A STUDY ON THE INFLUENCE OF CSR ON NORDIC STOCK PERFORMANCE DURING COVID-19

A QUANTITATIVE STUDY OF 373 PUBLIC COMPANIES DURING COVID-19 -2020-02-10 TO 2020-04-11

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Abstract

The majority of prior studies have found that firms with a high CSR rating have enjoyed higher returns on their stocks than comparable firms with lower CSR during financial crises, generally defined as having low societal trust levels. This effect is more prevalent in high trust societies such as the Nordics. Therefore, the question of the value of trust in crises caused by external factors becomes relevant, where trust levels are higher in the beginning. This trust factor will be examined in this thesis by looking at the effect of CSR ratings on returns in Nordic companies during the COVID-19 crisis, using the West African Ebola outbreak as a control. Our results show that during the COVID-19 crisis firms with high CSR suffered significant lower returns than comparable companies with lower CSR. This effect is more prevalent during the earlier stages of the crisis, which suggests that there are other variables than trust affecting high CSR firms negatively during the COVID-19 crisis.

Keywords:

COVID-19, Exogenous shock, CSR, Stock Performance, Trust, Social Capital

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I. Introduction

"Don't think money does everything or you are going to end up doing everything for money" – Voltaire. (Original name: François-Marie d'Arouet.)

The COVID-19 pandemic is a virus outbreak starting in December 2019, henceforth spreading from Asia to every continent except Antarctica (UNDP, 2021). Declared as an event with the greatest impact globally since the second World War, and is still ongoing and has so far reached a number of over two million deaths. The crisis which was initially rooted in a health challenge, later became a socio-economic crisis causing high volatility in financial markets. Moreover the International Monetary Fund (IMF) established that the most severe financial occurrence historically at the time since the great depression, which previously was the global financial crisis of 2008, has been trumped by the COVID-19 pandemic (Atkinson et al., 2013). The IMF states that the global output declined three times more than the global financial crisis, at half the time (International Monetary Fund, 2021). Despite the COVID-19 crisis and the 2008 housing bubble being triggered by different factors, they both lead to high volatility on the capital market, a drop in corporate valuations and a lack of certainty, according to the IMF. The objective of this thesis is to investigate whether and possibly to which extent a turbulent situation such as the COVID-19 pandemic benefits firms with high social capital, relative to low social capital firms. In our study social capital is measured by CSR.

As Breitz and Partapuoli (2020) found there have been many studies on the differences between high and low CSR firms during normal periods of time, who in turn also cite (Clark, Feinger, & Viehs, 2015; Kumar, Smith, Badis, Wang, Ambrosy & Tavares 2016; Fisher-Vanden & Thorburn, 2011; Revelli & Viviani, 2015; Landi & Sciarelli, 2018), but not as many during crises (Lins et al., 2017; Broadstock et al., 2021).

Along with the growth and attention appointed to corporations encouraging CSR, many studies have conveyed the existence of a positive relationship between a firm's degree of corporate social responsibility and the view the consumers and investors have of the specific firm, assuming that the firm is already familiar to them (Brown & Dacin, 1997). More specifically, one report states that 77% of consumers and 73% of investors (Mitchel, 2020) would be more likely to consume products from brands that lobby and act in accordance with the principles of CSR. Hence this thesis will investigate the extent of the corporate sustainability factor reflected in corporations' performance on the market in times of crisis. In order to be able to make an evaluation of the extent of trust present, a CSR rating will be utilized in viewing the financial performance of firms. This paper will mainly rely on the ISO 26000 standard of CSR, although there exists a variety of definitions of CSR in current literature (van Marrewijk, 2003).

To determine the attitude toward sustainability in times of a pandemic we have chosen to focus on the Nordic market, using over 373 stock listed companies. We motivate this metric by emphasizing that the majority of extensive similar research previously has been conducted on other markets, such as the American, as well as the Asian stock market (Lins et al., 2017; Broadstock et al., 2021), although Bergh (2011) and Jonung (2008) among other researchers have looked into the Nordic market. Also, as previous studies have shown a stronger effect in high-trust regions, which the Nordics countries are.

In this thesis we will compare firms' CSR rating with their performance during the COVID-19 crisis, to investigate if CSR activities pose any advantage during times of crisis. More specifically we will first test the hypothesis of whether there is no correlation between CSR and financial performance during the COVID-19 crisis in the Nordic market, our second null hypothesis is that the effect of CSR is negative to returns.

In order to strengthen our robustness we will also look at a similar exogenous crisis stemming from a virus outbreak; the West African Ebola outbreak of 2014. The Ebola crisis, on the other hand, showed a positive relation between CSR and returns.

We found that there is an effect from CSR on returns during early parts of the crisis, however this effect becomes statistically insignificant during the later stages of the crisis. The effect from CSR is negative, which differs from previous research on crises. This could be due to the fact that the COVID-19 crisis began due to exogenous factors, a new deadly virus instead of a speculative bubble. Therefore, another explanation is the different nature of the COVID-19 crisis, as it may have led to an unstudied variable to heighten the cost of CSR, such as travel restrictions hindering personnel training or supply line monitoring.

