STOCKHOLM SCHOOL OF ECONOMICS
Bachelor of Science in Business & Economics
Thesis in Accounting & Financial management
Spring 2015

Corporate Social Responsibility: Necessary evil or Cash cow?

A quantitative study on the relationship between CSR performance and financial performance in Swedish listed firms.

Victoria Söderberg
22727@student.hhs.se

Mirjam Medelli
23180@student.hhs.se

Abstract: The aim of this study is to investigate whether there is a relationship between Corporate Social Responsibility (CSR) and financial performance in Swedish firms. Data is collected from listed firms on the Stockholm Stock Exchange (OMX Stockholm). An investigation is performed on the relationship between CSR performance and financial performance within the different components of the DuPont framework. The results show a significant positive relationship between a firm's CSR rating and its financial performance. Also, an optimal level of Environmental CSR performance in order to maximize Return on Assets is identified. The study concludes that CSR can increase a firm's profitability to a certain point, after which the positive effects decrease.

Tutor: Florian Eugster

Keywords: Corporate Social Responsibility, Financial Performance, DuPont, Return on Assets, CSR Rating

Acknowledgements: We would like to thank our tutor Florian Eugster, Assistant Professor at the Department of Accounting, for valuable input and support throughout the process of writing this paper. We would like to thank Katarzyna Burger at GES Investment Services for the provision of data and information. A special thanks to Eric De Geer for help and guidance on the use of statistical tests. Finally, we would like to thank Anna Zhan and Josefin Halvarsson for insights and advice in regards to writing about Corporate Social Responsibility.

TABLE OF CONTENTS

1. INTRODUCTION

1.1. Background

Corporate Social Responsibility (CSR) has grown greatly in importance in the past couple of years (Windell, 2006). The Chief Sustainability Officer at the iconic Swedish company IKEA expresses how the world is in the midst of a "clean revolution". Firms are spending a great deal of resources on CSR performance, the largest UK and US firms collectively spend over 15 billion dollars on CSR activities a year. Simultaneously, the public grows more aware and demands have increased (Dawkins & Lewis, 2003). Companies are realizing this and putting additional effort into satisfying customer demand. The President and CEO of IKEA expresses; "*We know that our customers want to live more sustainably at home and this is an area where we can make a significant difference.*"

CSR is not tied to a specific industry or area. One of the largest Swedish firms, Hennes & Mauritz (H&M), expresses in their Annual Report 2014; *"Greater sustainability increases the value of H&M's customer offering, strengthens H&M as an employer, means resources are used more efficiently and helps stabilise sourcing markets. Sustainability is therefore an integrated part of the business."*. Also, they present a separate report on Sustainability development - something many other companies do as well. In a widely different industry, we find the automobile company Volvo. They state on their website; *"The overall objective is to contribute to sustainable development by taking the global lead towards sustainable transport solutions."*. Thus, we identify tangible evidence of intense CSR focus in a wide array of Swedish firms.

More and more firms are beginning to realize the benefits that can be reaped from CSR activities. Not only intangible assets, such as goodwill and reputation, can be positively affected but also actual financial effects, as SCA states in their Annual report. Large investments are being made and business strategies are directed towards these types of activities. Thus, in order to stay competitive in a dynamic and global market and to protect their reputation, many argue that firms need to perform in the area of CSR (Urip, 2010). But there are no advocates without opponents, some are supporting the famous Nobel-prize winner Milton Friedman and his quote: "*There is one and only one social responsibility of business, to use its resources and engage in activities designed to increase its profits."*

The different opinions about whether engaging in CSR activities is consistent with increased, measurable firm benefits or not, has led to the relation between CSR and financial performance becoming a more common area of research. Researchers want to see whether CSR

can lead to actual financial benefits, or if it is just a necessary evil to keep customers and regulators happy. Researchers have identified positive (Graves and Waddock, 1994), negative (Wright and Ferris, 1997) and neutral (McWilliams & Siegel, 2001) relationships. Thus, theorists remain parted in regards to what financial effects CSR has on a firm.

The identified results and information about CSR and financial performance are contradictory, researchers are divided when it comes to the benefits of CSR. Theorists remain parted in their conclusions and results have come out as negative, positive as well as neutral, which opens up for further research in this area. In previous studies, theorists have mainly been focusing on return measures at the end of the chain, such as ROA, ROE or stock return (Peloza, 2009), and we have not found a study that examines the different components of a financial measure. We have not identified this type of study on Swedish firms. Also, since Sweden is one of the most environmentally conscious countries in the world we conclude that Swedish firms need to be investigated further. We believe this study will contribute to previous research, as we aim to focus on the underlying components of ROA to see on what part of the return measure CSR has the greatest effect.

1.2. Purpose of study

The purpose of this study is to investigate whether CSR performance bears financial benefits to a firm. We are performing this research by using Return on Assets (ROA) as the financial measure, as we wish to measure the CSR effect on the overall firm performance. We will focus on ROA as well as its different components, using the DuPont framework, as we aim to investigate what part of the return measure CSR affects the most. Finally, we aim to identify an optimal level of CSR rating to maximize ROA. In conclusion, we wish to answer the following research question:

"Does CSR performance lead to improved financial performance?"

1.3. Research boundaries

We choose to focus on listed firms in Sweden, using OMX Stockholm. The sample period is between the years 2007 to 2014 since this is the time period for which we have available and reliable data. CSR performance is approximated using the GES Investment Services Rating and no investigation is performed to assess the quality of these ratings. CSR performance will be based on Environmental and Human Rights ratings, excluding Corporate Governance ratings as this data was not available for all the years in our time frame. Our thought is that excluding this will give us more comparable results over the years. As for financial performance, we are limiting ourselves to the DuPont framework. As we are interested in the overall firm performance, we have chosen to focus only on ROA as the return measure in this study.

1.4. Thesis Outline

This thesis is divided into 7 chapters. In Chapter 1 we introduce our area of study and provide background information. We then move on to present theory and previous research in Chapter 2, introducing concepts and terminology. In Chapter 3 we present our test logic and hypotheses. Chapter 4 presents the methodology for our research. Our results and tests for robustness are then presented in Chapter 5 before moving on to the discussion in Chapter 6. The thesis concludes in Chapter 7, in which we present the final conclusion of our research and suggests direction for future research. In the following appendices we attach a reference list and statistical tables of relevance to the reader.

2. THEORETICAL FRAMEWORK AND PREVIOUS RESEARCH

2.1. CSR

Corporate Social Responsibility (CSR) is a widely known concept that has been around for over a hundred years. In the late 1990s the concept gained popularity and ever since then it has become more of an integrated part of modern corporations, and a popular area of research. CSR can be defined in several ways, including but not limited to the following widely accepted definitions;

"Corporate Social Responsibility (CSR) is the commitment of business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve quality of life, in ways that are both good for business and good for development." World Bank

"Corporate social responsibility (CSR) refers to companies taking responsibility for their impact on society." European Commission

'The social responsibility of business encompasses the economic, legal, ethical, and discretionary expectations that society has of organizations at a given point in time'' Carroll, 1979

The core of the subject is that firms should take responsibility for their actions and how it affects society in different ways, not only focus on economic maximization. Most firms write Sustainability Reports and report on CSR issues in their annual reports. In 2008, 56% of Swedish listed firms reported on social responsibility. In 2015, the corresponding number was 96% - implying a large increase in CSR reporting (Grafström, Göthberg & Windell, 2015). There are several different aspects to CSR as a subject and how the issues are divided varies. It is common to divide it into Environmental, Social and Economic factors.

Environmental factors concern issues such as greenhouse gas emissions, water scarcity and renewable energy. The overall theme is ensuring that corporations are acting in a long-term sustainable way both internally and externally. This area of CSR receives a lot of attention in Sweden. Social factors can be separated into either internal or external effects. Internal effects concern what goes on inside the company and how the work situation for employees looks, both physically and psychologically. The external responsibilities focus on customer and society issues. Corporations must ensure fair treatment of customers and effect on society as a whole.

Some examples of Social factors are diversity, human rights and data protection. Even though Environmental factors receive a lot of the attention when it comes to CSR, expectations on firms to do well within Human Rights have increased dramatically (Grafström, Göthberg & Windell, 2015). Finally, Economic factors regard how the company does business. This partly concerns ensuring the company is making good business decisions and maintaining profitability, since it would otherwise not survive in the long run. Also, it regards business ethics and ensuring that money is earned responsibly. Some Economic factors are safety in the workplace, product guarantees and working conditions.

Assessing how well firms perform within CSR is a difficult task. Several theorists have aimed at designing a framework for assessing CSR, such as Aguinis & Glavas (2012), and found complexity in measuring and assessing CSR performance. There are several financial indices for social responsibility, such as the Dow Jones Sustainability Index. Recently some institutions have taken on the challenge in Sweden, such as the GES Investment Services.

Furthermore, what we do know is that Sweden is one of the most environmentally aware countries in the world, ranked as world leader by the Global Green Economy Index in 2014. For instance, Sweden ranks first in the European Union regarding consumption of organic foods according to the Swedish Government. This also holds true for other aspects within CSR, as Sweden is seen a pioneer within Human Rights awareness in businesses. The World Economic Forum's Global Gender Gap Report in 2014 reported Sweden as the 4th best in the world regarding gender equality, in terms of national gender gaps. This implied superiority in CSR performance makes Swedish firms relevant to investigate further.

2.1.2. Necessary evil or Cash cow?

There are two different points of view when it comes the effects CSR has on a firm. Some believe CSR to be somewhat of a necessary evil for firms, a hygiene factor required by law. These people would say CSR is something a firm is forced to do and not something with real benefits. In past research one has made a distinction between people who believe that CSR destroys value and those who believe CSR is value-creating. The Assabet Group calls these two different ideas the *Cost Center theory* and *Value Creation theory*.

Some even go as far as saying firms should not engage in CSR activities and merely focus on their financial performance. A key theorist in this area is Milton Friedman, who was a strong believer in firms sticking to their core purpose. In his eyes that meant maximizing profits;

"What does it mean to say "business" has social responsibilities? Only people can have responsibilities. A corporation is an artificial person in itself and in this sense may have artificial responsibilities, but "business" as a whole cannot be said to have responsibilities…"
(Friedman, 1970)

Even though most people today agree that CSR is an important aspect of business, some still remain sceptical. Mats Qviberg, CEO of Investment AB Öresund, stated in an interview with Svenska Dagbladet that Swedish firms ought to stick to doing what they actually know - producing. Some people believe that social responsibility is a threat towards the market economy and companies' role in society. However, many others have debated against these theories, such as Mulligan (1986). Theorists and organizations argue that, for example, a diverse workforce and high-quality raw materials lead to happier customers and employees as well as overall improved firm performance. The World Business Council for Sustainable Development expresses;

"...acting in a socially responsible manner is more than just an ethical duty for a company, but is something that actually has a bottom line pay-off."

The UN Global Compact, acting as one of the world's largest global sustainability initiatives, goes on to say that *"companies are seeing that economic, social and environmental issues matter, not just in the communities where they are located, but also for long-term business viability. Therefore, companies are increasingly taking actions and partnering with peers and other stakeholders to actively support societal goals."*

Grafström, Göthberg & Windell (2015) argue several benefits of CSR on firm performance. Performing well in the area of CSR is implied to attract customers, employees and investors as well as improve the reputation of a firm. The final point, improving the reputation of a firm, is also seen as a form of risk management. Firms with high CSR performance are hedged against other circumstantial effects and scandals. Greening & Turban (1996) found that CSR performance provides a competitive advantage in attracting employees. In line with this, Hillman & Keim (2001) and Peloza & Shang (2011) argue that CSR provides firms with improved relationships with key stakeholders, which in turn provides a competitive advantage. It has also been debated whether a large reserve of CSR goodwill could help mitigate the damage if a crisis or scandal hits a firm. Schnietz & Epstein (2006) investigated this link, and found that CSR reputation protects firms from stock declines during a crisis.

However, does CSR affect actual financial performance? A lot of research has been performed in the past years, aiming to determine whether CSR actually does pay off. Wright & Ferris (1997) found a negative relationship between CSR and financial performance, indicating that CSR expenditures are inconsistent with the goal of profit maximization. Brammer, Brooks and Pavelin (2006) also identified a negative relationship. This while some believe there to be a causal relationship, pointing towards the fact that CSR positively affects financial aspects of a firm (Graves & Waddock, 1994) (Zairi & Peters, 2002). Orlitzky, Schmidt & Rynes (2003) found that Corporate Social Performance is correlated with Corporate Financial Performance, especially accounting-based measures. This while others have concluded that there is no verifiable relation between CSR and financial performance (Surroca, Tribó & Waddock, 2010) (McWilliams & Siegel, 2001). Not even when theorists, such as Peloza (2009), aim at drawing a conclusive result based on all the research performed in the area does it seem possible to determine a conclusive positive or negative relationship. Thus, theorists remain parted in the area of CSR performance and its implications on firm financial performance.

