CSR Reporting and Stock Performance in Swedish Listed Companies

Evelina Radgren*   Linnea Åkerling**

Abstract

Corporate social responsibility (CSR) is becoming increasingly important and Swedish firms are pioneers within this area. The impact of CSR investments on firm value is a debated topic and there is evidence both for and against the existence of a relationship. This study uses a sustainability ranking, conducted by Folksam, including all firms listed on Nasdaq Stockholm to test whether CSR reporting has an effect on stock performance. We use regression analysis to test if high CSR ranked firms experience higher stock returns than low CSR ranked firms. We also conduct an event study to measure market reactions to the release of the sustainability index. The regression analysis shows a positive relationship between CSR reporting and a firm's stock return if the firm has a low ranking, but finds no significant relationship if the firm has a higher ranking. The event study indicates that the top ranked firms benefit from the release of the index, whereas there is almost no effect on the bottom ranked firms.

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1. Introduction

Corporate social responsibility (CSR) is becoming increasingly important for Swedish companies and many firms wish to take part of the positive publicity it supposedly brings. Swedish companies have increased their investments in CSR, either as part of their strategy to create value or as a result of the pressure set on the company by its stakeholders.

During the autumn of 2014 a new EU directive was set that obliges all listed companies with more than 500 employees to disclose information about their non-financial performance. According to a survey concerning corporate responsibility reporting conducted by KPMG, 79% of the 100 largest companies in Sweden reported information about their CSR related activities in 2013 compared to 60% of the 100 largest companies in 2008 (KPMG, 2013). This implies that CSR reporting was becoming increasingly important for Swedish companies even before the legislation imposed by EU.

With the practice of investing in CSR to an extent that exceeds the requirements imposed by law and regulations, Swedish firms are viewed as pioneers within the field. In 2013, Sweden topped the RobecoSAM Country Sustainability Ranking, which ranks 59 countries based on environmental, social and governance indicators (RobecoSAM, 2013). Being at the forefront of CSR initiatives, Swedish listed firms make a relevant foundation for investigating the effect of CSR investments on stock value.

Earlier studies that examine the relationship between CSR and stock performance show conflicting results. A central advocate of CSR is Freeman (1984), who claims that firms should satisfy all groups that have a stake in the business and not only invest to maximize shareholder value. The opposing view, as stated by Friedman (1962), means that the sole goal of a firm is to maximize shareholder wealth. The shareholder view implies that investing in CSR might incur unnecessary costs and thus have a negative effect on stock value.

Other recent studies indicate a more complex relationship between CSR and stock value. Krüger (2015) examines how investors react to positive and negative CSR events in the

short-run. He shows that investors react strongly negatively to negative events and weakly negatively to positive events. In this paper, we examine the effect of CSR on a company's stock performance depending on the quality of the CSR activities reported by the company. The study is based on the following hypotheses:

Hypothesis 1: CSR reporting has an effect on stock performance and this effect differs depending on the quality of the reported CSR activities.

Hypothesis 2: The stock market reacts differently in the short-run to the news that a company keeps a high versus a low quality on its CSR reporting.

The study is centred around the *Folksam Index of Corporate Social Responsibility* (the Folksam Index), which ranks all firms listed on Nasdaq Stockholm based on the quality of their reporting regarding environmental and human rights activities. The index was first released in 2006 and was released annually until 2009, after which it has been released every second year. The rankings of the index are based on public information available in financial reports and on company websites.

Hypothesis 1 is tested by the use of regression analysis. A fixed effects regression is run with stock returns being the dependent variable and where the Folksam Index is used as a proxy for the quality of a company's reported CSR activities. We make a distinction between firms with an above average (high) ranking and firms with a below average (low) ranking in order to investigate if these two groups experience different stock returns. To test Hypothesis 2, we conduct an event study in order to calculate abnormal returns surrounding the date of the press release of the Folksam Index. We divide the companies into top and bottom groups based on the rankings in the index, with the purpose of examining the differences in market reactions depending on the quality of the CSR reporting.

From the regression analysis, we find that there is a positive relationship between CSR reporting and a firm's stock return if the firm in question has a low ranking, but we find no significant relationship if the firm has a higher ranking. The event study indicates that market reactions following the release of the Folksam Index are positive for top ranked firms, whereas the bottom firms experience almost no effect at all. Our results

indicate that a firm with a low ranking can benefit by improving its CSR reporting system, whereas a top ranked firm can experience an immediate excess return following the news release of its high ranking.

The remainder of this paper is organized as follows. Section 2 provides a summary of underlying theories and previous research and section 3 gives an explanation of the Folksam Index and the collection of other data. The 4th section describes the methodology used for the regression analysis and the event study. The results together with some descriptive statistics of the rankings in the Folksam Index are presented in section 5. Our main conclusions are summarized in section 6. Section 7 presents limitations of our study and suggestions for future research.

2. Theoretical Framework

This section gives an overview of the underlying theories of the CSR concept and our study. It provides a discussion of the definition of CSR, background theories and related literature.

2.1 Underlying Theories

The underlying theories are the stakeholder and the shareholder value approach, as well as the efficient market hypothesis explained below.

2.1.1 Stakeholder and Shareholder Value Approach

The term CSR has been defined in various ways, ranging from Friedman's (1962) claim that the only social responsibility of a business is to increase its shareholder wealth to Hemphill's (2004) view of good corporate citizenship defined as the extent to which businesses meet the economic, legal, ethical and discretionary responsibilities imposed on them by their stakeholders. These two opposing views originate from the concepts of shareholder and stakeholder value maximization.

The shareholder view is consistent with Friedman's perspective of increasing profits. According to this theory the sole goal of corporate management is to maximize shareholder wealth (Ali 2015), whereby we would expect a company to only engage in CSR if it has a positive net present value for shareholders. The stakeholder view provides a wider perspective that also includes other groups than shareholders. The idea of the stakeholder approach is that managers must formulate and implement processes which satisfy all and only those groups who have a stake in the business (Freeman, 2001). This includes not only shareholders, but also employees, customers, suppliers, communities and other groups with an interest in the business. It has been common praxis within CSR literature to take on a stakeholder perspective and include stakeholder groups that traditionally have been omitted from the analysis (Freeman, 2001). Our study tests whether a company that reports activities with the intention of directly benefiting other stakeholders than stock owners (e.g. society and employees), also creates value for shareholders through increased stock returns.

2.1.2 Efficient Market Hypothesis

The Efficient Market Hypothesis (EMH) assumes that stock prices reflect all available information (Bodie, Kane and Marcus, 2010). The EMH is commonly divided into three versions: the weak, the semistrong and the strong-form. The weak-form suggests that stock prices reflect all information that can be derived by examining market trading data. The semistrong-form asserts that all publicly available information is reflected in stock prices and the strong-form proposes that all information, including insider information, is reflected in the prices (Bodie, Kane and Marcus, 2010).