The structure of the paper is the following; Section I provides an introduction to the thesis, Section II explains our constructed hypotheses and motivation for these. Section III provides the theoretical background that the research question is based on. Section IV describes the methodology used in our studies. Section V presents and discusses the results that have been obtained by our regression analyses. Section VI consists of our final conclusion.

II. Hypothesis

Based on the data of 373 publicly traded Nordic companies during the COVID-19 stock market crash within the specific timeframe of 2020-02-10 to 2020-04-11, we have condensed our research question into two hypotheses.

As many studies, (Lins et al., 2017; Cornett et al., 2016; Epstein & Schnietz, 2005) have found that there exists a correlation between CSR and returns during crises. We want to investigate whether this holds for the Nordic market during the COVID-19 crisis as well. Our first null hypothesis therefore states that there does not exist a correlation between a company's CSR rating and the stock prices during the COVID-19 crisis in the Nordic market.

Algebraically it is given by:

$$H0_1: \beta_{CSR} = 0$$

The alternative hypothesis is given by:

$$H1_1: \beta_{CSR} \neq 0$$

Where β_{CSR} stands for the CSR coefficient representing the effect of CSR ratings on the dependent variables of Raw and Abnormal return in our regression analysis. The first null hypothesis states that there does not exist a correlation between the independent variable of CSR and the dependent return variables, and a rejection of the null hypothesis would mean that there is a relation.

Earlier studies such as (Lins et al., 2017; Epstein & Schnietz, 2005) have also found a positive relation between CSR and returns during previous crises. Therefore the second null hypothesis will be that CSR has a negative effect on companies returns during the COVID-19 crisis, which algebraically is written as:

$$H0_2: \beta_{CSR} < 0$$

The alternative hypothesis is given by:

$$H1_2: \beta_{CSR} > 0$$

This hypothesis is aligned with the hypothesis of Lins et al. (2017), which is having a trust and social capital variable focused approach, emphasizing regional differences. However we will also need to account for the exogenous effects of the COVID-19 crisis, which might have implications on the results. We follow previous studies claiming that the effect of CSR on returns during crises

pose a positive effect on returns, specifically in our study targeting the COVID-19 crisis in the Nordics.

III. Literature review

A. Exogenous shocks

The COVID-19 crisis can be described as an unanticipated event exposed to an exogenous shock and with a systematic risk which in turn affects the behaviors of investors (Martín Fuentes & Moder, 2021). Although there has been substantial research conducted regarding financial impacts of previous global crises, less has been done on the perceived risk in connection to CSR, which in turn is translated into a certain behaviour on the stock market. In order to be able to identify the role of trust in a crisis as one of the key factors of a financial crisis, we will investigate the extent of the exogenous or trust factors to impact investors behavior on the market. By relying on previous research and looking at micro and macroeconomic effects it is possible to investigate whether a crisis depends on endogenous or exogenous factors.

Using the definition, given by Dabla-Norris and Gündüz's (2012), of a large negative exogenous shock as when the annual percentage change of the relevant shock variable sinks below the 10th percentile in the left-tail of the country-specific distribution. A shock is argued to include at least one of the following shocks; external demand, terms-of-trade, FDI, aid, remittances; climatic shocks (large natural disasters) (Dabla-Norris & Gündüz, 2012).

Another macroeconomic aspect of an exogenous shock is distinguished by the absence of precursory behaviour in the market before the crash (Sornette, 2006). Elaborating on the concept of exogenous shocks, Sornette refers to the 11th September 2001 crash, the coup attempt against Gorbachev and claims internal shocks at the other hand to be preceded by speculative bubbles.

B. Trust

A well established statement by the CEO of Deutsche Bank, John Cryan "Trust is the foundation of banking" (2016) shows one of the main factors surrounding a crisis. Likewise a frequently occurring definition within the academic field of relationship trust is "the expectation held by the consumer that the service provider is dependable and can be relied on to deliver on its promises" (Sirdeshmukh et al., 2002, p. 17). From a general aspect, trust has a wide range of definitions. The psychological sector would refer to it as being a collection of correlating cognitive processes and beliefs towards a feeling of vulnerability or risk, based on the uncertainty regarding future intentions and actions. (Kramer, 1999). In the same vein Rousseau et al. (1998) holds that "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another" (p. 395).

More specifically in the corporate area, trust raises the likelihood of cooperation and therefore can lessen the real and perceived risk. Several investigations indicate that high levels of economic inequality, which often is an effect of a recession (OECD, 2014), is negatively related to

generalized trust (Wilkinson & Pickett, 2009). With the knowledge that trust builds on some risk being betrayed by others (Yamagishi, 2011), it is logical that people being most exposed to a crisis may have lower levels of generalized trust, which could explain some behavior within the financial sector. With regards to this, there is a belief that the GFC has had a negative impact on the trust of consumers, specifically in financial service providers (Guiso, 2006).

On the other hand a study conducted by Hansen (2014) examining the importance of the trust factor in the relationship between customer and seller, before and after the GFC, finds that consumers base their choice more on satisfaction than on trust after the GFC in comparison to before. This suggests that crises do not always lead to a permanent state of lack of trust and that trust may not always be the most important factor.