2.2. CSR and Financial Performance

There are countless ways of measuring a firm's financial performance. Also, the area of financial performance which CSR may affect is substantial. Previous research has focused mostly on the relationship between CSR and financial performance using market-based measures such as stock performance. Brammer, Brooks and Pavelin (2006) studied the relationship between CSR and stock performance in the UK and found CSR to be negatively related to a firm's stock return. A negative correlation is also what Hassel, Nilsson and Nyquist (2005) found when studying how environmental information is reflected in the market value of listed Swedish companies. Other studies are using accounting measures such as ROA and ROE as approximations for firm financial performance. Ahamed, Almsafir and Al-Smadi (2014) studied the CSR effect on ROA and ROE on Malaysian firms and found a positive correlation. This while some researchers combine both market-, and accounting-based measures in their studies on CSR effect on financial performance (McGuire, J. B., Sundgren, A., Schneeweis, T., 1988). Even though previous studies have used a variety of measures for financial performance, it has been shown that the different measures have one thing in common. Namely that most of the financial performance measures are at the end of the chain, such as ROA or stock price (Peloza, 2009).

Previous research has overall performed two types of statistical tests. One method has been to perform an event study on the effects of publications of ratings or CSR documents from

the firm itself, measuring specific CSR events against stock prices or other financial measures in the short-term (Welch and Wazzan, 1999). Another method is to try and identify a relationship between CSR and financial performance in the long-term though regression analysis and other statistical methods (Cochran and Wood, 1984). Even though many studies have been conducted within this area, it is evident that no clear answer has been identified. This opens up for further research and investigation in this field. Since the previous findings on CSR and financial performance have been conflicting, we wish to investigate it further by looking into the different components of financial performance using the DuPont framework.

2.2.1. DuPont Framework

The DuPont framework was developed by the DuPont Corporation in the 1920's. It provides a framework for measuring a firm's financial performance and its ability to increase its return. The model is widely used both in the academic world and in practice within firms. It is helpful in understanding the components of a firm's return, and in which ways one can aim to improve it (Johansson & Runsten, 2013). Previous research is scarce in regard to the DuPont framework, and we have been unable to find any previous studies on these particular financial components.

There are several approaches to the DuPont framework and the inputs differ slightly depending on which return measure one chooses to focus on. These measures are relevant not only because of the public interest and wide usage, but because they truly give us an idea of how efficiently firms are using their resources to generate returns. A firm's absolute return measure does not tell us much about actual profitability (Johansson & Runsten, 2013). By placing this return in relation to its capital base, we are able to compare with other firms.

Return on Assets (ROA) plays an important role in determining a firm's financial performance as it measures how efficient the management is in turning assets into profit; the higher the ROA, the higher the profit per dollar of assets. There are several other return measures such as Return on Equity (ROE), Return on Investment (ROI) and Return on Capital Employed (ROCE). Generally, the choice of return measure depends on which aspect of a firm one wishes to analyze and in what industry the company is operating. Depending on the chosen measure, the components of the formula change. Profit margin and Capital turnover, included in the DuPont framework, are then calculated in differently depending on the chosen return measure.

The formula for return in the DuPont framework is:

$$Return = Profit\ margin * Capital\ turnover$$

2.2.2. Capital turnover

Capital turnover is one of the DuPont branches affecting return. A firm's measure of Capital turnover indicates how efficiently a company uses its capital. One puts a firm's return in relation to the capital they are able to use. Usually a higher ratio is preferred, since this means that a company is more efficient at utilizing their capital to generate revenue. If a firm has a low level of Capital turnover, it may indicate that the company has problems internally in their operations.

CSR performance could affect Capital turnover in several ways, both negatively and positively. Some argue that CSR performance leads a company to use its resources more efficiently by, for example, reducing pollution (King & Lenox, 2002). However, not only the environmental aspects are of value when it comes to efficiency. One could argue that a more diverse workforce and happier employees would imply an increased efficiency in firms. As Greening & Turban (1996) found, socially responsible firms tend to attract talented employees.

2.2.3. Profit margin

Profit margins, expressed as percentages, provide information on how much of a company's sales actually remain as earnings after costs have been deducted. A firm's Profit margin gives us an indication of how much income is left in the company after costs have been deducted. Depending the chosen return measure, different kinds of costs are included in the calculations. In simplified terms, profit margins tell us how profitable a firm is. However, they differ much between industries. In some industries one is able to maintain high margins, while other industries face higher costs. Most commonly one divides a return measure, such as net earnings, with revenue.

One could imagine that Profit margin may be both positively and negatively affected by CSR performance. On the one hand, earnings may increase thanks to increased sales (Stanwick & Stanwick, 1998) (Lewis, 2003). However, according to the previously mentioned cost-centered school, costs could outweigh the benefits. Blomgren (2011) aimed at identifying a relationship between CSR and above average profits, but was unable to find a positive relationship.

2.2.4. Components of Profit margin and Asset turnover

The components of Profit margin and Asset turnover are revenue, capital and profitability.

There have previously been other theorists who have proven a relationship between CSR performance and profitability, such Stanwick & Stanwick (1998). Profitability can be measured in several ways, by for instance looking at net earnings or EBIT. The chosen profitability term depends on the chosen return measure. A firm can be subject to a wide variety of costs such as research & development (R&D) expenses, depreciation and employee salaries. In many cases,

becoming more CSR means that costs will increase when, for example, more sustainable, and more expensive, raw materials are used or when a firm's production is moved to a country with better working conditions, and higher salaries, for employees.

Revenue is one of the most fundamental aspects of a firm's financial position. If this measure is high, the firm sells a lot. Previous research has implied a positive relationship between a firm's Corporate Social Performance and sales (Stanwick & Stanwick, 1998). Consumers are becoming more aware of a firm's CSR performance and include this in their purchasing decisions (Grafström, Göthberg & Windell, 2015) (Lewis, 2003). This is a reason why so many firms today focus on releasing sustainable products and use proof of CSR in their marketing. Nan & Heo (2007) investigated the effects when companies promise to donate parts of the profits from a sold product to charity, and were able to identify improved consumer attitudes.

The final part included in the components of ROA is a capital measure. Capital regards what companies actually own and are able to utilize in order to generate results, for instance assets in the form of machinery. The definition of capital depends on in what context it is used. If Return on Investments (ROI) is used as a return measure, the used capital base is often Total Investments. This compared to if Return on Equity (ROE) or Return on Assets (ROA) is used, where Equity and Total Assets, respectively, is used as the capital base. One way in which CSR might affect a firm's assets is by having more sustainable raw materials in stock, with a higher valuation. Also, as demonstrated by Murray & Vogel (1997), CSR could lead to increased goodwill of a firm, increasing the level of intangible assets of a firm.

3. TEST LOGIC AND GENERAL HYPOTHESES

The theoretical framework presented above provides a basis for the following study. In broad terms, our goal is to investigate the implications of CSR performance on financial performance. We will compare the GES Investment Services Rating with components of the DuPont framework. Thus, we aim to answer the question;

"Does CSR performance lead to improved financial performance?"

As presented in our discussion above, CSR has grown in importance, and can bring several positive and negative implications with it. In turn, these effects may lead to improved efficiency, higher margins, increased sales and improved earnings. However, some argue that the negative effects from CSR could have value-destroying implications. These different concepts make the area an interesting one to study, as there seems to be some kind of significant relationship between CSR performance and financial performance. Based on the theoretical framework presented above, our primary belief is that the positive benefits of CSR will outweigh the negative ones, and our null hypothesis can be formulated as;

H_0: *There is a non-verifiable, neutral or negative relationship between CSR performance and Return on Assets*

Thus, our first hypothesis is;

H_1: *There is a positive relationship between CSR performance and Return on Assets*

Further, we believe that there will be differences in how CSR affects the components of ROA. In accordance with H_1, we believe the positive effects of CSR outweigh the negative ones. Thus, we also believe that CSR performance has a positive effect on the components of ROA, Profit Margin and Asset Turnover, since CSR performance has been shown to positively affect both profitability and efficiency of a firm. This leads us to formulate our second and third hypotheses;

H_2: *There is a positive relationship between CSR performance and Profit margin*

H_3: *There is a positive relationship between CSR performance and Asset turnover*

Another goal with this study is to move further into the DuPont framework. We wish to analyze the effects on the underlying components within Profit margin and Asset turnover, namely EBIT, Net sales and Assets. This is done to investigate where CSR performance has the strongest effect, if there are specific effects tied to specific financial components. Thus, we have chosen to formulate our fourth hypotheses as:

H_{4a}: *There is a positive relationship between CSR performance and Net sales*

H_{4b}: *There is a positive relationship between CSR performance and EBIT*

H_{4c}: *There is a positive relationship between CSR performance and Assets*

Furthermore, we aim to investigate whether there is a non-linear relationship between CSR performance and ROA. While we believe there to be several positive financial effects of CSR on financial performance, we are curious to see whether it stops paying off at some point. We believe there to be a level of CSR spending at which the marginal benefits are lower than the negative financial implications. We formulate our fifth and final hypothesis as;

H_5: *There is a non-linear relationship between CSR performance and ROA, in which an optimal level of CSR performance can be identified*

4. METHODOLOGY

4.1. Sample

What initially determined the size and time-span of our sample was the available CSR rating data offered from GES Investment Services. From GES we were granted access to CSR ratings for the years 2005-2015. However, the amount of firms rated by GES varied depending on year. We chose to exclude the 2005 and 2015 ratings since the amount of firms was lower those years, 100 firms, compared to other years such as 2009, with 289 firms. This was done to enable us to reach more reliable results, using as many firms per year as possible. It left us with data for the years 2006-2014. Also, after combining the GES data and financial data we saw that the final sample had no observations for 2006. Thus, our sample consisted of a total of 8 years of data.

Regarding the financial data, Thomson Reuters Datastream was used for data collection and all numbers are measured in SEK. The initial sample on the collection date, 20/04/16, was 307 listed firms on OMX Stockholm. This data was combined with the GES data, providing the end data used in this study. We chose not to use data for firms within the industry "Financials", reducing our sample by 38 firms. This is mainly due to the fact that the balance sheets of these firms are vastly different from other industries in our samples. We believe that including these firms would have made our results more skewed and less reliable. Finally, when adding control variables, there were no observations available within the industries "Utilities" and "Energy".

Thus, we are left with data for 83 firms over the years 2007-2014, providing a total of 558 observations. For descriptive statistics in terms of sample, see *Table 3* and *Table 4* in Appendix.

4.2. Measuring financial performance

The DuPont framework is used to determine which financial measures to use. This framework is used as it is seen as an appropriate method for disaggregating financial performance and is widely used within Financial Accounting. As previously mentioned, there are several different versions of this framework. Following is a description of the components we have chosen to use.

4.2.1. Return on Assets

There are several return measures which can be used in the DuPont framework, such as Return on Equity (ROE), Return on Assets (ROA) and Return on Investment (ROI). These measures provide insights into different aspects of a firm's return. We have chosen to analyze CSR and the effect on ROA, as we want to achieve insight in the CSR effect on overall firm profitability.

Therefore, we conclude that a return measure focusing on total assets, rather than, for example, only focusing on equity, allows us to reach more general conclusions rather than be limited to a shareholder view when using ROE. It is common to divide ROA into two parts, namely Operating Profit margin, as a Profit margin component, and Asset turnover, as a Capital turnover component. Hereafter Operating Profit margin will be referred to as Profit margin.

Hence, we will move on to investigate the effect on ROA by disaggregating it into its two main parts, Profit Margin and Asset Turnover, which in turn are divided into several components.

$$ROA = Asset\ turnover * Profit\ margin$$

4.2.2. Asset turnover

Since we choose to focus on ROA, the capital base used is Total Assets, providing Asset turnover as the component for Capital turnover. The formula used to calculate Asset turnover is:

$$Asset\ turnover = Net\ sales / Total\ Assets$$

4.2.3. Profit margin

In the case of ROA, Profit margin is calculated by dividing Earnings Before Interest and Tax (EBIT) with Net sales.

$$Profit\ margin = EBIT / Net\ sales$$

Following is a brief description of the chosen components of this measure we aim to study.

4.2.4. Components

EBIT

Earnings before interest and tax (EBIT) is often referred to as “operating profit”. EBIT is used to represent the component for Profit in the DuPont framework. The difference between EBIT and net earnings is that interest and tax is not deducted in the case of EBIT. By ignoring these costs, focus is directed towards the ability of a firm to generate income from its operations.

$$EBIT = Pre\text{-}tax\ income + Interest\ expense\ on\ debt - Interest\ capitalized$$

ASSETS

In this study, Assets provides us with a Capital component. The formula for Assets is;

$$Assets = Total\ current\ assets + long\ term\ receivables + investment\ in\ unconsolidated\ subsidiaries + other\ investments + net\ PP\&E + other\ assets$$

NET SALES

Net sales is the component used for the Revenue component. The Formula for Net sales is;

$$Net\ sales = Gross\ sales + other\ operating\ revenue - discounts,\ returns\ and\ allowances$$

4.3. Measuring CSR

In this study we use the GES Investment Services (GES) rating as a proxy for CSR performance. GES Investment Services, previously CaringCompany, publish ratings once a year. They are the leading research institute in Northern Europe in regard to responsible investments.