Our study suggests that investors include CSR in their investment decisions, either by tracking social responsibility indices or through company produced information, like sustainability reports. We conduct an event study with the purpose of investigating if a company that experiences a change in a CSR index also experiences abnormal returns on the stock market. In this context, our study assumes that the market is semistrong efficient and that all publicly available information is reflected in the stock prices.

2.2 Related Literature

The relationship between CSR and financial and stock performance has been widely debated. There is previous research supporting positive relationships as well as negative relationships and there are studies showing no relationship at all. For example, Derwall et al. (2005) show that portfolios of companies with strong environmental responsibility relates positively to operational performance and market value. Deng, Kang and Low (2013) use a large sample of mergers to investigate whether CSR creates value for acquiring companies' shareholders. They find that high CSR acquirers realize higher merger announcement returns compared to low CSR acquirers. There is also evidence that portfolios of firms with strong CSR policies perform better than portfolios of firms with weak CSR policies (Statman and Glushkov, 2009; Kempf and Osthoff, 2007).

In contrast Reeneboog, Ter Horst and Zhang (2008) show that socially responsible investment (SRI) funds underperform compared to benchmarks in Continental Europe. Furthermore, if the SRI funds underperform it may be subject to Friedman's (1970) critique that it would be more efficient for SRI investors to invest in better performing

ordinary funds and use the excess return earned in these funds to donate money on their own, instead of investing in SRI funds. There are other studies that support the neoclassical view of a negative link between CSR investments and the market value of the company. For example, Jaggi and Freedman (1992) find that large investments for the environment only increases the cost for the company and thereby decreases the value of the firm.

Karpoff, Lott and Wehrly (2005) find that environmental violations are disciplined largely through legal and regulatory penalties, but that the reputation of the company is not affected at all. Their study strengthens the theory that investors do not value whether a company invests in CSR or not.

3. Data

In this section, we present the data necessary to perform our proposed tests. We also give a detailed description of the Folksam Index.

3.1 Sample Collection

The Swedish insurance company, Folksam, annually ranks all firms listed on Nasdaq Stockholm based on the level of disclosure of CSR activities. The rankings are compiled into an index, which was first published in 2006.

The companies listed in the Folksam Index sets the frame for the sample collection. To perform our proposed tests we collect financial data of all firms that have been listed on Nasdaq Stockholm between the years 2006-2013. The total number of firms included in the Folksam Index over the entire period is 350. A description of the data required to conduct the regression analysis and the event study is presented below.

3.1.1 Regression

We conduct a regression to test the effect of CSR reporting on stock returns. In the regression, we include only companies that have been listed during the entire period 2006-2013. This reduces the number of companies in the regression sample to 167.

To be able to calculate the return needed for the regression, adjusted year-end data has been collected from Finbas. This database includes, among other things, daily stock price information from the Nordic Stock Exchanges. The database is updated quarterly with data from SIX Financial Information and was donated to SSE by Nasdaq in 2011 (Swedish House of Finance, n.d.). The stock prices are adjusted for splits and dividends, which enables a correct calculation of the yearly returns. Closing prices (named last prices in Finbas) are used for each company.

Two control variables are included in the regression: size and capital structure. According to Margolis et al. (2009), these factors have been shown to have a great explanatory value in how the stock price develops and are therefore effective control variables. Total assets are used as a proxy for size and solvency is used to measure the capital structure. This data is collected from Orbis, which is a database that contains

financial information on public and private companies worldwide. On the occasion that firms listed on Nasdaq Stockholm have not been included in Orbis, additional data has been collected from their individual annual reports.

3.1.2 Event Study

In contrast to the sample size of the regression, we use the total number of firms that are included in the Folksam Index and that has historical data on both the event date and all estimation days in the event study. Thus the number of firms included in the event study is 247. The daily stock prices needed for the event study are collected from Finbas. OMXSPI is a value-weighted index over the companies listed on Nasdaq Stockholm, which is used as a proxy for the market return on Nasdaq Stockholm. To enable a calculation of the daily market return, daily prices of the OMXSPI are collected from Nasdaq Stockholm's website.

3.2 The Folksam Index

Folksam is an insurance company and a great part of its capital is invested in stocks. It is one of the largest institutional owners of Swedish listed firms (Folksam 2013). According to Folksam (2013), its customers wish that social and environmental factors are taken into account when investment decisions are made. It is within this context that Folksam ranks all companies listed on Nasdaq Stockholm based on two categories related to social performance: environment and human rights. The index was first released in 2006 and was published annually until 2009. From 2009 the index has been released every second year. The following sections describe the methodology used when conducting the index as explained by Folksam.

3.2.1 Definitions and Boundaries

The main focus of the Folksam Index is on each company's ability to manage its risks related to human rights and environment. The rankings are based on publicly available information in annual reports, sustainability reports and websites. The company-produced information is verified against other sources such as media, international organizations and public institutions. Information from all sources is considered in the final assessment, which is executed by GES Investment Services (a global investment advisor with focus on environmental, social and governance issues).

The underlying criteria of the analysis are based on Global Compact's ten principles and the OECD guidelines for multinational companies. The purpose of these principles and guidelines is to provide companies with a better understanding of the social responsibility they are expected to undertake. The principles and guidelines are founded upon international conventions and are mainly used in the Folksam study to evaluate whether the company's management system is adapted to international CSR standards.

The management system is evaluated based upon the following factors:
1. *Policy*: Does the company have a relevant policy, e.g. to promote health and security?
2. *Management System*: Are there routines in the organization that can ensure that the policy is enforced?
3. *Plans/Programs*: Is the policy decomposed into relevant targets and are there concrete plans of implementation?
4. *Disclosure*: Does the company disclose information that enables the evaluation of improvements?
5. *Verification*: Does an external party verify the management system?

The Folksam analysis is divided into two categories: environment and human rights. Each company is given a grade of 0-7 points for each of the two categories. The analysis of each category is divided into main areas containing 2-5 criteria each.

3.2.2 Environment

The analysis related to environment is based on the individual company's capacity to manage the environmental risks associated with its operations and is divided into two main areas, see *Table 1*.

Table 1: The Different Parts of the Environmental Analysis

Category	Criteria for Assessment
Sustainability Management	Policies & Programs
	Management System & Organization
	External Certification
	Sustainability Reporting
	Supplier Control
Sustainability Performance	Emission of Greenhouse Gases
	Energy Consumption
	Industry Specific Factors

The first area, Sustainability Management, evaluates the individual company's overall sustainability ambitions presented in its policies and programs. Within this area, Folksam also evaluates to what extent management systems are implemented in the organization and whether these are based on relevant external standards. Finally, Folksam assesses the treatment of suppliers and the quality of the sustainability reporting.

