are included in this review focus around the effect on the Cost of Equity by:

- legal institutions and securities regulations (Hail and Leuz, 2006);
- disclosure and earnings quality (Francis et al., 2005);
- dividends and taxes (Dhaliwal et al., 2006);
- corporate governance (Chen, Chen and Wei, 2009);
- ownership structure (Guedhami and Mishra, 2009).

The models for estimating the Cost of Equity in these articles all are accounting based models. In the following section it will be explained why.

2.2.1 Accounting based estimations

Basically, there are several ways to estimate the Cost of Equity. These estimations can be divided in three different categories: market based measures, accounting based measures and perceptual measures (Orltizky, Schmidt and Rynes, 2003).
Market based measures for the Cost of Equity, such as price per share, reflect the idea that stockholders are an important stakeholder group and whose satisfaction determines the company's destiny (Cochran and Wood, 1984). The bidding and asking processes of stock-market participants, who rely on their interpretations of the past results, the current situation, and future stock returns and risk, and with these views decide what the stock price is and hence the market value of the company (Orltizky, Schmidt and Rynes, 2003).
In contrast, accounting based indicators, such as the Return on Assets and Earnings per Share, show the internal efficiency of a company (Cochran and Wood 1984). Accounting returns are subject to the choices of the managers to allocate funds to different projects

and policy choices. As a result, it reflects the level of management and decision-making skills of the company instead of response of the market on non-market actions (Orltizky, Schmidt and Rynes, 2003).
Lastly, perceptual measures of financial performance ask survey respondents to provide subjective estimates of, for instance, 'soundness of financial position' of the company, 'wise use of corporate assets', or 'financial goal achievement relative to competitors' (Conine and Madden 1987; Wartick 1988).

As said, recent literature (e.g. Hail & Leuz, 2006; Chen, Chen, & Wei, 2009; Guedhami & Mishra, 2009) will be followed, where the accounting based estimation will be used for the estimation of the Cost of Equity. Accounting based models are found to provide a more accurate estimate for the Cost of Equity in comparison to traditional, market based models, who are based on historical returns. These estimates are "unavoidably imprecise" (Fama and French, 2004, p. 174) and avoid the 'noise' which pollutes realized historical returns (Pastor et al., 2008).

Accounting based valuation models
The basic idea of the accounting based valuation models is to use observable forward-looking (forecasting) data instead of, or in combination with, realized historical returns (Claus and Thomas, 2001, Gebhardt et al., 2001). Accounting based valuation models start with a beginning value (i.e. the book value or investment in equity) and then makes adjustments to this value by adding the present values of future residual financial results, which can be positive or negative.
Hail and Leuz (2006) have identified three reasons for using the accounting based valuation models above other models:

- *Terminal value.* In many accounting based valuation models the terminal value is considered to be zero. Determining the book value today is much easier than the determination of a terminal value further in the future.
- *Timing of value.* Forecasting future dividends and cash flows often is difficult. The main advantage of accounting based valuation models over other models is the timing of the recognition of value. In Discounted Cash Flow models, for example, most of the value is found in future dividends and in the terminal value (i.e. the present value of the cash flows after the last year) computation. The longer the forecast period, the higher the uncertainty that will exist regarding these future cash flows (Hail & Leuz, 2006). The accounting based models uses the current value and adjust that value based on forecast. It therefore relies less on future dividends. Put differently, a company adds value when it generates returns above the required rate of return and not purely based on the discounted cash flows or dividends.
- *Accounting measures.* Accounting based valuation models are, as the name reveals, entirely based on accounting measures of profit and value of assets. This means there is consistency throughout the determination of the figures of the different companies in the same country.

Two of the mostly used *accounting based* models for estimating the Cost of Equity are the Residual Income Valuation (RIV) model and the Abnormal Earnings Growth (AEG) model (Hail and Leuz, 2006). Both models are based on the idea that value only is added

to a company when it can earn returns which are higher than the required rate of return. Research on these accounting based models has found that the valuation models explain stock prices better than cash flow and dividend based models (Francis, Olsson, & Oswald, 2000).

The Residual Income Valuation model

The basic feature of the Residual Income Valuation (RIV) model is to calculate the value of the equity of a company by estimating the additional profit over the required rate of return. The additional returns are called residual incomes and can be computed as (Skogsvik, 2002):

$$Residual\ Income_t = \left(R_{e(t)} - \rho_{e(t)}\right) * B_{t-1} \quad (1)$$

Where,
$R_{e(t)}$ = return on equity,
$\rho_{e(t)}$ =required return on equity,
$B_{(t-1)}$ = book value of equity.

The RIV model can be divided into three components; the (accounting) book value of equity, the present value of the explicit period, and the present value of the expected value of owners' equity at a certain point in time, at the end of the horizon. These three components together form (2) (Skogsvik, 2002):

$$V_0 = B_0 + \sum_{t=1}^{T} \frac{B_{t-1} * \left(BR_{e,t} - \rho_e\right)}{(1+R_e)^t} + \frac{\left(B_t * \left(BR_{e,t} - R\right)\right)/(R_e - g_{ss})}{(1+R_e)^T} \quad (2)$$

Where:
V_0 = value of the equity at t=0,
B_0 = book value of equity,
$BR_{e.t}$ = book return on equity in period t,
R_e = required rate of return on equity = Cost of Equity,
g_{ss} = steady state growth.

The difference between the book return on equity ($BR_{e,t}$) and the Cost of Equity (R_e) can be perceived as a simple measure of 'residual' book return.

The first part of equation 2, the book value of equity B_0, is the actual accounting figure of equity in the company's balance sheet and is assumed to be unproblematic as long as the clean surplus relation holds (Skogsvik, 2002). The clean surplus relation of accounting means that the changes in equity are dependent only on net income, dividends and new issues of stock capital.

The second part of the RIV model is expressed in equation 3:

$$\sum_{t=1}^{T} \frac{B_{t-1} * \left(BR_{e,t} - R_e\right)}{(1+R_e)^t} \quad (3)$$

This is the sum of a number of years for which the numbers are gathered yearly. The period can range from a few years up to a very long period, depending on where it is estimated that the company have reached steady state. Several researchers (Nissim & Pennan, 2001; Fama & French, 2000) have found that there is no general rule on when a company reaches steady state.

The last part states the value for steady state, as expressed in equation 4:

$$\frac{(B_t*(BR_e-R_e))/(R_e-g_{ss})}{(1+R_e)^T} \quad (4)$$

This equation expresses the continuing value which represents the residual income that the company will generate in eternity. By using this formula, it is assumed that the company has reached steady state. This particularly has a constant year-to-year growth rate of residual income. At steady state, it is no longer needed to forecast each year's residual income because it will grow by a constant factor each year, g, which will be similar to that of the economy as a whole. The 'continuing value' represents the value of equity at a certain point in time. In order to determine the present value of the equity, the 'continuing value' is discounted by $(1 + R_e)^T$ (Skogsvik, 2002).

The Abnormal Earnings Growth model

As an alternative to the Residual Income Valuation model, the Abnormal Earnings Growth (AEG) model was developed by Ohlson and Juettner-Nauroth (2005). The two models are very similar and, as said, are both based on the idea that a company adds value when it generates returns above the required rate of return. Both models show resemblance because the abnormal earnings can be estimated by calculating the change in residual income between that certain year (t) and the year before (t-1). If this is the case, the two models will produce identical company values.

However, the models are only the same when the clean surplus relation is assumed to hold (Penman, 2007). As said at the RIV model, the clean surplus relation states that the change in equity from one year to the next is equal to net income less net dividends. In reality, most of the time this is not the case, because of other financial figures that effect the income statement affect the book value of equity (Penman, 2007).

Even though the Residual Income Valuation (RIV) and the Abnormal Earnings Growth (AEG) models theoretically are alike, they focus on different aspects. The RIV model values the company by starting at the book value of equity and adding the value of future earnings above the required level. In contrast, the AEG model values the company based on future earnings. This has some advantages.

Users of financial information understand what earnings are and the model has a connection to the commonly used price-to-earnings ratio. This increases the understanding for investors.

In addition, analysts regularly publish forecasted earnings (Penman, 2007). As an effect, the model can be updated frequently and represent recent developments.

Furthermore, a significant advantage of the AEG model is that it does not require clean-surplus accounting, in contrast to the RIV model (Penman, 2007). Even when the clean-

surplus relation holds on a total basis, it can still be violated on an individual, per share basis through share transactions. When, for example, a company issues new stock at a price that differs from the book value per share, the book value per share will be affected. Because the RIV model is dependent on clean-surplus accounting, this model does not include stock transactions (Ohlson, 2005).

The AEG model is based on the idea that a company's value depends on its power to realize earnings above a normal level. In order to calculate the abnormal earnings growth for a particular year, the concept of cum-dividend earnings is used. The abnormal earnings growth is equal to the difference between cum-dividend earnings and normal earnings, which can be showed as (Penman, 2007):

$$AEG = Cumulative\ Dividend\ Earnings\ (t) - Normal\ Earnings\ (t) = [earnings(t) * R_e * dividend(t-1)] - (1 + R_e) * earnings\ (t-1) \quad (5)$$

Cum-dividend earnings are defined as actual earnings, with last year's dividend reinvested at the required rate of return. 'Normal earnings' are equal to last year's earnings growing at the required rate of return. As the AEG model is very similar to the RIV model, the formula for valuing the equity is also similar to the RIV formula. It consists of the three parts defined by (6) (Penman, 2007):

$$V_0 = \frac{earnings_1}{R_e} + \frac{1}{R_e}\left(\sum_{t=2}^{T+1} \frac{AEG_t}{(1+R_e)^{t+1}} + \frac{(AEG_{T+2})/(R_e - g_{ss})}{(1+R_e)^T}\right) \quad (6)$$

The first part of the formula expresses the capitalized earnings for one year ahead.
In the next element of the model, the same forecast period as in the residual income valuation is made. This is required to have insightful information of the company in order to make reliable assumptions about the future.
The last part is again the 'continuing value', which expresses the value of equity at the last year for eternity. At this point, the company is assumed to have reached steady state (as explained oat the RIV model). The sum of the discounted abnormal earnings growths, made up by to the forecast period and 'continuing value', is then discounted by the required Cost of Equity. Adding the capitalized earnings for the first period, provides the present value of equity (Penman, 2007).

2.2.2 Estimation models of the Cost of Equity

Based on the two models described in the previous section, Claus and Thomas (2001), Gebhardt, Lee, & Swaminathan (2001), Ohlson & Juettner-Nauroth (2005) and Easton (2004) have proposed approaches for estimating a company's expected Cost of Equity that does not rely on realized returns. These studies define the Cost of Equity as the "internal rate of return that equates the current stock price of a company to the present value of the market's expected future residual flows to common stockholders as approximated by observable financial analysts' consensus forecasts" (Gebhardt, Lee, & Swaminathan, 2001, p. 136-137). In other words, it is the return that is based on the future earnings of a company, based on analysts' forecasts.

Following the studies of Hail and Leuz (2006) and Guedhami and Mishra (2009), the Cost of Equity will be estimated by using the "four widely used models in recent literature" (Guedhami & Mishra, 2009, p. 493): the models of Gebhardt, Lee, and Swaminathan (2001) and Claus and Thomas (2001), which are based on the Residual Income Valuation Model, and the model described by Ohlson and Juettner-Nauroth (2005) and Easton (2004), which are based on the Abnormal Earnings Growth model.
There are a several reasons for this choice. First of all, each of the models use several input data (e.g., growth rates, earnings estimates, and forecast horizon)in a different way to estimate the Cost of Equity, which are all important for valuing the company. For example, the models of Claus and Thomas (2001) and Ohlson and Juettner-Nauroth (2005) use two different growth rates (short- and long-term), the Gebhardt, Lee and Swaminathan, (2001) model includes growth based on industry and the return on investment of a company, and the model of Easton (2004) creates growth using two years of earnings forecasts and dividend pay-out ratio. It is therefore expected that by combining the estimation of the Cost of Equity, it will capture additional information, which is otherwise not captured in individual models (Guedhami & Mishra, 2009).
Secondly, a common feature of the four models is that the Cost of Equity for a company year can be estimated without needing historical data of a number of years. Even for a new company that does not have historical realized returns, the Cost of Equity can still be computed (Guedhami & Mishra, 2009).
Furthermore, several models for estimating the Implied Cost of Equity can increase the robustness of the research. Therefore, the use of the four models, as shown through the literature, provides a more solid proxy for the Cost of Equity then using just one of these models.

The Implied Cost of Equity models, as the four models are called (Guedhami & Mishra, 2009), are based on earnings forecasts instead of cash flow predictions. An important concern about international Cost of Equity comparisons is that growth differences across countries influence the results. By using analyst forecasts, these models try to capture (short-term) growth differences in a country and therefore provide better estimations (Hail & Leuz, 2006).
Furthermore, companies do not report cash flow in their financial reports. The U.S. based Generally Accepted Accounting Principles (US-GAAP) prescibes that companies report their quarterly earnings per share. Forecasting future earnings is therfore more common and based on actual numbers in comparison to cash flow predictions.
In addition, Gentry et al. (2002) found a strong statistical relationship existed between net earnings and capital rates of return (e.g. Cost of Equity), whereas cash flows has not shown this relation.