To conclude; our upcoming results showing a positive, null or negative correlation between CSR and the stock market might therefore not only rely on trust but also include the possible efforts and achievements of financial managers to attain satisfaction with the investors and customers. The paper by Hansen (2014) therefore also provides us with the perspective that the CSR rating involves many different factors and aspects and although a correlation might be found between the stock market and CSR, trust may not be the only factor, as considerable previous studies have indicated.

C. Corporate social responsibility

To measure social capital and corporate social responsibility CSR is frequently used, and will play a pivotal role in our thesis (Lins et al., 2017). As there is no formal global definition of CSR, it can be viewed as a form of an international private business regulation (Sheehy, 2014). The ISO 26000 standard on social responsibility does however provide a framework for defining CSR. The ISO standard states that social responsibility consists of multiple core subjects such as human rights, environment, fair operating practices and community development (IOFS 26000, 2018). Another common definition proposed by the World Business Council for Sustainable Development (2000) states “CSR is the commitment of a business to contribute to sustainable economic development, working with employees, their families, the local community and society at large to improve the quality of life.” (pg.8)

The lack of a widely utilized and standardized CSR means that there are many different approaches on the definition and measurement. Indicators are often chosen based on available data and current sentiment (Hopkins, 2005). Hopkins (2005) however also states that as companies release more data due to more demanding investment funds, it is becoming easier to estimate the CSR performance of a company. Continuing Hopkins also states that this increasing prevalence of information allows us to find indicators which on average show a good record.

While it can be complicated to estimate CSR, it can have an effect on a company's image if its CSR activities are seen as sincere by consumers (Yoon et al., 2006). Engaging in CSR activities

also improves support behaviours such as employment seeking and investment in companies (Du et al., 2010). This shows that while it may be hard to estimate a company's CSR numerically, CSR activities do affect companies positively and therefore is an adequate metric to use for measuring the social capital of a company, and therefore is relevant for this thesis.

D. Corporate Social Responsibility in market crises

The considerable economic and social consequences of the financial crisis in 2008 has driven substantial data collection, studies and analyses to be pursued regarding many different aspects and factors surrounding the crisis. An important factor in these studies has been the question of whether CSR poses an impact on the performance of a firm in times of turbulence. More specifically Lins et al. (2017) investigates the value of corporate social responsibility during the global financial crisis of 2008, where they found a positive correlation between CSR, profitability, growth, sales per employee and debt raising. Correspondingly Cornett et al. (2016) proclaim that the financial performance of banks in the United States during the financial crisis in 2008 exhibit a positive relation to ESG scores, which are related to CSR scores due to similar input variables. Also Epstein and Schnietz (2005) have found a positive effect of CSR during crises, as stock declines of high CSR firms were protected when other firms suffered declines.

As has been clarified profound research has been performed to relate economic variables to the 2008 crisis, the COVID-19 pandemic on the contrary is still ongoing and timewise not yet had the opportunity to have as much studies conducted. Up until now no studies have been found looking at the whole Northern European market during COVID-19. To name one scientific study which has examined the role of ESG performance during the COVID-19 crisis is Broadstock et al. (2021), specifically targeting the Chinese market. Broadstock et al. (2021) found that higher ESG firms show moderate lower price volatility during the proclaimed COVID-19.

IV. Methodology

As we are trying to discover relationships between CSR and stock returns and want to control this relation by using other variables, a regression analysis will be run, where return is set as the dependent variable and CSR is set as one among other independent variables. We will use two definitions of returns; Raw return will denote the buy and hold return of a stock, whereas Abnormal return will be adjusted according to CAPM.

A. Data collection and calculations of CSR scores

For this study, data about Nordic companies' stock returns, accounting data and CSR rating is required. We define a company as Nordic if it is listed on a Nordic stock market, not by the country of the headquarter. More specifically the Nordic countries included are Sweden, Finland, Denmark, Iceland, Norway and the Faroe Islands. We used data from the Nordic Compass database (NCD) with ESG data on 373 publicly traded Nordic companies to create a CSR rating. The NCD contains data such as the percentage of female employees, the potential existence of supplier guidelines and the number of independent directors.

As Lins et al. (2017) have found stronger effects from CSR in high-trust regions, which makes the high-trust Nordic countries interesting. The acknowledged Environmental Protection Index (EPI), which is linked to CSR as Environmental concerns is a subcomponent of CSR lists all Nordic countries at the top 10 countries in the world. (Yale University, 2020). The Nordic market also distinguishes itself by being a high trust market (Ortiz-Ospina and Roser, 2016), which according to Lins et al. (2017) could lead to stronger relations between CSR and returns.

NCD's data is divided into three areas, namely Environment, Social and Governance. It also contains integers such as the number of female board members, as well as true or false answers to questions as to whether a company has supplier guidelines and general data points on things like the industry the company acts in. Using this data we are able to create all inputs for the CSR rating of companies. As clarified earlier, there are various definitions of CSR and this thesis will follow the classification of Lins et al. 2017; Broadstock et al. 2021, which is divided into five different areas; governance, diversity, employee relation, environment and human rights, as shown in Table I. However, Lins et al. (2017) did not define governance as part of CSR as they argued that it had negligible impact on the social capital of firms. We will use their definition of CSR, but also study the impact of governance on returns and also perform a robustness check where governance is included as part of CSR.