The second area of assessment is related to the company's sustainability performance and evaluates the company's ability to manage its effects on the environment. The evaluation is based on criteria relevant for all industries, such as energy consumption and emissions, as well as industry specific criteria, for example related to product development and transportation.

3.2.3 Human Rights

The focus of the human rights analysis is to assess a company's ability to manage operational risks related to human rights. The analysis is divided into three main areas based on different groups of stakeholders, see *Table 2*.

Table 2: The Different Parts of the Human Rights Analysis

Category	Criteria for Assessment
Employees	Health & Security
	Discrimination
	Freedom of Association
	Working Hours & Salary
	Child Labour
	Forced Labour
Society	Industry-Related Social Responsibility
	Corruption
Suppliers	Code of Conduct
	Management System & Programs
	Disclosure

The first area concerns the company's employees and the criteria are based on the Global Compact principles and the OECD guidelines of working conditions, health and security.

The second area comprehends the company's effect on society such as prevention of corruption and industry-related social responsibility. The last criterion involves aspects

like knowledge transfer, security arrangements when the operations affect nearby societies and consultations before major operational transformations.

The last area of the analysis evaluates the company's choice of suppliers and how the company discloses information about the promotion of human rights in the supply chain. In some service industries, the suppliers have been excluded from the analysis because of difficulties of distinguishing a clear main group of suppliers. The IT and finance sectors are examples of industries where the supply chain has been left out of the analysis.

3.2.4 Ranking Assessment

The companies are rewarded points for each criterion included in the analysis. Full points are distributed if Folksam has been able to identify all desired components in the company's reporting or if there are other clear indicators of the company being well prepared to manage its environmental and social risks.

Within each main area, the points distributed for each criterion are summed and a mean value is calculated. Each company is awarded a ranking based on which interval the mean value falls into according to *Table 3*. The rankings are also calculated on an overall level where the company receives separate rankings for environment and human rights.

Table 3: Grading Translated into Stars

Scale	Grade
0.00	☆ ☆ ☆ ☆ ☆ ☆ ☆
0.01-0.69 (10%)	★ ☆ ☆ ☆ ☆ ☆ ☆
0.70-1.74 (15%)	★ ★ ☆ ☆ ☆ ☆ ☆
1.75-2.79 (15%)	★ ★ ★ ☆ ☆ ☆ ☆
2.80-4.19 (20%)	★ ★ ★ ★ ☆ ☆ ☆
4.20-5.24 (15%)	★ ★ ★ ★ ★ ☆ ☆
5.25-6.29 (15%)	★ ★ ★ ★ ★ ★ ☆
6.30-7.00 (10%)	★ ★ ★ ★ ★ ★ ★

3.2.5 Potential Biases

The rankings are first and foremost based on what is being reported by the companies. These findings are to some extent controlled against external sources, but the main focus of the analysis is not on the actions actually taken by the company. Thus, there might be scenarios where the company's social performance is not completely reflected in the ranking provided by Folksam. For example, a small company might not disclose information about the CSR related activities it performs and therefore receive a lower ranking than another company that undertakes similar activities and reports them. However, our analysis aims to investigate stock reactions to CSR and we therefore consider it relevant to examine the information that is available to investors. This information is reflected in the Folksam Index.

Another aspect to consider is the changing of rankings over time. The development of improved and more professional reporting increases the competition, resulting in a stricter assessment with higher demands. A company that maintains its CSR standards from one year to another could thus receive a lower ranking the second year due to higher external requirements.

4. Methodology

The aim of our study is to investigate whether CSR reporting has any effect on stock returns and especially whether this effect varies depending on the quality of the CSR activities being reported. We test the null hypothesis that CSR reporting does not have any effect on stock returns by conducting a regression analysis and an event study.

4.1 Regression Model Selection

Regression models are among the most common ways of studying the relationship between two or several variables (Wooldridge, 2012). Apart from being based on Hypothesis 1, our choice of regression model is based on the structure of our data.

The independent variable of interest is the rankings of the Folksam Index. A total of 167 firms have remained listed on Nasdaq Stockholm over the total time period that the index has been released. These firms constitute the sample included in the regression analysis. The data structure is thus that of panel data with 167 companies over the time period 2006-2013 (2010 and 2012 excluded). For econometric analysis of panel data, the assumption that observations are independently distributed across time cannot be made (Wooldridge, 2009). Unobserved factors affecting the dependent variable one year will also affect it another year. We use a fixed effects model to control for this time-constant unobserved factor.

4.1.1. The Fixed Effects Model

The fixed effects (FE) model with one explanatory variable is defined in *Equation 1* below:

$$y_{it} = \beta_1 x_{it} + a_i + u_{it}, \qquad t = 1, 2, \dots, T. \textbf{ (1)}$$

This model can effectively remove the unobserved effect, a_i, by the use of transformation prior to estimation (Wooldridge, 2009). This is done by, for each *i*, averaging *Equation 1* to get *Equation 2*:

$$\bar{y}_i = \beta_1 \bar{x}_i + a_i + \bar{u}_i \textbf{ (2)}$$

Because a_i is fixed over time, it remains the same in both equations and disappears if subtracting *Equation 2* from *Equation 1* which gives us *Equation 3*:

$$y_{it} - \bar{y}_i = \beta_1(x_{it} - \bar{x}_i) + u_{it} - \bar{u}_{t,} \qquad t = 1, 2, \dots, T. \textbf{(3)}$$

The equation above is thereafter estimated by pooled ordinary least squares (OLS). This assumes that the idiosyncratic error is uncorrelated with each explanatory variable across all time periods. If the strict exogeneity assumption does not hold, the fixed effects estimator is biased (Wooldridge 2009).

4.1.2 The Two-Way FE Model with Time Effects

The FE model as described above might suffer from endogeneity issues if systematic shocks or time effects affect the independent variables. These time effects can be incorporated in the FE model through the inclusion of year dummy variables (Baum, 2006). We conduct the regression both by using the one-way model, excluding time effects, and the two-way model, including time effects.

4.1.3 Inclusion of Control Variables

Another reason why the strict exogeneity assumption might not hold is if there are omitted variables, which are not time-invariant, that are correlated to the variables in the model (Allison, 2009). In order to avoid this, we include two common control variables in the model: size and capital structure.

