Does CSR engagement pay off?

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ABSTRACT

This paper study the relationship between CSR* engagement and firm value in terms of market-based as well as accounting-based performance measures for listed companies on OMXSPI between the years 2008-2016. The analysis is conducted using both panel data-based and cross-sectional based regressions. We use ESG scores from Thomson Reuters ASSET4, reflecting a company's performance in four areas: economic, environmental, social and corporate governance. As we rather take a restrictive approach when stating our conclusion and our empirical results show an ambiguous relationship between CSR and firm value, our main finding indicates a neutral relationship between CSR engagement and firm value.

Keywords: Corporate Social Responsibility, Environmental, Social & Corporate Governance, Financial Performance

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* During the course of this paper we will use CSR and ESG as synonyms.

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1. Introduction

Research and assessments of Corporate Social Responsibility (CSR) continue to gain momentum among shareholders and managers. However, as empirical studies on the relationship between firm value and CSR engagement provide us with mixed results there is no one shared view of the concept.

The different views of the value creation regarding investments on CSR activities often refers to the Shareholder and the Stakeholder Value Approach. The first mentioned approach was argued by Friedman (1970) who suggests that the sole purpose of a corporation is to maximize its profit and hence maximize the return to the shareholders as reward for their risk as investors. The second approach argued by Freeman (1984) suggest that for any business to be successful, it must create value for all stakeholders including customers, suppliers, employees, communities and financiers. Freeman claims that together, the stakeholders will create value that neither of them can create alone. The two different approaches in combination with the mixed results of previous empirical studies have led to an ongoing debate of whether the benefits of investing in CSR outweigh its costs.

There are numerous different definitions of CSR, varying from narrow to more extensive ones. One of the key models on CSR refers to Carroll's (1991) Pyramid of Corporate Social Responsibility, explaining CSR as the extent to which corporations need to expand their focus on shareholder and address concerns and obligations to its wider stakeholders. Carroll's Pyramid interpret CSR as actions taken by firms that goes further than being profitable and what is minimum required by law, and moreover address societal requirements such as ethical and philanthropic actions. Financial Times defines CSR as; "A movement aimed at encouraging companies to be more aware of the impact of their business in the rest of society, including their own stakeholders and the environment". Moreover, the European Commission has stated CSR as "companies taking responsibility for their impact on society". Common factors taken into consideration when examining businesses regarding CSR are hence Environmental, Social and Corporate governance (ESG), which include, among others, aspects such as resource and emission reduction, human rights as well as shareholder rights.

The fact that CSR is an umbrella-term, capturing plenty of aspects, and that there are numerous different ways on how to examine firms based on CSR engagement as well as various ways of measuring firm value and financial performance, might enlighten why the relationship between CSR engagement and firm value still is unclear. Furthermore, previous research (see e.g. Servaes and Tamayo, 2013; Margolis and Walsh, 2001) reason that another explanation to the ambiguity is due to the lack of understanding the channels through which CSR affects firm value.

Thus, this research aims to use a broad ESG measure, and we will run regressions both against market-based and accounting-based performance measures. In addition, we will complement our result with several previous findings from research which have examined the relationship between CSR and firm value in various ways to capture as many aspects of CSR and value creation as possible, aiming to understand their relationship.

When developing our predictions regarding investments in CSR being beneficial for firm value, we have found support from previous research (see e.g. Al-Tuwaijri et al., 2004; Burnett and Hansen, 2008; Erhemjamts et al., 2013; Rodgers et al., 2013). Moreover, Sen and Bhattacharya (2001, 2004) established that customers take firms' CSR activities into consideration when making purchase decisions. They found that, when consumers evaluate businesses, they are more sensitive to negative CSR information than positive CSR information and hence, managers should be particularly cautious about the hazards of appearing as socially or ethically irresponsible. This result is consistent with the result found by Krüger (2015) who established that investors respond strongly negative to negative CSR related events and weakly negative to positive events.

Furthermore, literature on business strategy and ethics consider CSR as a product attribute and hence a strategic investment to maximize firm value. They establish that CSR can be a differentiation strategy and point towards consumers being willing to pay a premium for products from firms who are more socially responsible, or when not willing to pay a premium, customers will at least be more likely to purchase products from these firms which in turn lead to an increasing demand. These theories correspond to further research findings implying that corporations engaging in CSR may signal higher quality products (Servaes and Tamayo, 2013). Moreover, empirical work by Fisman et al. (2008) found that the benefits of CSR are more extensive in competitive industries, as signalling product quality is more important when there is an increasing competition.

Additionally, we found support to our predictions in a study by Edmans (2011;2012) who analysed the relationship between employee satisfaction and long-run stock returns. He observed "The 100 Best Companies to Work for in America" and found that they demonstrated significantly more positive earnings surprises and announcement returns. His main findings included that employee satisfaction is positively correlated with shareholder returns, that stock market does not fully value intangibles and that some socially responsible investing's screens may improve investment returns.

To conclude, CSR refers to firms' creating value for their different stakeholders, and previous research has evaluated different channels used to generate higher firm value. Even though they all agree on the increasing importance of CSR engagement, this research seeks to evaluate whether

overall high CSR engagement is beneficial for firm value and thus signalling to managers as well as investors that investing in CSR is financially motivated. We predict that if, for example, increasing demand or premium pricing thanks to CSR engagement will increase firm profit, or if increased profits can be achieved by increasing employee satisfaction due to cost reductions such as increasing productivity or decreasing absenteeism, we would capture these, and other potential reasons, by adopting a broad CSR measure in combination with both market-based and accounting-based performance measures.

Sweden is a leading country in terms of environmental, social and governance, placing number one on the Country Sustainability Ranking jointly developed by RobecoSAM and Robeco, as of October 2017. This implies that sustainable business practice being highly valued in Sweden and hence we consider it being interesting to re-examine the Swedish market with updated prices and performance measures. However, we can predict that if increasing investments on CSR activities is correlated with increasing firm value we would find more distinct differences if evaluating the relationship between CSR and firm value on a broader, international market.

Despite the previous ambiguous results on CSR engagement impact on performance, we foresee an indication of increasing onward importance of non-financial information. An EU directive in 2014 established that by 2018, large public-interest companies with more than 500 employees are required to include non-financial statement in the annual report, providing information on the way they operate and manage social and environmental challenges. The purpose of the legislation is to help investors, consumers, policy makers and stakeholder to examine the corporation's non-financial performance (EU, 2014).

On the back of this, our hypothesis is that companies who invest in CSR will enjoy greater financial performance and increased firm value. To test our hypothesis, we use ratings from ASSET4 as our proxy for CSR engagement, along with stock price data from Swedish House of Finance's FinBas and complementary firm data from Thomson Reuters Datastream. We make the assumption that firms engaging more in CSR activities will enjoy higher ESG scores.

2. Theoretical Framework

The following section provides an overview of the underlying theories related to our study. The wide range of definitions of CSR as well as the various results of empirical work have steered CSR to become an ongoing debate among management and investors. By providing a broad framework of different definitions and theories, this section aims to evaluate why the relationship between CSR and financial performance still is unclear, as well as setting the basis for our hypothesis.

2.1 Corporate Social Responsibility

One key model on CSR is Carroll's (1991) Pyramid of Corporate Social Responsibility, which refers to CSR as four responsibilities: economic, legal, ethical and philanthropic. Carroll explain CSR as the extent to which corporations need to expand their focus on shareholders and address concerns and obligations to its wider stakeholders. However, the Pyramid can mirror the unsettled issues of whether companies do well because they are doing good or whether companies that are doing well can also do good.

Fundamental reasons for the uncertainty about the relationship between CSR and firm value are problems regarding how to measure CSR as well as the direction of causation (O'Bannon and Preston, 1993). Positive financial performance may, on the one hand, be the forerunner to increasing CSR engagement via the availability of slack resources (McGuire et al., 1990). On the other hand, CSR may contribute to better relations with stakeholders which, in turn, could lead to increased financial performance.