Table I)

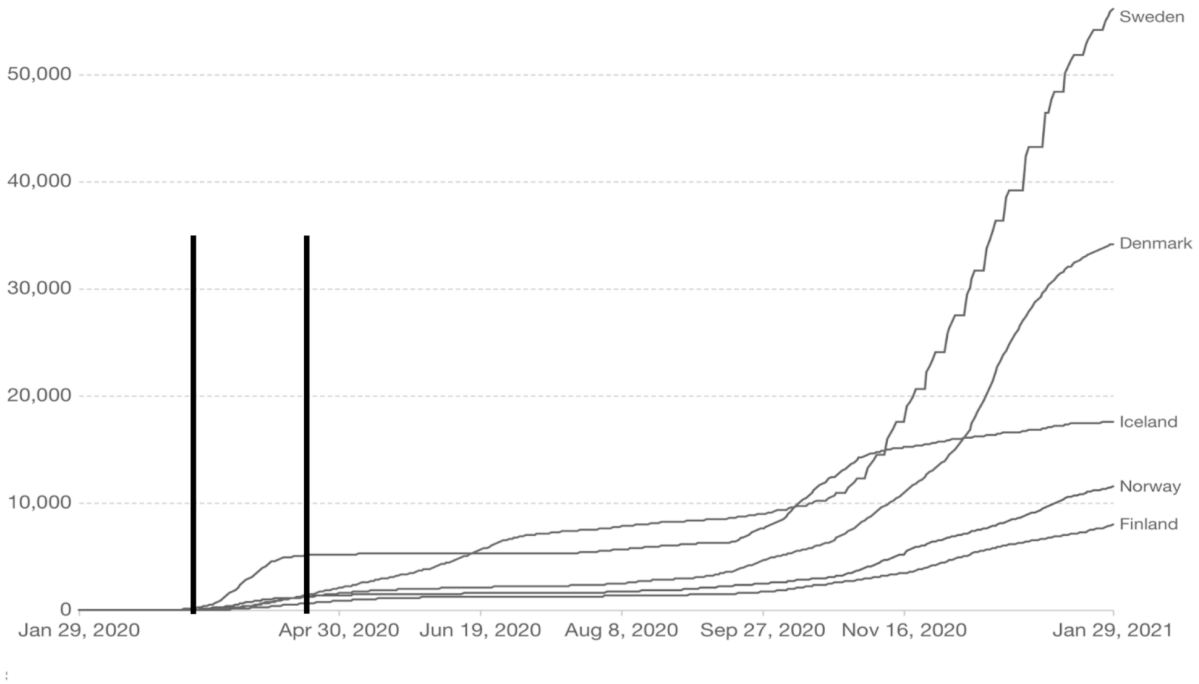
Data used from Nordic compass to create subcomponents of the CSR rating.

Governance	Diversity	Employee relation	Environment	Human rights
Supplier guidelines, disclosure of % suppliers visited and audited, Disclosure of Supplier Evaluation Procedures	Percentage female employees, Percentage female executives, Percentage female board, Reporting on male/female pay equality, Equal Opportunity Policy or Statement	Employee relations score, Training & Education spending (hours/employee), Training & Education policy for employees, Disclosure of types of Injury and by Region and/or Gender, Accidents per millions hours worked (LTI), Health & Safety Policy, Health & Safety Risk Assessment, Number of fatalities per employee	Greenhouse gases per euro sales, CEO/Chair/Executive Sustainability Statement, Environmental Policy and Assessment, Targets associated with Environmental Performance, Steps taken to reduce negative environmental impact, Increased usage of renewable energy, Disclosure of raw material consumption, Targets associated with Efficient use of Resources, Disclosure of Water Discharges	Supplier assessment for labor practices, Supplier assessment for human rights, Whistleblower mechanisms / hotlines, Anti-Corruption Policy or Statement. including extortion and bribery, Human Rights Policy or Statement, Code of Conduct / Ethics Policy

As Morgan Stanley Capital International we argue that CSR ratings follow a normal distribution (MSCI, 2021), which also makes it simple to distinguish CSR leaders from laggards. Z-score was used to normalize all inputs to the subcomponents - governance, diversity, environment etc. - of CSR, which means that all inputs have a mean of zero and a standard deviation of one. Thus all subparts to CSR are equally weighted, which also is how the MSCI ESG Ratings data provider has weighted their CSR score. As MSCI has been responsible for consulting with the 55 largest investors internationally their methodology is recognized. Then, the CSR score is also normalized to ensure that the standard deviation becomes one and the mean is set to zero. Furthermore, we do not penalise companies which act in a segment and can be seen as controversial, such as nuclear energy or weapons. We are solely interested in the impact of trust in the stock market performance, which does not necessarily correlate to the industry they act in.