Industry could also be a useful control variable since different industries vary in their social responsibility practices. In industries where the risks associated with environment and/or human rights are high, companies are expected to disclose more information about their CSR activities, which would imply a higher grade (Folksam 2013). However, the fixed effects estimator allows for correlation between a_i and the explanatory variables in any time period. Therefore, any explanatory variable that is constant over time for all *i* is removed by the fixed effects transformation (Wooldridge, 2009). Industry is assumed to be time-constant over the period 2006-2013 for the 167 firms included in our sample. Industry can thus not be included as a third control variable as it is already included in the fixed effects.

4.1.4 Model Definition

The fixed effects model, including control variables, is defined as follows in *Equation 4*:

$$y_{it} = \beta_{CSR} \cdot CSR_{it} + \beta_{Assets} \cdot Assets_{it} + \beta_{Solvency} \cdot Solvency_{it} + a_i + u_{it} \textbf{ (4)}$$

where y_{it} is the yearly stock return calculated as *Equation 5*:

$$y_{it} = \frac{(Price_t - Price_{t-1})}{Price_{t-1}} \textbf{ (5)}$$

The independent variables are CSR, assets and solvency. The CSR-factor is calculated as a company's total CSR ranking in the Folksam Index each year. The control variables included are the logarithm of assets and solvency (equity divided by total assets). a_i captures the fixed effects and u_{it} the idiosyncratic errors.

4.1.5 The CSR-Factor

The companies included in the Folksam Index can receive a maximum of 7 points in each category, adding up to a total of 14 points. Since the index is relatively normally distributed OLS is used as an approximation and we do not need to adapt the regressions to a count model (Metzger, 2015).

To test the hypothesis that the effect of inadequate CSR reporting differs from that of high quality CSR reporting, the companies are divided into two groups: high and low ranked firms. The division is based on the mean value of the index. The low ranked group consists of the companies with a CSR grade below the mean value and the high ranked group are the firms with a total grade above the mean value.

Each year that the index has been released there has been a few companies that have received a ranking of zero (zero rankings). According to Folksam, this ranking is only distributed if the company does not disclose any information describing its capacity to manage social and environmental risks. Therefore, Folksam has been unable to provide a ranking. Since the focus of our study is on publicly available information on CSR, we have chosen to include the zero rankings in our tests. However, we also perform the tests excluding the zero ranked firms as a check for robustness.

4.1.6 Estimation of Gap Years

The Folksam Index has been published annually since 2006, except for 2010 and 2012. To run our main regression, we have estimated rankings over the missing years for all companies included in the regression. The ranking of an individual company does not greatly vary between one year and the next, see *Table 4*. Therefore, the estimated rank-

ings are calculated as the average of the rankings the year prior and the year after the year of estimation.

Table 4: Descriptive Statistics of the Folksam Index

	(1)	(2)	(3)	(4)	(5)
Year	N	Mean	Sd.	Min.	Max.
2006	167	4.461	2.966	0.290	11.42
2007	167	4.561	2.837	0.210	11.14
2008	168	4.671	2.755	0.210	11.11
2009	169	4.697	2.683	0.240	11.11
2011	171	4.870	2.462	0.550	11.18
2013	171	4.760	2.426	0.350	10.82

4.2 Event Study

The regression measures the relationship between a firm's CSR ranking and its stock return. As a complement, we also test the effect of the release of the Folksam Index on the Swedish stock market by conducting an event study. An event study examines the informativeness of an event assessed by market participants. The notion of efficient capital markets provides a strong theoretical foundation for the basic event study methodology as it assumes that security prices fully reflect all available information (Fama, 1991). As new information is made available to the market, investors are expected to enclose this information in the stock price to match the true value of the firm. The event study is done for the total number of firms in the event study sample, as well as for the 25 top ranked firms and the 25 bottom ranked firms each year.

The event study acts as a complement to the regression since it is not exposed to the same endogeneity issues. Konchitchki and O'Leary (2010) argue that an event study provides a certain precision that is impossible to achieve using a regression. Since the event study solely examines detailed timing of a specific type of announcement, alternative explanations for changes in shareholder value can be discarded (Krüger, 2015). We follow the event study methodology presented by MacKinlay (1997). The procedure is summarized below:

1. Define the event of interest
2. Define the event window
3. Set the sample selection
4. Estimate the abnormal return
5. Define the estimation window
6. Test if the abnormal return is statistically different from zero

4.2.1 Sample Selection and Definition of Event Window

According to MacKinlay (1997), the initial task of an event study is to define the event of interest and identify the period over which the security prices of the firms involved in this event will be examined, i.e. the event window. In this paper, the event of interest is the release of the Folksam Index. The index becomes available to the market at the date of the press release, which occurs in November or December each year. The date of the press release thus constitutes Day 0.

It is customary to define the event window to be larger than the specific date of interest, because it permits examination of the period surrounding the event (MacKinlay, 1997). According to Krivin et al. (2003), information regarding announcements that are unusual is expected to take longer time to process, indicating the need for an event window of several days. However, a longer event window increases the risk of other events occurring that affect the abnormal returns. The power to detect abnormal returns therefore decreases as the horizon of the event study increases (Kothari and Warner, 2007). Thus, we have chosen to examine two different lengths of event window: a shorter period of 3 days (Day 0-2) and a longer period of 10 days (Day 0-9).

The sample is set to the firms included in the Folksam Index that have been listed on Nasdaq Stockholm during the full period of the event and estimation windows.

4.2.2 Estimation of Abnormal Returns and Definition of Estimation Window

A measure of abnormal returns is required to examine the event's impact. The abnormal return is defined as the difference between actual and predicted returns, without the event occurring (Konchitchki and O'Leary, 2010). For firm *i* and event date *t*, the abnormal return is defined as in *Equation 6*:

$$AR_{it} = R_{it} - E(R_{it}|X_t) \textbf{ (6)}$$

where AR_{it} is the abnormal return, R_{it} is the actual return, $E(R_{it}|X_t)$ is the normal return for the time period t and X_t is the conditioning information for the normal return model.

The calculation of actual returns, R_{it}, is based on adjusted daily stock prices and is presented in *Equation 7* below:

$$R_{it} = \frac{P_{it} - P_{it-1}}{P_{it-1}} \textbf{ (7)}$$

where P_{it} is the closing price of security i at day t and P_{it-1} is the closing price of security i at day $t-1$.

MacKinlay (1997) suggests the use of the market model for predicting normal returns. The market model is a statistical model that relates the return of any given security to the return of the market portfolio and it assumes a stable linear relation between the market return and the security return. For any security i, the market model is presented as in *Equations 8-10*,

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \textbf{ (8)}$$

$$E(\varepsilon_{it} = 0) \textbf{ (9)} \quad Var(\varepsilon_{it}) = \sigma^2_{\varepsilon_i} \textbf{ (10)}$$

where R_{it} and R_{mt} are the period-t returns on security i and the market portfolio. ε_{it} is the zero mean disturbance term and α_i, β_i and $\sigma^2_{\varepsilon i}$ are the parameters of the market model. α_i and β_i are predicted by OLS regression.