2.2 Shareholder Value Approach versus Stakeholder Value Approach

The Shareholder Approach (Friedman, 1970) suggests that the sole purpose of a corporation is to maximize its profit and hence maximize the return to the shareholders as reward for their risk as investors. Investments in social responsibilities should thus only be taken on if the net present value of the investments are positive, otherwise, the cost of taking on social responsibilities could lead to a reduction of return to shareholders. Friedman base this theory on the conviction that shareholders should have the option to decide whether to engage in social responsibilities or not and hence the decision should not be made by the firm. Furthermore, the approach implies that firms not engaging in social responsibility, ceteris paribus, perform better than firms who does for

the sake of goodwill. Accordingly, this would suggest that investing in CSR as a sole philanthropic action would imply no positive relationship between CSR engagement and financial performance.

In contrast, the Stakeholder Value Approach (Freeman, 1984) suggest that for any business to be successful it must create value for all stakeholders including customers, suppliers, employees, communities and financiers. Freeman argues that managers need to make sure that their interest go in the same direction as all stakes are of equal importance and together they will create something that neither of them can create alone. The approach denotes ethics and business as being coupled and argues that the statement "paying attention to stakeholders comes at the expense of looking at shareholder" is a myth. Freeman claims that caring about the stakeholders, in contradistinction, create even more value for the shareholders. One reasoning in this approach is that managers who pay attention to CSR issues are more likely to pay attention to other details and hence are expected to run their business better. On the contrary, firms who are not keen to CSR issues may take risky short-cuts, potentially causing a lower long-term value and increasing legal and reputational costs. In total, this would imply a positive relationship between CSR engagement and financial performance.

To conclude, the two approaches have different views on value maximization. A common approach to conceptualize CSR is shifting focus from achieving short-term financial results to making decisions today that will improve performance in the long-run. Consequentially, Freidman's theory may be a matter of maximizing the short-term financial performance and could thus be related to short-termism, which imply managers having excessive focus on short-term results due to market pressure. Meanwhile, the Freeman's approach takes on a more long-term perspective. Related to this, a report from the CFA Institute and Business Roundtable Institute for Corporate Ethics (2006), found that short-termism combined by insufficient long-term strategy can tumble the balance in value-destructive ways for the market. If this is the case, short-termism would not be motivated as it is value-destructive. This might not necessarily support our hypothesis but still indicate the importance of CSR engagement in the long run. However, if we find a positive relationship between CSR engagements and increasing firm value, our findings would support the Stakeholder Value Approach. Meanwhile, a neutral or negative relationship may support the Shareholder Value approach. If investors do not consider CSR engagement, and hence long-run strategies, being important, increasing CSR engagement would not lead to increasing market-based performance.

3. Previous research findings & hypothesis development

The following section gives an overview of previous research and findings on the relationship between CSR and firm value aiming to support our hypothesis. Furthermore, the section ends with a discussion of our hypothesis development.

3.1 CSR and firm value

The fact that there are numerous definitions of CSR, different ways on how to examine firms based on CSR engagement as well as various of ways of measuring firm value and financial performance, previous findings differ in results, ranging from positive (see e.g. Al-Tuwaijri et al., 2004; Burnett and Hansen, 2008; Erhemjamts et al., 2013; Rodgers et al., 2013) to neutral (see e.g. Alexander and Buchholz, 1978; Aupperle et al., 1985; Soana, 2011; Sun et al., 2010; McWilliams and Siegel, 2000) as well as negative (see e.g. Baird, Geylani and Roberts, 2012; Peng and Yang, 2014) relationships between CSR activities and performance.

Previous research on CSR engagement and financial performance show that firms consider investments in CSR important (Luo and Bhattacharya, 2006) but states that it is time consuming and require large investments (McGuire, Sundgren and Schneeweis, 1988). Consistent with Krüger (2015), Sen and Bhattacharya, (2001; 2004) and Margolis et al., (2009), investments in CSR may rather be a preventive action as negative CSR announcements are firm-value destructive while good CSR announcements may not have a significant impact on firm value. As previously stated, if this is the case, it might not necessarily support our hypothesis but still indicate the importance of CSR engagement in the long run.

A meta-study by Margolis et al. (2009) examines 167 empirical researches and found that capital markets do not punish companies that invest in CSR. They also found that companies with strong financial fundamentals in the past are more likely to spend money on philanthropic activities, consistent with Carroll (1991), and hence it is highly probable that good financial performance would result in increasing CSR engagement, not vice versa. This puts emphasis on the concerns of causality between CSR and firm value, as a positive relationship potentially can be explained by a reverse causation.

3.2 Channels through which CSR affects firm value and necessary circumstances

Expanding on Friedman's (1970) and Freeman's (1985) different theories, Servaes and Tamayo (2013) as well as Margolis and Walsh (2001) argues that a reason why the relationship between CSR engagement and firm value still is unclear is because the lack of understanding about the channels through which CSR affects firm value. Servaes and Tamayo (2013), Sen and Bhattacharya (2001; 2004), Schuler and Cording (2006), McWilliams and Siegel (2001) and Fisman et al. (2008) all found that CSR investments enhance firm value under certain circumstances when looking at one key stakeholder, the customers.

Servaes and Tamayo (2013) found that CSR and firm value are positively correlated for businesses with high customer awareness. Sen and Bhattacharya (2001; 2004), Schuler and Cording (2006) and McWilliams and Siegel (2001) found that one major limitation to profitable strategic CSR investment is the lack of customers' CSR awareness and its characteristics. Servaes and Tamayo (2013) include empirical evidence on CSR activities increasing firm value if the investments work as a differentiation strategy and hence are signalling higher quality products. Additionally, Fisman et al. (2008) suggest that CSR may work as vertical differentiation in a market where it is difficult to observe quality. They found that corporate philanthropy and profits are positively related but merely in competitive industries with high advertising intensity, potentially because of increasing importance of signalling product quality when facing a greater competition.

To summarize, these studies found positive relationship between CSR engagement and firm value but only under certain circumstances such as customer awareness, high advertising intensity and as a differentiation strategy to signal higher quality in more competitive industries.

Moreover, Edmans (2011;2012) analysed the relationship between CSR and stock-return by looking at another key stakeholder, the employees. He observed "The 100 Best Companies to Work for in America" and his main findings included that employee satisfaction is positively correlated with shareholder returns, that stock market does not fully value intangibles and that some socially responsible investing's screens may improve investment returns.

As these researches shed light on different issues regarding CSR investments and its effect on firm value, their findings can be interpreted as being in line with the Friedman Approach who suggest that a more accurate way to increase firm value could be to lower prices instead of engaging in CSR activities and hence allow their customers to make their own charitable allocations (Fisman et. al. 2008).

However, we use their findings to support our hypothesis and predict that if, for example, increasing demand or premium pricing due to CSR engagement will increase firm profit or if increased profits can be achieved by increasing employee satisfaction due to cost reductions, by

for example increasing productivity or decreasing absenteeism, we would capture this, as well as other potential reasons, by adopting a broad CSR measure in combination with using both market-based and accounting-based performance measures. Equally important, as CSR has continued to be a much discussed subject we could argue that firms would have become more aware of how to incorporate CSR investment and hence, if the majority of firms successfully implement CSR activities we would find a positive relationship between CSR and firm value.

3.3 Hypothesis development

As Sweden is a leading country in terms of ESG, placing number one on the Country Sustainability Ranking, as of October 2017, we assume that CSR is especially important for Swedish listed companies and investors. On the back of the theoretical framework and previous literature, we argue that companies who invest in CSR activities will enjoy greater financial performance and increasing firm value through increased investments directly and indirectly. Directly by investors valuing firms engaging more in CSR activities higher, which will drive the stock price and indirectly by customers increasing demand and/or willingness to pay a premium for the firms' products or services.

Combining these assumptions, we state our hypothesis as:

Hypothesis 1. *Increasing CSR engagement lead to increasing firm value by looking at market-based performance.*

Hypothesis 2. *Increasing CSR engagement lead to increasing firm value by looking at accounting-based performance.*

4. Data

In the following section, a description of the process of collecting data as well as the development of our final regression model will be discussed.