Below, the four models are described. As can be seen in the models below, the left side of the equation P_t is used instead of the V_0 presented in the Residual Income Valuation en Abnormal Earnings Growth models in section 2.2.1 . This is because the models are applied to the value of stock (i.e. the stock price, P_t) instead of a more generic value (V).

1 - CT: The model by Claus and Thomas (2001) – based on the RIV model
This model assumes the stock price to be expressed in terms of forecasted residual earnings and book values. It uses earnings forecasts to compute the abnormal earnings

for the next five years. After these five years, forecasted residual earnings are set to grow at the expected inflation rate. Earnings forecasts for the future 4th and 5th years are derived from the earnings forecasts for the future 3rd year and the long-term earnings growth rate.
If the long-term earnings growth rate is missing, then it is calculated as the earnings growth rate that is implied from $FEPS_{t+2}$ and $FEPS_{t+3}$. Afterwards, it is assumed that the abnormal earnings at T=5 will grow at a long-term growth rate of g_{lt}.
The valuation equation is given by:

$$P_t = B_t + \sum_{i=1}^{5}\left(\frac{FEPS_{t+i} - R_{CT} * B_{t+i-1}}{(1+R_{CT})^{i}}\right) + \frac{(FEPS_{t+5} - R_{CT} * B_{t+4})(1+g_{lt})}{(R_{CT} - g_{lt})(1+R_{CT})^{5}} \quad (11)$$

2 - GLS: The model by Gebhardt, Lee and Swaminathan (2001) – based on the RIV model

This model also assumes stock price to be expressed in terms of forecasted returns on equity and book values. It uses analyst forecasts for the market expectation of the earnings for the next three years. The forecast horizon is set to three years. Thereafter the forecasted return on equity slowly grows to the median industry return on equity by the twelfth year, and remains constant thereafter.

The future book value of equity is estimated by assuming $B_{t+1}=B_t+FEPS_{t+1}-DIV_{t+1}$. The future dividend pay-out ratio is calculated by the historical three-year median pay-out ratio of a company.

The valuation equation is expressed by (Gebhardt, Lee, & Swaminathan, 2001):

$$P_t = B_t + \sum_{t=1}^{T}\left(\frac{(FEPS_{t+i}/B_{t+i-1}) - R_{GLS}}{(1+R_{GLS})^{i}} * B_{t+i-1}\right) + \frac{(FEPS_{t+T}/B_{t+T}) - R_{GLS}}{R_{GLS}(1+R_{GLS})^{T}} * B_{t+T-1} \quad (12)$$

3 - OJ: The Model of Ohlson and Juettner-Nauroth (2005) - the AEG model

This model avoids using the book value of equity and assumes that the short-term earnings growth rate will slowly transfer to a long-term earnings growth rate of g_{lt}. The short-term earnings growth rate is calculated as the average of the forecasted percentage change in earnings from year t+1 to t+2, and the long-term growth rate. If either is missing, then the short-term earnings growth rate takes the value of the other. The model requires positive one-year-ahead and two-year ahead earnings forecasts. The long-term earnings growth rate, g_{lt}, is calculated by the inflation rate.

The valuation equation is given by (Ohlson & Juettner-Nauroth, 2005):

$$P_t = \frac{FEPS_{t+1}}{R_{OJ}} + \frac{\left(FEPS_{t+2} - FEPS_{t+1} - R_{OJ} * FEPS_{t+1}(1-POUT)\right)}{R_{OJ}(R_{OJ} - g_{lt})} \quad (13)$$

This suggests that

$$R_{OJ} = A + \sqrt{A^2 + \frac{FEPS_{t+1}}{P_t} * \left(\frac{FEPS_{t+2} - FEPS_{t+1}}{FEPS_{t+1}} - g_{lt}\right)} \quad (14)$$

Where:

$$A = \frac{1}{2}\left(\mathrm{g_{lt}} + \frac{POUT * FEPS_{t+1}}{P_t}\right) \quad (15)$$

4 - ES: The model of Easton (2004) – based on the AEG model

This model allows stock price to be expressed in terms of one year-ahead expected dividend per stock, and one-year-ahead and two-year-ahead earnings forecasts. The forecast horizon is set to two years, after which forecasted abnormal earnings grow in perpetuity at a constant rate. The model requires positive one-year-ahead and two-year-ahead earnings forecasts as well as positive change in earnings forecast. The valuation equation is provided by (Easton, 2004):

$$\mathrm{P}_t = \frac{FEPS_{t+2} - FEPS_{t+1} + R_{ES} * FEPS_{t+1} * POUT}{{R_{ES}}^2} \quad (16)$$

2.3 Influence of Corporate Social Performance on the Cost of Equity

In this section the relation between Corporate Social Performance (CSP) and the Cost of Equity will be described based on recent literature. By discussing literature and empirical findings, the hypothesis is developed. Most of the research in the field of Corporate Social Performance (CSP) has been pointed at the relation between the role of the company in society and (measures of) financial performance (Gelb and Strawser, 2001). This has resulted in studies with different viewpoints about how CSP relates to financial performance. These will be discussed in the following sections.

2.3.1 Reputation and good management

A part of the examined literature considers the relationship between reputation and value, by using stakeholder theory, to explain the positive relationship between CSP and financial performance. These studies imply that a reputation for high CSP influences the stakeholders' perception of a company in a way that increases expected cash flows, and therefore financial performance. This good reputation is a result of good management, as is posed in the study by Waddock and Graves (1997).

Instrumental Stakeholder Theory

Traditionally, a company had only one group of who it had to take the interests or needs into account: the stockholders. Maximizing the value for the stockholders was key in doing business (Friedman, 1972). Later on, as this view developed through the influence of societal development, four traditional groups of stakeholders were included: the investors, the employees, the suppliers and the customers.

The stakeholder theory (Jones, 1995) elaborates on this model by arguing that there are a lot more stakeholders to take into account for a company besides these traditional groups, for example government, pressure groups, or trade unions. Also competitors can be regarded as a stakeholder in some cases. Jones (1995) claims that a company has to manage with all these different stakeholders in order to be successful.

The instrumental side of the theory focuses on the introduction on 'event management', in which case studies are created about what will happen (consequences) if managers or companies behave in certain ways. Or, to put it in a question: 'what happens if?' In that way, a company can map scenarios, increase risk management quality and improve its business and, as a result, increase value (Jones, 1995).

Good management

Waddock and Graves (1997) have developed two theories on the relation between financial performance and CSP. The first theory, the Good Management Theory (Waddock & Graves, 1997), is derived from the Instrumental Stakeholder Theory (Jones, 1995). The good management theory states that there is a high correlation between good management practice and CSP, simply because attention to CSP areas improves relationships with key stakeholder groups, resulting in better overall performance. This may not only be for the actual actions they take, but may also be the result of only giving

more attention to the issue or person. This is also referred to as the Hawthorne-effect (Franke & Kaul, 1978). In any case, the theory states that the effect of good management practices on CSP will be positive. For example, good employee relations might be expected to improve morale, productivity, and satisfaction. Excellent community relations might provide motivations for local government to provide competition-enhancing tax breaks, improved schools, or reduced regulation, thereby reducing costs of the company and improving the financial performance (Waddock & Graves, 1997).
Another group of stakeholders are the investors on the market. They react stronger on CSP than the accounting measures of capital show. Companies with stable shareholder groups can attract new equity more easily than companies with unstable, active shareholders (Waddock & Graves, 1997). Small investments in CSP may be interpreted as a lack of management skills because the company hasn't got a pro-active reputation. That is why investors would perceive a company with a low CSP to be riskier than a company with a higher CSP.

In line with the Good Management Theory, Demacarty (2009) claims that the most important explanation for the positive relation between financial performance and CSP is lies in the level of management skills. Demacarty (2009) poses that companies with high financial performance are managed intelligently and therefore apparently also manage CSP skilfully. Companies with lower financial performance, in contrast, are managed less adequate, which may tend to manage CSP less skilfully. This fact could contribute to an apparently causal relation between CSP and financial performance, but was instead a result of (partial) collinearity (i.e. the tendency of a variable to increase as another one increases) between CSP and proper management.

Reputation
Positive reputations, as a result of good management, can also generate excess returns by permitting companies to charge premium prices, attract better job applicants, and attract investors (Fombrun and Shanley, 1990). The negotiation position, in relation with all stakeholders, of a company with a good reputation increases because the company can communicate the quality of its products and services; and further has the ability to answer future claims. Since the customers perceive the reputation of a company as a quality measure for its products, they are willing to pay a higher price for the products. In addition, (future) employees are more engaged with the company and prefer working for companies with better reputation, They also work harder and accept lower compensation, which reduces the costs of human resources (Fombrun and Shanley, 1990).
This view is described as a self-reinforcing system of positive effects (Demacarty, 2009), as shown in figure 1.

FIGURE 1: SIMPLIFIED ILLUSTRATION OF A MECHANISM BY WHICH COPORATE SOCIAL PERFORMANCE PRODUCES HIGH FINANCIAL RETURNS (DEMACARTY, 2009)

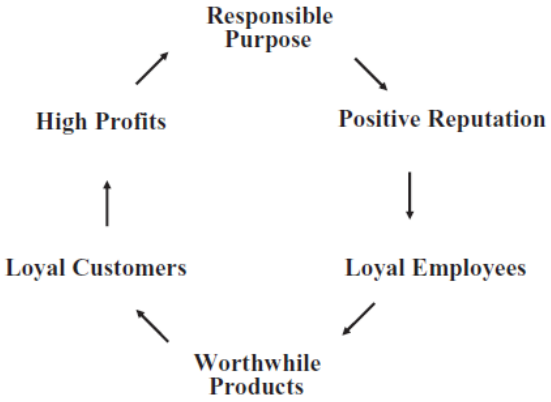

Figure 1 starts at the positive reputation, as a result of good CSP. Customers perceive this reputation and leads to superior value in comparison to competitors with lower CSP (Demacarty, 2009). This increases the loyalty of employees through greater satisfaction and pride in their work (Reichheld, 1996). In addition, high CSP may make it easier to attract better employees (Waddock and Graves 1997). This loyalty makes that employees work longer in the company and as a result who work for the company and as a result increase knowledge about customer needs (Reichheld, 1996). In addition, experienced employees do not only have a higher production, but also gain more responsibility and control. This reduces managing costs for the company (Pfeffer, 1998). As a result, the products of these employees become better and hence the perceived value of these products. This then improves the loyalty of the customer (Reichheld, 1996). In addition, the profit per customer increases, but also the customer retention and therefore an increase in sales and thus profits. Strong CFP shows that the responsible purpose can result in an improved CFP which strengthens the system.
This mechanism can be expanded with access to capital markets. Investors and banks increasingly make use of CSP rankings before they lend money. Companies with low CSP therefore have less access to market capital. This also increases the level of financial risk (McGuire, Sundgren, & Schneeweis, 1988). This leads to a stronger the reaction of the market on CSP than the accounting measures of capital show.

2.3.2 Volatility

Besides that socially responsible companies are perceived to have good management skills, they are also observed to be less volatile and risky (Di Giulio et al., 2007; Orlitzky and Benjamin, 2001; Spicer, 1978). Companies that behave socially responsible have significant less trouble of negative financial consequences which may be derived from their activities (e.g. legal costs, damages). Their stock price is much less volatile, since their financial results are much more stable. For example, products are sold with an implicit guarantee that they will safely perform as expected. Not investing in the safety of a product and selling and unsafe product, may , as a result, raise the chance of legal proceedings against the company and may enlarge the expected future costs (Orlitzky and Benjamin, 2001).
In addition, low risk and less volatility makes it possible for a company to make a better planning, since the low level of risk provides more certainty towards future opportunities, costs, benefits and level of cash flows (Sharpe, 1990). When a company is

more stable and has more reliable financial planning and forecasting, it can apply more resources to CSP. Otherwise these resources would be used for investments with a more direct relation to the economic survival of the company.
The operational and financial risks of social responsible companies are systematically lower, which results is lower yield claims and thus lower risk premia for shareholders, because “a firm that is socially responsible and responsive may be able to increase interpersonal trust between and among internal and external stakeholders, build social capital, lower transaction costs, and, therefore, ultimately reduce uncertainty about its financial performance.” (Orlitzky & Benjamin, 2001, p. 391)

2.3.3 Slack Resources

Another theory on the relation between financial performance and Corporate Social Performance (CSP), which is in the opposite direction of the Good Management Theory, is the Slack Resources Theory (Waddock & Graves, 1997). The Slack Resources Theory states that better financial performance potentially results in the availability of slack (financial and other) resources that provide the opportunity for companies to invest in areas of social performance, such as community relations, employee relations, or environment (Waddock & Graves, 1997). In this sense, the decision to invest in CSP is influenced by the profitability of a company. When a company is highly profitable, it can afford social, as well as economic, investments, without having to compensate for the high demands from investors and other financial stakeholders. It has financial space, ‘slack’, for other subjects, especially CSP. It may well be that companies with available resources may choose to spend those resources on 'doing good by doing well', and that those resource allocations may result in improved overall CSP.
From this reasoning Waddock and Graves (1997) elaborate that higher financial performance (and thus more slack) could result in higher CSP. The profitability, as measured by Return on Equity, is in the context an indicator for the availability of slack resources (Waddock & Graves, 1997).