According to MacKinlay (1997) a broad based stock index is used for the market portfolio in applications. MacKinlay also suggests the use of a value-weighted index. We therefore use the daily returns of the OMXSPI, which is a value-weighted index of the stocks listed on Nasdaq Stockholm.

The normal return is calculated for each day in the estimation window. According to Pettengill (2001) the length of the estimation window is a debated topic and it ranges from 120 business days prior to the event to 255 business days prior to the event. The amount of firms listed on Nasdaq Stockholm is constantly changing, for example 23 companies were delisted and 10 companies were listed in 2008 (Skatteverket, Aktieinformation 2008). To be able to include as many firms as possible in the full

estimation window, we use a window of 120 days. See *Figure 1* for an overview of the outline for the estimation and event windows.

Figure 1: Overview of the Event and Estimation Windows
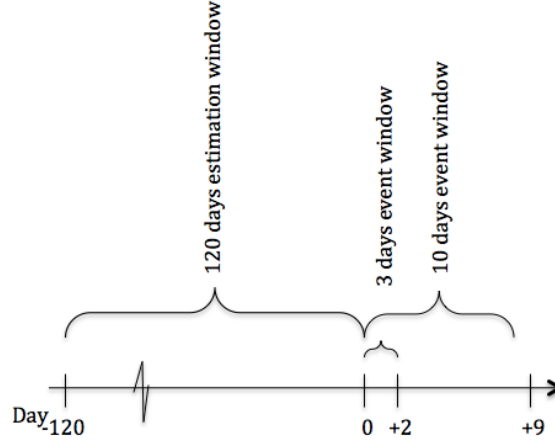
Under the market model, abnormal returns are calculated as in *Equation 11*:

$$AR_{it} = R_{it} - \hat{\alpha}_i - \hat{\beta}_i R_{mt} \textbf{ (11)}$$

where R_{it} is the actual return of firm i on day t, $\hat{\alpha}_i$ and $\hat{\beta}_i$ are intercept and slope estimators and R_{mt} is the return of OMXSPI on day t.

The abnormal return observations must be aggregated to be able to draw overall conclusions of the event of interest (MacKinlay, 1997). The cumulative abnormal return (CAR) reflects to what extent the firm has changed in value due to the occurred event and the new available information on the market for the stakeholders. Depending on the event, the CARs are expected to be positive if the incremental future cash flows are expected to increase due to the event, or negative if the incremental future cash flows are expected to decrease due to the event (Konchitchki and O'Leary, 2010).

The abnormal return aggregated through time for an individual security is calculated as *Equation 12*:

$$CAR_{i[t_1,t_2]} = \sum_{t=t_1}^{t=t_2} AR_{it} \textbf{ (12)}$$

where t_1 is the first day of the event window and t_2 is the last day of the event window.

The individual securities' CARs can be aggregated as in *Equation 13* to find the average cumulative abnormal return:

$$\overline{CAR}_{[t_1,t_2]} = \frac{1}{N_t}\sum_{i=1}^{i=N_t} CAR_{i[t_1,t_2]} \textbf{ (13)}$$

After having calculated the average cumulative abnormal returns, the final step of the event study is to test whether the abnormal return is statistically different from zero. This procedure is described in the following section.

4.2.3 Testing for Significance

There are two types of statistical tests that can be used to test the null hypothesis that the abnormal returns are different from zero: parametric and non-parametric tests. Typically, parametric and non-parametric tests are not used in isolation, but in conjunction with the other (MacKinlay 1997). In this sense, the non-parametric test can be used as a check for robustness of inferences based on a parametric test. For example, Campbell and Wasley (1993) found that for daily Nasdaq stocks returns, the non-parametric rank test provides more reliable inferences than the standard parametric t-test alone. We therefore conduct both a parametric t-test and a non-parametric test for significance.

T-statistics are frequently used as a parametric test of the statistical significance of CAR (Konchitchki and O'Leary, 2010). The parametric tests, such as the t-test, relies on the assumption that the abnormal returns are normally distributed (Serra, 2002).

If we cannot assume that the sample is normally distributed it is better to use the non-parametric Wilcoxon sign rank test (Lowry 2015). The sign rank test is a two-sided test that considers if both the sign and magnitude of the abnormal returns are significant. The test statistic is given by *Equation 14*,

$$W = \sum_{i=1}^{N} r_i^+ \textbf{ (14)}$$

where r^+ is all the positive ranks of the absolute value of the abnormal returns. If N is large and under the null hypothesis of equally likely negative or positive abnormal

returns, the variable W asymptotically follows a normal distribution with the following mean and variance presented in *Equation 15-16*:

$$E(W) = \frac{N(N+1)}{4} \textbf{ (15)}$$

$$V(W) = \frac{N(N+1) \cdot (2N+1)}{12} \textbf{ (16)}$$

Both the parametric and non-parametric test will be tested at a 5% significance level, meaning that the null hypothesis that the average cumulative abnormal return is equal to zero can be rejected when the p-value is less than or equal to 0.05.

5. Results

The results are organized in three sections. The first section presents descriptive statistics of the Folksam Index. Thereafter, the results from the regression analysis are presented and the last section consists of the results from the event study.

5.1 Descriptive Summary Statistics

Since it was first published in 2006, the Folksam Index has ranked a total of 350 companies. Below follows a brief description of how the distribution of the rankings has changed over time.

5.1.1 Number of Zero Ranked Firms

Each year there is a number of firms that do not report their CSR activities. Folksam is unable to rank these firms and they are given a total score of zero. *Table 5* presents the number of firms that has received zero points in each year that the index has been released.

Table 5: Number of Companies Given Zero Points per Year

VARIABLES	N
Total	67
2006	20
2007	13
2008	11
2009	10
2011	5
2013	8

As seen in *Table 5,* the number of firms with a ranking score of zero has decreased during the years.

5.1.2 Ranking Characteristics of the Regression and Event Study Sample

The regression includes the 167 companies that have been listed each year that the index has been released. As seen in *Table 6* the average total CSR score in this sample is 4.577.

Table 6: Descriptive Statistics of the Folksam Index for the Regression Sample

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	Mean	Sd.	Min.	Max.
Environment	1,032	2.296	1.752	0	6.560
Human Rights	1,032	2.281	1.229	0	5.920
Total	1,032	4.577	2.742	0	11.42

When looking at all of the companies included in the event study, the average total score of the Folksam Index is 3.919, see *Table 7*.