The GES rating assesses companies based on their ESG, Environmental, Social & Corporate Governance, performance. In this study we choose to focus only on the Environmental and Human Rights rating, since the Corporate Governance rating was assessed only in 2013 and 2014. Including this rating would not provide comparable results for the years 2006-2012.

The Environmental rating is based on international standards for environmental management and industry-specific key indicators for environmental performance. It considers how firms manage aspects such as energy use, emissions of greenhouse gases and use of hazardous substances. Both future preparedness and current performance is assessed. We see this as a good estimate of the previously discussed Environmental factors of CSR performance.

The Human Rights rating is based on the United Nations Universal Declaration of Human Rights, Convention on the Rights of the Child and ILO Core Labour Conventions. GES investigates the management of relations with employees, communities and suppliers in relation to international norms. Factors such as safety in the workplace and corruption are assessed. We see this as a good estimate of the previously discussed Social factors of CSR performance.

Different rating scales have been used, some years a scale of 0-3 and other years 0-7. Due to this, we computed a rating on a 0-1 scale for each year. However, we have used two different CSR scales to make results easier to interpret. In Hypothesis 1-4 the CSR scale is 0-100, and in

Hypothesis 5 it is 0-1. We calculated a total CSR rating by giving the Environmental and Human Rights rating equal weights. See *Table 1* for exact variable definitions and sources.

There are two ways of interpreting the firms with a "0" rating. GES themselves do not specify this, it could either a missing value or a zero engagement in CSR activities. As some companies are excluded from the rating some years, with missing values, we chose to interpret the "0" as a zero CSR performance and keep them in our analysis.

The rating is thought an appropriate CSR performance proxy for several reasons. Firstly, the ratings are performed on all Stockholm OMX firms. Also, the ratings have previously been used by other theorists, such as Hassel, Nilsson & Nyquist (2005), indicating that it is an appropriate measure. Additionally, using a rating performed by a professional institute feels more reliable than if we had computed our own CSR rating. Finally, we wish to examine actual CSR performance rather than disclosed performance. Since this is the exact purpose of the GES rating, it is found appropriate.

Table 1. CSR variable definitions and sources

Variable	Definition	Source
CSR	Total CSR rating. Consists of 50% Environmental rating and 50% Human Rights rating for each year. Scale of 0-100 (H_1-H_4) or 0-1 (H_5).	GES Investment Services
CSR ENV	Environmental rating. Scale of 0-1.	GES Investment Services
CSR HR	Human Rights rating. Scale of 0-1.	GES Investment Services

4.4. Interpreting Logarithmic variables

Several of our variables have been log-transformed. We use a common logarithm, logarithm to the base of 10, to transform our variables. We do this since we are working with several large financial numbers, such as firm size, which vary substantially from firm to firm. Using a logarithm scale reduces wide-ranging quantities to smaller scopes. This method can help provide a more functional form in linear regressions. It also helps in making results easier to interpret. When deciding which variables to perform this transformation on, we observed the distribution of each variable. The variables that had a skewed distribution, a sample distribution with a long tail, were log-transformed in order to achieve a more normal distribution (Wooldridge, 2009). The variables that we log-transformed are SIZE, R&D, SALES, EBIT and ASSETS.

As we have log transformed some dependent variables, SALES, EBIT and ASSETS, but not others, ROA, PM and AT, we perform both log-level regressions and level-level regressions. That is, some of our analysis will consist of a log-transformed dependent variable, while others will consist of a non-log transformed dependent variable. The way to interpret the results will vary depending on this.

When we perform level-level regression analysis we will interpret the results as for each unit change in x, y will change by one unit * β_1, all else held constant. When the regression is log-level we interpret the results as if we change x by 1 one unit we expect a $\beta 1 * 100$ percentage change in y.

4.5. Research method and statistical tests

Since the aim of this study is to perform quantitative analysis, a multiple regression model is found to be the most suitable method. In order to be able to perform a reliable, statistical analysis on the CSR ratings' effect on ROA and its components, we have chosen to perform an OLS (Ordinary Least Squares) regression model using Stata.

The coefficients, β, will give us an indication of how large the effect of a change in the independent variable x is on the dependent variable y. The interpretation of the different β, varies depending on if we perform a log-level regression or a level-level regression.

When performing a regression analysis, we aim to identify effects of a certain variable on a dependent variable. Since we use panel data, we can control for different types of fixed effects. When we control for these effects, we reduce the time-independent variation in our regression analysis. We do this by controlling for industry and year fixed effects. It is also possible to control for firm fixed effects, but in our case this was omitted due to collinearity.

Controlling for fixed effects allows us to control for unobserved factors, hopefully helping us reduce bias and inconsistency. However, there are drawbacks to correcting for fixed effects, one of which is the reduction of variation in our data. Lower variation in the data could potentially reduce the reliability ratio in our study, since we then no longer use all the variation in our sample. Removing much of the variation in our sample could potentially lead to larger standard errors and higher sensitivity to measurement errors in the independent variables.

Due to the different implications of correcting for fixed effects, we choose to perform regressions both with and without these controls, in our *Baseline model*.

4.5.2. Hypothesis 1

$$ROA_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 BETA_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 CRISIS_{it} + \beta_6 R\&D_{it} + (\beta_7 INDUSTRY + \beta_8 YEAR) + u_{it}$$

In our first baseline model test we will mainly look at the coefficient β_1, if the coefficient is positive at a 10% significance level or less, the null hypothesis will be rejected.

$$H_0: \beta_1 \leq 0; H_1: \beta_1 > 0$$

Where:

ROA = Return on Assets

CSR = CSR rating

BETA = Market beta

SIZE = Logarithm of a firm's market capitalization

LEV = Leverage ration, debt over equity (D/E)

CRISIS = Dummy variable with value 1 for years 2007-2008 to control for the years of financial crisis, and value 0 for all other years

R&D = Logarithm of a firm's R&D expenses divided by market capitalization

INDUSTRY = Industry fixed effects

YEAR = Year fixed effects

i = Unit (Firm)

t = Year of valuation

4.5.3. Hypothesis 2

To test our second hypothesis, we will use a similar model. However, instead of ROA we will use Profit margin (PM) as our dependent variable:

$$PM_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 BETA_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 CRISIS_{it} + \beta_6 R\&D_{it} + (\beta_7 INDUSTRY + \beta_8 YEAR) + u_{it}$$

In accordance with our first hypothesis, the null hypothesis will be rejected if:

$$H_0: \beta_1 \leq 0; H_2: \beta_1 > 0$$

4.5.4. Hypothesis 3

For Hypothesis 3, we use Asset turnover (AT) as our dependent variable:

$$AT_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 BETA_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 CRISIS_{it} + \beta_6 R\&D_{it} + (\beta_7 INDUSTRY + \beta_8 YEAR) + u_{it}$$

Also in this case the null hypothesis will be rejected if:

$$H_0: \beta_1 \leq 0;\ H_3: \beta_1 > 0$$

4.5.5. Hypothesis 4

To test our fourth hypothesis, we use EBIT, Net sales and Assets as dependent variables.

$$H_{4a}: SALES_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 BETA_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 CRISIS_{it} + \beta_6 R\&D_{it} + (\beta_7 INDUSTRY + \beta_8 YEAR) + u_{it}$$

$$H_{4b}: EBIT_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 BETA_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 CRISIS_{it} + \beta_6 R\&D_{it} + (\beta_7 INDUSTRY + \beta_8 YEAR) + u_{it}$$

$$H_{4c}: ASSETS_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 BETA_{it} + \beta_3 SIZE_{it} + \beta_4 LEV_{it} + \beta_5 CRISIS_{it} + \beta_6 R\&D_{it} + (\beta_7 INDUSTRY + \beta_8 YEAR) + u_{it}$$

The null hypothesis can be rejected if:

$$H_0: \beta_1 \leq 0;\ H_4: \beta_1 > 0$$

4.5.6. Hypothesis 5

For our fifth and final hypothesis, we apply a nonlinear regression model to test if there is a nonlinear, u-shaped relationship between CSR and ROA. To test for this we will add a squared CSR rating, (CSR^2), to our industry and year fixed effects model:

$$ROA_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 CSR^2_{\ it} + \beta_3 BETA_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 CRISIS_{it} + \beta_7 R\&D_{it} + (\beta_8 INDUSTRY + \beta_9 YEAR) + u_{it}$$

For this hypothesis, we will be able to draw conclusions regarding the nonlinear relationship only if the coefficients CSR and CSR^2 both are significant at a minimum 10% significance level.

4.6. Control variables

We wish to identify relationships between one dependent variable, for example ROA, and an independent variable, CSR. If we perform a regression analysis on these two variables only, a lot of other effects are disregarded and the ability to argue a causal relationship is lost. There are a lot more aspects other than CSR performance affecting ROA. In order to isolate the effect of CSR, we include several control variables in our study.

In this study, we choose to use size (SIZE) as a control variable. We have used market capitalization as a proxy for firm size, that is the total market value of a company's outstanding shares. The larger the firm, the larger the numbers will be. Larger firms in general have more resources available compared to small firms. Hall & Weiss (1967) identified a relationship between a firm's size and level of profit rates.

Leverage (LEV), in this study computed as Debt through Equity (D/E), is used as a control variable. We use this since the general perception is that financial pressure affects a firm's financial choices. Ahmad, Salman & Shamsi (2015) were able to find that financial leverage has a statistically significant and inverse impact on profitability. Also, Baker (1973) states that leverage and profitability have a strong relationship. As we conclude that the amount of leverage could impact on a firm's financial performance, we include it as a control variable.

One suggested interpretation of beta by Fama & French (2004) is that beta measures the sensitivity of the asset's return to variation in the market return. Thus, beta (BETA) is included as a control variable to be able to control for each firm's sensitivity to market fluctuations, as this has an impact on a firm's return and can affect ROA.

A lot of researchers before us have found negative relationships between CSR and financial performance. However, there have been findings that imply such negative relationships are due to not controlling for Research and Development (R&D) expenditures (McWilliams & Siegel, 2000). Also, R&D has been shown to be highly correlated with firm financial performance (Lichtenberg and Siegel, 1991), (Hall, 1999). R&D has been shown to improve firm efficiency and productivity (Chuang & Lin, 1999), (Zhang et al., 2003). Due to the implied importance of controlling for R&D expenditures, we choose to do so in this study. As it is

suggested to use R&D as a relative measure, we are using R&D intensity proxied by *R&D expenses/Market capitalization*, in which Market capitalization is seen as a proxy for firm size.

Since our sample is for the period 2007-2014 we want to take in account the impact of the financial crisis, in the years of 2007-2008, as the crisis affected most industries and firms. We chose to formulate a control variable, CRISIS, which takes the value 1 for the years 2007-2008 and the value 0 for 2009-2014 (Helleiner, 2011). All control variables are described in *Table 2.*

Table 2. Control variable definitions and sources

Variable	**Definition**	**Source**
SIZE	The logarithm of a firm's market capitalization.	Datastream
LEV	Leverage is calculated as total Debt divided by Equity, D/E ratio.	Datastream
BETA	Market beta	Datastream
R&D	The logarithm of a firm's R&D expenses/Market capitalization	Datastream
CRISIS	A dummy computed consisting of value 0 or 1. The value "1" is assigned to all data for the years 2007-2008.	-

Industry

When dividing the firms into industries we used the same framework as theorists before us, such as Hassel, Nilsson & Nyquist (2005), namely the Global Industry Classification Standard (GICS). In our original GES data, there were many industries mentioned. Using this framework, we were able to narrow the many industries down to 10 industries. The 10 industries in this framework are Energy, Materials, Industrials, Consumer Discretionary, Consumer Staples, Health care, Financials, Information technology, Telecommunication services and Utilities, see *Table 17* in Appendix. These were further used as fixed effect control variables in some of the analysis.

Since different industries have different types of balance sheets and business conditions, our results could potentially become biased if we do not control for this. A firm's level of Profit margin and Asset turnover is heavily dependent on which industry it operates in (Johansson & Runsten, 2013). Additionally, it has been shown that the behaviour of ROA is very affected by operating leverage and what stage in the product life cycle the company or product is in, why ROA may differ between industries and companies (Selling, T., Stickney C., 1989).

5. RESULTS AND ANALYSIS

Here, we present descriptive statistics for our sample and data. We then discuss results found regarding Hypothesis 1, presenting our Ordinary Least Squares (OLS) regression analysis. Following this, we present results for Hypothesis 2, 3 and 4. Finally, we present Hypothesis 5.