2.3.4 Empirical findings

Existing empirical research generally shows a positive correlation between Corporate Social Performance (CSP) as measured and corporate financial performance. Since there are many studies who, somehow, examine the relationship between some kind of social activity and financial performance, the focus of the empirical findings is on meta-analyses. As Orlitzky, Smidt and Rynes (2003) put it: “Meta-analysis has proven to be a useful technique in many substantive areas where multiple individual studies have yielded inconclusive or conflicting results” (Orlitzky, Schmidt & Rynes, 2003, p. 404).

Meta-analysis by Pava and Krausz

Pava and Krausz (1996) have reviewed 21 studies that examined the relationship between CSP and financial performance and compared those studies with their own analysis of the financial performance of a 53 companies identified, who are all said to be socially responsible by the Council on Economic Priorities. Their goal was to measure both the direction and the degree of association between CSP and financial performance. Pava and Krausz (1996) hypothesized, as opposite to the traditionalist view, that companies that act more social responsible perform financially better on the long term in comparison to their less social counterparts. Therefore they introduced the

expression 'paradox of social costs', which means that although investing in CSP would cost companies, that companies that are more socially responsible outperform companies that has not invest in social activities.
Pava and Krausz (1996) made three observations in their study. First of all, out of the 21 examined studies, 12 reported a positive association between CSP and financial performance, 1 reported a negative association, and 8 reported no measurable association. From this notion they conclude that "there is a consistent pattern in terms of this association" (Pava and Krausz, 1996, p. 324).

TABLE 1: ASSOCIATIONS OF 21 EMPIRICAL STUDIES (PAVA AND KRAUSZ, 1996)

Direction of association	Results
Positive association	12
Negative association	1
No association	8
Totals	21

Secondly, Pava and Krausz (1996) found that out of the 12 studies that reported some positive association, there was no predominance way of measuring CSP performance.
The last observation stated that there was also a broad diversity of measures for financial performance in the examined studies.

After their analysis, Pava and Krausz (1996) try to find explanations for their findings. They developed 5 explanations, of which the first four were rejected. According to their fifth explanation, there are two types of socially-responsible actions. The first type is the social actions that have no net costs, and in fact may benefit the companies in the long run. The second type, on the other hand, other socially-responsible actions can be costly to the company. This explanation leads to the conclusion that "sometimes, a conscious pursuit of corporate social-responsibility goals causes better financial performance" (Pava and Krausz, 1996, p. 333).

Meta-analysis by Orlitzky, Schmidt & Rynes

Further empirical support is delivered by the meta-analysis of Orlitzky, Schmidt and Rynes (2003). They have conducted a meta-analysis of 52 of primarily quantitative studies of the relationship between CSP and financial performance, with a total sample size of 33,878 observations. Two of the objectives of their meta-analysis are to provide an integration of research on the relationship between CSP and financial performance; and to examine several operationalizations of CSP and CFP and timing of CSP and financial performance measurement (Orlitzky, Schmidt & Rynes, 2003).
The results of the meta-analysis show that there is a positive association between CSP and financial performance across industries and across study contexts. The authors conclude that CSP is positively correlated with financial performance; that this relationship has a tendency to be bidirectional and simultaneous; and that reputation shows to be an important mediator of this relationship (Orlitzky, Schmidt & Rynes, 2003, p. 427), Appendix 5 includes a list of included studies who use the Cost of Equity as a measure for financial performance.

Meta-analysis by Margolis and Walsh

Simultaneously to the meta-analysis of Orltizky, Schmidt and Rynes (2003), Margolis and Walsh (2003) examined 127 studies on the relationship between corporate social responsibility and financial performance. This study included 22 studies in which CSP was treated as a dependent variable and financial performance was regarded as the independent variable. Of the 22 studies Margolis and Walsh examined, 16 found to have a positive relationship. This was interpreted by making use of the slack resources theory, where, as explained in section 2.3.3., companies with higher financial results are more responsible because they can afford to be.

3 Research Methodology

In this chapter, the methodology for the research will be discussed. The chapter starts with the hypothesis based on the literature review in the previous chapter. Then, the research model will be introduced for testing the hypothesis. After that, the assumptions underlying the research will be discussed. This chapter continues the estimation of Corporate Social Performance and the Cost of Equity. In the end of this chapter, the control variables are presented.

3.1 Hypothesis

The studies discussed in the previous chapter show that a higher Corporate Social Performance does not only impacts stakeholders' perception of a company , but also improves financial results. This is the result of good management, that reduces volatility and increases expected cash flows. The improved financial position leads to better accessible equity and hence a lower cost the company has to pay for its equity.
On the other side, high financial performance companies have more slack resources for investment in CSP. The hypothesis is therefore defined as:

The higher the Corporate Social Performance of a company, the lower its Cost of Equity will be.

This hypothesis will be tested by a regression analysis, which is described below.

3.2 Research Model

The aim of this research is examine the relation between CSP and the Cost of Equity, while controlling for other variables mentioned in the literature review. These variables will be controlled for. The generally used statistical method for examining such kind of relations is the multiple linear regression model (Kallenberg, 2006). The general purpose of multiple regression is to learn more about the relationship between several a dependent variable and independent variables.

Research on the Cost of Equity show the same kind of models (Chen, Chen, & Wei, 2009; Guedhami & Mishra, 2009; Hail & Leuz, 2006). Based on these models, the research model is redefined by (8) and the hypothesis defined in section 3.1:

$$R_{i,t} = \alpha + \beta * CSP_{i,t} + \sum \boldsymbol{\gamma} * Conrols_{i,t} + \varepsilon_{i,t} \qquad (7)$$

In this model, R is the average of the Cost of Equity estimation models and the subscripts i and t denote respectively company and time. The control variables which will be used are explained in section 3.5. The sample of companies is described in section 3.6 and data will cover the year 2009. This is the most current year, for which the data in the KLD database was available at the start of this thesis, in the summer of 2010.

Furthermore, the CSP data from the other previous years were not fully accessible. Therefore, the analysis will be based on the data of 2009.

3.2.1 Assumptions of the model

The multiple linear regression analysis is based on the Ordinary Least Square (OLS) method, which is mostly applied method of linear regression analysis. This method is straightforward, but holds some assumptions(Kallenberg, 2006). These assumptions will be tested before the regression analyses.

The assumptions of the Ordinary Least Square Method (OLS) are:

- Normality of the data

The OLS method assumes that the data used for analysis is normally distributed. This can be tested in several ways. The Shapiro-Wilk test is perceived to be the most reliable test for non-normality for small to medium sized samples (Kallenberg, 2006). The null hypothesis for the Shapiro-Wilk test is that the data are normally distributed.
This test can be run in SPSS. With the α set on the 0.05-level and the p-value less than 0.05, the null hypothesis will be rejected. This means that the data are not normally distributed. If the p-value is greater than 0.05, then the null hypothesis will not be rejected and thus the data is normally distributed.

- Homogeneity of variance (Homoscedacity)

The second assumption of the OLS method is that the variables of the observations have a constant variance. This can be tested by using the Breusch-Pagan test. In this test, the null hypothesis states that the variance of the residuals is homogeneous. A very small p-value therefore forces to reject the null-hypotheses.

- Non-multicollinearity

Multicollinearity appears when two or more predictors (control variables) are correlated and provide redundant information about the response (Kallenberg, 2006). Multicollinearity can be tested by computing the Variance Inflation Factors (VIF) for each of the predictors x_i in the model. The formula for VIF is stated as:

$$VIF_j = \frac{1}{1 - R_j^2} \tag{8}$$

In equation 8, R_j^2 is the coefficient of determination of the model that includes all predictors except the j^{th} predictor (x_j). If R_j equals zero (i.e., no correlation between x_j and the remaining independent variables), then VIF_j equals 1 (Neter, Wasserman, & Kutner, 1990).
Using the VIF-formula for determining multicollinearity is straightforward. The rule of thumb states that a VIF score higher than 4 or 5 could indicate problems with multicollinearity, whereas the literature states that "for standardized data VIF ≥ 10 indicates harmful collinearity" (Kenndy, 1992, p. 183)

3.3 Estimation of Corporate Social Performance

As already mentioned in chapter 2.1.3, several authors (Dhaliwal, Eheitzman, & Li, 2006; Chen, Chen, & Wei, 2009; Hail & Leuz, 2006) have estimated Corporate Social Performance (CSP) by using CSP screens. It is not a coincidence that these screens are often used in empirical research (Van Oosterhout & Heugens, 2006). Analogous with Scharfman (1996), Waddock and Graves (1997), Ruf et al. (2001) and Chatterji et al. (2007), a single score for the KLD data will be made out of the KLD database. As explained in section 2.1.3, a company in the KLD index is given a 'strength' score and a 'concern' score for each of the issues in the 22 themes. In each case, the score can also be a 'blank', indicating either insufficient information or no out-of-the-ordinary performance.

The method for calculating the CSP score per company is to add all the values of the issues for that company from the KLD database. A 'blank' value receives a 0 (null) while a strength scores a 1 (plus one). Concern scores are set to be -1 (minus one) (Scharfman, 1996). Then, the cumulative (negative) number of concerns for the company is added to its total number of strengths. This results in a net score for CSP for each individual company in the sample (Chatterji, Levine, & Toffel, 2007). These scores are used as the estimation of CSP in the research model.

3.4 Estimation of the Cost of Equity

As was mentioned in chapter 2.2.2, the research at hand follows the studies of Hail and Leuz (2006) and Guedhami and Mishra (2009), where the Cost of Equity is estimated by using the models of models of Gebhardt, Lee, and Swaminathan (2001), Claus and Thomas (2001), Ohlson and Juettner-Nauroth (2005) and Easton (2004). The reasons for using these have also been elaborated in section 2.2.

To reduce the effects of measurement errors that are associated with one particular model, Chen, Chen and Wei (2009) and Guedhami and Mishra (2009) use the average of the four models as their estimated Cost of Equity. This arithmetic average of the four models for estimating the implied Cost of Equity is used for the overall estimated Cost of Equity. This will be denoted as $R_{AVERAGE}$:

$$R_{AVERAGE} = \frac{R_{CT}+R_{GLS}+R_{OJ}+R_{ES}}{4} \quad (9)$$

The descriptions of the four models of the implied Cost of Equity are based on the studies by Hail and Leuz (2006), Chen, Chen and Wei (2009) and Guedhami and Mishra (2009) and described below. In the four models, analyst earnings forecasts and stock prices will be used.

Variables of the models

The variables used in the models for the estimation of the Cost of Equity, as described below.

TABLE 2: VARIABLES OF THE COST OF EQUITY ESTIMATION MODELS

Variable	Definition	Source
R_{CT}	Implied Cost of Equity derived from the Claus and Thomas (2001) model estimated on the 31st of December of year t.	Calculations based on I/B/E/S and CompuStat
R_{GLS}	Implied Cost of Equity derived from the Gebhardt, Lee and Swaminathan (2001) model estimated on the 31st of December of year t.	As above
R_{OJ}	Implied Cost of Equity derived from the Ohlson and Juettner-Nauroth (2005) model estimated on the 31st of December of year t.	As above
R_{ES}	Implied Cost of Equity derived from the Easton (2004) model estimated on the 31st of December of year t minus the rate on a 10-year treasury bond.	As above
P_t	Average market price of a company's common stock on the 31st of December of year t.	From CompuStat
$FEPS_{t+i}$	Forecasted earnings per stock for the next ith year on the 31st of December of year t.	From I/B/E/S
B_t	Book value per stock at the last day of year t.	From CompuStat
r_f	Risk free rate, the yield on a 10-year Treasury bond in year t.	From CompuStat
POUT	Forecasted dividends pay-out ratio, measured by using a company's historical three-year median dividends pay-out ratio. This pay-out ratio is calculated by dividing the yearly dividends per stock by the earnings per stock (trailing 12 months), excluding extraordinary items. If these number are missing, the pay-out ratio is calculated by the total dividends divided by the net income (Brealey, Myers, & Allen, 2008, p. 798).	From CompuStat
g_{lt}	Expected long-term future earnings growth rate. This variable is calculated as the long-term median expected earnings rate from 2009 to 2014.	From CompuStat
CSP	The CSP score, as described in section 3.3.	KLD database

If the Forecasted Earnings Per Share ($FEPS_{t+i}$) is not available in I/B/E/S, it is calculated from the previous three year $FEPS_{t+i}$ and the long-term growth forecast for the company as $FEPS_{t+\tau} = FEPS_{t+\tau-1} * (1+g_{lt})$ (El Ghoul et al., 2011, p. 2397).