Table 7: Descriptive Statistics of the Folksam Index for the Event Study Sample

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	Mean	Sd.	Min.	Max.
Environment	1,549	1.931	1.700	0	6.560
Human Rights	1,549	1.989	1.221	0	5.920
Total	1,549	3.919	2.696	0	11.42

The average total CSR score is higher in the regression sample than in the sample of the event study. This is not surprising considering that the 167 companies that have been listed the entire period, and thus compose the regression sample, include some of the largest Swedish corporations. These firms often experience a higher pressure of disclosure and have larger resources to invest in CSR than many of the small companies, which are also included in the event study sample.

5.1.3 Ranking Characteristics of Top and Bottom Ranked Firms

To test the difference in market reactions to the release of the Folksam Index, depending on the ranking received, we perform separate event studies for the top and bottom 25 companies each year. *Table 8* presents some differences between the top and bottom groups of firms, excluding the zero rankings.

Table 8: The Bottom and Top Groups of Companies in the Event Study Sample

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	Mean	Sd.	Min.	Max.
Bottom 2006	25	0.706	0.192	0.290	0.880
Bottom 2007	25	0.675	0.253	0.210	0.880
Bottom 2008	25	0.751	0.203	0.210	0.880
Bottom 2009	25	0.727	0.206	0.240	0.880
Bottom 2011	25	0.976	0.226	0.550	1.330
Bottom 2013	25	0.963	0.341	0.330	1.530
Top 2006	25	9.732	0.931	8.220	11.42
Top 2007	25	9.539	1.009	8.140	11.14
Top 2008	25	9.466	0.997	8.020	11.11
Top 2009	25	9.532	1.034	7.980	11.11
Top 2011	25	9.225	0.833	8.170	11.18
Top 2013	25	8.986	0.782	7.950	10.82

The mean values as well as the minimum and maximum values have increased in the bottom ranked group. This is probably due to higher external demands regarding CSR disclosure in combination with the increased awareness of CSR in general. The intensified requirements have also resulted in a stricter standard, which explains the decreased mean, minimum and maximum values for the top group.

5.2 Regression Results

The regression has been run according to the one-way FE model and the two-way FE model with time effects. As robustness tests we have used control variables and excluded the firms with a ranking of zero points. A division has also been made between the two categories of the Folksam Index: environment and human rights.

5.2.1 General Results

Table 9 presents the results of running the regressions on the total sample of the 167 firms that have been consistently listed each of the years that the index has been released. The first column shows the results of the fixed effects model, the second and third column present the results with time effects including and excluding the zero ranked firms. The CSR coefficient is slightly negative in all three models indicating a negative relationship between CSR reporting and stock performance. However, none of the models produce significant results regarding the CSR coefficient, whereby no clear relationship can be asserted.

Table 9: Regression Results of All Companies

VARIABLES	(1) FE Model (incl. zero rankings)	(2) Two-Way FE Model (incl. zero rankings)	(3) Two-Way FE Model (excl. zero rankings)
CSR	-0.0267	-0.00295	-0.000606
	(0.0166)	(0.0143)	(0.0147)
Constant	0.229***	0.0355	0.0243
	(0.0783)	(0.0754)	(0.0776)
Observations	1,333	1,333	1,316
R-squared	0.002	0.314	0.316
Number of Firms	167	167	167

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

We also perform the above regressions after having divided the firms into two groups: one with above average CSR rankings and one with below average CSR rankings.

5.2.2 High Ranked Firms

The results of running the regression with a sample of firms with a ranking above the average are similar to those of running the regression with the total sample of firms. The CSR coefficient is close to zero and slightly negative, see *Table 10*. Just like in the case of the total sample, the CSR coefficients are insignificant.

Table 10: Regression Results of the High Ranked Companies

VARIABLES	(1) FE Model	(2) Two-Way FE Model
CSR	-0.0111	-0.0288
	(0.0292)	(0.0221)
Constant	0.170	0.588***
	(0.211)	(0.168)
Observations	580	580
R-squared	0.000	0.461
Number of Firms	92	92

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.2.3 Low Ranked Firms

Table 11 presents the regression results of the group of firms with a lower grade than the average. According to the FE model without time effects the CSR coefficient is

0.00810, but insignificant. However, when the model includes time effects, it produces significant results. The CSR coefficient is 0.0608 when the zero rankings are included and 0.0757 when they are excluded. The significance levels of the results of the bottom ranked group are highly improved when time effects are included in the FE model. When the zero rankings are included in the two-way FE regression, we have a p-value below 0.05 and when we exclude the zero rankings the p-value is below 0.01. These results indicate that an increase in the CSR-factor of a company with a low CSR ranking has a small positive effect on stock prices.

Table 11: Regression Results of the Low Ranked Companies

VARIABLES	(1) FE Model (incl. zero rankings)	(2) Two-Way FE Model (incl. zero rankings)	(3) Two-Way FE Model (excl. zero rankings)
CSR	0.00810	0.0608**	0.0757***
	(0.0264)	(0.0258)	(0.0275)
Constant	0.0942	0.245***	0.200***
	(0.0734)	(0.0695)	(0.0753)
Observations	753	753	736
R-squared	0.000	0.263	0.266
Number of Firms	118	118	118

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.2.4 Inclusion of Control Variables

We also run the regressions including control variables for size and capital structure, see *Table 12*. The results are similar to when control variables are not included. The CSR coefficients for the total and high ranked groups of firms are close to zero and points toward a negative relationship, whereas the results of the low ranked group rather points toward a positive relationship. Similar to when the control variables are excluded, it is only when applying the two-way FE model to the low group that the result is significant. Regarding the coefficients of the control variables, it is only solvency that achieves a significant level.

Table 12: Regression Results When Including Control Variables

VARIABLES	(1) FE Total Group	(2) Two-Way FE Total Group	(3) FE High Group	(4) Two-Way FE High Group	(5) FE Low Group	(6) Two-Way FE Low Group
CSR	-0.0220	-0.00330	0.00170	-0.0266	0.00958	0.0589**
	(0.0167)	(0.0144)	(0.0287)	(0.0221)	(0.0272)	(0.0259)
Ln(Assets)	-0.0523	0.0392	-0.0815	0.0886	-0.0171	0.0620
	(0.0421)	(0.0375)	(0.0781)	(0.0666)	(0.0573)	(0.0524)
Solvency	0.445***	0.113	1.212***	0.666***	0.166	-0.0691
	(0.165)	(0.139)	(0.274)	(0.219)	(0.220)	(0.192)
Constant	1.133	-0.864	1.474	-1.659	0.359	-0.991
	(0.905)	(0.815)	(1.812)	(1.514)	(1.176)	(1.071)
Observations	1,333	1,333	580	580	753	753
R-squared	0.010	0.315	0.050	0.471	0.001	0.265
Number of Firms	167	167	92	92	118	118

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

5.2.5 Environment and Human Rights

Table 13 shows the results of applying the two-way FE model and including only the CSR ranking of the first category, environment. Similar to the results of including the total ranking, the coefficient of 0.0951 is only significant in the low ranked group of firms. This supports the existence of a positive relationship between CSR reporting with focus on environment and stock returns of a company with a lower CSR ranking.