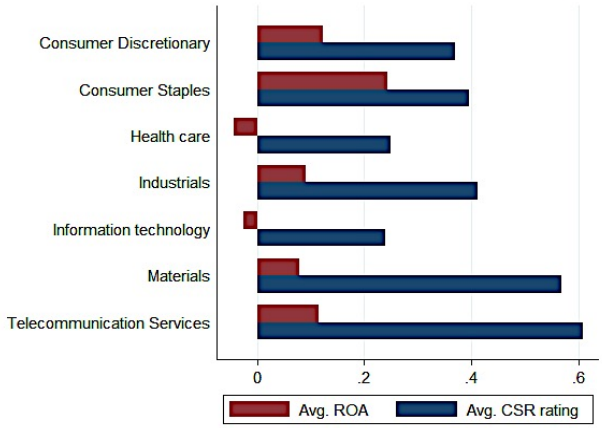
5.1. Descriptive statistics

As illustrated in *Table 3* in Appendix, the data used in this study consists of 558 observations. The sample consists of 83 firms within 7 different industries. A majority of observations is within the industries Industrials, Health care and Information technology. They account for 84.05% our sample. Our 558 observations are quite evenly distributed across years, as can be seen in *Table 4* in Appendix. This implies that no years are highly under- or overrepresented in our sample.

Table 5 in Appendix shows that the average CSR rating in our sample is 0.3429. The average ENV rating is larger, at 0.3517, than the average HR rating, 0.3341. This implies that the firms in our sample perform better within Environmental performance than Human Rights.

Table 6 in Appendix illustrates the industry means for the CSR rating. The industry performing at the highest level within CSR is the Telecommunication services industry. The industries with the largest representation in our sample, Industrials, Health care and Information technology, have an average CSR rating of 0.4116, 0.2487 and 0.2383, respectively. Thus, our sample consists to a large part of industries performing relatively badly within CSR.

Figure 1. Average CSR rating and ROA over industries



As seen in *Table 7* in Appendix, the average ROA varies depending on industry. Best performing is Consumer Staples. The lowest performing industries, Information technology and

Health care, have a negative average ROA. Thus, the most highly represented industries in this study are those with lowest average industry ROA, further illustrated in *Figure 1*.

The average Profit margins per industry are illustrated in *Table 8* in Appendix. The most highly represented industries in our sample perform relatively badly in terms of Profit margins compared to other industries. Consequently, we observe the average Asset turnover within industries in *Table 9* in Appendix. The best performing industry is Industrials. The worst performing industries are Telecommunication services and Health care.

As *Table 10* in Appendix shows, the average CSR rating has declined since 2007. Average CSR ratings were highest in 2010, 0.3762, and lowest in 2013, 0.3057. This finding goes against the belief that CSR performance in firms has increased in the past years. Surprisingly, CSR ratings did not significantly stagnate during the financial crisis. As can be seen from *Figure 2* in Appendix, average CSR ratings and average ROA seem to move together across years.

Correlations help us understand if one variable affects another. By producing a correlations table for the main variables used ins this study, we see that CSR has a positive correlation with all variables, as illustrated in *Table 11* in Appendix. This seems in line with our hypotheses - there is a positive relationship between CSR and financial performance, more or less strong depending on the financial measure. Correspondingly, look at the correlations between our dependent variable and independent variables used in Hypothesis 1 in *Table 12* in Appendix, we see that not all correlations are found to be significant. However, some variables correlate with our dependent variable, ROA, at a significant level.

5.2. Hypothesis 1

We begin our analysis by examining our first hypothesis, to see whether there is a positive relationship between CSR performance and Return on Assets.

We begin our analysis by performing an OLS regression with ROA as a dependent variable and CSR as an independent variable, see Table 13 in Appendix. Further, we add control variables, fixed effects and robust regression to achieve reliable results. However, it is interesting that CSR seems to have a positive effect on ROA (0.00150***) at a $p<0.01$ significance level.

To continue our analysis on the effect of CSR on ROA, we add our control variables. Results are illustrated in *Table 14*. When adding control variables, results remain positive. In fact, even when controlling for industry and year fixed effects, results remain positive at a significant level. As previously mentioned, firm fixed effects were omitted due to collinearity in all of our regressions, for all hypotheses.

Table 14. Regression results for ROA including control for fixed effects

	(1) Baseline model ROA	(2) Industry FE ROA	(3) Year FE ROA	(4) Industry & Year FE ROA
CSR	0.00113**	0.00108**	0.00108**	0.00107**
	(0.00044)	(0.00048)	(0.00045)	(0.00049)
BETA	0.05798***	0.06686***	0.05764***	0.06631***
	(0.02204)	(0.02184)	(0.02229)	(0.02219)
LEV	-0.00002	-0.00002*	-0.00002	-0.00002*
	(0.00001)	(0.00001)	(0.00001)	(0.00001)
CRISIS	0.02383	0.02082	0.03201	0.02862
	(0.01845)	(0.01846)	(0.03591)	(0.03653)
SIZE	0.00193	0.00237	0.00250	0.00285
	(0.00449)	(0.00459)	(0.00460)	(0.00469)
R&D	-0.07662***	-0.07519***	-0.07780***	-0.07705***
	(0.01064)	(0.01241)	(0.01044)	(0.01234)
Constant	-0.35921***	-0.48756***	-0.35578***	-0.49198***
	(0.05930)	(0.08900)	(0.06499)	(0.09602)
Observations	558	558	558	558
R-squared	0.27178	0.29936	0.27642	0.30412
Industry effects	NO	YES	NO	YES
Year effects	NO	NO	YES	YES

This table presents our OLS regression model of CSR as an independent variable and ROA as the dependent variable, as well as our control variables. The variable ROA is defined as a firm's Return on Assets measured as Profit Margin*Asset Turnover. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. The variable SIZE is firm size, calculated as the logarithm of a firm's market capitalization. The variable LEV is leverage, calculated as Debt/Equity. The variable R&D is the logarithm of a firm's R&D expenses divided by market capitalization. BETA is the Market beta. CRISIS is a dummy variable with value 1 for years 2007-2008 and 0 for all other years. The first regression model (1), Baseline model, is one without the adjustment for fixed effects. Model (2) includes industry fixed effects; model (3) year fixed effects and regression model (4) includes both industry and year fixed effects. For each variable, the coefficient is presented along with the robust standard errors in the parenthesis below. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

In the first regression, not controlling for industry or year fixed effects, the CSR coefficient is positive (0.00113**) and significant at the p<0.05 level. The coefficient implies that a one unit increase in CSR rating improves ROA by 0.00113. The R-squared remains above 0.27 for all regressions, implying relatively high explanatory value of the variables used.

In the second regression we control for industry fixed effects. The coefficient for CSR is slightly reduced (0.00108**) and significant at the p<0.05 level, implying that a one unit increase in CSR improves ROA by 0.00108, when adjusting for industry-specific factors.

The third regression controls for year fixed effects. The R-squared is slightly increased compared to the Baseline model, implying a larger explanatory value when including year effects. As when controlling for industry fixed effects, the CSR coefficient is slightly lower than

in the Baseline model. The CSR coefficient is 0.00108 and significant at the p<0.05 level. Thus, when controlling for year effects we still identify a positive relationship between CSR and ROA.

In the final regression, we control for both industry and year fixed effects in order to see if the positive CSR-ROA relationship still holds. As can be seen in *Table 14*, we get a slightly lower but still positive coefficient at a 5% significance level (0.00107**), compared to the Baseline model. The R-squared does not change much and is at a level of 0.30412.

These findings indicate support for Hypothesis 1, our results imply that CSR performance has a positive effect on ROA. Thus, we reject the null hypothesis at a p<0.05 significance level.

5.3. Hypothesis 2

Table 15. Regression results for Profit margin with control for fixed effects

	(1) Baseline model PM	(2) Industry FE PM	(3) Year FE PM	(4) Industry & Year FE PM
CSR	0.02256**	0.01849**	0.02485**	0.02149**
	(0.00950)	(0.00870)	(0.01028)	(0.00946)
BETA	-0.55688	-0.40759	-0.55313	-0.40337
	(0.37894)	(0.38066)	(0.37859)	(0.38143)
LEV	0.00013	0.00015	0.00015	0.00019
	(0.00028)	(0.00023)	(0.00031)	(0.00027)
CRISIS	-0.06782	-0.09402	0.17785	0.16075
	(0.30600)	(0.29753)	(0.40703)	(0.42119)
SIZE	-0.08450	-0.05486	-0.10394	-0.07661
	(0.07842)	(0.07854)	(0.08765)	(0.08728)
R&D	-0.43656***	-0.39976***	-0.46739***	-0.44418***
	(0.13734)	(0.14936)	(0.14354)	(0.15959)
Constant	-0.94178*	-1.88889**	-0.74762	-1.83284
	(0.48381)	(0.83349)	(0.82598)	(1.24415)
Observations	558	558	558	558
R-squared	0.05106	0.07702	0.06244	0.08941
Industry effects	NO	YES	NO	YES
Year effects	NO	NO	YES	YES

This table presents our OLS regression model of CSR as an independent variable and PM as the dependent variable, with control variables. The variable PM is defined as a firm's: EBIT/Sales. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. The variable SIZE is firm size, calculated as the logarithm of a firm's market capitalization. The variable LEV is leverage, calculated as Debt/Equity. The variable R&D is the logarithm of a firm's R&D expenses divided by market capitalization. BETA is the Market beta. CRISIS is a dummy variable with value 1 for years 2007-2008 and 0 for other years. The first regression model (1), *Baseline model,* is one without the adjustment for fixed effects. Model (2) includes industry fixed effects; model (3) year fixed effects and regression model (4) includes both industry and year fixed effects. For each variable, the coefficient is presented along with robust standard errors in the parenthesis. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

We find that CSR overall has a strong and statistically significant effect on Profit margin, as can be seen in *Table 15*. In the Baseline model, before controlling for industry and year fixed effects, we see that CSR has a positive coefficient (0.02256**) at a 5% significance level. This indicates that a one unit increase in CSR rating results in a 0.02256 increase in Profit margin.

Adding controls for industry fixed effects to our regression, it still indicates a positive relationship between CSR and Profit margin, slightly lower than in our Baseline model (0.01849**). The results from adding year fixed effects follows this pattern, the coefficient of CSR is positive (0.02485**). The null-hypothesis is rejected at a 5% significance level. Lastly, including both industry and year fixed effects we find similar results, (0.02149**), implying a 0.02149 increase in Profit margin for every one unit increase in CSR at the $p<0.05$ level.

The R-squared ranges from 0.05106 to 0.08941, implying that only 5.1%-8.9% of the sample variation in Profit margin can be explained by the independent variables. We see that CSR seems to have a greater effect on Profit margin than on ROA.

5.4. Hypothesis 3

Our results for Asset turnover imply a positive effect of CSR, as seen in *Table 16*. In the Baseline model, the CSR coefficient is (0.00857**). This implies that a one unit increase in CSR rating increases Asset turnover by 0.00857. This result is significant at a $p<0.05$ level.

In the second regression, we control for industry fixed effects. The CSR coefficient implies that a one unit increase in CSR rating will increase Asset turnover by 0.00605, a smaller effect than in the Baseline model. Performing the same type of control for year fixed effects, in the third regression, we find that the CSR coefficient is (0.00851**). Thus, controlling for year fixed effects we see a 0.00851 increase in Asset turnover if CSR rating improves by one unit. In the fourth regression, we control for year and industry fixed effects. Results imply that a one unit increase in CSR rating increases Asset turnover by 0.00607.

The R-squared in our Baseline model implies that 13.918% of the sample variation in Asset turnover can be explained by our independent variables. The R-squared is over twice as high in the second regression, at 0.32629. This tells us that the explanatory value in our regressions are substantially improved when we control for industry fixed effects.