Figure I)

The figure displays the cumulative confirmed COVID-19 cases per million people for 5 nordic countries during the time period January 29th 2020 and January 29th 2021



Source*: Open access, by Max Roser, Hannah Ritchie, Esteban Ortiz-Ospina and Joe Hasell (2020). Published online at OurWorldInData.org.*

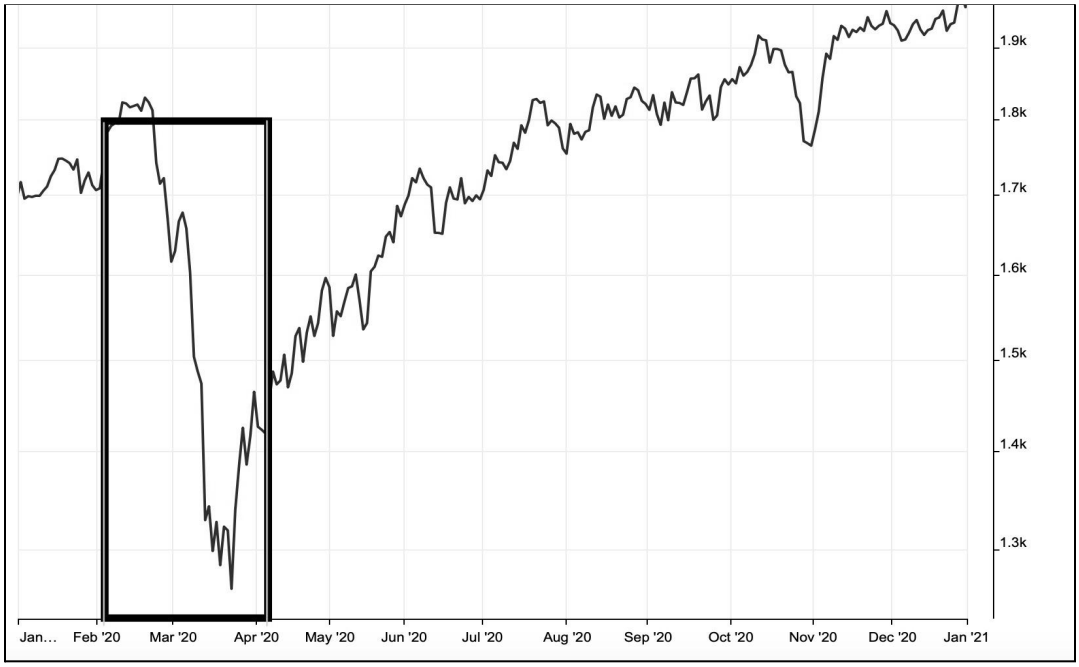
We used CSR data from 2019, to reflect companies just before the COVID-19 crisis to illustrate the trust image the companies had at the beginning of the crisis. The Nordic database of 2019 has data on 459 companies. After removing private companies and firms with inadequate data on S&P Capital IQ we have a sample of 373 firms, which means that 18.7% of companies were removed. This sample is used for the baseline regression in this paper.

B. Collection and calculation of financial data

In order to compare CSR to stock performance, company financials and stock data is obtained from the database S&P Capital IQ. S&P Capital IQ, utilized at over 500 academic institutions, is a well established research database that provides over 2.8 billion firms (Phillips, 2012). The database consists of a majority of European firms, 35.7%, which makes it suitable with our scope focusing on the Nordics (Phillips, 2012).

Figure II)

The figure displays the historical development of the OMX NORDIC 40 stock market during the event window stretching from 1st of January 2020 to 1st of January 2021 for the full sample.



Source: Open access, retrieved online from MarketScreener

We define the crisis period as the time period between 2020-02-10 and 2020-04-11, which is when the global stock market fell deeply as investors understood that the COVID-19 virus was going to affect the world economy profoundly, as Figure II shows. The OMX Nordic 40 index fell nearly 18% during this time period, which is comparable to the worst two months of the -08 financial crisis where the OMX Nordic 40 between August and October fell by over 30%. This is also as the coronavirus spread to the Nordic countries, as can be seen on Figure I.

Advancing with descriptions of the computations of the dependent variables; the Crisis-Period Raw Return defines the dependent variable *Raw return*, which states the raw return of owning stock worth 1 USD during the time period stretching from 2020-02-10 to 2020-04-11. This measurement includes dividends during the specific time period to simulate a buy and hold investor. The other dependent variable, Crisis-Period *Abnormal return* reflects the same time period, by including market model parameters calculated using data from the previous five years of the OMX Nordic.

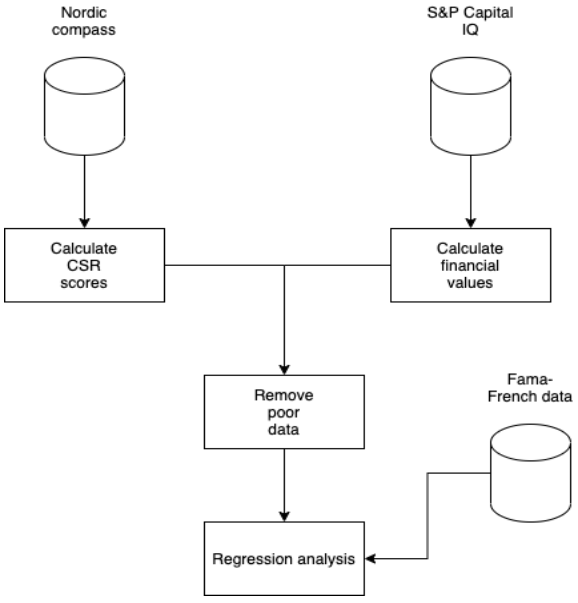
Proceeding with our independent variables that mainly consists of accounting measures as in *long term debt*, *profitability* and *book to market*. These were extracted from the previous quarter before the crisis to show a picture of the company's financial health before COVID-19 hit the world economy. Nguyen and Dam (2020) found that stock performance during crises depends on the

financial health of the company, which leads us to also include key figures representing the financial health, such as liquidity. The accounting data is from the quarter previous to the crisis, as this stands for the companies standing going into the crisis.