Table 13: Regression Results Based on the Environmental Ranking

VARIABLES	(1) Two-Way Model Total Group	(2) Two-Way Model High Group	(3) Two-Way Model Low Group
Environment	0.00546	0.00709	0.0951**
	(0.0240)	(0.0352)	(0.0435)
Constant	0.00803	0.344**	0.287***
	(0.0642)	(0.149)	(0.0586)
Observations	1,333	580	753
R-squared	0.314	0.459	0.262
Number of Firms	167	92	118

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results of applying the two-way FE model including only the human rights ranking differ somewhat from those of the environment ranking. When only human rights are included it is no longer the coefficient of the low group that is significant. Instead the coefficient is significant at the 5% level in the high ranked group, see *Table 14*. For this group, an increase of 1 in the human rights ranking implies a decrease of 0.0753 in the company's stock return.

Table 14: Regression Results Based on the Human Rights Ranking

VARIABLES	(1) Two-Way Model Total Group	(2) Two-Way Model High Group	(3) Two-Way Model Low Group
Human Rights	-0.0128	-0.0753**	0.0613
	(0.0232)	(0.0340)	(0.0390)
Constant	0.0530	0.622***	0.298***
	(0.0642)	(0.117)	(0.0640)
Observations	1,333	580	753
R-squared	0.314	0.464	0.260
Number of Firms	167	92	118

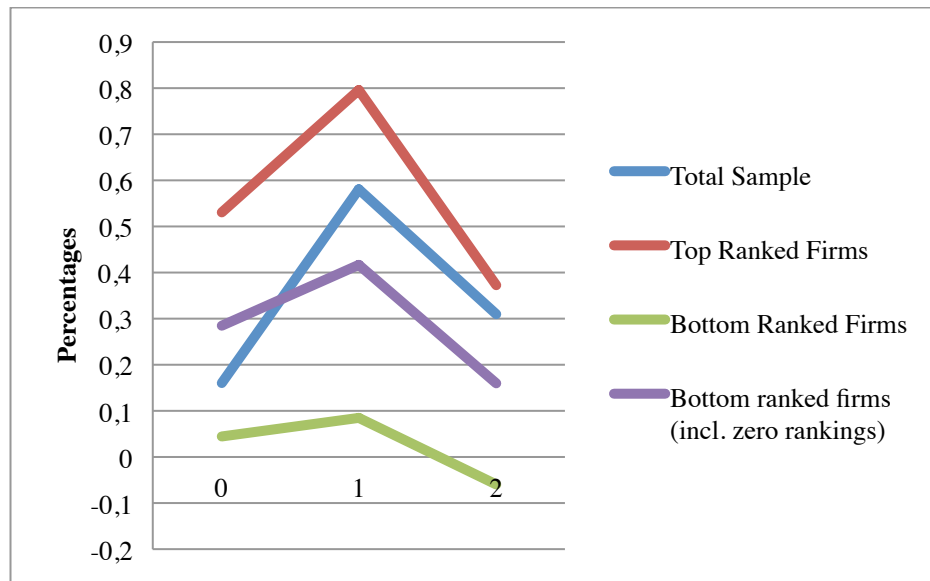Standard errors in parentheses
*** $p<0.01$, ** $p<0.05$, * $p<0.1$

5.3 Event Study Results

Abnormal returns have been analyzed with the use of two different event windows: one shorter of three days and one longer of ten days. Thereafter, a t-test and the Wilcoxon signed rank test have been conducted to test whether the abnormal returns are significantly different from zero.

5.3.1 Event Window of Three Days

Figure 2 graphs the average cumulative abnormal returns in an event window of three days. We find that the CARs of all groups of firms are quite close to zero, ranging from -0.06% to 0.80%. The top group of firms experiences the highest abnormal returns, peaking on Day 1 at 0.80% and then decreasing on Day 2 to a level of 0.37%. All firms experience a positive abnormal return, with the exception of the bottom group. The bottom ranked firms (excluding zero rankings) have a slightly negative CAR of -0.06% on Day 2 of the event window.

This result indicates that the top companies gain the most from the release of the Folksam Index, whereas the abnormal returns of the bottom ranked firms are barely affected at all.

5.3.2 Event Window of Ten Days

When we expand the event window to ten days, there is a larger spread between the top and bottom groups of firms, see *Figure 3*. When the zero rankings are excluded, the bottom group occasionally suffers from negative abnormal returns, resulting in a slightly negative CAR on Day 8. When the zero rankings are included in the analysis, the CAR is somewhat higher. However, the bottom firms still experience abnormal returns close to zero. In contrast, the CAR of the top firms increases more rapidly after Day 2 in the event window. Starting on a level of 0.37% on Day 2, the CAR of the top firms reaches a level of 4.53% on Day 9. None of the groups of firms seem to weaken due to the press release when studying the cumulative abnormal return over the longer event window.

Since all company groups have a peak on Day 1, we cannot exclude the possibility that the event study might have captured something else than only the press release of the Folksam Index, which would modify the data on the second event day.

Figure 3: Average Cumulative Abnormal Return in Event Window of Ten Days
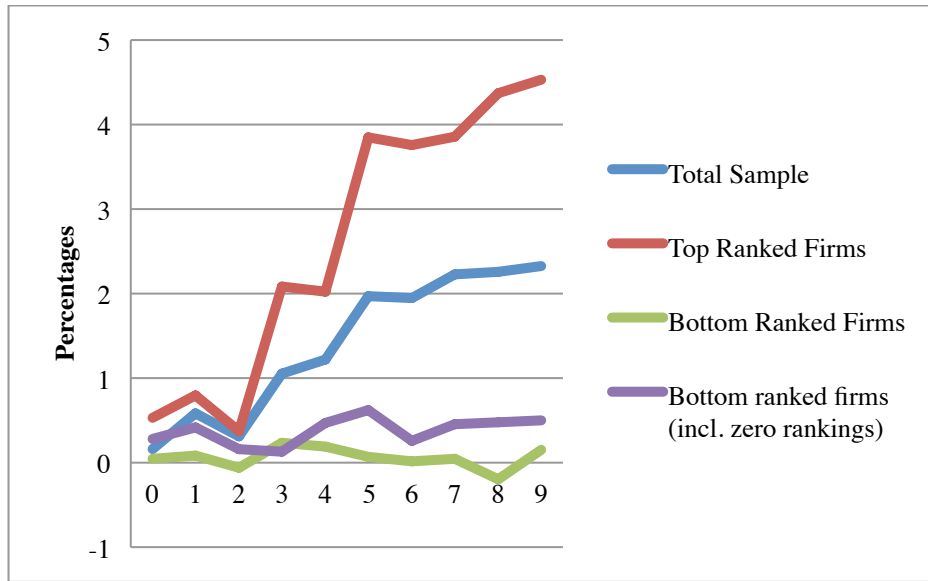
5.3.3 Test for Significance

The observed abnormal return for all companies is small and by looking at the t-test only the top companies have abnormal returns that are significant at a 5% level. The top group has a t-value of 2.76 and p-value of 0.006, see *Table 15*.