4.1 Sample collection

The aim of this thesis is to evaluate whether scoring high on CSR rating generate superior performance. To conduct our analysis, we examine firms listed on OMX Stockholm All-Share Index (OMXSPI). We use ESG scores retrieved from Thomson Reuters ASSET4 as our proxy for CSR engagement. The score is an equal weighted rating reflecting a company's performance in four areas: economic, environmental, social and corporate governance. The ASSET4 ESG data is further built on 18 subcategories including, among others, client and shareholder loyalty, resource and emission reduction, human rights and employment quality as well as board structure and shareholder rights. Moreover, the 18 subcategories are built on 750+ data points and 280+ key performance indicators. The data is also adjusted to be comparable across all companies and markets and is hence useful for quantitative analyses. The scores received can range from 0-100. A total of 350 firms are included in OMXSPI, however, the ESG data from ASSET4 is limiting the number of observations possible since it only provides ESG scores between the years 2008 to 2016 for a total of 77 companies, in which only 50 firms have scores during the whole period. The sample size for the cross-sectional data is thus limited to only including 77 companies and the panel data is limited to 50 firms.

Daily stock price data between the years of 2007 and 2016 was collected from the Swedish House of Finance's database FinBas, a finance database for researchers. The database has been in commercial use for approximately three decades as it started in the Accounting Department at the Stockholm School of Economics (SSE) in 1976 before it was sold to commercial users in 1984. However, it was eventually donated back to the SSE by NasdaqOMX. The FinBas contains daily end-of-day stock price data for four countries; Sweden, Norway, Denmark and Finland. The daily prices are collected from SIX Financials AB, which also provides information of corporate actions and fundamentals updated on a quarterly basis. The prices are adjusted for corporate actions which makes the prices comparable over time. Examples of corporate actions are dividends data, stock splits, right issues, buybacks and adjustment factors. We collect only the last prices for the sample of firms who have ESG scores from ASSET4. The FinBas were missing stock price data for two companies, reducing our sample size to include 75 firms.

Accounting data, market data and industry codes for each firm were retrieved from Thomson Reuters Datastream. No accounting data was found for one firm in the sample, which was hence dropped before merging all data sets into the final data set of 74 firms and 514 firm-year observations for the cross-sectional data and 50 firms and 443 firm-year observations for the panel data.

4.1.1 Sample selection bias

A majority of the firms included in OMXSPI were dropped because of lack of ESG scores from ASSET4. By looking at the summary descriptive for the entire sample in Appendix A, Table A5 and Table A6, we find that the firm observations have a mean of 287.8 MSEK in total assets for the cross-sectional data and 330.3 MSEK in total assets for the panel data, indicating that the remaining firms are biased towards larger firms. A possible reason to this could be that smaller firms might not have been listed during the entire time period or that Thomson Reuters only observed large Swedish listed companies in the beginning since it might have been easier to find the information needed to do proper ESG analysis on those firms. The combination of Freeman (1984), arguing that bigger firms might expose larger external pressure on CSR engagement as well as the likelihood of larger firms having more slack resources than younger, smaller firms and thus are more likely to invest in CSR (McGuire et al., 1990), may indicate that a biased sample towards larger firms also lead to a biased sample of firms with relatively high CSR engagement.

The fact that Sweden is a leading country in ESG activities (Country Sustainability Ranking, 2017) might provide further implications of the sample being biased towards firms with superior CSR engagement. If increasing investments on CSR activities is correlated with increasing firm value, we are likely to have a sample of firms with relatively less distinct differences than if we would have chosen to examine firms on a broader, international market. On the other hand, this could be interpreted as our sample of firms are active on a market who value CSR engagement higher than other markets and thus would generate greater relationship between CSR and firm value.

4.2 Performance measures

As this paper aims to examine the relationship between CSR and firm value, we need to define what performance measures to use. When measuring financial performance, we can either choose to look at a market-based performance measures such as Tobin's Q and stock price return or accounting-based performance measures such as return on assets (ROA) or return on equity (ROE). Meanwhile the accounting-based measures are backward-looking corresponding to how the firms have performed, the market-based measures are forward looking reflecting investor's expectation on future performance.

The Tobin's Q ratio is a commonly used measure of performance in economics and finance which postulate that the market value of a company should be about equal to its replacement costs. It is calculated by dividing the market value of a firm by the replacement value of its assets. Tobin's Q captures the value a firm creates with its assets and it is advantage in comparison to other profitability measures, accounting-based measures, is its long-term perspective as it is based on the market value. When providing research on value creation due to investments on CSR, the Tobin's Q is useful since CSR activities knowingly can decrease profitability in the short run with the intention to create future long-term value (Tobin, 1969).

In contrast to the more forward-looking, long-term Tobin's Q, as previously mentioned, profitability can be measured using an accounting-based and more conservative approach by for example looking at ROE and ROA. Both measures display management's effectiveness. ROE is calculated by dividing the annual net income by the average shareholders' equity and captures how efficiently a firm uses the shareholder's money and if they increases firm value at an acceptable rate. ROA is calculated by dividing annual net income by the average total assets and captures how well the firm utilizes its assets. The factor separating the two measures is hence financial leverage, debts. ROA is an effective, broadly available profitability measure capturing the fundamentals in a holistic way, looking at both the income statement and the balance sheet. To conclude, we will use both Tobin's Q and ROA as complements rather than substitutes and ROE will be used as robustness check (Damani and Grames, 2013).

4.3 Control variables

We introduce several control variables to control for factors that potentially could impact the financial performance but that is not in the interest to our hypothesis. Such elements may bias our findings and hence we have chosen to control for firm size and capital structure.

Since several studies have found positive relationship between firm size and financial performance (see e.g. Hall and Weiss, 1967; Fiegenbaum and Karnani, 1991; Majumdar, 1997; Waddock and Graves, 1997; Özgülbaş et al., 2006; Jonsson, 2007; Serrasqueiro and Nunes, 2008; Lee, 2009; Stierwald, 2009; Saliha and Abdessatar, 2011; Akbaş and Karaduman, 2012; Shubita and Alsawalhah, 2012), we consider firm size being an important control variable as or sample being biased towards larger firms. The plausible explanations to these previous findings are that bigger firms can benefit from both economies of scope as well as economies of scale. In accordance with the stakeholder theory, larger firms might face additional external pressure to engage in CSR activities and therefore, not controlling for firm size might cause biased estimates. We use the natural logarithm of total assets as our proxy for firm size since the firm sizes of our sample is unlikely to be normally distributed. It would also be possible to use market capitalization as our proxy for firm size. Even though market capitalization measure is forward-looking and total assets is not, it only captures the ownership of equity while total assets reflect a firm's total resources. However, we will use total revenue as a robustness check for firm size since total assets is the denominator in both ROA and Tobin's Q.

Moreover, the agency cost hypothesis by Jensen and Meckling (1976), imply that higher level of debt is associated with better financial performance and accordingly we will add a control variable for risk. We use capital structure and more specifically long-term debt to asset as our proxy for firm risk.

4.4 Panel data

Table 1. Descriptive Statistics over Panel Data.

Variable	N	Mean	SD	Min	Max
ROA	443	0.0562	0.0918	-0.569	0.461
ROE	443	0.177	1.375	-10.33	17.27
Tobin's Q	443	0.595	0.199	0.0218	1.154
Return	443	0.167	0.698	-0.938	9.146
ESG	443	75.24	22.79	3.380	96.77
Size	443	17.97	1.552	14.98	22.58
Debt	443	0.214	0.151	0	0.804

This table shows descriptive statistics for the main variables used in the panel data regression, including number of firm-year observations (N), means, standard deviations, minimum values and maximum values. ROA, return on assets, ROE, return on equity, Tobin's Q and return, the yearly stock return, are the dependent variables. ESG is the predictor variable and our proxy for CSR engagement. Size is the natural logarithm of total assets. Debt is long-term debt divided by total assets.

In total, our panel data is based on 50 firm-year observations and a total of 443 observations during a period of eight years, 2008-2016. Table 1 show a summery descriptive of the data. We observe that the ESG scores range between 3.38 and 96.77 while the mean ESG score is 75.24, implying that firms listed on OMXSPI score relatively high on CSR engagement.

4.5 Cross-sectional data

Table 2. Descriptive Statistics over Cross-Sectional Data.