Computing R from the four estimation models

Following previous studies (e.g. Gupta, Krishnamurti & Tourani-Rad, 2010), the Cost of Equity estimates are computed backwards by numerical approximation using the Generalized Reduced Gradient Algorithm (Lasdon et al., 1973). This algorithm is used by the built-in Solver-function in Microsoft's spread sheet program Excel (Microsoft Office 2007 Support Website, 2010).

3.5 Control variables

A control variable is a variable that effects the dependent variable. When a vraible is controlled, the effect of that vairable between subjects and groups is 'balanced' so that this variable can be ignored. As an effect, the relationship between the independent (CSP) and the dependent variable (Cost of Equity) can be examined.

In this section, the control variables for the relation between Corporate Social Performance (CSP) and the Cost of Equity are described. The discussed factors are: corporate governance (section 3.5.1), size (3.5.2), book-to-market ratio (3.5.3), return variability (3.5.4), type of industry (3.5.5) of level of disclosure (3.5.6). The selection of control variables is based on the review in section 2.3 and prior studies on the relation between measures of financial performance and CSP (e.g. Hail and Leuz, 2006, Chen, Chen and Wei, 2009).

3.5.1 Corporate Governance

Corporate governance can be described as the set of mechanisms used to deal with agency risks, which is based on the conflict between two kinds of agents: the external stockholders and the internal managers (Jensen & Meckling, 1976). A formal definition of agency risk is "the possibility that [company's] managers will not act in the best interest of its stockholders" (Scott, 2003). This risk is created by asymmetries in the information between stockholder and management. Information asymmetries occur in the capital market when the stockholders are too much dispersed to directly monitor the management of a company. This risk can cause two types of problems (Asbaugh-Skaife, Collins, & LaFond, 2004):

- Firstly, it can create moral hazard problems, because managers tend to act on their own interests instead of the interests of investors. This 'self-interested managerial behaviour' occurs in several forms all of which increase agency risk (Asbaugh-Skaife, Collins, & LaFond, 2004). Examples are reduced effort, rewards, empire building, entrenching investment and avoiding risk (Brealey, Myers, & Allen, 2008, pp. 328-329).
- The second type of problems is adverse selection problems. The asymmetry in information can lead to problems in the selection process for investors to determine where they will invest in. Investors cannot find out the true economic value of a company, since this value is also partly determined by the unique quality of the management. A lack of quality in the information about the quality of management and the economic value of the company increases the stockholder's agency risk (Asbaugh-Skaife, Collins, & LaFond, 2004).

Asbaugh-Skaife, Collins, & LaFond (2004) have identified three types of measures by which agency risk can be reduced:

- improving the information quality, increasing the transparency of financial information and publishing more public disclosure of private information of a company,
- limiting the tendency of managers of showing opportunistic behaviour that decreases company value, and

- increasing the monitoring of the actions executed by the management and thereby promoting effective managerial decision making that increases company value (e.g., investing in positive Net Present Value projects)

These measures can be captured by three company characteristics (Asbaugh-Skaife, Collins, & LaFond, 2004): the level and quality of disclosure (proxied by size), stockholder rights and monitoring (also proxied by size), ownership and board structure (proxied by size); and the legal institutions and securities.

Size

Large companies get, because of their size, more attention from all stakeholders, in comparison to smaller companies. These companies show higher levels of disclosure and information quality. This increases the monitoring by stockholders. As a result, the ownership structure has more duality between management and stockholders (Asbaugh-Skaife, Collins, & LaFond, 2004).

For companies with strong stockholder rights, it is expected that they present better monitoring of management and better control over opportunistic actions and important strategic decisions (for example, takeovers). The factor is further discussed in 3.1.2.

Legal institutions & securities

The legal institutions and securities regulations are the same for the whole sample, since the research will be held among companies from the same country: the United States of America. This factor will therefore not be included in the analysis.

3.5.2 Size

There are several reasons why the size of a company affects the Corporate Social Performance of a company and thus have to be controlled for analysis (Artiach, Lee, Nelson, & Walker, 2010).

The first reason is the visibility of a company. Because large companies have more exposure (i.e. are more visible politically), they attract more attention from the general public, government and other stakeholders. Furthermore, large companies can create larger social problems, since they act on a larger scale and their activities are more prominent.

Secondly, the size of a company influences its strategic response towards the demands of the stakeholders. As mentioned at the first reason, larger companies are dealing with much more public awareness and pressure from its environment. This means for large companies there is a small chance that a passive or negative response would be successful policy. It therefore has to be more notable of its social responsibility.

The last reason is that large companies, because of their size, can realize economies of scale. This does not only hold for production or overhead, but also for the field of Corporate Social Performance. This is because companies will have lower average costs for issuing CSP actions in comparison to small companies (McWilliams & Siegel, 2001). For instance, the costs for environmental (waste) fines or social investments are relatively lower for a large company as for a small company, simply because of its level of revenues.

In recent literature, the size of a company is measured as the natural logarithm of total assets. (Chen, Chen, & Wei, 2009; Dhaliwal, Eheitzman, & Li, 2006; Guedhami & Mishra, 2009). But, following the reasoning of Fama and French (1998) size can also be considered as a proxy for reflecting company's level of disclosure and, especially, risk. In this case, it is more logical to use market capitalization (i.e. share price multiplied by the number of shares outstanding) as a measure of size. By doing this, the perception of the market on the risks of the company is included in the size, as Fama and French (2003) pose. But this is already captured by the estimates of the Cost of Equity, which was stated before.
In addition, by using market capitalization, some of the other control variables are captured, which can muddle the size factor. The use of the total assets instead of market capitalization means a less noisy variable for measuring the size of a company and will therefore be used in the analysis.

3.5.3 Book-to-market ratio

The book-to-market ratio reflects the investor's future expectations towards and confidence in a company (Brealey, Myers, & Allen, 2008). The ratio, which is the book market of the company divided by its market value, gives an idea of whether an investor is paying too much for what would be left if the company went bankrupt immediately. In other words, the book-to-market ratio tries to find out whether stock is undervalued or overvalued. If the ratio is above 1 then the stock is undervalued; if it is less than 1, the stock is overvalued. When the stock is undervalued, its price is expected to rise in the future. However, a high book-to-market ratio could also be an indication of negative forward looking investor confidence (e.g. poor earnings projections) or too much intangible assets on the book value.
When investors expect that a company can create more (market) value with its assets in comparison to other similar companies, the book-to-market ratio decreases as a result. In other words, investors see investment opportunities for the company. Companies with high investment opportunities tend to have higher market value, which also leads to a lower book-to-market ratio. Investment opportunities are expected to produce higher long-term growth in earnings and cash flows. This may result in a lower book-to-market ratio and lowers the Cost of Capital (e.g., Gebhardt et al., 2001; Gode and Mohanram, 2003).
In line with the Slack Resources Theory, companies with high investment opportunities will invest in CSP more often than companies with low investment opportunities, simply because they have more resources for it. Goss and Roberts (2011) found that companies with high social responsibility ratings generally have lower book-to-market ratios in comparison with companies with lower ratings.
This conclusion is supported by Fama and French who, based on the study by Keim (1988), state that size and the book-to-market ratio both can be regarded as "different ways to scale stock prices" (Fama & French, 1992, p. 428). They can be regarded as different ways of extracting information from stock prices about expected stock returns (Keim, 1988). In other words, these variables extract the information about risk and expected returns from the stock prices and are therefore predictors of these returns.

The book-to-market ratio will be determined by the ratio of the book value of equity to the market value of equity (Chen, Chen, & Wei, 2009). The book value of equity is calculated by subtracting the total liabilities from the total assets. The market value of equity is computed as the market capitalization (stock price times the number of stock outstanding) on the 31st of December 2009, since that is the day the balance sheet is dated.
The problem with including book-to market ratio as control variable is that they are market based and therefore absorb the effects of the legal institutions and securities factor because 'better' institutions result in a lower Cost of Capital and hence higher valuations. (Hail & Leuz, 2006, p. 497). Since the research only uses data from the United States, the legal institutions and securities are assumed to be equal for all companies.
Even if there are differences, the estimates from abnormal earnings growth valuation models, such as the models of Ohlson and Juettner-Nauroth (2005), and Easton (2004), are less likely to be affected by accounting differences than those from models using book values, such as the models of Claus and Thomas (2001) and Gebhardt, Lee, and Swaminathan (2001) (Hail & Leuz, 2006, p. 511). By using the average of the four models, the effect of accounting differences smoothened.

3.5.4 Return variability

In section 2.3.2., where return variability (or volatility) have been introduced, the influence of return volatility has already been stressed. A similar relation as for the book-to-market ratio also holds between Cost of Equity and the return variability. The return variability could be a measure of stability of the future returns, and therefore has influence on the Cost of Equity. This sounds logical since a higher return variability can lead to more uncertainty about the future income and therefore the Cost of Equity is higher as a compensation for the higher (income) risk.
In their review of research about the relationship of corporate social performance to risk, Orlitzky and Benjamin (2001) define company risk in terms of the variability of returns. They find a negative relationship between social performance and subsequent company risk. Each of the seventeen studies reviewed in their study used typical measures of risk derived from the financial theory literature, such as measures of market risk.
Fama and French (1992) found that there is a strong relation between returns on stocks and size, book-to-market ratio and return variability. In addition to the conclusions of Fama and French (1992), Hail and Leuz (2006) find that a "substantial portion of this cross-sectional variation is explained by traditional proxies for company risk, that is, size, volatility [i.e. variability], and the book-to-market ratio" (Hail & Leuz, 2006, p. 487).

Following previous literature, the variability of the returns is measured as the average of the standard deviation of annual stock prices divided by average annual stock price for the period 2005-2009. (Hail & Leuz, 2006; Guedhami & Mishra, 2009).

3.5.5 Type of industry

A large group of studies around the topic of Corporate Social Performance (CSP) contains samples that are too small to result in any generalizable results (Hail & Leuz,

2006). In several of these studies, the small sample of CSP companies was segmented and subgroups were compared. In others, the sample was matched with an external control group of similar size. Most the studies ended up with control groups smaller than 100 companies. In order to overcome this problem, several researchers compared their samples to broad market averages such as the Standard and Poor's 500 (Cochran & Wood, 1984). This step made the results better, but it showed that comparison to industry control groups is superior (Cochran and Wood, 1984). They state that accounting practices, operating leverage, and other variables that may influence test results, will be more homogeneous within industries.
This can be explained by several reasons. First of all, there is difference in the neediness to invest in CSP because of regulations, for example the petrochemical industry. Secondly, in some industries it is more common to invest in CSP and the companies follow that line in order to get ahead of or stay in line with their competitors. The third reason is that some industries find more pressure from outside to behave responsible, just because of the business they are in. Examples are the biotechnological industry or medicine industry (Hail & Leuz, 2006).
Fama and French (1997) pose that there is substantial variation in the 'factor loadings' of the Cost of Equity across industries. Factor loadings are the sensitivities of the Cost of Equity to the factors. They do not clearly describe the reasoning behind this statement, but in the conclusion they pose that the type of industry does matter in determining a company's Cost of Equity. Furthermore, Gebhardt et al. (2001) also state that a company's Cost of Equity is positively and significantly related with the Cost of Equity of the industry, which is the average of the Cost of Equity estimates at (two-digit) industry codes, it is active in. Other empirical literature using the Cost of Equity confirms this result (e.g., Gode and Mohanram, 2003; Hail and Leuz, 2006).
Besides CSP and Cost of Equity, the type of industry also affects the book-to-market ratio. Technology companies and other companies in industries which do not have a lot of physical assets, tend to have low book to market ratios, because on average the (book) value of the assets are low in comparison to other companies with similar market value. They simply need less capital (per dollar of profit) than for example heavy industry.

The companies in the sample will be grouped according to their four-digit industry codes, which are based on the North American Industry Classification System (NAICS). NAICS is the standard used by Federal statistical agencies in classifying business establishments (North American Industry Classification System, 2010). In section 4.3, an overview is provided on the amount of companies in each industry, based on the sample for the research.