Table 16. Regression results for Asset turnover with control for fixed effects

	(1) Baseline model AT	(2) Industry FE AT	(3) Year FE AT	(4) Industry & Year FE AT
CSR	0.00857***	0.00605***	0.00851***	0.00607***
	(0.00122)	(0.00114)	(0.00126)	(0.00115)
BETA	0.03963	0.08081***	0.03922	0.08057***
	(0.03273)	(0.03010)	(0.03284)	(0.03028)
LEV	0.00005	0.00002	0.00006	0.00003
	(0.00006)	(0.00003)	(0.00006)	(0.00003)
CRISIS	0.00827	-0.01157	0.01528	-0.00360
	(0.04133)	(0.03651)	(0.07235)	(0.06490)
SIZE	-0.10829***	-0.09351***	-0.10750***	-0.09347***
	(0.01307)	(0.01172)	(0.01324)	(0.01182)
R&D	-0.09790***	-0.06725***	-0.09874***	-0.06867***
	(0.01521)	(0.01658)	(0.01532)	(0.01679)
Constant	1.87268***	1.38971***	1.86601***	1.37594***
	(0.14185)	(0.14111)	(0.15020)	(0.15236)
Observations	565	565	565	565
R-squared	0.13918	0.32629	0.14012	0.32725
Industry effects	NO	YES	NO	YES
Year effects	NO	NO	YES	YES

This table presents our OLS regression model of CSR as an independent variable and AT as the dependent variable and control variables. The variable AT is defined as a firm's: Sales/Assets. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. The variable SIZE is firm size, calculated as the logarithm of a firm's market capitalization. The variable LEV is leverage, calculated as Debt/Equity. The variable R&D is the logarithm of a firm's R&D expenses divided by market capitalization. BETA is the Market beta. CRISIS is a dummy variable with value 1 for years 2007-2008 and 0 for all other years. The first regression model (1), *Baseline model,* is one without the adjustment for fixed effects. Model (2) includes industry fixed effects; model (3) year fixed effects and regression model (4) includes both industry and year fixed effects. For each variable, the coefficient is presented along with the robust standard errors in the parenthesis below. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

5.5 Hypothesis 4

Hypothesis 4 (a)

We began by looking at Net sales, results are illustrated in *Table 17*. The CSR coefficient in our Baseline model is (0.03464***). As mentioned before, this is a log-level regression analysis with the independent variable presented in a scale of 0-100, hence the coefficient will be interpreted as a one unit increase in CSR rating will lead to a 3,464% increase in Sales. A relatively strong effect remains throughout all four regressions.

The coefficient is smallest in the second and fourth regressions, where we control for industry fixed effects. All regressions provide us with coefficients significant at a p<0.01 level. The R-squared in our Baseline model implies that 79.967% of the sample variations for Net sales is explained by the used independent variables.

Table 17. Regression results for Sales with control for fixed effects

	(1) Baseline model SALES	(2) Industry FE SALES	(3) Year FE SALES	(4) Industry & Year FE SALES
CSR	0.03464***	0.02173***	0.03358***	0.02138***
	(0.00343)	(0.00303)	(0.00349)	(0.00300)
BETA	-0.02729	0.10704	-0.03649	0.09493
	(0.14098)	(0.12685)	(0.13965)	(0.12635)
LEV	0.00050	0.00037	0.00051	0.00038*
	(0.00037)	(0.00023)	(0.00037)	(0.00023)
CRISIS	0.22215*	0.13644	0.66770***	0.53649***
	(0.11983)	(0.10540)	(0.20129)	(0.17910)
SIZE	0.76094***	0.81788***	0.77416***	0.82803***
	(0.03929)	(0.03361)	(0.03982)	(0.03357)
R&D	0.00921	0.19607***	-0.01209	0.16594***
	(0.04552)	(0.04981)	(0.04476)	(0.04910)
Constant	1.98308***	1.71240***	1.63882***	1.37335***
	(0.39848)	(0.38072)	(0.41287)	(0.41932)
Observations	565	565	565	565
R-squared	0.79967	0.84293	0.80532	0.84706
Industry effects	NO	YES	NO	YES
Year effects	NO	NO	YES	YES

This table presents our OLS regression model of CSR as an independent variable and SALES as the dependent variable and our control variables. The variable SALES is defined as a firm's total net sales. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. The variable SIZE is firm size, calculated as the logarithm of a firm's market capitalization. The variable LEV is leverage, calculated as Debt/Equity. R&D is the logarithm of a firm's R&D expenses divided by market capitalization. BETA is the Market beta. CRISIS is a dummy variable with value 1 for years 2007-2008 and 0 for all other years. The first regression model (1), *Baseline model,* is one without the adjustment for fixed effects. Model (2) includes industry fixed effects; model (3) year fixed effects and regression model (4) includes both industry and year fixed effects. For each variable, the coefficient is presented along with the robust standard errors in the parenthesis. Significance levels: *** p<0.01, ** p<0.05, * p<0.1

Hypothesis 4 (b)

We then moved on to look closer at EBIT, as can be seen in *Table 18.* We still see a positive effect, although slightly lower than the effect on Net sales, indicating that while CSR leads to improved Net sales, the effects are smaller once costs are taken into account. The CSR coefficient in the Baseline model is (0.00870***), implying that a one unit increase in CSR rating improves EBIT by 0.87%. This result is found to be significant at a p<0.01 level. Similar to the regressions for Sales, the CSR rating coefficient is lower when controlling for industry fixed effects (0.00434*), which is significant at a p<0.1 level. This implies that industry specific effects are a very important factor in determining the magnitude of the CSR rating effect on EBIT. Also, the R-squared is very high, all the performed regressions seem to explain over 90% of the sample variances in EBIT. Results are not found to be significant in the fourth regression.

Table 18. Regression results for EBIT with control for fixed effects

	(1) Baseline model EBIT	(2) Industry FE EBIT	(3) Year FE EBIT	(4) Industry & Year FE EBIT
CSR	0.00870***	0.00434*	0.00747***	0.00338
	(0.00213)	(0.00243)	(0.00204)	(0.00229)
BETA	0.15843	0.25564**	0.16543	0.25374**
	(0.10487)	(0.10638)	(0.10509)	(0.10820)
LEV	0.00009	0.00002	0.00010	0.00004
	(0.00007)	(0.00004)	(0.00008)	(0.00006)
CRISIS	0.38810***	0.35580***	0.69695***	0.62911***
	(0.08031)	(0.07675)	(0.12647)	(0.12550)
SIZE	0.97929***	0.98223***	0.99582***	0.99931***
	(0.02295)	(0.02315)	(0.02177)	(0.02225)
R&D	-0.01000	0.07868**	-0.03370	0.04733
	(0.03181)	(0.03671)	(0.03154)	(0.03604)
Constant	-2.81913***	-1.76168***	-3.13521***	-2.20986***
	(0.30412)	(0.37441)	(0.30952)	(0.38792)
Observations	452	452	452	452
R-squared	0.91507	0.92078	0.92285	0.92764
Industry effects	NO	YES	NO	YES
Year effects	NO	NO	YES	YES

This table presents our OLS regression model of CSR as an independent variable and EBIT as the dependent variable as well as our control variables. The variable EBIT is defined as a firm's Earnings before Interest and Taxes. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. The variable SIZE is firm size, calculated as the logarithm of a firm's market capitalization. The variable LEV is leverage, calculated as Debt/Equity. The variable R&D is the logarithm of a firm's R&D expenses divided by market capitalization. BETA is the Market beta. CRISIS is a dummy variable with value 1 for years 2007-2008 and 0 for all other years. The first regression model (1), *Baseline model,* is one without the adjustment for fixed effects. Model (2) includes industry fixed effects; model (3) year fixed effects and regression model (4) includes both industry and year fixed effects. For each variable, the coefficient is presented along with the robust standard errors in the parenthesis below. Significance levels: *** p<0.01, ** p<0.05, * p<0.1

Hypothesis 4 (c)

When we performed the same analysis on a firm's Assets, we identified positive results. Results are illustrated in *Table 19.* The CSR coefficient in our Baseline model (0.02055***) implies that a one unit increase in CSR rating will increase Assets by 2.055%, all else held constant. In the second regression we control for industry fixed effects, and find the CSR coefficient to be lower at (0.01205***). When we control for year fixed effects in the third regression, results imply that a one unit increase in CSR rating increases Assets by 1.945%. The lowest effect is found in the fourth regression when controlling for both industry and year fixed effects. This provides us a CSR coefficient of (0.01143***). All these findings are significant at a p<0.01 level. The R-squared in all regressions is above 0.9, implying that over 90% of the sample variations in Assets can be explained through our independent variables.

Table 19. Regression results for Assets with control for fixed effects

	(1) Baseline model ASSETS	(2) Industry FE ASSETS	(3) Year FE ASSETS	(4) Industry & Year FE ASSETS
CSR	0.02055***	0.01205***	0.01945***	0.01143***
	(0.00227)	(0.00214)	(0.00225)	(0.00207)
BETA	0.03543	0.09566	0.02689	0.08400
	(0.06858)	(0.06131)	(0.06782)	(0.06119)
LEV	0.00040	0.00032*	0.00041	0.00034*
	(0.00029)	(0.00019)	(0.00028)	(0.00018)
CRISIS	0.23248***	0.18191**	0.09543	0.06427
	(0.07869)	(0.07126)	(0.12654)	(0.11853)
SIZE	0.89206***	0.92425***	0.90522***	0.93582***
	(0.02644)	(0.02351)	(0.02634)	(0.02312)
R&D	0.14531***	0.27547***	0.12858***	0.25193***
	(0.03025)	(0.03606)	(0.02902)	(0.03482)
Constant	1.16419***	1.52735***	0.79561**	1.21816***
	(0.29045)	(0.28353)	(0.31404)	(0.30751)
Observations	568	568	568	568
R-squared	0.90131	0.91674	0.90597	0.92024
Industry effects	NO	YES	NO	YES
Year effects	NO	NO	YES	YES

This table presents our OLS regression model of CSR as an independent variable and ASSETS as the dependent variable as well as our control variables. The variable ASSETS is defined as a firm's total assets. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. The variable SIZE is firm size, calculated as the logarithm of a firm's market capitalization. The variable LEV is leverage, calculated as Debt/Equity. The variable R&D is the logarithm of a firm's R&D expenses divided by market capitalization. BETA is the Market beta. CRISIS is a dummy variable with value 1 for years 2007-2008 and 0 for all other years. The first regression model (1), *Baseline model,* is one without the adjustment for fixed effects. Model (2) includes industry fixed effects; model (3) year fixed effects and regression model (4) includes both industry and year fixed effects. For each variable, the coefficient is presented along with the robust standard errors in the parenthesis below. Significance levels: *** p<0.01, ** p<0.05, * p<0.1

5.6. Hypothesis 5

In order to test our fifth hypothesis; whether or not there is a U-shaped relationship between CSR performance and ROA, we perform a nonlinear analysis. This is done by adding a squared term, CSR^2, to our regression analysis.

The results shown in *Table 20*. indicate that we do not find a significant result for the CSR rating. When disaggregating the CSR rating into its components, CSR ENV and CSR HR, we see that CSR HR is not significant. Thus, we cannot reach conclusions regarding a nonlinear relationship for the total CSR and Human Rights ratings. Although, when looking at CSR ENV we see that both the positive coefficient CSR (0.23963**) and the negative CSR^2 (-0.18825*) are significant at a 5% and 10% level respectively.

Solving the quadratic equation provides us with results implying an inverse U-shaped relationship between ROA and the Environmental rating. We conclude that a rating of 0.64 is at the peak of the curve, and that firms with an Environmental rating lower than 0.64 experience increasing returns to scale, while firms with Environmental ratings higher than 0.64 experience decreasing returns to scale. Thus, the implied optimal level of Environment performance is at a rating of 0.64. When passing this level, it stops paying off, in terms of ROA.

Table 20. Results from nonlinear relationship CSR-ROA

	CSR ROA	CSR HR ROA	CSR ENV ROA
CSR	0.19539	0.01386	0.23963**
	(0.12286)	(0.14143)	(0.09860)
CSR^2	-0.12217	0.07778	-0.18825*
	(0.14163)	(0.18533)	(0.10211)
BETA	0.06513***	0.06658***	0.06200***
	(0.02249)	(0.02217)	(0.02217)
LEV	-0.00002*	-0.00002*	-0.00003**
	(0.00001)	(0.00001)	(0.00001)
CRISIS	-0.01463	-0.01632	-0.01186
	(0.02908)	(0.02891)	(0.02934)
SIZE	0.00376	0.00617	0.00466
	(0.00475)	(0.00438)	(0.00458)
R&D	-0.07599***	-0.07456***	-0.07523***
	(0.01245)	(0.01196)	(0.01245)
Constant	-0.51091***	-0.51443***	-0.52452***
	(0.09767)	(0.09985)	(0.09654)
Observations	558	558	558
R-squared	0.30467	0.30199	0.30728
Industry	YES	YES	YES
Year	YES	YES	YES

This table presents our OLS regression model of CSR as an independent variable and ROA as the dependent variable as well as our control variables. The variable ROA is defined as a firm's Return on Assets, Profit Margin*Asset Turnover. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. The variable SIZE is firm size, calculated as the logarithm of a firm's market capitalization. The variable LEV is leverage, calculated as Debt/Equity. The variable R&D is the logarithm of a firm's R&D expenses divided by market capitalization. BETA is the Market beta. CRISIS is a dummy variable with value 1 for years 2007-2008 and 0 for all other years. CSR^2 is added to study the linear relationship between CSR and ROA. The table is divided into total CSR rating (CSR), Human Rights rating (CSR HR) and Environmental rating (CSR ENV). All regression analyses include both industry & year fixed effects. For each variable, the coefficient is presented along with the robust standard errors in the parenthesis below. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

6. DISCUSSION

In the first part of this section we will shortly summarize our findings and discuss underlying logic. We then present our sensitivity analysis and discuss how our methods, approximations and assumptions may have an impact on the reliability of our results. In the final section, we present our robustness tests, serving as our quality assurance to check our method validation.