Variable	N	Mean	SD	Min	Max
ROA	513	0.0600	0.0991	-0.569	0.752
ROE	513	0.177	1.282	-10.33	17.27
Tobin's Q	514	0.589	0.199	0.0218	1.154
Return	514	0.261	1.209	-0.950	15.65
ESG	514	71.60	25.09	3.380	96.77
Size	514	17.74	1.626	12.27	22.58
Debt	514	0.209	0.151	0	0.804

This table shows descriptive statistics for the variables used in the cross-sectional regression, including number of observations (N), means, standard deviations, minimum values and maximum values. ROA, return on assets, ROE, return on equity, Tobin's Q and return, the yearly stock return, are the dependent variables. ESG is the predictor variable and our proxy for CSR engagement. Size is the natural logarithm of total assets. Debt is long-term debt divided by total assets. The differing number of observations for ROA and ROE is due to it being calculated as averages between years and the sample includes one firm with ESG scores only available for two years.

Our cross-sectional analysis includes all firms listed on OMXSPI that obtained an ESG score between 2008 and 2016. In total, this includes 74 firms and 514 observations as shown in Table 2. Summarizing the descriptive data, we find no difference in the ESG score range compared to our

panel data, 3.38-96.77. However, the mean decreases slightly, potentially due to the fact that the firms receiving ESG scores during the entire time period may be larger, more developed firms and hence, supported by previous theories, they may engage more in CSR activities. Accordingly, introducing smaller, younger firms would lower the mean.

4.6 Further treatment of data

When running regression analysis, results could be biased if variables that effect both the dependent and the independent variables are omitted. This will cause correlation between the independent variables and the error terms as well as causing the regression coefficients to be biased due to structural effects (Arrellano, 2003). In terms of this research, and more specifically the panel-data regression, this means that we need to control for the possibility that we have unobserved time-invariant heterogeneity that will bias our results.

As one of our regressions is based on panel data, using a fixed effects model or a random effects model will allow us to control for some unobserved heterogeneity. For the fixed effects model to work, two assumptions need to hold. First, the dependent variable needs to be measured at least two times and they also need to be directly comparable. Second, the predictor variables' need to differ in-between periods for a majority of the sample (Allison, 2009). On the other hand, the random effects model is a special case of the fixed effect model. It is a hierarchical linear model assuming that the data being examined are collected from a hierarchy of dissimilar populations whose inconsistencies relate to the hierarchy. "If an effect is assumed to be a realized value of a random variable, it is called random effect" (LaMotte, 1983).

To conclude whether to use a fixed effects model or a random effects model, a Durbin-Wu-Hausman test was done with the null hypothesis being that the random effects model is appropriate. The null hypothesis could be rejected for all dependent variables.

We conduct our analysis with firm fixed effects as well as industry-year fixed effects. Firm fixed effects allows us to control for time-invariant firm characteristics that could influence the financial performance of a company. Furthermore, we want to control for time effects since factors such as the economic growth and inflation could explain the financial performance of the firms. We also include the industry effect to control for unobservable industry characteristics that could impact the financial performance. We use industry in interaction with year fixed effects to control for the differing nature of business cycles between different industries.

4.6.1 Multicollinearity

Multicollinearity occurs when several independent variables in a multiple regression model are closely correlated to each other, meaning that the predictors could linearly be predicted by other predictors. This will cause skewed or misleading results. Usually it causes decreasing performance values, p-values, for the independent variables as well as broader confidence intervals (Wooldridge, 2009). To examine whether our predictors suffer from multicollinearity, we first identified our collinear independent variables and calculate variance inflation factors (VIF) for these variables. However, all predicting variables had a VIF lower than two and as a common threshold for VIF is 10, we can conclude that multicollinearity is not a problem in our model.

4.6.2 Heteroscedasticity

If the standard deviation of our model is non-constant over the time, we have problems with heteroscedasticity. This would cause biased coefficient and thus result in misleading findings (Wooldridge, 2009). A Breusch-Pagan test was done to test the null hypothesis that our model is homoscedastic. The test results for our basic models implied that the null hypothesis could be rejected and hence, we have problems with heteroscedasticity. We therefore use robust standard errors clustered at firm-level in our analysis, due to the fact the same firm can enter our regressions several times.

5. Results

The following section aims to examine whether our hypothesis is justified or not. We also conduct robustness checks to validate our findings.

5.1 Regression description

We perform two different regression, one panel data based and one cross-sectional based OLS model. The panel data regression is run over two dimensions, years and firms, as we have collected data over a specified time period for the same firms. With panel data, we can control for unobserved and time-invariant heterogeneity and omitted variable bias. However, since the firms included in the panel data sample are limited by having scores over the entire time period, we also conduct a cross-sectional regression allowing us to include all firms ever given an ASSET4 score in-between 2008 and 2016. We pool all scores from the cross-sectional data and create new scoring variables, both divided into quintiles.

5.2 Panel data regression

We run three different regressions based on three different equations, as described below. Equitation (1) includes control variables and year dummies. In equation (2), we introduce firm fixed effects and equation (3) controls for industry-year effects. An overview of the equations is found below:

$$y_{i,t} = \beta_1 ESG_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 DEBT_{i,t} + a_t + \varepsilon_{i,t} \quad (1)$$

$$y_{i,t} = \beta_1 ESG_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 DEBT_{i,t} + a_t + b_i + \varepsilon_{i,t} \quad (2)$$

$$y_{i,t} = \beta_1 ESG_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 DEBT_{i,t} + c_{j,t} + \varepsilon_{i,t} \quad (1)$$

The endogenous variable $y_{i,t}$ denotes Tobin's Q, ROA or stock return for firm *i* at time *t*. $ESG_{i,t}$ denotes the ESG score for firm *i* at time *t*. $SIZE_{i,t}$ is a control variable for firm size for firm *i* at time *t*. $DEBT_{i,t}$ is a control variable for capital structure for firm *i* at time *t*. a_t is a set of year dummies, b_i captures the firm fixed effects, $c_{j,t}$ captures the industry-year effects and $\varepsilon_{i,t}$ is the error term. A full description of all variables is available in Appendix A, Table A1.

Lastly, we winsoirize our dependent variables at the 1th and 99th percentiles to avoid biased regression results due to outliers. We also use clustered-robust standard errors at firm-level to take

into consideration that the same firm can enter our regression several times and to control for heteroscedasticity.

Table 3 shows regression results for the basic regression, including control variables and year dummies but excluding firm fixed and industry-year fixed effects. Regression (4), (5) and (6) are winsorized at the 1th and 99th percentile.

Table 3. Panel regression of ROA, Tobin's Q and Return.

	(1) ROA	(2) Tobin's Q	(3) Return	(4) ROA	(5) Tobin's Q	(6) Return
ESG	0.000693*	0.00266**	0.00385	0.000553	0.00263**	0.00308
	(0.000286)	(0.000883)	(0.00219)	(0.000278)	(0.000882)	(0.00168)
Size	-0.00781	0.0297	0.0233	-0.00764	0.0300	0.0142
	(0.00459)	(0.0169)	(0.0336)	(0.00447)	(0.0168)	(0.0255)
Debt	-0.0768	0.697***	-0.0267	-0.0756	0.684***	-0.0320
	(0.0762)	(0.137)	(0.219)	(0.0750)	(0.133)	(0.184)
Intercept	0.137	-0.235	-0.966	0.155	-0.236	-0.752
	(0.0839)	(0.287)	(0.735)	(0.0807)	(0.286)	(0.557)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	No	No	No	No
Ind-year effects	No	No	No	No	No	No
N	443	443	443	443	443	443
R^2	0.075	0.421	0.118	0.072	0.421	0.142

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. Model (4), (5) and (6) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

We find a significant relationship for regressions (1), (2) and (5). The relationship between ESG score and Tobin's Q is significant at a 1% level and the relationship between ESG score and ROA is significant at a 5% level, when not controlling for outliers. This implies that an increase of 10 points in ESG score results in approximately 2.6 percentage points for Tobin's Q when controlling for outliers as well as not controlling for outliers and an increase of 0.7 percentage points in ROA when not controlling for outliers. However, if we control for outliers in ROA, the relationship between ESG engagement and ROA becomes insignificant. We find no significant relationship between stock returns and ESG. This imply that our regression using equation (1) support H_1 when using Tobin's Q as our proxy for firm value.