The NAICS-categories based on the industry codes are:

TABLE 3: NAICS INDUSTRY CODES

Industry	From	To
Agriculture, Forestry and Fishing	0100	0999
Mining	1000	1499
Construction	1500	1799
Manufacturing	2000	3999
Transportation and Public Utilities	4000	4999
Wholesale Trade	5000	5199
Retail Trade	5200	5999
Finance, Insurance, Real Estate	6000	6799
Services	7000	8999
Public Administration	9100	9999

3.5.6 Level of Disclosure

Companies use the level of disclosures to distinguish themselves from other companies, thereby increasing demand for their stock and lowering their Cost of Capital. This is concluded by the Special Committee on Financial Reporting of the American Institute of Certified Public Accountants (1994), who found that companies can ease their access to capital and lower their Cost of Capital by improving the quality of disclosure. This view is supported by Sengupta (1998), who found empirical evidence that companies with higher disclosure ratings have, on average, a lower cost of debt capital.

Providing quality financial disclosures is not only initiated form regulations and official criteria, but companies also disclose because it is the socially responsible thing to do (Gelb & Strawser, 2001). Companies have the incentive to behave actively towards their stakeholders by undertaking socially responsible activities. Providing extensive and informative disclosures is one of those activities (Gelb & Strawser, 2001). In that sense, disclosing information is a form of socially responsible behaviour of a company. Furthermore, companies who are engaged in socially responsive activities (i.e. high CSP) provide more informative and/or extensive disclosures than do companies that are less focused on improving their social goals (Gelb & Strawser, 2001).

Following the study by Gebhardt et al. (2001), size can be used as a proxy for the availability of information. The risk of investing in a company increases when information about the company is more difficult to acquire. This is similar to the reasoning above. But size can proxy this level of disclosure, because information is more available for larger companies than for smaller companies (Gebhardt, Lee, & Swaminathan, 2001, p. 145). A second argument for using the company size as a proxy for agency costs is based on the study by Hooks (2003), who states that the financing constraints (i.e. the difficulty of finding external financing for a company) decreases when the size of a company increases.

3.5.7 Inflation rate

Hail and Leuz (2006) mention the inflation rate as a control variable. They find that the inflation rate of a country has a positive correlation with the Cost of Equity because the inputs of the Cost of Equity, such as the book value of equity, stock price, and earnings forecasts of analysts, are all reported in nominal terms. Furthermore, the inflation rate is used in the calculation of the terminal value through the assumption of the perpetual earnings growth rate (Hail and Leuz, 2006, Chen, Chen and Wei 2009). In contrast to the study of Hail and Leuz (2006), this study only focuses on one country, the United States. Therefore, the inflation will not be included as an explanatory variable.

4 Data

In this chapter the preparation of the data before the regression analysis is described. The assumptions of the Ordinary Least Square are tested and the summary statistics of the data is presented.

4.1 Sample

The sample is limited to the information available from the several resources. Since the KLD database is the smallest, this will be the constraint in the number of companies. The KLD states that the 3,000 largest (by market capitalization) publicly traded companies in the United States are included in the database since 2002. For the year 2009, the KLD database holds data of 2,913 companies. From 87 companies, data is missing. The companies are listed on the following indices (KLD Research & Analytics, 2010):

- Standard & Poor's 500
- Domini Social 400
- Russell 1000
- Russell 2000

The all data in the sample companies are dated on the end of the year 2009 (31-12-2009). The first data for this thesis was collected in the beginning of 2010, at that time that data of 31-12-2009 was most recent. Since the CSP data is also set on that date, all variables are based on data from the same date.

From the companies in the KLD dataset, in total 2,913 for all years, the companies which do not have all the necessary data to construct a CSP score, as defined in section 3.3 for the year 2009, are excluded. Necessary means that each cell in the database contains either a value of null, plus one or minus one. Missing data in the database have the value of a dot (.). After this process, 497 companies are left in the sample.

Determining companies based in the United States
Some companies incorporate in a specific country for tax reasons, while some choose a higher tax structure for the trade-off of access to capital. Russell uses objective criteria to assign countries to the United States equity market. All companies which Russell determines to be part of the United States equity market are included in the Russell U.S.-indexes. This is determined by the following procedure presented in table 4.

TABLE 4: RUSSEL'S U.S. INDEX ASSIGNMENT PROCEDURE

Step	Question	If yes:	If no:
1	Is the company incorporated, traded and headquartered in one unique country?	Classified in the unique country.	Move to step 2.
2	Are the company's reported assets primarily located in one of the Home Country Indicators (HCI's)*?	Classified in the country of primary assets.	Move to step 3.
3	Are the company's reported revenues primarily located in one of the HCI's*?	Classified in the country of primary revenue.	Move to step 4.
4	Is the headquarters in a non-BDI country?	Classified in the country of headquarters.	Assign to primary exchange country.

This table reports the assignment procedure of the Russell U.S.-index for determining the country in which a company is based.
* Home Country Indicators are 1) the country of incorporation, 2) the country of the headquarters, and 3) the country of the most liquid exchange (defined by 2-year average daily dollar trading volume).
** BDI = Benefit Driven Incorporation, are companies that are incorporated in an offshore financial centre that have their headquarters in the U.S. This is done for taxation purposes.

Companies in the KLD database (for CSP constructing the scores, see also section 3.3) are first matched with those in the databases I/B/E/S (for earnings forecasts) and with the data from CompuStat (for stock price, earnings, book value, pay-out ratio, and size). Both databases I/B/E/S and CompuStat are part of the WRDS database, which was used at the company (KPMG) where this thesis was partially written. Then, the companies that are missing data determining the Cost of Equity estimates or control variables (i.e. size, book-to-market ratio and return variability) are excluded.

Outliers were dealt with by removing the companies which have nominal data values larger than 3 times the standard deviation or smaller than -3 times the standard deviation for one of the variables. This number, 3 times the standard deviation, is considered to be good indicator for being an outlier (Kallenberg, 2006). Outliers were found after analysis in SPSS and 8 companies were excluded based on these criteria. These companies had either a very large (or small) book-to-market ratio or return variability.

This selection process results in a final sample of 489 companies for 31 December 2009.

4.1.1 Classifying the CSP scores

The method of estimating the CSP score is mentioned in section 3.3. Table 5 shows the frequency table of the total CSP scores of the sample.

TABLE 5: FREQUENCY DISTRIBUTION OF THE CSP SCORES

Total CSP score	Frequency	Percentage
-10	1	0.2
-9	2	0.4
-8	5	1.0
-7	6	1.2
-6	13	2.7
-5	19	3.9
-4	27	5.5
-3	44	9.0
-2	75	15.3
-1	99	20.2
0	71	14.5
1	52	10.6
2	27	5.5
3	13	2.7
4	8	1.6
5	9	1.8
6	6	1.2
7	5	1.0
8	2	0.4
10	2	0.4
11	2	0.4
14	1	0.2
Total	489	100.0

This table presents the frequency distribution of the CSP scores in the sample of 489 companies. The CSP score is constructed as described in section 3.3. The CSP data has been extracted from the KLD database.

Theoretically, a company can have a maximum score of 40, since this is the total number of issues which score a +1. The minimum score can in theory be -33, the amount of negative issues. From table 5, it can be seen that the maximum CSP score in the sample is +10 and the minimum is -14.

Furthermore, it can be observed that the largest part of the scores is concentrated between -2 and +2. These scores are not particularly positive or negative and therefore do not state much about the level of CSP in a company. Furthermore, there is a large group of these 'neutral' scores in comparison to the higher scores. This does not increase the statistical power of the analysis.

Therefore, the CSP scores will be categorized. This is done by making three classes of scores. The scores below -2 will be in one class. And the CSP scores above +2 will also be in one class. As said, the scores which fall in the range from -2 to +2 will be put in the neutral class, since no clear positive or negative score can be stated. In table 6, this classification is summarized.

TABLE 6: CLASSIFIACTION OF THE CSP SCORES

Class number	Class name	CSP score
1	Negative score	Below -2
2	Neutral score	Between -2 and +2
3	Positive score	Above +2

This table reports the criteria for determining three classes of CSP for the companies in the sample, based on their CSP score.

This new classification leads to the distribution in table 7, which will be used for further analysis.

TABLE 7: FREQUENCY TABLE OF THE CSP CLASSES

Class number	Frequency	Percent
1	117	23.9
2	324	66.3
3	48	9.8
Total	489	100.0

This table reports the frequency distribution of the 489 companies in the sample. The criteria for the distribution are reported in table 6.

For the prime analysis, the whole sample of 489 companies will be used. After that, an analysis of the separate sample based on the three classes will be made in order to research how negative scores (i.e. class 1) and the positive scores (i.e. class 3) effect the Cost of Equity. These results are presented in section 5.2.2.

4.1.2 The logarithm of size

As mentioned in section 3.5.2, the size of a company is measured as the natural logarithm of the total assets of the company. This is in line with previous research (e.g. Chen, Chen, & Wei, 2009; Dhaliwal, Eheitzman, & Li, 2006; Guedhami & Mishra, 2009).

4.2 Testing model assumptions

As mentioned in section 3.2.1, the multiple linear regression analysis is based on the Ordinary Least Square (OLS) method. This which holds some assumptions who are tested before executing the data regression.

The assumptions of the Ordinary Least Square Method (OLS) are:

- Normality of the data

The most common test for normality is the Shapiro-Wilk test. The null hypothesis for this test is that the data are normally distributed. The Shapiro-Wilk test for a variables show p-values ranging from .207 to .727. With the α set on the 0.05-level and all p-values are larger than 0.05. This means the null hypothesis will is accepted and thus the data is normally distributed.

- Homogeneity of the variances of the residuals (Homoscedacity)

To testing for heteroscedacity, the Breusch-Pagan test is executed. Since SPSS does not include an pre-installed analysis for this test, the method described by the Kellogg

School of Management (2005) is used. The result of the test shows a p-value of 0.068 and with the α set on the 0.05-level, this means that the null hypothesis of homoscedacity in the Breusch-Pagan test is accepted.

- Non-multicollinearity

The multicollinearity of the data is tested by the Variance Inflation Factors (VIF). SPSS includes the option to retrieve Colliniearity Statistics, including the VIF. Since all variables in the regression model show VIF little above 1 (and thus lower than 5), the hypothesis of multicollinearity is rejected.

4.3 Summary statistics

The total sample of 489 companies is distributed by industry as follows:

TABLE 8: DSITRIBUTION OF COMPANIES BY INDUSTRY

Industry Name	Frequency	Percentage
Mining	62	12.7
Construction	104	21.3
Manufacturing	98	20.0
Transportation and Public Utilities	89	18.2
Wholesale Trade	43	8.8
Retail Trade	36	7.4
Finance, Insurance, Real Estate	37	7.6
Services	20	4.1
Total	489	100.0

This table reports the distribution of the 489 companies in the sample over the industries, based on the NAICS Industry Codes as described in chapter 3.5.5.

Table 8 presents the sample selection process and the distribution of the sample across 10 industries. As can be seen, the industries are not equally distributed. Construction is the largest industry with 21.3% of the total number of companies in the sample. And Services is the smallest industry consisting of 4.1% of the sample. Agriculture, Forestry & Fishing and Public Administration are not represented in the sample.

Cohen et al. (2003) provide a method a-priori (in advance) to determine the minimum sample size for regression analysis (For detailed explanation, see appendix 4). This method is used to determine the minimum amount of companies that is needed for regression analysis. For the current study the minimum amount of companies in the sample should be 53. As can be seen from table 8, Mining, Construction, Manufacturing and Transportation and Public Services comply with this prerequisite. It may be worthwhile to compare these four industries. It can provide insights in what industries CSP has a larger effect on the Cost of Equity in comparison to other industries.
For the following sections the whole sample of 489 companies is used, with which Type of Industry is used as a controlling variables.

4.3.1 Summary statistics of the Cost of Equity estimates

Table 9 below provides the descriptive statistics of the Cost of Equity estimates derived from the four models. It can be seen that the mean of $R_{AVERAGE}$ is 8.34. This means that the average Cost of Equity the companies in the sample on average is 8.34 %. As said in the beginning of chapter 2, this is the cost a company incurs for financing it's equity capital. This low in comparison to Chen, Chen and Wei (2009), who report an average of 17.1 %, and Hail and Leuz (2006), who found an average of 12,5 %. In contrast. the Cost of Equity of 4.8 % reported by El Ghoul et al. (2011) is lower. These differences may be due to the use of data from different years in the studies, where Hail and Leuz (2006) and Chen, Chen and Wei (2009) use data from 2007 and earlier.

The standard deviation of $R_{AVERAGE}$ is 5.06. This table further shows that the Cost of Equity estimates of abnormal growth models (R_{OJ} and R_{ES}) are higher in comparison to the residual income valuation models (R_{CT} and R_{GLS}), which is in correspondence with Hail and Leuz (2006). It further can be seen that R_{GLS} has the lowest mean, consistent with Gode and Mohanram (2003) and Hail and Leuz (2006).