6.1. Results

Our first hypothesis to test was identifying a positive relationship between CSR and ROA. As our findings indicate that CSR has a positive and statistically significant effect on ROA, we were able to reject our null hypothesis. Depending on which fixed effects we chose to include in the regression analysis, we could show that a one unit increase in CSR rating would improve ROA by 0.00107-0.00113, all else held constant. As previously mentioned, there has been debate and separated opinions regarding whether CSR performance leads to any financial benefits or not. Our findings, that CSR actually does lead to financial benefits, are in line with several theorists before us. For instance, this is what Ahamed, Almsafir and Al-Smadi (2014) found when studying the relationship between CSR, ROE and ROA.

In sum, our results indicate that firms with higher CSR performance use its assets to generate earnings more efficiently than firms with lower CSR performance. According to the DuPont framework, one can improve ROA in two ways; through Profit margin or Asset turnover. Thus, our findings indicate that firms with higher CSR performance either benefit from increasing sales, lowered costs or a more efficient use of its assets. This could be done by, for example, avoiding excess production and improving inventory management.

For our second and third hypotheses we were able to show that CSR performance has a positive effect on both Profit margin and Asset turnover. But what we were more interested in was to see whether CSR performance had a greater effect on either of the components. Our results imply that CSR performance seems to have a greater positive effect on Profit margin than on Asset turnover. We identify a 0.01849-0.02485 improvement in Profit margin, compared to 0.00605-0.00857 improvement in Asset turnover, for each unit increase in CSR rating, all else held constant. These findings indicate that CSR performance has a greater impact on increasing sales and reducing expenses than on a more efficient use of its Assets.

Furthermore, we thought it could be interesting to see what effect CSR performance has on the components of Profit margin and Asset turnover, namely on EBIT, Net sales and Assets, which provided a basis for our fourth hypothesis. Our findings indicate that CSR has a positive

effect on each of the components. But, according to our results, CSR seems to have a greater effect on Net sales than on EBIT. We believe that CSR could lead to good publicity and brand reputation and that many people would chose to buy products or services from a company that invests in CSR activities over a company that does not, in line with theories presented by Grafström, Göthberg & Windell (2015). Hence, CSR is not only the right thing to do, it also seems to lead to increased Net sales and real financial benefits.

As CSR seems to have a larger positive effect on Net sales than on EBIT, this indicates that a firm with high CSR performance also experiences increased costs. This could be due to implications such as more expensive raw material. However, even though CSR also leads to increased expenses, our findings indicate that the positive effects outweigh the negative ones.

Lastly, we aimed at identifying a U-shaped relationship between CSR and ROA. We were unable to achieve significance for the total CSR rating and the Human Rights rating. However, the Environmental rating had an inverse U-shaped relationship with ROA. This implied that 0.64 would be the maximum, optimal point where after any efforts to achieve a higher Environmental rating would lead to diminishing returns to scale.

As mentioned previously, included in the Environmental aspect is how firms manage aspects such as energy use, emissions of greenhouse gases and use of hazardous substances. As the used ratings are presented in a 0 to 1 scale, an Environmental rating of 0.64 is relatively high. In our sample, very few industries have average ratings that high as the sample Environmental rating mean is at 0.35, as can be seen in Table 21 in Appendix. This implies that most firms could reap benefits in terms of ROA by improving the aspects included in the Environmental rating. We believe that very few firms are aware of what kind of responsibilities they have, and what a great impact their actions have on the environment and behaviour of the rest of the world's population. Additionally, we think that most firms are afraid that CSR investments will be value destroying and lead to negative financial effects rather than positive ones. Also, we believe that some firms simply do not care about being environmentally responsible.

6.2. Reliability, validity and generalizability

6.2.1. Financial Performance

The financial data used in this study is collected from Datastream/Worldscope. We have assumed this source as completely reliable and updated. However, we cannot be completely sure that the financial data collected is without fault. Thus, the measurement of financial performance makes us vulnerable to errors. To reduce the risk of using incorrect data, we analyzed and observed the

data before commencing the regression analysis. We did not experience any substantial difficulties when performing analysis on the data and have consequently assumed the data to be correct and reliable. Some components in the DuPont framework can be calculated in different ways depending on what you wish to analyze. This could impact the validity and generalizability of our results. Finally, using ROA to represent financial performance brings limitations with it. Even though we identify positive relationships with several components, it is unreasonable to conclude that financial performance, as whole, has the same relationship with CSR.

6.2.2. CSR Performance

In this study, we have taken the GES rating as given and not performed any analysis on the reliability of the rating. This makes us vulnerable to errors in the rating. We cannot be completely sure that the ratings provide a fair representation of reality. Different rating institutions have different assessment methods. Thus, ratings could depend on what rating agency has performed the analysis. Since we only use one rating, we are not hedged against this potential risk.

Since we calculated the CSR rating as an equally weighted average of the Environmental rating and Human Rights rating, we assumed an equal importance of the two ratings. Since no measure of Economical aspects of CSR is included in the rating, we cannot draw conclusions about CSR as whole. When comparing CSR ratings over years, in *Table 10* in Appendix, CSR measurements become more vulnerable. The methods for measuring CSR could differ between years, as more CSR activities emerge and are utilized by firms. Also, measurements could have become stricter as CSR becomes a hygiene factor for firms in the competitive environment.

As previously mentioned, another relevant aspect to keep in mind regarding the GES rating are "0"-values. In this study, we have chosen to assume that all "0"-values imply a rating of 0, not a missing value. If this assumption is wrong, it may affect our results to be less reliable.

On a more general basis, assessment and measurement of CSR performance is a difficult task. Since firms can engage in many different types of, more or less public, CSR activities it becomes difficult to decipher in which ways some activities are better than others. Thus, we cannot be completely sure what a good CSR investment is. CSR performance becomes increasingly difficult to assess since firms themselves can decide what to disclose and not. Thus, firms may say one thing but do another, creating difficulties for rating institutes.

6.2.3. Sample

As previously discussed, we chose to remove all observations within the industry "Financials". Including this in our analysis could have changed the outcomes. However, the main reason for

not including these observations was to improve the reliability of our results. So, even though the results become sensitive to this bias we believe the reliability to be improved. Also, we chose not to include the 2005 and 2015 ratings in our analysis. Being able to perform the analysis on data from the most recent year would have enabled us to provide more reliable and current results.

We believe R&D an important independent variable in our regression analysis. However, our sample was significantly reduced due to the inclusion of this variable. We found that data on R&D expenditures in Swedish listed firms was difficult to attain, and saw about half of our initial observations be excluded. While we remain certain that this action was appropriate and important, we are aware that this may have influenced our results. For instance, we would have more firms available in each industry and be able to draw more reliable and general conclusions.

Furthermore, how we decided to handle extreme values may have had implications on our results. We have noticed the presence of outliers in ROA, Profit Margin, Asset Turnover and Leverage, to adjust for this we have chose to winsorize these variables at the 1st and 99th percentile with the hope of achieving more reliable results, unaffected by extreme values.

One of the main limitations in our study is the overrepresentation of certain industries. This limits us in drawing general conclusions, since it would be unreasonable to draw conclusions for industries with a low or inexistent representation in our sample. Thus, the results found and conclusions drawn in this study can only be said to represent the most represented industries in our sample. We do not see the same problems in regards to years, since observations are more evenly distributed across years, as can be seen in *Table 4* in Appendix.

6.2.4. Regression

In our regression analysis we have limited ourselves to using OLS regressions, adding controls for robustness, industry and year fixed effects to attain more stable and reliable results. However, there may be other statistical methods more suitable to measure this specific statistical relationship. Also, firm fixed effects were omitted due to collinearity. If we would have had a larger sample, or the ability to use a different method to include firm fixed effects as well, we might have achieved even more reliable results. Furthermore, the usage of a multiple regression method includes a few standard assumptions; for example, that the error terms are not correlated with one another and the residuals having constant variance (Wooldridge, 2009). Some of these can be corrected for, by using robust regressions to adjust for heteroskedasticity. However, if one or a few of these assumptions are not met and not corrected for, it affects the reliability of our results. Furthermore, there may be other control variables than the ones used in our regression

analysis that might affect our dependent variables. Including more control variables could have improved reliability of our results, although we have been unable to identify any such variables.

6.3. Robustness tests

The information on robustness tests presented in this section has been collected from "Introductory Econometrics", by Jeffrey M. Wooldridge, and "Statistics for Business and Economics", by Paul Newbold, William L. Carlson and Betty M. Thorne.

6.3.1 Heteroskedasticity

Heteroskedasticity is a statistical term used to describe the state when the variability of a variable is unequal across different values of the independent variable. The main problems with heteroskedasticity are that the computed standard errors are wrong and the confidence intervals and hypothesis tests are not reliable. Heteroskedasticity is detected when observing scatter plots of variables. If the variables are heteroskedastic, the scatterplots will normally have the shape of a cone rather than being more rectangular with a high concentration around the center, as would be the case if homoskedasticity would hold. There are several statistical tests which can be conducted in order to check whether the variables are heteroskedastic.

We have decided to perform two tests, the Breusch-Pagan/Cook-Weisberg test and the Szroeter test, both with the null hypothesis that variance is constant. That is, if we can reject the null hypothesis in both tests, we are able to conclude that our set of variables are heteroskedastic.

The Breusch-Pagan/Cook-Weisberg test implied a χ^2 of 323.56 and p=0.0000, the χ^2 value of this test can be interpreted as an average of the right-hand side variables, the independent variable including control variables. This while the Szroeter test computes separate χ^2 values for each variable. The results are in line with the Breusch-Pagan/Cook-Weisberg test with p=0.0000. Hence, we can conclude that heteroskedasticity is present and we use robust regression in all our tests to adjust and correct for this.

6.3.2. Multicollinearity

If multicollinearity is present, it implies that two or more variables are very close to perfect linear combinations of one another. The higher the degree of multicollinearity, the more difficult it is to compute the estimates for a regression model. Multicollinearity is also characterized by unstable estimates and inflated standard errors. To find out whether this is present in our regression model or not, we use the Variance Inflation Factor test (VIF). A VIF greater than 10, or a 1/VIF lower than 0.1, is usually considered worrisome. This level is chosen to be our cut-off point. As results

imply, illustrated in *Table 22* in Appendix, our variables have a VIF lower than 10, hence multicollinearity is not significantly affecting our regression and is not considered a problem.

6.3.3. Woolridge test for autocorrelation of panel data

When using multiple regression models we often assume that the random variables all have the same means and variances. However, we cannot always assume that they are independent of each other. Imagine that we are interested in a series of product sales; it is likely that the sales in following periods are correlated. These correlation patterns are what is called autocorrelation. We are using the Wooldridge method to test for autocorrelation on our independent variables. The null hypothesis states that no first-order autocorrelation is present, our test provides a Prob > F of 0.1338 and we fail to reject the null hypothesis. Hence, we conclude that our data does not have first-order autocorrelation and this will not have to be controlled for in our analysis.

6.3.4. CSR rating

GES does not specify whether a "0"-rating is defined as a missing value or total failure in CSR performance. We chose to interpret "0"-ratings as a zero performance in CSR. To control if it would have affected our results to interpret the zero value as a missing value, we performed a regression analysis with excluded "0"-ratings. This gave us a positive CSR coefficient, (0.00140***) significant at the $p<0.01$ level. Thus, results indicated an even stronger relationship between CSR performance and financial performance. However, we chose to stick to our previous assumptions. We felt it was more precautionary and reliable to use the presented results.

6.3.5. Causality

One problem with our study is that it is hard to prove that the effect CSR has on ROA is causal. That is, it is hard to prove that x and y are moving together, and not that x is causing y to move. For instance, it becomes challenging to know whether increased CSR performance increases ROA or if CSR performance is high because of ROA being high. A more profitable firm has more resources available to spend on CSR, implying that more profitable firms perform better in the area of CSR. This would mean that our findings, CSR positively affecting ROA, are false.

Causality is a difficult aspect to work with, and near impossible to prove. We have not been able to prove that causality holds, and we are very much aware of the fact that this is a bias difficult to get away from. However, the theoretical framework and motivations presented earlier in this study provides a stable base for arguing that CSR in fact does affect financial performance.

7. CONCLUSION

The purpose of this paper is to examine whether CSR performance leads to improved financial performance for a firm. This study focuses on the DuPont framework and Return on Assets to measure financial performance, and the GES Investment Services (GES) rating as a proxy for Corporate Social Responsibility (CSR) performance. We focus on Swedish listed firms between the years of 2007-2014 and disaggregate ROA into its different components in order to determine on which financial components CSR performance has the greatest effect. Finally, we investigate whether there is a nonlinear, U-shaped relationship between CSR rating and ROA.