When introducing firm fixed effects (Table 4), we find significant results in regression (7) and (10). These regressions imply that an increase of 10 in ESG score results in an increase of about 1 percentage point in ROA supporting H_2. Another point of interest is that the relationship between ESG score and Tobin's Q become insignificant. This result implies that it is more likely that the explanatory power of performance in terms of Tobin's Q comes from variations within firms rather than from ESG engagement. Thus, we no longer find support for H_1.

Table 4. Panel regression of ROA, Tobin's Q and Return with firm fixed effects.

	(7) ROA	(8) Tobin's Q	(9) Return	(10) ROA	(11) Tobin's Q	(12) Return
ESG	0.00126*	0.00000526	0.00324	0.00103**	-0.0000126	0.00263
	(0.000563)	(0.000385)	(0.00376)	(0.000375)	(0.000374)	(0.00346)
Size	0.0740	-0.0156	-0.109	0.0575	-0.0134	-0.0667
	(0.0387)	(0.0288)	(0.338)	(0.0308)	(0.0282)	(0.208)
Debt	-0.222**	0.501***	-0.0568	-0.182**	0.484***	0.0197
	(0.0747)	(0.129)	(0.522)	(0.0566)	(0.124)	(0.341)
Intercept	-1.325	0.789	1.443	-1.012	0.754	0.710
	(0.697)	(0.508)	(5.772)	(0.547)	(0.498)	(3.505)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Ind-year effects	No	No	No	No	No	No
N	443	443	443	443	443	443
R^2	0.464	0.946	0.283	0.535	0.948	0.285

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. All regressions also use a fixed effects model, in this case firm fixed effects. Model (10), (11) and (12) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 5 shows results of regression using equation (3), including industry-year fixed effects. Here, we find no significant relationship between neither market-based nor accounting-based performance measures.

Table 5. Panel regression of ROA, Tobin's Q and Return with industry-year fixed effects.

	(13) ROA	(14) Tobin's Q	(15) Return	(16) ROA	(17) Tobin's Q	(18) Return
ESG	0.000401	0.00107	0.00698	0.000363	0.00113	0.00528
	(0.000215)	(0.00118)	(0.00656)	(0.000192)	(0.00113)	(0.00476)
Size	-0.00413	-0.0204	0.200	-0.00564	-0.0207	0.141
	(0.00748)	(0.0310)	(0.233)	(0.00679)	(0.0307)	(0.172)
Debt	-0.0861**	0.411*	-0.000118	-0.0837**	0.405*	-0.0808
	(0.0251)	(0.167)	(0.391)	(0.0264)	(0.161)	(0.262)
Intercept	0.119	0.794	-3.886	0.149	0.795	-2.689
	(0.143)	(0.561)	(4.599)	(0.129)	(0.556)	(3.391)
Year dummies	No	No	No	No	No	No
Firm fixed effects	No	No	No	No	No	No
Ind-year effects	Yes	Yes	Yes	Yes	Yes	Yes
N	443	443	443	443	443	443
R^2	0.770	0.893	0.534	0.801	0.894	0.592

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. All regressions also use a fixed effects model, in this case industry-year fixed effects. Model (16), (17) and (18) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

A limitation to the fixed effects models is that some of the signalling could be lost if the ESG variable do not vary much across time. To make sure that our regressions are correctly constructed, we calculate the standard deviation of the ESG score for each firm during the time period. We then calculate the average standard deviation for our total sample, resulting in an average standard deviation of 8.62. This can be interpreted as a relatively low standard deviation and thus, we run extra regressions using only data of firms which have a standard deviation, for the ESG score, higher than 10. Our findings (Appendix A, Table A2-A4) are however not substantially affected and we conclude that the fixed effects model is superior to use.

5.3 Cross-sectional regression

To further analyse the relationship between CSR engagement and performance, we conduct a cross-sectional OLS regression. In contrary to the panel data sample, which is limited by having scores over the entire time period, the cross-sectional data sample allows us to increase the number of firms included, as we now do not take time effects into account. After introducing our control variables, the final equation is expressed as:

$$y_{i,t} = \beta_1 ESG_{i,t} + \beta_2 SIZE_{i,t} + \beta_3 DEBT_{i,t} + \varepsilon_{i,t} \quad (4)$$

The endogenous variable $y_{i,t}$ denotes Tobin's Q, ROA or stock return for firm *i* at time *t*. $ESG_{i,t}$ denotes the ESG score for firm *i* at time *t*. $SIZE_{i,t}$ is a control variable for firm size for firm *i* at time *t*. $DEBT_{i,t}$ is a control variable for capital structure for firm *i* at time *t*, and $\varepsilon_{i,t}$ is the error term. A full description of all variables is available in Appendix A, Table A1.

Furthermore, we create two new scoring variables and run regressions where we replace the ASSET4 scoring variable and use the newly created scoring variables. Both of the new variables will be split in to quintiles and receive the score 1, 2, 3, 4 or 5, depending on the score given by ASSET4. However, we will assign the two new variables on different bases. We construct one weighted score in which we split the observations into five equally large groups. The observations having the lowest scores, 20% of all observations, will receive a value of 1. The next 20% of all observations who scored the second lowest will receive a value of 2 and so forth. The other variable will be construct by simply convert the scores given from ASSET4 ranging from 0-100 to scores of 1, 2, 3, 4 or 5. This means that observations that were given a score between 0 and 20 will be given a score of 1, observations that were given a score between 21 and 40 will be given a score of 2 and so forth. The difference between these two variables is that the distribution of observations between the scores will differ, as shown in Table 6. It also means that one firm can be found in different quintiles depending on the different years.

Table 6. Distribution of observations in each scoring variable.

Score	Weighted	Raw
1	103	37
2	103	31
3	103	70
4	103	100
5	102	276
N	514	514

Table 7 shows the results from regressions conducted on equation (4). Here, we find significant results in regression (20), (23) and (26), in other words, all regressions using Tobin's Q as dependent variable. Since our self-constructed scoring variables only can take on 5 different values while the ASSET4 ESG score can take on 100 different values, an increase of 1 unit of our self-constructed scores can be compared to an increase of 20 units of the ASSET4 score. Thus, the 0.00188 ESG-coefficient of regression (20) is similar to the ESG-coefficients of regression (23) and (26). However, the results from regression (23) is a bit lower than the results from regression (20) and (26), which is no surprise as we have overall high scores in our sample. Thus, when splitting the scores to equally large groups, we find less differences between the actual ESG scores in the different quintiles. To conclude, the cross-sectional regressions supports H_1, when looking at Tobin's Q, implying that firms with higher CSR engagement enjoys higher firm value when looking at a market-based performance measure. An interesting finding is that the relationship between ESG score and ROA become insignificant when looking at the cross-sectional based regressions compared to when looking at the panel data based regressions. Hence, the cross-sectional regressions show no support for H_2.

Table 7. Cross-sectional regression of ROA, Tobin's Q and Return.