Table 15: Results from the T-Test

	T-value	P-value
Top Ranked Firms	2.76	0.006
Bottom Ranked Firms	0.18	0.858
Bottom Ranked Firms (incl. zero rankings)	1.22	0.226
Total Sample	1.65	0.100

The non-parametric sign rank test, on the other hand, show that the only group of companies for whom we cannot reject the possibility that the abnormal return is equal to zero is the bottom group, excluding zero rankings. All other groups, independent on the event windows, have p-values below 0.05 which indicates that the abnormal returns are significant, see *Table 16*.

Table 16: Results from the Wilcoxon Sign Rank Test

Event Window		P-value
	Top Ranked Firms	0.0002
	Bottom Ranked Firms	0.8826
3 Days	Bottom Ranked Firms (incl. zero rankings)	0.0271
	Total Sample	0.0000
	Top Ranked Firms	0.0000
	Bottom Ranked Firms	0.4311
10 Days	Bottom Ranked Firms (incl. zero rankings)	0.0028
	Total Sample	0.0000

Both the parametric t-test and the non-parametric sign rank test result in insignificant values for the bottom group and significant values for the top group at a significance level of 5%.

6. Conclusions

The purpose of this paper is to examine whether CSR reporting has any effect on stock returns and especially whether this effect differs depending on to what extent a company reports its CSR activities. The study is centred on the Folksam Index of Corporate Social Responsibility and divided into two parts: a regression analysis and an event study. The regression uses the Folksam Index as a proxy for the quality of a company's reported CSR activities whereas the event study examines the market reactions to the release of the actual index.

In the regression analysis, we find that there is a small, but positive relationship between CSR reporting and stock returns for firms with a ranking below the average ranking. This relationship is valid under several conditions: including and excluding control variables and including and excluding the zero rankings. However, we find no significant relationship for firms with an above average ranking. This indicates that a firm with a lower ranking can create value for its shareholders by improving its CSR reporting systems.

Similarly to the results above, we find a small positive relationship between environmental activities reported by a company with a low ranking and its stock return. However, no such link can be asserted for human rights activities. Instead, we find a small, but negative effect of human rights reporting on stock performance for firms with an above average ranking.

The event study shows that the abnormal returns during the first two days after the release of the Folksam Index are small. The average cumulative abnormal return of the bottom group (excluding zero rankings) is negative after two days. When the event window is extended to ten days, we find that the cumulative abnormal returns increase for the top group of firms and remains close to zero for the bottom ranked group. Thus, firms with an efficient CSR reporting seem to gain more from the release of the index than firms with an inadequate reporting. This indicates that investors value that companies have well developed CSR policies and standards.

7. Limitations and Suggestions for Future Research

Limitations and proposals for future research related to our study are presented below.

7.1 Limitations

The great majority of the data is collected from Finbas and Orbis. As data was missing for a few of the companies listed on Nasdaq Stockholm, we completed it with data from their individual reports. It is possible that this introduces biases in the data. Furthermore, the regression only includes the companies that have been listed the entire period of 2006-2013. The results might therefore be affected by a survivorship bias.

The regression analysis might be suffering from omitted variable biases. The control variables included in the regression are occasionally insignificant and does not necessarily contribute to explaining changes in stock returns. It is possible that there are other omitted variables that affect the CSR-factor and/or stock prices, whereby the fixed effects estimator could be biased. Furthermore, we do not include a variable for industry in the regression. Instead we assume that industry is time-constant over the period 2006-2013. However, if a company changes industry during this period, the fixed effect model would not capture this.

The efficient market hypothesis assumes that stock prices reflect all available information. We base the event study on the assumption that the market is semistrong, i.e. all public information is reflected in the stock prices. However, one might question if the Folksam Index really is common knowledge among investors. The index is only released to the public through Folksam's own website, which complicates the process for investors to gain information about its existence. The index is also limited in the sense that it only includes companies that are listed on Nasdaq Stockholm and has only been released six times.

The results of the regression analysis and the event study are not entirely consistent. The regression analysis shows a positive relationship between CSR reporting and a firm's stock return if the firm has a low ranking, but finds no significant relationship if the firm has a higher ranking. Conversely, the event study indicates that the top ranked

firms benefit from the release of the Folksam Index, whereas there is almost no effect on the bottom firms. However, the two studies are not directly comparable. Only the firms that have been listed the entire period between 2006-2013 are included in the regression analysis, while all firms ever included in the index are included in the event study. Furthermore, the regression tests the relationship between CSR reporting and stock returns, whereas the event study measures the short-term market reactions to the release of the Folksam Index.

7.2 Suggestions for Future Research

The Folksam Index is not a well-known index and the publicity of its press release is limited. Therefore, it would also be interesting to conduct an event study by looking at CSR related events, affecting Swedish listed firms, that receive higher attention in the media. Moreover, the definition of the term CSR is broad and varying. It might thus be relevant to make a distinction between different types of CSR activities or events and investigate whether stock reactions differ depending on this distinction.

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Appendix

Table for Figure 2, Average CAR in Event Window of 3 Days (%)

Day	Total Sample	Top Group	Bottom Group	Bottom Group (incl. zero rankings)
0	0.160	0.531	0.044	0.284
1	0.580	0.796	0.085	0.416
2	0.310	0.373	-0.060	0.159

Table for Figure 3, Average CAR in Event Window of 10 Days (%)

Day	Total Sample	Top Group	Bottom Group	Bottom Group (incl. zero rankings)
0	0.160	0.531	0.044	0.284
1	0.580	0.796	0.085	0.416
2	0.310	0.373	-0.060	0.159
3	1.059	2.086	0.232	0.130
4	1.218	2.021	0.191	0.473
5	1.973	3.846	0.071	0.621
6	1.947	3.757	0.017	0.260
7	2.229	3.854	0.046	0.456
8	2.260	4.370	-0.197	0.475
9	2.328	4.534	0.153	0.500