The *market capitalization* is from before the stock market crash, and is stated in millions of dollars. The market capitalization is used as an independent variable aligned with Chordia and Avramov (2006) who have shown that small cap companies experience higher returns during recessions. We then compute the natural logarithm of the market cap to reduce the effect of outliers, which is large for the. *Long-Term Debt* is distinguished as the long-term debt divided by assets. Likewise the computation of *Short-Term Debt* is given by the debt in current liabilities divided by total assets. *Cash Holdings* consists of cash and marketable securities divided by assets. *Profitability* is calculated by operating income divided by assets. *Book-to-Market* is formed by the book value of equity divided by market value of equity. Our dummy variable is defined as *Negative B/M* and is given the number one, when the book-to-market ratio is negative and is otherwise zero. *Momentum* is the raw return of one invested USD in the company during the year previous to the crisis, between the dates 2019-02-10 and 2020-02-10. This is to measure how the company developed just before the crisis. *Idiosyncratic Risk* is the residual variance from the market model estimated over the previous three years. The normal market variance is defined as the OMX Nordic market variance. We use these control measures as Lins et al. (2017) argued that these have an impact during crises, and indeed found significant effects from many of these variables during crises.

Figure III)

The figure shows the data flows to the regression. The cylinders symbolize data sources.



C. Regression methodology

Our baseline regression model is a least squares regression model, which estimates stock returns during the crisis using CSR ratings from the pre-crisis period. The dependent variables Raw return and Abnormal return are estimated using CSR, accounting and financial variables that could have an impact on stock returns, such as long term debt. Lins et al. (2017) excluded financial companies from their regression analysis due to excessive financial support, but as no specific industry was favored by governments in the COVID-19 crisis we will not exclude any industry. The regression was done using the Python module Statsmodels, which is a library for statistical and econometric analysis (Seabold & Perktold, 2010).

$$R_{it} = \alpha + \beta_1(R_{Mt} - R_{Ft}) + \beta_2 SMB_t + \beta_3 HML_t + \beta_4 RMW_t + \beta_5 CMA + R_{Ft} \quad (1)$$

Firms factor loading are also controlled using the Fama-French five factor model in the equation above, which is directed to capture the size, value, profitability, and investment patterns in average stock returns (Fama & French, 2015). Fama and French have found that the Fama-French five factor model better explains patterns in average returns found unexplained by CAPM, which is why we use their method. This is done through controlling for the values of the five research factors. In the equation R_{it} stands for the return of a market portfolio, and R_{Ft} is the risk free return. Then, we have $R_{Mt} - R_{Ft}$, which stands for the difference between risk free rate and market returns. SMB stands for the excess returns of small firms over large companies, looking at market value; while HML looks at book value. RMW is the difference between returns of firms with high and low profitability. CMA is the difference in returns between firms with high and low investment levels. If the coefficients of β_1 to β_5 capture all variation in return, the intercept α becomes zero, according to Fama and French. We use the website of Kenneth French (2020), one of the writers of the Fama-French paper, to extract the historical values of the differences in returns and use them in our regression. The regression then estimates the coefficients.

Studies have found that the COVID-19 pandemic has impacted different industries unevenly. Bartik et al (2020) found that one dominant factor influencing the performance of industries has been personal contact, where the study shows that sectors with high involvement of personal contacts also experience a tougher climate during the pandemic and the opposite for less personal contact firms in the United States. In addition, some industries might have a lower barrier or a higher willingness to invest in CSR. Using the allocation of companies divided into industries from Nordic Compass, we added industry dummies to the regression.

D. Robustness test of effect of CSR 2019 outside crisis

To check the robustness of our results in the baseline regression we will perform robustness checks where factors are changed to discover whether previous findings still are repeated and statistically significant.

In order to minimize the risk of an omitted outside factor being correlated with CSR of the year 2019, we control the results by using time as a control factor. We will also investigate whether CSR only has an effect on returns during crises, or if it also has an impact during high trust time periods outside crises.

Therefore a regression based on monthly data stretching from January of 2018 to April of 2020 which corresponds to the time before, during and after the COVID-19 crisis is performed. As previously stated, we use CSR data from Nordic Compass in the year of 2019 for the regression. The independent variables are identical to the ones utilized in the baseline regression, except that a time dummy corresponding to each unique month is added. Thus monthly effects such as a stock market boom in one month does not distort the regression. The accounting data is from the relevant year or quarter and the monthly returns are calculated using financial data from the beginning and end of each month's trading day.