TABLE 9: DESCRIPTIVE STATISTICS OF THE COST OF EQUITY ESTIMATES

	Mean	Q1	Median	Q3	St. Dev.
R_{CT}	8.00	5.86	7.23	9.16	3.74
R_{GLS}	6.24	3.89	5.67	7.88	4.60
R_{OJ}	10.05	7.80	9.36	11.62	6.05
R_{ES}	9.75	7.19	8.84	11.27	6.25
$R_{AVERAGE}$	8.34	6.51	7.68	9.81	5.06

This table reports descriptive statistics for the Cost of Capital estimates based on four models for a sample of 489 company observations. R_{CT}, R_{GLS}, R_{OJ} and R_{ES} refer to the Cost of Equity estimates derived from Claus and Thomas (2001), Gebhardt, Lee and Swaminathan (2001), Ohlson & Juettener-Narouth (2000) and Easton (2004), respectively. $R_{AVERAGE}$ is the mean of the R_{CT}, R_{GLS}, R_{OJ} and R_{ES} models. Detailed description of the four models is reported in chapter 3.4.

Table 10, below, shows the Pearson's correlation coefficients between the estimates of the Cost of Equity of each model. The mostly used correlation coefficient is the Person's correlation (Huizingh, 2006). This correlation shows the sensitivity of a linear relationship between two variables. The correlations with $R_{AVERAGE}$ range from 0.716 (R_{GLS}) to 0.901 (R_{OJ}). This means that there is a strong relationship between the average R and the R of the four estimates, which can be expected $R_{AVERAGE}$ is composed these estimates.

Table 10 further shows a high correlation between R_{OJ} and R_{ES}. This was expected, since the estimate of the Easton-model is based on the model of Ohlson & Juettner-Nauroth. The results in table 10 are similar to the reported correlations in the studies of Hail and Leuz (2006), who report similar values ranging from 0.509 for the correlation between R_{OJ} and R_{GLS} until 0.959 for the correlation between $R_{AVERAGE}$ and R_{OJ}. The only remarkable difference is the reported correlation of R_{OJ} and R_{CT} of 0.945 from Hail and Leuz (2006) compared to 0.619 from table 10.

Guedhami and Mishra (2009) also report similar findings as in table 10, although the correlations are a little higher (on average 0.05) than reported in table 10. Furthermore, the correlations between R_{OJ} and R_{CT}, and between R_{OJ} and R_{GLS}, in table 10 are close to the correlations reported by Guedhami and Mishra (2009), respectively 0.628 and 0.444, in contrast to the findings of Hail and Leuz (2006).

TABLE 10: PEARSON CORRELATION COEFFICIENTS BETWEEN COST OF EQUITY ESTIMATES

	R_{CT}	R_{GLS}	R_{OJ}	R_{ES}
R_{GLS}	0.523			
R_{OJ}	0.619	0.411		
R_{ES}	0.569	0.406	0.936	
$R_{AVERAGE}$	0.793	0.716	0.901	0.892

This table reports Pearson correlations for the Cost of Capital estimates based on four models for a sample of 489 company observations. R_{CT}, R_{GLS}, R_{OJ} and R_{ES} refer to the Cost of Equity estimates derived from Claus and Thomas (2001), Gebhardt, Lee and Swaminathan (2001), Ohlson & Juettener-Narouth (2000) and Easton (2004), respectively. $R_{AVERAGE}$ is the mean of the R_{CT}, R_{GLS}, R_{OJ} and R_{ES} models. Detailed description of the four models is reported in chapter 3.4.

4.3.2 Descriptive Statistics of the Control Variables

Table 11 shows the descriptive statistics of the control variables. As can be seen for all the variables, the mean and median are close to each other. This indicates that the variables are relatively evenly distributed on both sides of the mean, which indicates that the distribution is fairly symmetrical and can be considered normally distributed.

TABLE 11: SUMMARY OF THE VARIABLES

	Mean	Min.	Median	Max.	St.Dev.
Return variability	0.79	-0.36	0.78	2.80	0.49
B/M	0.51	0.07	0.53	1.77	0.23
Size (LN)	7.60	5.12	7.67	9.10	0.50

This table reports descriptive statistics for all regression variables. The sample consists of 489 company observations. Definitions of the variables are reported in chapter 3.5.

Table 12 below provides additional information on the correlation coefficients for the key variables. This tables shows correlations between the Cost of Equity, CSP and control variables. These data were used for the models which treated Cost of Equity as the dependent variable.

It can be seen from table 12 that the three control variables are correlated with each other (at $p < 0.05$ for all three variables), as was expected.

TABLE 12: CORRELATION BETWEEN THE VARIABLES

	$R_{AVERAGE}$	CSP score	Return Variability	B/M
CSP score	-0.18			
Return Variability	0.26	-0.03		
B/M	0.28	-0.29	0.10	
Size (LN)	-0.25	0.16	0.13	- 0.27

This table reports Pearson correlations for all regression variables. The sample consists of 489 company observations. $R_{AVERAGE}$ is the mean of Cost of Equity estimates based on the four models described in chapter 3.4. CSP, the main test variable, is the Corporate Social Performance of a company, as mentioned in chapter 3.3. Definitions of the variables are reported in chapter 3.5.

It can be seen from table 12 that companies that have a higher book-to-market ratio, have a lower score on CSP and vice-versa. This relation could be explained in two ways: on the one hand, a higher CSP-score leads to a higher market value, which leads to a

lower book-to-market ratio. On the other hand, a higher CSP score could result in a lower book value. Since the book value is assumed to be correct and in line with the standards, it is assumed that a higher CSP score results in a higher market value. This then results in a lower book-to-market ratio.

In addition, table 12 shows correlation between size and book-to-market ratio. That leads to the assumption that larger companies have higher book-to-market ratios. This is logical since size is measured by natural logarithm of the total assets, which corresponds with book value in the book-to-market ratio.
As stated in section 4.2., the multicollinearity of the data has been tested by the Variance Inflation Factors (VIF). Although table 12 reports correlations, the test results showed that there is no multicollinearity.

5 Results

In this chapter the data in the sample is analysed. This means executing the regression defined in chapter 4. After that, several regressions are made in order to provide more insights in the relation between Cost of Equity, Corporate Social Performance and the control variables.

5.1 Results of the regression analysis

In table 13 below, the results of the Multiple Regression are shown. In this regression, the dependent variable is the average estimate of the Cost of Equity premium, or $R_{AVG.}$ Included are 489 companies. Besides the overall regression output, the results for the industries (Construction, Mining, Manufacturing, and Transportation & Public Utilities) are presented.

TABLE 13: IMPACT OF CORPORATE SOCIAL PERFORMANCE ON THE COST OF EQUITY

	All companies	All companies	Construction	Mining	Manufacturing	Transportation & Public Utilities
	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
CSP score	-0.036 **	-0.041 **	-0.037 **	-0.032 *	-0.043 **	-0.034 **
	(-1.505)	(-1.538)	(-1.564)	(-1.480)	(-1.511)	(-1.563)
Return	0.122 **	0.125 **	0.117 **	0.120 *	0.126 **	0.119 **
Variability	(1.138)	(1.212)	(1.127)	(1.109)	(1.148)	(1.099)
B/M	1.334 **	1.345 **	1.469 **	1.277 *	1.385 **	1.372 **
	(4.151)	(5.008)	(5.263)	(3.163)	(3.956)	(5.071)
Size (LN)	-0.128 **	-0.130 **	-0.131 **	-0.138 *	-0.122 **	-0.133 **
	(-6.512)	(-6.837)	(-7.808)	(-6.838)	(-6.284)	(-6.412)
INTERCEPT	1.859 **	1.934 **	1.722 **	1.689 *	2.036 **	1.585 **
	(2.963)	(2.988)	(2.935)	(2.827)	(2.903)	(3.137)
Industry effect	NO	YES	N/A	N/A	N/A	N/A
N	489	489	104	62	98	89
Adj. R^2	0.213	0.216	0.218	0.197	0.213	0.228

This table presents regression results of the CSP score on Cost of Equity (INTERCEPT) while controlling for Return variability, Book-to-market ratio (B/M), Size and Industry effects. The sample consists of 489 company observations in 2009. The Cost of Equity (INTERCEPT) is the mean of Cost of Equity capital estimates based on the four models described in chapter 3.4. CSP, the main test variable, is the Corporate Social Performance of a company, as mentioned in chapter 3.3. Definitions of the variables are reported in chapter 3.5. Model 1 includes all companies without controlling for Industry effects. Model 2 also holds the total sample and includes the Industry effects. Models 3 – 6 only hold the sample for the specific industry.
Beneath each estimate is the t-statistic.
The superscript asterisks ** and * denote statistical significance at the 5% and 10% levels, respectively.

Table 13 presents the results from regressing the average estimates of the Cost of Equity ($R_{AVERAGE}$) with the CSP-score and control variables for the year 2009. The results of model 1, which excludes the industry as controlling variable, show that the regression coefficient of the CSP score is - 0.036 and significant.

Model 2, which includes the industry as controlling variable, shows a stronger regression coefficient for $R_{AVERAGE}$ in comparison to model 1. It can be seen from table 13 that the regression coefficient is – 0.041 and significant. These findings provide support for the hypothesis that, although the effect is small, companies which score higher on CSP have a significantly lower Cost of Equity. This result is in line with the study by El Ghoul et al. (2011) who found a regression coefficient close to the reported -0.041 of table 13, when regressing the Cost of Equity on CSP.
In their study on the effect of company-level corporate governance on the Cost of Equity, Chen, Chen and Wei (2009) found a regression coefficient of −0.080, significant on a 1%-level. A similar significant relation between the corporate governance and the Cost of Equity was found by Gupta et al. (2006). These findings provides support for the assumption that corporate governance is negatively related with the Cost of Equity
Furthermore, Hail and Leuz (2006) have examined the relation between legal institutions and securities regulation, and the Cost of Equity. They found that companies with more extensive disclosures and tighter securities regulation experience a significantly lower Cost of Equity.
Since information disclosure and securities regulation, and corporate governance are closely related to CSP, the results of the research at hand are supported by findings from previous studies.

The adjusted R-squared for the regression of model 2 (including industry effects) is 0.216. This number measures the part of the variation of the dependent variable that can be explained by the independent variables. In other words: the adjusted R-squared states what part of the explanatory factors (size, book-to-market and return variability) explain the dependent variable (Cost of Equity). The tested model explains 21.6 % of the variability in the Cost of Equity of the companies in the sample. The value of 0.216 for R-squared is a little less to other studies, which are around 0.3. The study of El Ghoul et al. (2011) in particular found an R-squared of 0.332. These other studies (e.g. Chen, Chen and Wei, 2009, Attig et al., 2008) include more control variables, which may be the reason of the higher R-squared in these studies.

5.1.1 Control variables

From table 13 it can be seen that all control variables have the expected sign and are significant across the industries.

Return Variability

Table 13 shows significant, positive regression coefficient for return variability. As expected, this indicates that companies with higher return variability show a higher Cost of Equity, supporting the findings of Hail and Leuz (2006).

Book-to-market ratio

The regression results further show a positive coefficient for the book-to-market ratio. These suggest that companies with a higher book-to-market ratio have higher expected returns, and as a result also higher expected Cost of Equity. These results are in line with previous studies (e.g., Fama & French, 1992, Guedhami & Mishra, 2009), who report a similar significant result for the book-to-market ratio as control variable.

Size

The regression coefficient of size in table 13, confirms the expected sign of this predictor on the Cost of Equity. The coefficient shows that Cost of Equity is negatively associated with company size, which is consistent with Fama and French (1992) and Chen, Chen and Wei (2009). This means a company that is larger, has lower Cost of Equity. This provides support for the assumption that companies have more exposure (and thus a higher CSP score) or the economies of scale a large company has.

5.1.2 Industry effects

From table 13, it can be seen that controlling for the industries results in different regression coefficients. The coefficient for the CSP score are for model 1 -0.036 and for model 2 -0.042. In addition, all control variables have a higher coefficient and thus a stronger effect. This leads to the conclusion that the type of industry, as described in section 3.5.5, plays a significant role in the analysis.

Furthermore, it can be seen from table 13 that companies in the Construction industry have, on average, a strong regression coefficient for book-to-market ratio (1.469) in comparison to the Mining (1.277), Manufacturing (1.385) and Transportation & Public Utilities (1.372) industries. This can be explained in two ways. First of all, the book value of the companies in the Construction industry is high, because of high intensity of assets usage. Construction needs investments in heavy equipment and factories, which increases book value of the assets. Secondly, the market value of the companies in the industry is relatively low, since investors see less opportunities in the industry. Construction can be regarded as a conservative industry, and therefore is subject to less development and speculation.

In addition, the Manufacturing industry (model 5) shows a stronger regression coefficient (-0.043) than the other industries. This, again, may be the result of the conservatism in the other industries or the pressure from stakeholders in the manufacturing industry to implement CSP activities and policies.