	(19) ROA	(20) Tobin's Q	(21) Return	(22) ROA	(23) Tobin's Q	(24) Return	(25) ROA	(26) Tobin's Q	(27) Return
ESG	0.000320	0.00188*	0.00123						
	(0.000221)	(0.000751)	(0.00154)						
Weighted score				0.00601	0.0326*	0.0578			
				(0.00458)	(0.0154)	(0.0370)			
Raw score							0.00663	0.0367*	0.0134
							(0.00472)	(0.0149)	(0.0269)
Size	-0.00969*	0.0259	-0.00568	-0.0101*	0.0245	-0.0212	-0.00959*	0.0271	-0.00189
	(0.00389)	(0.0158)	(0.0214)	(0.00421)	(0.0165)	(0.0184)	(0.00385)	(0.0155)	(0.0234)
Debt	-0.0965	0.665***	-0.148	-0.0919	0.689***	-0.0979	-0.0963	0.666***	-0.149
	(0.0675)	(0.113)	(0.179)	(0.0695)	(0.115)	(0.193)	(0.0672)	(0.113)	(0.178)
Intercept	0.229***	-0.143	0.268	0.241***	-0.0859	0.448	0.224***	-0.180	0.235
	(0.0649)	(0.245)	(0.462)	(0.0660)	(0.257)	(0.400)	(0.0649)	(0.240)	(0.490)
N	514	514	514	514	514	514	514	514	514
R^2	0.061	0.412	0.002	0.061	0.406	0.008	0.062	0.410	0.001

This table shows cross-sectional regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement visible in regressions (19), (20) and (21) using scores from ASSET4, model (22), (23) and (24) shows regression using weighted scores and model (25), (26) and (27) shows raw scores. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. All models are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

5.4 Robustness checks

To further validate our findings, we conduct a number of robustness checks to see how our conclusions change when we change our assumptions. To test the sensitivity of our proxy for financial performance we will start by replacing the dependent variable to ROE. The results for the panel data regression (Table 8), show only a significant relationship between ESG engagement and ROE when not controlling for firm or industry-year effects and when winsorized at the 1th and 99th percentile (29). Table 9 shows the results of the cross-sectional regression using ROE as dependent variable. These findings are consistent with the earlier cross-sectional regressions when using ROA as a dependent variable, showing no significant results.

Table 8. Panel regression of ROE.

	(28) ROE	(29) ROE	(30) ROE	(31) ROE	(32) ROE	(33) ROE
ESG	0.00210	0.00148*	0.00437	0.00141	0.000792	0.000792
	(0.00117)	(0.000672)	(0.00405)	(0.00231)	(0.000411)	(0.000411)
Size	-0.00598	0.00176	0.278	0.281*	-0.0134	-0.0134
	(0.0187)	(0.0108)	(0.221)	(0.139)	(0.0163)	(0.0163)
Debt	1.147	-0.00959	3.821	0.0926	-0.108	-0.108
	(0.981)	(0.183)	(2.792)	(0.602)	(0.0809)	(0.0809)
Intercept	-0.150	0.0233	-5.984	-4.979*	0.381	0.340
	(0.369)	(0.217)	(3.809)	(2.287)	(0.312)	(0.312)
Year dummies	Yes	Yes	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes	No	No
Ind-year effects	No	No	No	No	Yes	Yes
N	443	443	443	443	443	443
R^2	0.044	0.026	0.116	0.158	0.996	0.930

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROE and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. Regression (30) and (31) use a firm fixed effects model. Regression (32) and (33) use industry-year fixed effects. Model (29), (31) and (33) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 9. Cross-sectional regression of ROE.

	(34) ROE	(35) ROE	(36) ROE
ESG	0.000608		
	(0.000607)		
Weighted score		0.00719	
		(0.0131)	
Raw score			0.0126
			(0.0124)
Size	-0.00536	-0.00449	-0.00516
	(0.00960)	(0.0106)	(0.00950)
Debt	-0.150	-0.145	-0.149
	(0.142)	(0.148)	(0.142)
Intercept	0.222	0.228	0.211
	(0.178)	(0.181)	(0.180)
N	514	514	514
R^2	0.010	0.009	0.011

This table shows cross-sectional regression using OLS model to evaluate the relationship between financial performance, expressed as ROE and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement visible in regressions (34) using scores from ASSET4, model (35) shows regression using weighted scores as our proxy for CSR engagement and model (36) shows raw scores used as our proxy for CSR engagement. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. All models are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

We also replace our proxy for size from total assets to revenue due to the fact that total assets is used as the denominator in both Tobin's Q and ROA. Our findings (Table 10, 11, 12, 13) are mainly in line with earlier findings, both for the panel data and the cross-sectional data. However, the regression model including industry-year effects now show a significant positive relationship between ROA and ESG.

Table 10. Panel regression of ROA, Tobin's Q and Return.

	(37) ROA	(38) Tobin's Q	(39) Return	(40) ROA	(41) Tobin's Q	(42) Return
ESG	0.000663*	0.00259**	0.00361	0.000517	0.00257**	0.00361
	(0.000284)	(0.000805)	(0.00210)	(0.000273)	(0.000803)	(0.00210)
Revenue	-7.83e-11	4.28e-10	4.61e-10	-7.20e-11	4.25e-10	4.61e-10
	(6.89e-11)	(2.27e-10)	(7.32e-10)	(6.84e-11)	(2.25e-10)	(7.32e-10)
Debt	-0.0830	0.734***	0.0151	-0.0811	0.721***	0.0151
	(0.0773)	(0.133)	(0.223)	(0.0761)	(0.129)	(0.223)
Intercept	0.00594	0.262***	-0.576*	0.0269	0.266***	-0.576*
	(0.0334)	(0.0680)	(0.224)	(0.0301)	(0.0670)	(0.224)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	No	No	No	No
Ind-year effects	No	No	No	No	No	No
N	443	443	443	443	443	443
R^2	0.063	0.394	0.118	0.057	0.391	0.118

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement. All regressions control for size, expressed as revenue, and debt, expressed as long-term debt to assets. Model (40), (41) and (42) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 11. Panel regression of ROA, Tobin's Q and Return with firm fixed effects.

	(43) ROA	(44) Tobin's Q	(45) Return	(46) ROA	(47) Tobin's Q	(48) Return
ESG	0.00138*	-0.0000357	0.00348	0.00112**	-0.0000495	0.00272
	(0.000619)	(0.000393)	(0.00376)	(0.000398)	(0.000380)	(0.00338)
Revenue	4.28e-11	1.23e-10	-3.43e-09*	4.76e-11	1.20e-10	-1.63e-09*
	(8.20e-11)	(6.78e-11)	(1.47e-09)	(8.54e-11)	(6.60e-11)	(7.69e-10)
Debt	-0.168*	0.492***	-0.200	-0.140*	0.477***	-0.0588
	(0.0641)	(0.126)	(0.311)	(0.0563)	(0.122)	(0.224)
Intercept	-0.0275	0.507***	-0.256	-0.00525	0.511***	-0.360
	(0.0520)	(0.0446)	(0.238)	(0.0376)	(0.0432)	(0.230)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Ind-year effects	No	No	No	No	No	No
N	443	443	443	443	443	443
R^2	0.440	0.946	0.289	0.516	0.948	0.286

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement. All regressions control for size, expressed as revenue, and debt, expressed as long-term debt to assets. All regressions use a fixed effects model, controlling for firm fixed effects. Model (46), (47) and (48) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 12. Panel regression of ROA, Tobin's Q and Return with industry-year fixed effects.

	(49) ROA	(50) Tobin's Q	(51) Return	(52) ROA	(53) Tobin's Q	(54) Return
ESG	0.000462*	0.000881	0.00604	0.000425*	0.000941	0.00604
	(0.000202)	(0.00138)	(0.00624)	(0.000189)	(0.00133)	(0.00624)
Revenue	-1.32e-10*	5.23e-10	1.62e-09	-1.33e-10*	5.13e-10	1.62e-09
	(6.01e-11)	(2.84e-10)	(2.53e-09)	(6.20e-11)	(2.78e-10)	(2.53e-09)
Debt	-0.0944***	0.461*	0.0295	-0.0912**	0.455*	0.0295
	(0.0252)	(0.203)	(0.405)	(0.0277)	(0.198)	(0.405)
Intercept	0.0499**	0.398***	-0.323	0.0531**	0.395***	-0.323
	(0.0172)	(0.0888)	(0.596)	(0.0157)	(0.0867)	(0.596)
Year dummies	No	No	No	No	No	No
Firm fixed effects	No	No	No	No	No	No
Ind-year effects	Yes	Yes	Yes	Yes	Yes	Yes
N	443	443	443	443	443	443
R^2	0.772	0.898	0.527	0.802	0.899	0.527

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement. All regressions control for size, expressed as revenue, and debt, expressed as long-term debt to assets. All regressions use a fixed effects model, controlling for industry-year fixed effects. Model (46), (47) and (48) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table 13. Cross-sectional regression of ROA, Tobin's Q and Return.