As earlier, private companies are removed and months of data from companies which were not listed on the stock market during the whole time period. Removing certain months from younger companies may lead to skewing results as older companies would have a more prominent placement during older time periods. The time dummies, however, will partly correct for this effect. In the end we have 17554 data points for the regression, where each data point corresponds to one company per month.

$$Return_{i,t} = \alpha + b_0 PreCSR_{i,2019} + b_1 CSR_{i,2019} * Crisis_t + b_2 CSR_{i,2019} * PostCrisis_t + b_3' X_{i,t} + Time\ Dummies + \varepsilon_{i,t} \quad (2)$$

The regression is based on dummies for the pre-crisis time period, crisis, and post-crisis time period. The dummies are set to one or zero, in order to show the effect of CSR on each time period. Return stands for the monthly return of a firm i, during time t. Financial health factors are denoted as the vector X. Thus the effect of the CSR of 2019 is shown for each time period, and influences outside the COVID-19 crise period are shown. The pre-crisis monthly returns are also included to control for any correlations where financially successful companies may be more involved in CSR work due to more leeway in finances.

We will also investigate whether the country the company has its headquarters in affects the monthly returns, in conjunction with CSR and time. Sweden stands out from its Northern neighbours due to a radically different approach from the government towards lock downs during COVID-19 (Claeson & Hanson, 2021). Swedes also had a lower trust in the government than its neighbours in 2020, according to data from OECD (OECD, 2019). Thus a difference between the value of social capital between Sweden and its Nordic neighbours should emerge, according to Lins et al (2017). This is done through modifying the earlier monthly regression, by introducing a dummy for whether a company is located in Sweden or not.

E. Comparison to the Ebola crisis

Lins et al. (2017) have compared their final findings from the Global Financial Crisis with the Enron scandal of 2001, which they argue both to have factors of financial crisis, trust and social capital highly present. As proven earlier, since COVID-19 is initially triggered by the exogenous shock factor, the trust factor is present in a later stage of the crisis than both the GFC and the Enron crisis. To investigate whether the findings from the COVID-19 period also applies to similar crises we need to examine a crisis with similar effects on trust. We use the Western African Ebola virus epidemic of the early autumn of 2014 as this similar crisis, as it also is a crisis begun by the spread of a lethal disease, which evoked an exogenous shock and the trust factor had a similar function.

Supporting our view on COVID-19 and Ebola to have certain common mechanics is a study by Briand et al. (2014), which explains that the World Health Organization (WHO) on the 8 August 2014 declared a Public Health Emergency of International Concern (PHEIC). This is similar to COVID-19 which on the 30th of January in 2020 was also announced by the WHO to be an PHEIC (WHO, ND.) When a PHEIC is announced, international health regulations are set in motion. In the time of Ebola this agreement consisted of 196 countries in total. To name one of the undertaken regulations were strong restrictions on travels internationally, which at that time involved four affected countries. The two crises should therefore both have similar market reactions regarding trust and stability due to the insecure nature of both crises, especially at the onset of the crisis.

CSR values from 2014, using the Nordic Compass database, were applied. Also the same control factors for firms financial health and stock performance as in the baseline regression were used. We defined the time period of the Ebola financial crisis to have started on the 1st of September, and ended on the 15th of October in 2014, where OMX Nordic 40 fell approximately 8%.

Nordic Compass of 2014 has data on 253 firms, however after sorting out private companies and companies with insufficient financial data we have 125 firms left. Due to the smaller sample size, a dummy variable of CSR>0 is inserted for each company to create a crude measurement for the

companies' CSR rating. This aids the regression in making statistically significant results despite the limited sample size. Otherwise we use the same financial variables in the regression to create an identical regression of the Ebola crisis as for the COVID-19 crisis.

F. Using other definitions of the time period of the crisis

Another robustness test of our baseline regression is to change the time periods, and see if earlier results still are significant. Another study, by Björkil and Martinsson (2020), which studies the effect of ESG on Swedish companies during the COVID-19 crisis used the times of the Swedish restrictions of people as start and end times for their regression analyses. Sweden had restrictions of 500 people between 6 and 20 of March 2020, and later enforced restrictions of 50 people between 27 of March to 20 of November 2020.

We therefore perform the baseline regression twice, using the time periods of the two restrictions. The amount of companies in this sample is the same as for the baseline regression, 373 firms, which is the provided financial and CSR data for these companies in the specific period. Also, the financial health variables will be the same as in the baseline regression, as this control will only change the time periods.

G. Limitations of method

As argued above our databases and our choice of using regression analysis have been chosen after much deliberation and have been relied on in similar previous research (Lins et al., 2017). However for every method there will always exist drawbacks, which we will correct through different methods and robustness checks.

An issue regarding the companies in the Nordic compass database is that there might be a probability that firms with the best CSR performance will report their results, compared to those with doing poorly in that area. Therefore the results will most likely be overrepresented by the well performing right tailed situated firms and the ones with the lowest CSR performance will be omitted. This can be viewed as a type of "voluntary response bias and exclusion of outliers in the left hand tail will therefore create a skew in the data.