5.2 Partial regression results

Recall from chapter 3.2, that the following research model was defined:

$$R_{i,t} = \alpha + \beta * CSP_{i,t} + \sum \boldsymbol{\gamma} * Conrols_{i,t} + \varepsilon_{i,t} \quad (8)$$

5.2.1 Regression results per control variable

For further analysis of the influence of the control variables, the following regressions are made per control variable:

$$R_{i,t} = \alpha + \beta * CSP_{i,t} + \boldsymbol{\gamma} * B/M_{i,t} + \varepsilon_{i,t} \quad (17)$$

$$R_{i,t} = \alpha + \beta * CSP_{i,t} + \boldsymbol{\gamma} * Size_{i,t} + \varepsilon_{i,t} \quad (18)$$

$$R_{i,t} = \alpha + \beta * CSP_{i,t} + \gamma * Return\ Variability_{i,t} + \varepsilon_{i,t} \quad (19)$$

The results of these regressions, in table 14 below, shows lower CSP regression results when controlling for only Return Variability (18) and Size (20). This means that the effect of the control variables on its own are less strong when they are all included in the model. As stated in chapter 5.3.2, the control variables show some correlation, which is confirmed by the regression results.

The results in table 14 for model (19) further confirm the thought that the book-to-market ratio is an important mediating factor. By controlling for the book-to-market ratio, the regression show stronger results in comparison with the models that do not include book-to-market ratio as an controlling variable.

TABLE 14: THE IMPACT OF CSP ON THE COST OF EQUITY, DIFFERING FOR CONTROLLING VARIABLES

	Model (2)	Model (17)	Model (18)	Model (19)
CSP score	-0.041 **	-0.028 *	-0.042 **	-0.032 *
	(-1.538)	(-1.094)	(-1.511)	(-1.483)
Return	0.125 **	0.120 *		
Variability	(1.212)	(1.109)		
B/M	1.345 **		1.885 **	
	(5.008)		(6.956)	
Size (LN)	-0.130 **			-0.156*
	(-6.837)			(-7.238)
INTERCEPT	1.934 **	1.645*	2.036 **	1.725 *
	(2.988)	(2. 798)	(2.903)	(2.933)
Industry effects	YES	YES	YES	YES
N	489	489	489	489
Adj. R^2	0.216	0.089	0.159	0.072

This table presents regression results of the CSP score on Cost of Equity (INTERCEPT) while controlling for Return variability, Book-to-market ratio (B/M) and Size in different settings. The sample consists of 489 company observations in 2009. The Cost of Equity (INTERCEPT) is the mean of Cost of Equity capital estimates based on the four models described in chapter 3.2. CSP, the main test variable, is the Corporate Social Performance of a company, as mentioned in chapter 3.3. Definitions of the variables are reported in chapter 3.5. Model (2) is the research model defined by equation (8) and is presented in table 13, which includes all control variables. Model (17), (18) and (19) are the models defined in equation (18), (19) and (20) while controlling for industry effects and one other variable, which respectively is return variability, book-to-market ratio and size.

Beneath each estimate is the t-statistic. The superscript asterisks ** and * denote statistical significance at the 5% and 10% levels, respectively.

5.2.2 Regression results per CSP class

In section 4.1.1., three subsamples based on the classes of CSP scores were created. Below in table 15 the regression results of these classes are presented. From this table it can be seen that the regression coefficient for class 1 and class 3 (respectively - 0.058 and - 0.051) is higher than class 2 (- 0.021) and statistically significant at the 5% level in comparison to the 10%-significance level of the class 2 model.

Furthermore it can be observed from table 15 that the book-to-market ratio has a larger coefficient for class 2 (i.e. 1.467) in comparison to class 1 (1.315) and class 3 (1.309).

TABLE 15: THE IMPACT OF CSP ON THE COST OF EQUITY FOR THREE CSP CLASSES

		Class1	Class2	Class3
	Model (2)	Model (7)	Model (8)	Model (9)
CSP score	-0.041 **	-0.058 **	-0.021 *	-0.051 **
	(-1.538)	(-1.731)	(-1.287)	(-1.852)
Return	0.125 **	0.124 **	0.128 *	0.119 **
Variability	(1.212)	(1.198)	(1.315)	(1.212)
B/M	1.345 **	1.315 **	1.476 *	1.309 **
	(5.008)	(4.875)	(5.324)	(5.184)
Size (LN)	-0.130 **	-0.127 **	-0.138 *	-0.133 **
	(-6.837)	(-6.381)	(-7.133)	(-6.992)
INTERCEPT	1.934 **	2.102 **	1.875 *	1.934 **
	(2.988)	(3.013)	(2.928)	(2.996)
Industry effects	YES	YES	YES	YES
N	489	117	324	48
Adj. R^2	0.216	0.221	0.208	0.217

This table presents regression results of the CSP score on Cost of Equity (INTERCEPT) while controlling for Return variability, Book-to-market ratio (B/M) and Size in different settings. The sample consists of 489 company observations in 2009. The Cost of Equity (INTERCEPT) is the mean of Cost of Equity capital estimates based on the four models described in chapter 3.2. CSP, the main test variable, is the Corporate Social Performance of a company, as mentioned in chapter 3.1. Definitions of the variables are reported in chapter 3.3. Model (2) is the research model defined by equation (8) and is presented in table 13, which includes all control variables. Model (7), (8) and (9) are the models based on three classes of CSP scores. Model (7) includes the sample of companies with scores below -2. Model (8) includes the sample of companies with CSP scores between -2 and +2. Model (9) includes the sample of companies with a CSP score above +2.

Beneath each estimate is the t-statistic. The superscript asterisks ** and * denote statistical significance at the 5% and 10% levels, respectively.

6 Conclusion and Discussion

This thesis tried to find an answer on the question what the effect is of Corporate Social Performance (CSP) on the Cost of Equity of companies in the U.S. The relation between CSP and the Cost of Equity was based on two different theories. The Good Management (and reputation) theory states that there is a high correlation between good management practice and CSP, simply because attention to CSP areas improves relationships with key stakeholder groups, resulting in better overall performance and thus Cost of Equity. The Slack Resources Theory, on the other hand, states that better financial performance potentially results in the availability of slack (financial and other) resources that provide the opportunity for companies to invest in areas of social performance.
Based on the literature review, it was hypothesized that a higher CSP of a company, would result in a lower Cost of Equity. This hypothesis has been examined by regressing the Corporate Social Performance of the companies in the sample on the average of four models for the estimation of the Cost of Equity, while controlling for return variability, book-to-market ratio, size and industry. In the sample 489 companies in the United Sated were included.

Corporate Social Performance has been estimated by constructing a score based on the data in the KLD database. Every strength in this database was assigned a score of +1 and every weakness -1. Adding all the strengths and weaknesses for each of the 73 issues in the KLD database resulted in the estimated CSP score for each company.
The Cost of Equity was estimated by the average four different models, in line with prior studies (e.g. Hail and Leuz, 2006, Guedhami and Mishra, 2009). The four models of Claus and Thomas (2001), Gebhardt, Lee, & Swaminathan (2001), Ohlson & Juettner-Nauroth (2005) and Easton (2004) were derived from two accounting based models: the Residual Income Valuation model and the Abnormal Earnings Growth model.

The regression results show significant support for the hypothesis that companies with higher CSP scores have significantly lower Cost of Equity. These results in line with El Ghoul et al. (2011), Hail and Leuz (2006), Attig et al. (2008), and Chen, Chen and Wei (2009), who found similar relations between the Cost of Equity and, respectively CSP, disclosures and securities regulation, shareholder influence, and company-level corporate governance. The subjects in the studies of Hail and Leuz (2006), Attig et al. (2008), and Chen, Chen and Wei (2009), i.e. disclosures and securities regulation, shareholder influence, and company-level corporate governance, are included in the Governance ratings of the KLD database (see also appendix 3). It was therefore expected that these subjects are closely related to CSP and would show similar results.
The relation between CSP and the Cost of Equity is statistically significant on a 5%-level. This means that it is expected that companies can, ceteris paribus, reduce their Cost of Equity by investing in CSP and increasing the CSP of the company. This relation is one way, since a lower Cost of Equity does not result in a higher CSP. This result further provides support for the statement that investing in CSP does not only cost money, but also results in a reduction of the Cost of Equity and can compensate for the cost of investing in CSP.

Regression results further show a significant positive relation between the book-to-market ratio and the Cost of Equity. Since the (negative) correlation between the book-to-market and the CSP is strong, this may be the main explanatory factor: companies with high CSP scores, may also have lower book-to-market ratio, which both result in a lower Cost of Equity. This may be because companies with a higher CSP score are perceived to have a higher market value either because of the goodwill, higher expected future income because of the CSP investment, or, in terms of risk, are perceived to be less risky and more sustainable. These findings are supported by the regression results per control variable in section 5.2.1 and prior studies (e.g. El Ghoul et al., 2011, Chen, Chen and Wei, 2009), where the book-to-market ratio consistently shows the largest regression coefficient of the controlling variables.

In addition, the results present a small positive relation between the Cost of Equity and the size of a company. This may be a result of the fact the larger companies have more slack resources to invest in CSP, can create more economies of scale and have more exposure. Therefore, they are more tended to invest in CSP.

A similar relation also holds between Cost of Equity and the return variability. The return variability could be a measure of stability of the future returns, and therefore has influence on the Cost of Equity, This sounds logical since a higher return variability can lead to more uncertainty about the future income and therefore the Cost of Equity is higher as a compensation for the higher (income) risk.

The results show support for differentiation between industries. When controlling for industries, the effect of CSP on the Cost of Equity became stronger. This leads to the conclusion that there are significance differences between the industries in the sample. The regression results per industry support this assumption, by showing different regression coefficients. This may be the result of a more capital intensive industry or a different attitude towards innovation and CSP. From the four analysed industries Manufacturing has the highest correlation coefficient on CSP. This result was expected, since the other three industries (Constructing, Mining, and Transportation & Public Utilities) are perceived by the author as more conservative.

As was expected, the regression results of the three samples differentiated per CSP class show that companies with highly positive or negative CSP scores experience a stronger effect on the Cost of Equity than companies with a small positive, zero or small negative score. Companies who invest much in CSP and as a result have high CSP scores, show significant lower Cost of Equity. The opposite holds for companies with a highly negative score. The results show that very low CSP scores (below -2) incur significant higher Cost of Equity. Furthermore, companies who score high (above +2) on CSP experience a stronger negative effect (i.e. -0.058) on the Cost of Equity than companies who score low (below -2) on CSP (i.e. -0.051). This is remarkable, since it was expected that both classes would show the same result. From the results in table 15, it can be concluded that for the high CSP scores the Cost of Equity decreases faster than that the low CSP scores increase in the Cost of Equity. These findings can support the study of Fisscher et al. (2001), who state that CSP would be the new competitive factor for companies. Investing in CSP can provide competitive advantage with regards to the Cost of Equity, because of the strong effect for companies with high CSP.

The study at hand focuses on the companies in the United Sates. The applicability of the results to, for example, Western European countries is difficult to make. Research on the Cost of Equity of companies outside the United States show that there is no difference in the usage of the Cost of Equity. For example, Guedhami and Mishra (2009) find, after controlling for company- and country-level factors, that the Cost of Equity is increasing in excess control. Furthermore, there are difficulties in the applicability of the conclusions of the current study to other countries, since there can be large variation in the perception of CSP due to cultural and religion differences.

6.1 Discussion

The findings in this thesis are subject to several discussions items. The first item is the long term growth for the future that is used in the calculation of the Cost of Equity. These growth figures are based on analyst forecasts. Because the Cost of Equity models have to make assumptions about company growth beyond the explicit forecast horizon, the estimates could be quite sensitive to these assumptions about long-run growth (Hail & Leuz, 2006).

Secondly, the research has been performed for the year 2009 only, due to limited data availability. For increasing robustness and explanatory power, it would be preferred to take a 5-year time frame. This can be done in two different ways. Firstly, by analysing the data year by year, over the period 2005-2009, an overall trend in the results may be found. This may give insight in the historical pattern on the effect of CSP on the Cost of Equity. Secondly, the data can be analysed pooled. There may be a chance that in one year, the numbers of the companies in the sample are influenced by extraordinary factors. This may be a new kind of regulation or an unique economic incident. These are factors which only may happen once in a time. By relying on one year, the figures are based too much on just that year. By including multiple years, the trend over time can be analysed. In addition, the robustness of model increases.

The Cost of Equity estimates used in the research at hand are all earnings based, because of the availability (i.e. it is prescribed by Generally Accepted Accounting Principles, GAAP) and usability for earnings forecasting. The question raises about whether earnings provide better insight in the financial position of a company than that cash flows do. Earnings can vary from company to company based on their interpretations of GAAP. Research (Gentry et al., 2002) has shown a strong statistical relationship between net earnings and capital rates of return (e.g. Cost of Equity), where cash flow show no statistical relationship. A research on the effect of CSP on the rate of return estimated by Cash Flow based models, could useful different insights.