	(55) ROA	(56) Tobin's Q	(57) Return	(58) ROA	(59) Tobin's Q	(60) Return	(61) ROA	(62) Tobin's Q	(63) Return
ESG	0.000165	0.00192**	0.000606						
	(0.000225)	(0.000595)	(0.00172)						
Weighted score				0.00279	0.0334*	0.0473			
				(0.00495)	(0.0128)	(0.0385)			
Raw score							0.00387	0.0371**	0.00178
							(0.00459)	(0.0117)	(0.0309)
Revenue	-7.34e-11	4.91e-10*	3.70e-10	-7.74e-11	4.36e-10	-2.80e-11	-7.54e-11	5.23e-10*	4.49e-10
	(6.84e-11)	(2.25e-10)	(6.93e-10)	(8.25e-11)	(2.24e-10)	(6.57e-10)	(6.54e-11)	(2.25e-10)	(7.15e-10)
Debt	-0.107	0.720***	-0.115	-0.105	0.739***	-0.116	-0.107	0.724***	-0.108
	(0.0679)	(0.109)	(0.186)	(0.0685)	(0.106)	(0.195)	(0.0680)	(0.109)	(0.190)
Intercept	0.0750**	0.274***	0.184	0.0783**	0.310***	0.109	0.0712**	0.258***	0.215
	(0.0244)	(0.0498)	(0.148)	(0.0245)	(0.0510)	(0.129)	(0.0259)	(0.0529)	(0.153)
N	514	514	514	514	514	514	514	514	514
R^2	0.035	0.400	0.002	0.035	0.392	0.006	0.036	0.398	0.002

This table shows cross-sectional regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement visible in regressions (55), (56) and (57) using scores from ASSET4, model (58), (59) and (60) shows regression using weighted scores as our proxy for CSR engagement and models (61), (62) and (63) shows raw scores used as our proxy for CSR engagement. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. All models are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

6. Discussion

This research aims to study the relationship between CSR engagement and firm value for listed companies on OMXSPI. The empirical results show some support for our hypotheses. We find a significant positive relationship between CSR and ROA as well as Tobin's Q when using our baseline panel data regression model. However, when controlling for firm fixed effects, the relationship is only significant for ROA and moreover, when introducing industry-year effects, we find no significant statistical link between ESG and market-based nor accounting-based value measures. This suggests that the findings from the baseline model may be due to time-variant effects and hence, we cannot find any distinct relationship between CSR and firm value. Furthermore, we find a significant positive relationship between CSR and Tobin's Q for our cross-sectional analysis. Thus, our findings differ between the two regression types and moreover provide us with mixed results when running several robustness checks. As we rather take a restrictive approach when stating our conclusion and the empirical results show an ambiguous relationship between CSR and firm value, we find no support for our hypotheses. This result is consistent with the Shareholder Value Approach and findings from, among others, Soana (2011) and Sun et al. (2010).

Not finding any robust relationship between CSR and market-based performance measures could be explained by intangibles not being fully incorporated because the market lacks information of the value of CSR, or that investors use traditional valuation methods which do not incorporate intangibles. Thus, rational investors would not find any excess value for CSR investments and CSR engagement would not increase firms' market value.

Moreover, a plausible explanation to our findings regarding a neutral relationship between CSR and firm value, may be due to the lack of managers understanding about the channels through which CSR affects firm value. Although we could argue that firms, due to the increasing emphasis on, as well as the ongoing debate about CSR, should have become more informed about what CSR actions to take on as well as knowing how to incorporate them, this might not be the case. In line with Servaes and Tamayo (2013), Sen and Bhattacharya (2001; 2004), Schuler and Cording (2006), McWilliams and Siegel (2001) and Fisman et al. (2008), CSR increase firm value under certain circumstances such as, for example, when firms also put emphasis on intensive advertising or experience increasing competition. They argue that CSR might work as a differentiation strategy when signalling higher quality, or if not willing to pay a premium, it can at least increase demand. This would result in increasing revenue or higher gross margin and hence, increase firm value when looking at accounting-based measures. Furthermore, built on Edmans (2011;2012) regarding employee satisfaction, we argue that another possible explanation may be due to the way the firms

try to increase employee satisfaction. With support from a report by Centers of Diseases Control and Prevention in 2015 as well as a report by Willis Towers Watson in 2016, increasing employee satisfaction due to increasing health initiatives, making employees more efficient, motivated and decreasing absenteeism, will probably lead to cost savings. Hence, this would increase firm value by looking at accounting-based measures. In addition, this reasoning puts emphasis on the issue of having several of definitions of CSR as well as plenty of ways to measure CSR engagement. We suggest that managers should shift focus from engaging in CSR for the sake of goodwill towards understanding which CSR actions that would benefit their specific organisation and how they should incorporate the investments in an efficient way. Adding these reasoning to our finding can explain why we find a neutral relationship between CSR and firm value as it might be due to the fact that only some firms successfully incorporate CSR investments and thus experience an increase in firm value.

Although our findings find no support for CSR engagement improving firm value, we on one hand argue that there is a possibility of CSR engagement becoming more important and value-creating in the future due to increased awareness, transparency as well as focus on intangibles as the new EU directive is coming into force in 2018. On the other hand, the neutral relationship between CSR engagement and firm value may be due to previous theories providing investors with ambiguous predictions if CSR lead to increasing firm value or not, rather than investors not being aware of companies CSR engagement.

As the focus on CSR continue to increase and as transparency increases with the new directive, a research suggestion, in line with both Sen and Bhattacharya (2001; 2004) and Krüger (2015) who established that consumers and investors are more sensitive to negative CSR information than positive, would be to examine whether firms not paying attention to CSR activities may take risky short-cuts, potentially causing a lower long-term value and increasing reputational costs. This could add complementary information to our findings, as we have looked at the upside of investing in CSR instead of looking at the downside of ignoring investments in CSR. One could argue that a value destructive relationship between not investing in CSR and firm value would pose a larger incentive to managers as well as investors to put more emphasis on CSR engagement than if CSR engagement is value-creating.

To summarize, we do not find any homogenous significant relation between CSR engagement and firm value. Nevertheless, we still want to emphasize that even though investing in CSR might not result in a direct increase of financial performance, it could still be of great importance by working as a competitive advantage or as a safety net against value distortion. Lastly, we only find

signs of increasing focus and transparency connected to CSR, which postulate the importance of including CSR in strategic decision-making both for managers and investors.

6.1 Limitations

Our findings show no support for a relationship between CSR engagement and stock returns. A reason to this could be due to how we have conducted our analysis. The stock return analysis could have benefited by looking at a cross-sectional regression in which we were to construct different portfolios with firms that obtained high CSR scores and then looked to see if these generated alphas and thus, higher returns than the market due to their CSR engagement. However, due to the time scope of this research, we were not able to construct such a portfolio analysis as well as running panel-based and cross-sectional based regressions.

Another constraint is the limited amount of firms provided with ESG scores from ASSET4. Of the 350 listed stocks on OMXSPI we were only able to include 50-74 firms in our analysis. This could have affected our results since we were left with only relatively large firms which all had relatively high CSR scores. Furthermore, we only included the 50 companies which had a CSR score for the entire period in our panel-data regression, which could lead to incorrect conclusions due to survivorship bias. In addition to this, the CSR scoring from ASSET4 in itself could pose limitations to our study. As earlier discussed, the definition of what is included in CSR activities is ambiguous and thus, it is also unclear how you should evaluate firms based on CSR. First, since CSR engagement is a qualitative measure and may be a matter of subjective judgment, it could be hard to quantify CSR engagement. In future studies, we suggest that research should incorporate different CSR-ratings. Second, we have been looking at CSR using a broad measure which could be an explanation as to why we do not have any constant significant results. In future studies, we suggest that it could be beneficial to pinpoint the source that drives firm value, that is, to look at the CSR score on a disaggregated level. All in all, this could explain why the results differ between researches. We argue that it would be necessary to make a standardized national or international measure of CSR engagement to be able to draw comparable and reliable conclusions.

Furthermore, when examining the relationship between CSR and firm value, we want to emphasize the issue of endogeneity and thus a potential reverse causality from firm value to CSR, that is to say – does CSR improve financial performance or do good financial performance results in more resources available to invest in CSR? This is in line with a meta-study of 52 empirical studies which concluded that even though most of the studies found significant positive correlations, the causal link is likely to be reciprocal and simultaneous (Marc et. al., 2003). In terms

of our research, we do not control for this endogeneity issue, and future research could benefit from using a two stage least square model to correct for this.