Our main finding is that CSR performance seems to have a positive and statistically significant relationship with ROA. Focusing on different components in ROA, results indicate that CSR has a greater positive effect on Profit margin than on Asset turnover. Combining this with analysis of the CSR effect on EBIT, Net sales and Assets, we are able to see that CSR has the strongest effect on Net sales, and that effects on EBIT is positive but lower. This indicates that CSR performance could increase sales and expenses, although the positive effects outweigh the negative. Also, since our results show that CSR has a positive effect on Asset turnover implies that CSR could lead to a more efficient use of Assets. Thus, results suggest that CSR performance a leads to financial benefits. As some components of ROA seem to benefit more from CSR performance than others, our suggestion is that firms that struggle in certain parts of the chain, such as Net sales, invest more in CSR to boost this part of the DuPont framework.

However, our results imply an optimal Environmental rating where after firms will experience diminishing returns to scale and lower ROA. Up until an Environmental rating of 0.64, there are increasing returns to scale. In our sample, most firms have yet to reach this level. Thus, we suggest to the majority of Swedish listed firms to improve CSR performance within Environmental factors, in order to maximize ROA.

Overall, we find CSR to be an efficient tool for firms to use in order to improve financial performance. Our results indicate that CSR is not merely a necessary evil for firms, but can provide them with a cash cow.

7.1. Theoretical contribution

We believe this study offers theoretical contribution within empirical research through two dimensions; originality and utility.

Firstly, we have been unable to identify a study, especially on Swedish firms, which focuses on the different components of Return on Assets. As mentioned previously, the vast

majority of the studies on CSR and financial performance have one thing in common: they focus on financial measures at the end of the chain such as stock price return, ROE or ROA. Thus, we believe that we contribute with originality in the sense of disaggregating ROA in its different components in order to determine where CSR seems to have the greatest impact.

In terms of utility, since we divide ROA into its components we can motivate practical suggestions for firms regarding what to focus on and exactly in what part of the chain to expect positive financial benefits of CSR performance Also, examination of Hypothesis 5 contributes with both originality and utility. This since we have not seen an evaluation of an optimal level of CSR performance to maximize ROA, and our findings here allow us to provide recommendations to firms below the optimal level of 0.64 to further invest in Environmental CSR factors.

7.2. Suggestions for future research

An interesting area for future research could be to look at non-listed firms, since listed and non-listed firms differ in several aspects. We were unable to do this due to data restrictions.

Looking at and comparing the results when using several different CSR ratings is something that would be interesting for future researchers. Not only would it be interesting to see how results differ depending on the used rating, it would also reduce the risk for bias due to using one rating only. Perhaps one could use one rating, based on disclosed performance, and another like the GES rating, based on what companies actually do. Thus, one would possibly be able to identify differences in effects on financial performance based on actual disclosure.

Being able to somehow incorporate an analysis of Corporate Governance or Economic CSR factors would be interesting. By doing this, one would be able to draw more general conclusions regarding CSR performance.

We analyzed several components within the DuPont framework. It would be interesting to move further into the framework and see how effects of CSR potentially differ depending on components, something we were unable to do within the scope of a Bachelor thesis. Also, observing differences in the effects of CSR on financial performance between different years and industries provides an interesting area for research. When we compared average CSR and financial performance over these aspects, we saw substantial differences. However, since we had such few observations, it was something we were unable to identify reliable results for.

Finally, it would be interesting to identify optimal levels of total CSR ratings and Human Rights ratings. We were not able to find statistically significant results for these tests.

REFERENCES

Aguinis, H. & Glavas, A. 2012, "What We Know and Don't Know About Corporate Social Responsibility: A Review and Research Agenda", Journal of Management, vol. 38, no. 4, pp. 932-968

Ahamed, W. S. W., Almsafir, M. K. & Al-Smadi, A. W. 2014, "Does Corporate Social Responsibility Lead to Improve in Firm Financial Performance? Evidence from Malaysia", *International Journal of Economics and Finance*, vol. 6, no. 3, pp. 126-138

Ahmad, N., Salman, A. & Shamsi, A. F. 2015. "Impact of Financial Leverage on Firms' Profitability: An Investigation from Cement Sector of Pakistan", *Research Journal of Finance and Accounting*, vol. 6, no. 7, pp. 75-80

Baker, A. H. 1973, "Risk, Leverage and Profitability: An Industry Analysis", *The Review of Economics and Statistics*, vol. 55, no. 4, pp. 503-507

Blomgren, A. 2011, "Does Corporate Social Responsibility Influence Profit Margins? A Case Study of Executive Perceptions", *Corporate Social Responsibility and Environmental Management*, vol. 18, iss. 5, pp. 263-274

Bowen, F. E. 2000, "Environmental visibility: A trigger of green organizational response?", *Business Strategy and the Environment*, vol. 9, no. 2, pp. 92-107

Brammer, S., Brooks, C. & Pavelin, S. 2006, "Corporate Social Performance and Stock Returns: UK Evidence from Disaggregate Measures", *Financial Management*, vol. 35, iss. 3, pp. 97–116.

Carroll, A. B. 1979, "A Three-Dimensional Conceptual Model of Corporate Performance", *The Academy of Management Review,* vol. 4, no. 4, pp. 497–505

Chuang, Y. & Lin, C. 1999, "Foreign direct investment, R&D and spillover efficiency: Evidence from Taiwan's manufacturing firms", *The Journal of Development Studies*, vol. 35, no. 4, pp. 117-137

Cochran, P. L. & Wood, R. A. 1984, “Corporate Social Responsibility and Financial Performance”, *The Academy of Management Journal, vol.* 27´, no. 1, pp. 42–56

Dawkins, J. & Lewis, S. 2003, “CSR in stakeholder expectations: And their implication for company strategy”, *Journal of Business Ethics* 44 (2-3), pp. 185-193

Fama, E. F. & French, K. R. 2004, “The Capital Asset Pricing Model: Theory and Evidence”, *The Journal of Economic Perspectives*, vol. 18, no. 3, pp. 25-46

Friedman, M. 1970, “The Social Responsibility of Business Is to Increase Its Profits”, *New York Times Magazine*, no. 33, pp. 122-26

Grafström, M., Göthberg, P. & Windell, K. 2015, “CSR: Företagsansvar i förändring”. 2nd ed., Sweden: Liber

Graves, S. B. & Waddock S. A. 1997, “The Corporate Social Performance - Financial Performance Link”, *Strategic Management Journal*, vol. 18, no. 4, pp. 303-319

Greening, D. W. & Turban, D. B. 1996, “Corporate Social Performance and Organizational Attractiveness to Prospective Employees”, *Academy of Management Journal*, vol. 40, no.3, pp. 658-672

Hall, B.H. 1999, “Innovation and market value”, working paper, *National Bureau of Economic Research*, no. 6984.

Hassel, L., Nilsson, H. & Nyquist, S. 2005, “The Value Relevance of Environmental Performance”, *European Accounting Review*, vol. 14, no. 1, pp. 41-61

Hall, M. & Weiss, L. 1967, “Firm Size and Profitability”, *The Review of Economics and Statistics*, vol. 49, no. 3, pp. 319-331

Helleiner, E. 2011, “Understanding the 2007-2008 Global Financial Crisis: Lessons for Scholars of International Political Economy”, *The Annual Review of Political Science*, vol. 14, pp. 67-87

Hillman, A. J. & Keim, G. D. 2001, “Shareholder value, stakeholder management, and social issues: what’s the bottom line?”, *Strategic Management Journal,* vol.22, iss. 2, pp. 125-139

Johansson, S-E. & Runsten, M. 2013, “Företagets lönsamhet, finansiering och tillväxt: mål, samband och mätmetoder”, 3rd ed., Sweden: Studentlitteratur AB

King, A. & Lenox, M. 2002, “Exploring the Locus of Profitable Pollution Reduction”, *Management Science,* vol. 48, no. 2, pp. 289-299

Lewis, S. 2003, "Reputation and corporate responsibility", *Journal of Communication Management*, vol. 7, issue 4, pp. 356 - 366

Lichtenberg, F. & Siegel. D. 1991, “The impact of R&D investment on productivity: New evidence using linked R&D-LRD data”, *Economic Inquiry*, vol. 29, pp. 203–228

McGuire, J. B., Sundgren, A., & Schneeweis, T. 1988, “Corporate social responsibility and firm financial performance.”, *Academy of Management Journal*, vol. 31, no. 4, pp. 854-872

McWilliams, A. & Siegel, D. 2000, “Corporate Social Responsibility and Financial Performance: correlation or misspecification?”, *Strategic Management Journal*, vol.21, iss. 5, pp. 603–609

McWilliams, A. & Siegel, D. 2001, “Corporate Social Responsibility: A Theory of the Firm Perspective”, *Academy of Management Review,* vol. 26, no. 1, pp. 117-127

Mulligan, T. 1986, “A critique of Milton Friedman's essay ‘the social responsibility of business is to increase its profits’”, *Journal of Business Ethics*, vol. 5, iss. 4, pp. 265-269

Murray, K. B. & Vogel, C. M. 1997, “Using a hierarchy-of-effects approach to gauge the effectiveness of corporate social responsibility to generate goodwill toward the firm: Financial versus nonfinancial impacts”, *Journal of Business Research,* vol. 38, iss. 2, pp. 141-159

Nan, X. and Heo, K. 2007, “Consumer Responses to Corporate Social Responsibility (CSR) Initiatives: Examining the Role of Brand-Cause Fit in Cause-Related Marketing”, *Journal of Advertising*, vol. 36, no. 2, pp. 63-74

Newbold, P., Carlson, W. L. & Thorne B. M. 2013, “Statistics for Business and Economics”, 8th ed., The United States of America: Pearson Education Limited

Orlitzky, M., Rynes, S. L. & Schmidt, F. L. 2003, “Corporate Social and Financial Performance: A Meta-Analysis”, *Organization Studies,* vol. 24, no. 3, pp. 403-441

Peloza, J. 2009, “The Challenge of Measuring Financial Impacts From Investments in Corporate Social Performance”, *Journal of Management*, vol. 35, no. 6, pp. 1518-1541

Peloza, J. & Shang, J. 2011, “How can corporate social responsibility activities create value for stakeholders? A systematic review”, *Journal of the Academy of Marketing Science*, vol. 39, pp. 117-135

Schnietz, K.E. & Epstein, M. J. 2005, “Exploring the Financial Value of a Reputation for Corporate Social Responsibility During a Crisis”, *Corporate Reputation Review,* vol. 7, no. 4, pp. 327-345

Selling, T. & Stickney, C. 1989, “The effects of business environments and strategy on a firm’s rate of return on assets”, *Financial Analysts Journal*, vol. 45, pp. 43-52

Stanwick, P. A. & Stanwick S. D. 1998, “The Relationship Between Corporate Social Performance, and Organizational Size, Financial Performance, and Environmental Performance: An Empirical Examination”, *Journal of Business Ethics*, vol. 17, iss. 2, pp. 195-204

Surroca, J., Tribó, J.A. & Waddock, S. 2010, “Corporate Social Responsibility and Financial Performance: The Role of Intangible Resources”, *Strategic Management Journal,* vol. 31, iss. 5, pp. 463-490

Teoh, S, H., Welch, I. & Wazzan, C. P., "The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott." *Journal of Business*, 1999, vol. 72, no. 1

Udayasankar, K. 2008, "Corporate Social Responsibility and Firm Size", *Journal of Business Ethics*, vol. 83, iss. 2, pp 167-175

Urip, S. 2010, "CSR Strategies: Corporate Social Responsibility for a Competitive Edge in Emerging Markets", Singapore: John Wiley & Sons

UN Global Compact 2014, *Guide to Corporate Sustainability,* The United Nations Global Compact

WBI 2003, *Public Policy for Corporate Social Responsibility,* The World Bank Institute

Windell, K. 2006, *"Corporate social responsibility under construction: Ideas, translations, and institutional change.",* Doctoral thesis, Företagsekonomiska institutionen, Uppsala universitet

World Economic Forum 2014, *The Global Gender Gap Report 2014*, World Economic Forum

Wooldridge, J. M. 2009, "Introductory Econometrics", 4th ed., The United States of America: South-Western Cengage Learning

Wright, P. & Ferris, S. 1997, "Agency conflict and corporate strategy: the effect of divestment on corporate value", *Strategic Management Journal*, vol. 18, pp. 77-83

Zairi, M. & Peters, J. 2002, "The impact of social responsibility on business performance", *Managerial Auditing Journal*, vol. 17, iss. 4, pp. 174-178

Zhao, R. 2003, "A study of the R&D efficiency and productivity of Chinese firms", *Journal of Comparative Economics*, vol. 31, iss. 3, pp. 387-594