To be able to construct a reliable result, much information of the company and the industry is needed, from which the forecast period is made. Since extensive assumptions must be made for many years in the future, the forecast uncertainty of these models increases. Furthermore, for every year that is added more detail is needed in the model. If all necessary information would be available, this would mean that the model would be very precise. However, because of information asymmetries and uncertain future, the model becomes more speculative and uncertain for every year that is added. Thus, it would be valuable to have a quick valuation technique that is based on accounting data but is less time consuming than the complete valuation models. These models will also

contain less speculative information, something that might be an advantage in an uncertain environment. In addition, the residual income model is based on accounting numbers, which may not reflect the true economic value of assets and cash flows.

The final discussion item is related to the CSP score, based on the KLD ratings. These ratings are on a ordinal scale. On each individual issue (which is scored either a one or a null), does not assign a weight to that issue, only whether it exists or not. In estimating the CSP score, a composite score is used as described in section 3.3. This score provides an insight how many times a company is doing well (strengths) and doing badly (weaknesses). A high score shows that a company is doing 'more good' than a company with a low score and therefore is assumed to be more social responsible. This reasoning is in line with the previous studies. (e.g. Waddock and Graves, 1997; Waddock, 2003; Goss and Roberts, 2011; Chen, Chen and Wei, 2009)

In previous literature, there has been discussion on the weights of the strengths and weaknesses, because they all receive the same weight (zero or one) in the current method. Waddock and Graves (1997) developed a weighting scheme based on the opinion of three experts from the Social Issues in Management division of the Academy of Management who had been active in the social issues arena for more than 15 years. Similarly, Ruf et al. (1998) generated weights for the different KLD dimensions through a survey of preference of 101 public officers, executives of non-profit organizations, and managerial accountants. As Waddock and Graves (1997) did, Ruf et al. (1998) came up with a weight distribution for the different categories.

Other research on stakeholder management and social participation has shown that no overall agreed-upon weights of social or environmental issues can exist for different stakeholder groups in different situations, since perceptions and preferences are dynamic and could change over time (Mitchell et al. 1997, Hillman and Keim 2001, Bird et al. 2007). Therefore, the more than 10 year old weights were not used.

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Appendices

Appendix 1: Corporate Social Performance Indices

In this appendix, the three leading CSP indices will be shortly described.

FTSE4Good Index Series
The FTSE4Good Index Series was launched in 2001 and is a series of benchmark and tradable indices for responsible investors. The index series is derived from the FTSE Global Equity Index Series. The FTSE4Good criteria are applied to the FTSE Developed Index Series, which covers 23 markets and over 2.000 potential elements. The series consists of five benchmark indices covering the Global and European regions, the US, Japan and the UK.
A broad range of stakeholders help shape the criteria, including NGOs, governmental bodies, consultants, academics, the investment community, and the corporate sector. Companies that do not meet the standards are deleted from the index series. Companies with the largest risks and impacts have to meet more challenging requirements.

To be included in the index, companies need to demonstrate that they are working towards:

- Climate Change Mitigation and Adaptation
- Environmental Management
- Countering Bribery
- Upholding Human and Labour Rights
- Supply Chain Labour Standards

Dow Jones Sustainability Index (DJSI)
Comparative to the FSTE4Good Index, Dow Jones has come up with an index particularly for top-sustainable companies: the Dow Jones Sustainability Index (DJSI). DJSI analyses 1,237 companies worldwide, of which 398 from Europe. Information is gathered mostly from public company data and reports, but also some stakeholders are consulted.

The DJSI has three main categories for their criteria: economic, environmental and social. These criteria have to researched and weighted to come to an overall score. Unlike FTSE4Good the weights are mentioned explicitly in the process by DJSI.

The Kinder, Lydenberg & Domini Social Rating Index (KLD)
KLD Research & Analytics is an independent rating service that focuses on assessment of corporate social performance across a range of dimensions related to stakeholder concerns. KLD's rating scheme has several advantages compared to FSTE4Good and DJSI (Waddock & Graves, 1997). First, all companies in the S&P 500 are rated. Second, each company is rated on multiple attributes considered relevant to CSP. Third, a single group of researchers, working independently from the rated companies or any particular brokerage house, applies the same set of criteria to related companies. Fourth, the criteria are applied consistently across a wide range of companies, with data

gathered from a range of from a range of sources, both internal and external to the company.
A more detailed description of the research process can be found in Appendix 2: Research method of KLD.

Appendix 2: Research method of KLD

KLD Research & Analytics is the leading index on social research and indexes for institutional investors and academic researchers. "*KLD data supports over 60 peer-reviewed articles in publications including Journal of Investing, Business & Society, Financial Analyst Journal and Business Ethics Magazine*" (KLD Research & Analytics, 2010).

KLD's Research Process
KLD research relies on for its ratings and analysis on five sources of data. Data are collected from a wide variety of company, government, non-government organization and media sources, as shown in **Fout! Verwijzingsbron niet gevonden.**.

FIGURE 2: KLD METHODOLOGY (KLD RESEARCH & ANALYTICS, 2010)

This reported research methodology of KLD Research and Analytics gives an intuitive feeling that the KLD index could be a solid construct for determining Corporate Social Performance (CSP) for companies. Besides the own company data, public documents, stakeholders (government and Non-Governmental Organizations), KLD includes information and data from media resources and research partners.

This feeling is confirmed and academically supported by the research of Scharfman (1996) and Chatterji et al. (2007), who provide proof for the usefulness of the KLD index for measuring CSP in an academic research.

Appendix 3: Structure of the KLD ratings

The KLD rating is set up with binary (0/1) score for every issue in the following overview:

TABLE 16: ENVIRONMENTAL RATING THEMES ANS ISSUES

Theme	***Issue***	
	Strengths	**Concerns**
Climate Change	Clean energy	Climate change
Products & Services	Beneficial products & services	Ozone depleting chemicals
		Agricultural chemicals
Operations & Management	Pollution prevention	Hazardous waste
	Recycling	Regulatory problems
	Management systems	Substantial emissions
Other Strengths & Concerns	Other strengths	Other concerns

TABLE 17: GOVERNANCE RATING THEMES AND ISSUES

Theme	***Issue***	
	Strengths	**Concerns**
Reporting	Political accountability	Public Policy
	Public Policy	Transparency
	Transparency	
Structure	Compensation	Compensation
	Ownership	Ownership
Other Strengths & Concerns	Other strengths	Accounting
		Other concerns

TABLE 18: SOCIAL RATING THEMES AND ISSUES

Theme	*Issue*	
	Strengths	**Concerns**
Community	Charitable giving	Investment controversies
	Innovative giving	Negative economic impact
	Non-US charitable giving	Tax disputes
	Support for education	Other concerns
	Support for housing	
	Volunteer programs	
	Other strengths	
Diversity	Board of directors	Discrimination
	CEO	Non-representation
	Employment of the disabled	Other concerns
	Gay & lesbian policies	
	Promotion	
	Women & minority contracting	
	Work/life benefits	
	Other strengths	
Employee Relations	Health & safety	Union relations
	Retirement benefits	Health & safety
	Union relations	Retirement benefits
	Cash profit sharing	Workforce reductions
	Employee involvement	Other concerns
	Other strengths	
Human Rights	Labour rights	Labour rights
	Relations with indigenous peoples	Relations with indigenous peoples
	Other strengths	Burma
		Other concerns
Product	Benefits to economically disadvantaged	Antitrust
	Quality	Marketing/contracting controversy
	R&D/Innovation	Safety
Other Strengths & Concerns	Other strengths	Other concerns

Appendix 4: Minimal sample size for regression analysis

The determination of the minimal sample size before regression is based on the article of Cohen, Cohen, West and Aiken (2003). This appendix describes the method by which this minimum size is determined.

The calculation of the minimum sample size needs four input variables:
- The probability level (alpha),
- The amount of predictors in the model,
- The anticipated effect size,
- The desired statistical power level.

After these number are determined, the a-priori sample size for multiple regression is calculated with use of the following method (Cohen et al., 2003):

1. The degrees of freedom are set to be equal to the number of predictors + 1.
2. The critical value of the Fisher-distribution is estimated by using:
   - the number of predictors,
   - the degrees of freedom (see step 1),
   - the probability level.
3. The non-centrality parameter (or, λ) is calculated by:

   $$\lambda = f^2 * n$$

   Where f^2 is the anticipated effect size and n the sample size.

4. The value of the non-central F-distribution is estimated by making use of the following formula:

$$\sum_{k=0}^{\infty} \frac{e^{-\lambda/2}(\lambda/2)^k}{B\left(\frac{v_2}{2}, \frac{v_1}{2}+k\right)k!}\left(\frac{v_1}{v_2}\right)^{\frac{v_1}{v_2}+k}\left(\frac{v_2}{v_2+v_1 f}\right)^{\frac{v_1+v_2}{2}+k} f^{v_1/2-1+k}$$

EQUAITON 1: ESTIMATION OF NONCENTRAL F-DISTRIBUTION (COHEN ET AL., 2003)

   Where v_1 is the number of predictors. v_2 the degrees of freedom, λ the noncentrality parameter, *f* the critical F-value, and *B* the Beta function.

5. The statistical power of the current model is calculated by determining the cumulative area under the normal curve from zero to the noncentral F-value.
6. If the observed statistical power is less than the desired power level, the degrees of freedom is increased and the steps 2 through 5 are repeated.
7. The a-priori sample size is equal to the number of predictors + the denominator degrees of freedom + 1.

For this research, the following input variables are used
- There are four predictors. i.e. CSP, book-to-market ratio, Return Variability and Size.

- The alpha (probability level) is set to 0.05, two-tailed.
- The statistical power for regression analysis is commonly set to 0.80,
- The anticipate effect size is determined by taking the average correlation between $R_{AVERAGE}$ and the four independent variables, which is 0.25.

Filling in these numbers in the formula and working through the formula, the minimal sample is set to **53**.

Appendix 5: Meta-analysis of Corporate Social and Financial Performance (Orltizky, Schmidt and Rynes 2003)

The table below lists the studies reviewed by Orltizky, Schmidt and Rynes (2003) in their meta-analysis of the relation between corporate social performance and financial performance. Included are the most important study characteristics, such as author(s), date of study, sample size (N_i), observed *r*, number of correlations per study, operationalization of CSP and CFP, and estimates of reliability.
Classification of CSP (in parentheses): D = disclosures/content analysis; R = reputational indices; SA/P/O = social audit, process and outcome measures; CSR1 = Aupperle's and others' measures of corporate principles and values.

TABLE 19: OVERVIEW OF THE META ANALYSIS OF CORPORATE SOCIAL AND FINANCIAL PERFORMANCE (ORLTIZKY, SCHMIDT AND RYNES, 2003)

Authors	Year	N_i	Observed r[b]	Number of r's reported	Measure of CSP	Measure of CFP	Reliability of CSP	Reliability of CFP
Bowman and Haire	1975	3	.30, .35 (t)	2	CSR1 in ARs, CEP Indexes (D)	ROE		
Bragdon and Marlin	1972	12	.22 to .69	15	Three CEP Indexes (SA/P/O)	EPS growth, ROE, ROC		
Cowen et al.	1978	10-15	-.25 to .18	9	Number of various CSR1 disclosures (D)	ROE		
Freedman and Jaggi	1982	109	-.04 to .01	7	AR/10K pollution disclosure index (D)	(Cash-basis) ROA and ROE, 2 operating ratios	.15,.37	
Graves and Waddock	1994	430	.03, .15	2	KLD Measure (SA/PO)	ROA, ROE		
Griffin and Mahon	1997	7	-.59 to .51	13	Fortune rating, KLD score, Toxics Release Inventory, philanthropy (R, SA/P/O)	ROS, ROE, ROA	.35, .73	.71
Heinze	1976	28	-.34 to .51	5	National Affiliation of Concerned Business	Sales growth rate,		

					Students (NACBS) ratings of social involvement (R)	ROS, OE/Sales, RoA, ROE		
Marcus and Goodman	1986	22, 27	Not included		Compliance with air pollution regulation	ROA, ROE		
Parket and Eilbit	1975	3	.89 to 1.00 (t)	Not included	Response vs. Non-response to social responsibility quationairre	Net income, ROS, ROE, EPS		
Pava and Krausz	1995	14	-.22 to .66 (t)	7	Dichtomization based on Council on Economic Priorities ranking (SA/P/O)	Market return, P/E ratio, market-to-book value, ROA, ROE, EPS, dividend pay-out ratio		
Simerly	1994	110	.01 to .88 (t)	14	Fortune reputation scores, dichotomized (R)	EPS, share price, market value, ROE, sales/equity, ROI, sales rate		
Simerly	1995	48	.59 (t)	1	Dichotomized Fortune survey measure (R)	ROE		
Spicer	1978	18	.42, .52	2	Council on Economic Priorities report (SA/P/O)	ROE	.93	
Waddock and Graves	1997	469	.08 to .17	6	8 KLD dimensions (SA/P/O)	ROA, ROE, ROS		.57

Appendix 6: List of tables and figures

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