7. Conclusion

In this study, we have analyzed the relationship between CSR engagement and firm value for firms listed on OMXSPI. Even though our empirical results find some support for the relationship, using several different statistical models, we find no homogenous significant relationship between increased CSR engagement and firm value.

Previous research provides us with mixed results, ranging from the relationship between CSR and firm value being positive, to neutral and negative. Our findings are similar to those of McWilliams and Siegel (2000), Soana (2011) and Sun et al. (2010).

Even though our findings show a neutral relationship between CSR engagement and firm value, we still emphasize the importance of CSR engagements if it works as a competitive advantage or as a safety net against value distortion. Lastly, we see no signs of the focus and transparency connected to CSR slowing down. Instead, we rather see the opposite, which postulate the importance of including CSR in strategic decision-making both for managers and investors.

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Appendix A

Table A1. Variable definitions.

Variable	Description
Exogenous variables	
Tobin's Q	(Market Value + Total Liabilities) / Total Assets
ROA	Net income / ((Total Assets$_t$ + Total Assets$_{t-1}$)/2)
ROE	Net income / ((Total Equity$_t$ + Total Equity$_{t-1}$)/2)
Return	(Price$_t$/Price$_{t-1}$)-1
Endogenous variables	
ESG	ESG score retrieved from ASSET4
Weighted score	Score derived from the ASSET4 score split into weighted quintiles
Raw score	Score derived from the ASSET4 score split into quintiles
Control variables	
Size	ln(Total Assets)
Debt	Long-term Debt / Total Assets

This table shows the definitions of variables used to examine the relationship between CSR engagement and firm value. A more extensive description of the variables Weighted score and Raw score can be found in section 5.3.

Table A2. Panel data regression on ROA, Tobin's Q and Return.

	(64) ROA	(65) Tobin's Q	(66) Return	(67) ROA	(68) Tobin's Q	(69) Return
ESG	0.00150*	0.00130	0.000407	0.00133*	0.00126	0.000401
	(0.000675)	(0.000898)	(0.00153)	(0.000625)	(0.000885)	(0.00153)
Size	0.0160	-0.105***	-0.0131	0.0158	-0.104***	-0.0133
	(0.0164)	(0.0208)	(0.0287)	(0.0159)	(0.0203)	(0.0285)
Debt	0.00604	0.810***	-0.173	0.00400	0.789***	-0.172
	(0.0893)	(0.143)	(0.0942)	(0.0889)	(0.136)	(0.0937)
Intercept	-0.334	2.088***	-0.166	-0.309	2.069***	-0.162
	(0.300)	(0.341)	(0.512)	(0.286)	(0.333)	(0.510)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	No	No	No	No
Ind-year effects	No	No	No	No	No	No
N	182	182	182	182	182	182
R^2	0.122	0.691	0.335	0.119	0.692	0.335

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement and only firms which had a standard deviation of the ESG score higher than 10 over the period is included in these regressions. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. Model (67), (68) and (69) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A3. Panel data regression on ROA, Tobin's Q and Return including firm fixed effects.

	(70) ROA	(71) Tobin's Q	(72) Return	(73) ROA	(74) Tobin's Q	(75) Return
ESG	0.00179*	-0.000210	-0.00148	0.00149**	-0.000210	-0.00146
	(0.000690)	(0.000445)	(0.00324)	(0.000429)	(0.000440)	(0.00322)
Size	0.0884*	-0.0377	0.0207	0.0768*	-0.0334	0.0219
	(0.0415)	(0.0403)	(0.163)	(0.0346)	(0.0392)	(0.163)
Debt	-0.221*	0.547**	-0.123	-0.187*	0.520**	-0.122
	(0.0862)	(0.182)	(0.302)	(0.0701)	(0.176)	(0.302)
Intercept	-1.498*	1.088	-0.675	-1.286*	1.023	-0.696
	(0.715)	(0.657)	(2.602)	(0.580)	(0.640)	(2.614)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Ind-year effects	No	No	No	No	No	No
N	182	182	182	182	182	182
R^2	0.451	0.934	0.368	0.493	0.936	0.369

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement and only firms which had a standard deviation of the ESG score higher than 10 over the period is included in these regressions. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. All regressions use a fixed effects model, controlling for firm-fixed effects. Model (73), (74) and (75) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A4. Panel data regression on ROA, Tobin's Q and Return including industry-year fixed effects.

	(76) ROA	(77) Tobin's Q	(78) Return	(79) ROA	(80) Tobin's Q	(81) Return
ESG	0.00139	-0.00237	0.00258	0.00118	-0.00224	0.00258
	(0.000880)	(0.00287)	(0.00328)	(0.000741)	(0.00274)	(0.00328)
Size	0.0171	-0.115	0.0214	0.0127	-0.115	0.0214
	(0.0157)	(0.0739)	(0.0604)	(0.0138)	(0.0703)	(0.0604)
Debt	-0.0986*	0.417	-0.343	-0.0996*	0.412	-0.343
	(0.0463)	(0.250)	(0.234)	(0.0404)	(0.238)	(0.234)
Intercept	-0.309	2.584	-0.298	-0.218	2.582*	-0.298
	(0.309)	(1.290)	(1.157)	(0.270)	(1.230)	(1.157)
Year dummies	No	No	No	No	No	No
Firm fixed effects	No	No	No	No	No	No
Ind-year effects	Yes	Yes	Yes	Yes	Yes	Yes
N	182	182	182	182	182	182
R^2	0.451	0.934	0.368	0.493	0.936	0.369

This table shows panel data regression using OLS model to evaluate the relationship between financial performance, expressed as ROA, Tobin's Q or Return, and CSR engagement for firms during the years 2008-2016. ESG is a proxy for CSR engagement and only firms which had a standard deviation of the ESG score higher than 10 over the period is included in these regressions. All regressions control for size, expressed as the natural logarithm of total assets, and debt, expressed as long-term debt to assets. All regressions use a fixed effects model, controlling for industry-year fixed effects. Model (73), (74) and (75) are winsorized at the 1th and 99th percentile. Standard errors are robust and clustered at firm-level and shown in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

Table A5. Descriptive statistics over financial data for the panel data sample.

Variable	N	Mean	SD	Min	Max
Market Value	443	83,830	119,134	438.4	984,734
Revenue	443	6.229e+07	7.815e+07	0	4.792e+08
Net Income	443	5.775e+06	1.019e+07	-3.672e+07	6.422e+07
Total Assets	443	3.303e+08	9.456e+08	3.189e+06	6.398e+09
Total Equity	443	4.501e+07	5.685e+07	-4.209e+06	3.096e+08
Total Debt	443	1.234e+08	3.775e+08	0	2.450e+09
Long-term Debt	443	6.758e+07	2.135e+08	0	1.825e+09
Solvency	443	0.395	0.197	-0.150	0.978

This table shows descriptive statistics over financial data of the firm-year observations used in the panel-data regression, including number of observations (N) means, standard deviations, minimum values and maximum values. All values are expressed in SEK except for Market Value, which is expressed in MSEK.

Table A6. Descriptive statistics over financial data for the cross-sectional data sample.

Variable	N	Mean	SD	Min	Max
Market Value	514	74,028	113,324	358.3	984,734
Revenue	514	5.640e+07	7.463e+07	0	4.792e+08
Net Income	514	5.124e+06	9.630e+06	-3.672e+07	6.422e+07
Total Assets	514	2.878e+08	8.842e+08	212,300	6.398e+09
Total Equity	514	3.991e+07	5.436e+07	-4.209e+06	3.096e+08
Total Debt	514	1.072e+08	3.527e+08	0	2.450e+09
Long-term Debt	514	5.892e+07	1.994e+08	0	1.825e+09
Solvency	514	0.402	0.197	-0.150	0.978

This table shows descriptive statistics over financial data of the observations used in the cross-sectional regression, including number of observations (N) means, standard deviations, minimum values and maximum values. All values are expressed in SEK except for Market Value, which is expressed in MSEK.