Sustainability reports & Online resources

IKEA, IKEA Group Sustainability Report 2014
H&M, Annual Report 2014
SCA, Annual Report 2014

EC, last updated: 05/04/16, *Corporate Social Responsibility*, the European Commission, [Online]. Available: http://ec.europa.eu/growth/industry/corporate-social-responsibility/index_en.htm [24/02/16]

EcoWatch, last updated: 21/10/14, *Top 10 Greenest Countries in the World*, EcoWatch, [Online]. Available: http://ecowatch.com/2014/10/21/top-greenest-countries-in-world/ [15/02/16]

MSCI, last updated: n/a, Global Industry Classification Standard, Morgan Stanley Capital International, [Online]. Available: https://www.msci.com/gics [29/02/16]

SvD,last updated: 10/03/2006, Qviberg upp till kamp mot etiken, Anna-Karin Storwall, *Svenska Dagbladet*, [Online] Available: http://www.svd.se/qviberg-upp-till-kamp-mot-etiken [10/05/16]

Sweden.se, last updated: 24/09/15, *Sustainable living in Sweden*, The Swedish Institute, [Online]. Available: https://sweden.se/nature/sustainable-living/ [05/05/16]

The Assabet Group, last updated: 18/03/2009, The Emerging Relationship Between Environmental Performance and Shareholder Wealth, [Online]. Available: http://www.assabetgroup.com/101.html [01/03/16]

The Economist, last updated 27/06/2015, *Corporate Social Responsiblility: The halo effect*, The Economist Print Edition, [Online]. Available: http://www.economist.com/news/business/21656218-do-gooding-policies-help-firms-when-they-get-prosecuted-halo-effect [24/02/15]

Volvo Group, last updated 02/05/2016, *Corporate Social Responsibility*, Volvo Group Global, [Online]. Available: http://www.volvogroup.com/group/global/en-gb/responsibility/Pages/responsibility.aspx [06/05/16]

WBCSD, last updated: n/a, *Corporate Social Responsibility,* World Business Council for Sustainable Development, [Online]. Available: http://www.wbcsd.org/work-program/business-role/previous-work/corporate-social-responsibility.aspx [29/02/16]

APPENDIX

Table 3. Frequency of firms within industries

Industry	Firms	Observations	Percentage
Materials	6	37	6.63
Industrials	30	207	37.10
Consumer Discretionary	6	36	6.45
Consumer Staples	1	8	1.43
Health care	20	128	22.94
Information technology	19	134	24.01
Telecommunication services	1	8	1.43
Total	83	558	100.00

Industries are classified according to the Global Industry Classification Standard (GICS).7 out of 10 industries are represented in our sample.

Table 4. Frequency of firms over years

Year	Observations	Percentage
2007	62	11.11
2008	67	12.01
2009	71	12.72
2010	72	12.90
2011	77	13.80
2012	72	12.90
2013	71	12.72
2014	66	11.83
Total	558	100.00

Table 5. Average CSR, ENV and HR ratings

	Mean	Std. Err	[95% Conf.	Interval]
CSR	.3429354	.0092781	.3247111	.3611598
CSR ENV	.3517017	.0112605	.3295834	.3738199
CSR HR	.3341692	.0083493	.3177693	.3505692

This table presents average ratings for our sample. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. CSR ENV is the Environmental rating and CSR HR is the Human Rights rating.

Table 6. Average CSR ratings over industries

CSR	Mean	Std. Err.	[95% Conf.	Interval]
Materials	.567574	.0282853	.5120152	.6231328
Industrials	.4116736	.0146231	.3829504	.4403968
Consumer Discretionary	.3704894	.0395298	.2928437	.4481351
Consumer Staples	.3954167	.0876492	.2232532	.5675801
Health care	.2487974	.0138175	.2216567	.2759382
Information technology	.2383236	.0167386	.2054451	.271202
Telecommunication services	.6073661	.0189904	.5700645	.6446677

This table presents average CSR across industries. Industries are classified according to the Global Industry Classification Standard (GICS). CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings.

Table 7. Average ROA over industries

ROA	Mean	Std. Err.	[95% Conf.	Interval]
Materials	.0797749	.0103052	.059533	.1000168
Industrials	.0904315	.0053996	.0798255	.1010376
Consumer Discretionary	.1233079	.013034	.097706	.1489098
Consumer Staples	.2430612	.0151442	.2133144	.272808
Health care	-.0443438	.0284532	-.1002325	.011545
Information technology	-.0259041	.0218449	-.0688125	.0170044
Telecommunication services	.1156216	.0053598	.1050936	.1261495

This table presents average ROA across industries. Industries are classified according to the Global Industry Classification Standard (GICS). The variable ROA is defined as a firm's Return on Assets, Profit Margin*Asset Turnover.

Table 8. Average Profit margin over industries

PM	Mean	Std. Err.	[95% Conf.	Interval]
Materials	.089454	.0107808	.0682781	.1106299
Industrials	.0751956	.0081763	.0591354	.0912557
Consumer Discretionary	.136618	.0161466	.1049023	.1683338
Consumer Staples	.2803813	.0118489	.2571073	.3036553
Health care	-1.773507	.5910149	-2.934397	-.6126164
Information technology	-.1190431	.0447187	-.2068811	-.0312052
Telecommunication services	.2723177	.0081339	.2563408	.2882946

This table presents average PM across industries. Industries are classified according to the Global Industry Classification Standard (GICS). The variable PM is Profit margin, defined as a firm's: EBIT/Sales.

Table 9. Average Asset turnover over industries

AT	Mean	Std. Err.	[95% Conf.	Interval]
Materials	.9468347	.0628043	.8234725	1.070197
Industrials	1.110739	.0214947	1.068518	1.152959
Consumer Discretionary	1.058436	.0517426	.9568013	1.16007
Consumer Staples	.8628344	.0261166	.8115354	.9141335
Health care	.5984598	.0285702	.5423413	.6545783
Information technology	.9576458	.0417803	.8755796	1.039712
Telecommunication services	.4232485	.0091916	.405194	.441303

This table presents average AT across industries. Industries are classified according to the Global Industry Classification Standard (GICS). The variable AT is Asset turnover, defined as a firm's: Sales/Assets.

Table 10. Average CSR ratings over years

CSR	Mean	Std. Err.	[95% Conf.	Interval]
2007	.3386847	.0317344	.276351	.4010184
2008	.3389979	.0287682	.2824905	.3955052
2009	.3680047	.0271967	.314584	.4214254
2010	.3762037	.0253055	.3264979	.4259095
2011	.348355	.0241479	.300923	.395787
2012	.3334606	.0239085	.2864988	.3804225
2013	.3057629	.0231608	.2602697	.3512561
2014	.3316667	.0268587	.27891	.3844233

This table presents average CSR across years. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings.

Table 11. Pearson correlation coefficients for the main variables

	CSR	*ROA*	*PM*	*AT*	*EBIT*	*SALES*	*ASSETS*
CSR	1.0000						
ROA	0.2370***	1.0000					
PM	0.1177***	0.3448***	1.0000				
AT	0.0993**	0.3185***	0.2874***	1.0000			
EBIT	0.4954***	0.1745***	0.0789*	-0.1080**	1.0000		
SALES	0.5491***	0.1038**	0.0675	0.0001	0.7347***	1.0000	
ASSETS	0.5199***	0.0996**	0.0661	-0.1189***	0.8107***	0.9463***	1.0000

This table presents the Pearson correlation coefficients for the main variables, with a total of 558 observations over the years 2007-2014. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. The variable ROA is defined as a firm's Return on Assets, Profit Margin*Asset Turnover. The variable PM is Profit margin, defined as a firm's: EBIT/Sales. The variable AT is Asset turnover, defined as a firm's: Sales/Assets. The variable SALES is defined as a firm's Net sales. The variable EBIT is defined as a firm's Earnings before Interest and Taxes. The variable ASSETS is defined as a firm's total assets. Significance levels: *** p<0.01, ** p<0.05, * p<0.1

Table 12. Pearson correlation coefficients for the control variables

	ROA	*CSR*	*SIZE*	*LEV*	*R&D*	*BETA*	*CRISIS*
ROA	1.0000						
CSR	0.2370***	1.0000					
SIZE	0.1526***	0.5365***	1.0000				
LEV	0.0240	0.0232	0.0645	1.0000			
R&D	0.0401	0.3433***	0.6606***	0.0251	1.0000		
BETA	0.2176***	0.1857***	0.1063**	0.0424	0.0612	1.0000	
CRISIS	0.0260	-0.0102	-0.0316	0.0668	-0.0060	-0.0127	1.0000

This table presents the Pearson correlation coefficients for our dependent and independent variables, with a total of 558 observations over the years 2007-2014. The variable ROA is defined as a firm's Return on Assets, Profit Margin*Asset Turnover. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. The variable SIZE is firm size, calculated as the logarithm of a firm's market capitalization. The variable LEV is leverage, calculated as Debt/Equity. The variable R&D is the logarithm of a firm's R&D expenses divided by market capitalization. BETA is the Market beta. CRISIS is a dummy variable with value 1 for years 2007-2008, to control for the years of financial crisis, and value 0 for all other years.

Table 13. Simple OLS Regression ROA

	(1) ROA
CSR	0.00150***
	(0.00024)
Constant	0.00992
	(0.00891)
Observations	1,380
R-squared	0.02710

This table presents a simple OLS regression with CSR as independent variable and ROA as dependent variable. There are no control variables included nor adjustment for fixed effects. The variable ROA is defined as a firm's Return on Assets, Profit Margin*Asset Turnover. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1

Table 21. Average Environmental ratings over industries

CSR ENV	Mean	Std. Err.	[95% Conf.	Interval]
Materials	.629897	.0359138	.5593539	.7004401
Industrials	.4585162	.0165596	.4259893	.4910432
Consumer Discretionary	.3977249	.05083	.297883	.4975667
Consumer Staples	.4370833	.0964559	.2476215	.6265452
Health care	.2140513	.0163954	.181847	.2462557
Information technology	.2088806	.0194836	.1706102	.247151
Telecommunication services	.6033929	.0331834	.538213	.6685727

This table presents average CSR ENV over industries. Industries are classified according to the Global Industry Classification Standard (GICS). CSR ENV is the GES Environmental rating,

Table 22. Variance Inflation Factor test (VIF)

Variable	VIF	1/VIF
CSR	2.18	0.457843
BETA	1.19	0.840144
LEV	1.02	0.978234
CRISIS	1.01	0.993652
SIZE	2.91	0.343926
R&D	1.30	0.772060
Mean VIF	**1.60**	

This table presents a Variance Inflation Factor (VIF) test for the OLS regression of ROA on CSR and control variables. CSR is defined as an equally weighted average of the GES Environmental and Human Rights ratings. BETA is the Market beta. The variable LEV is leverage, calculated as Debt/Equity. CRISIS is a dummy variable with value 1 for years 2007-2008, to control for the years of financial crisis, and value 0 for all other years. The variable SIZE is firm size, calculated as the logarithm of a firm's market capitalization. The variable R&D is the logarithm of a firm's R&D expenses divided by market capitalization. The sample consists of 588 observations over the years 2007-2014.

Figure 2. Average CSR rating and ROA over years 2007-2014

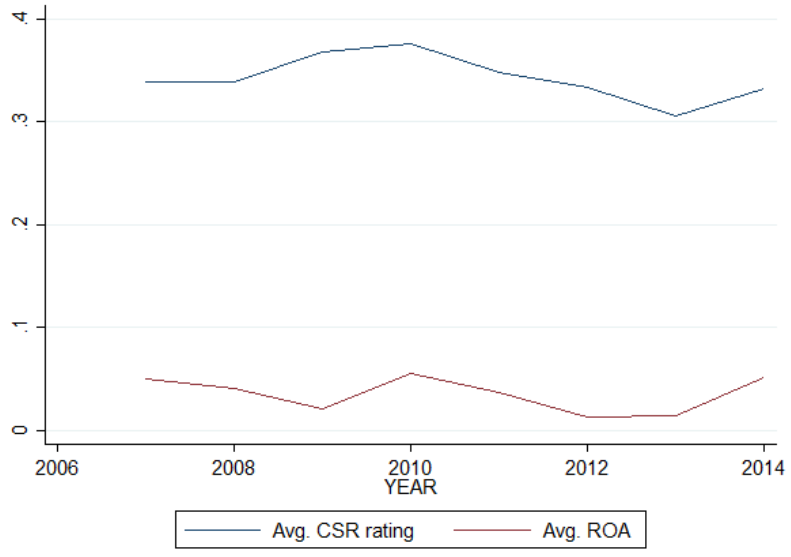


Figure 2 illustrates the average CSR rating and ROA over the years 2007-2014. The CSR rating is an equally weighted average of the GES Environmental and Human Rights ratings. The variable ROA is defined as a firm's Return on Assets, Profit Margin*Asset Turnover. The sample consists of 588 observations over the years 2007-2014.