Another drawback is that CSR ratings are difficult to measure (McWilliams, Siegel, & Wright, 2006; Öberseder et al., 2014). This might stem from the notion that much data is provided by the companies themselves in the form of reports, with sparse comparable numbers and statistics. Hereby firms can direct and manipulate their data in order to achieve a higher score. As Latif and Sajjad (2018) argue the main problem is the shortage of systematic reviews of the tools and scales utilized to compute the CSR score.

We therefore use an equally weighted CSR score, which also is used by the ESG dataprovider MSCI ESG research. However, Capelle-Blancard and Petit (2015) argue that not all dimensions of CSR should be equally weighted to best represent the corporate social performance of an organisation. Instead the weights should differ by the industry to match what each industry is most criticized by. For example they argue that the industry segment of Basic Resources should have a CSR rating more heavily influenced by environmental concerns than social. The CSR scores of banking should at the other hand be heavily influenced by the governmental dimension, according to Capelle-Blancard and Petit (2015). We therefore create a CSR value using the industry specific weights found by Capelle-Blancard and Petit (2015) in our robustness analysis.

Another criticism of our method is whether the chosen time period of the crisis best defines the crisis in terms of stock performance, as well as behavior. There are no daily or weekly measures of the trustlevel in the stock market, which results in that different definitions of the crisis time can be equally legitimate. Therefore a robustness check is needed where other authors' time periods of the crisis is used for our baseline regression. We will also use the time periods of Björkil and Martinsson (2020) who used lockdowns of the Swedish government as a proxy for the time periods of the crisis.

Our regressions are limited to linear relationships between the dependent and independent variables. Even though there have been studies where a significant linear relationship between CSR and financial returns or volatility have been found, non-linear relations have also been found (Nollet et al., 2016) We therefore divide the CSR rating into quantiles to find non-linear or monotone relationships between CSR and financial returns. Also, least squares regression models are sensitive to outliers, which means that the results may be influenced disproportionately by certain companies. However, our normalization of CSR and removal of low quality data reduces the issue.

V - Results & Analysis of baseline regressions

A. Descriptive statistics

Table II)

Summary statistics table over mean, standard deviation, minimum and maximum value and different percentiles of the variables we are using in the regression.

	CSR	RawReturn	Abnormal Return	LNMarketCapBefore Crash	LongTermDebt	ShortTermDebt	CashHoldings	Profitability	BookToMarket	BookToMarketNegative Dummy	Momentum	Idiosyncratic Risk
Mean	-0,04	-0,25	-0,25	3,03	0,17	0,30	0,10	0,04	0,65	0,01	-0,08	1,58
Std Dev	1,01	0,16	0,16	0,64	0,15	0,20	0,15	0,19	0,66	0,07	0,46	34,73
Min	-3,75	-0,89	-0,91	1,43	0,00	0,01	0,00	-2,16	-0,19	0,00	-0,96	-6,87
25% perc	-0,52	-0,34	-0,35	2,54	0,04	0,16	0,03	0,03	0,27	0,00	-0,36	-6,49
Median	0,19	-0,26	-0,26	2,89	0,14	0,27	0,06	0,06	0,47	0,00	-0,14	-5,17
75% perc	0,66	-0,16	-0,16	3,45	0,26	0,39	0,11	0,09	0,82	0,00	0,10	-2,86
Max	2,39	0,46	0,46	5,12	0,70	1,42	0,96	0,38	7,61	1,00	3,12	473,28

Table III)

A correlation matrix over the correlations between the variables we are using in the regression analysis.

	CSR	RawReturn	AbnormalReturn	LNMarketCapBefore Crash	LongTermDebt	ShortTermDebt	CashHoldings	Profitability	BookToMarket	BookToMarketNegative Dummy	Momentum
CSR											
RawReturn	-0,113										
AbnormalReturn	-0,111	1,000									
LNMarketCapBeforeCrash	0,499	0,094	0,098								
LongTermDebt	0,120	-0,207	-0,204	0,100							
ShortTermDebt	0,015	-0,095	-0,093	-0,104	-0,206						
CashHoldings	-0,380	0,141	0,136	-0,188	-0,314	-0,125					
Profitability	0,304	0,019	0,021	0,207	-0,071	-0,204	-0,326				
BookToMarket	0,002	-0,253	-0,253	-0,197	0,222	0,075	-0,226	-0,016			
BookToMarketNegativeDummy	-0,078	-0,019	-0,021	-0,001	0,182	0,178	0,006	-0,394	-0,088		
Momentum	-0,071	0,539	0,541	0,134	-0,085	-0,090	0,161	0,070	-0,323	-0,055	
IdiosyncraticRisk	-0,221	-0,060	-0,058	-0,159	-0,042	0,036	0,038	-0,077	-0,001	0,064	0,136

Utilizing data from S&P Capital IQ and Nordic compass we computed the main variables, which can be found in Table II. The first row in the table presents the *CSR* factor, showing a mean of -0.0354, which is close to zero as the CSR score is normalized. The non-normalized CSR rating, where each subpart is rated from -1 to +1 for each company, is 0.879 and a median of 0.9902, which indicates that the average Nordic company performs relatively well as the median and average is above zero. The span of the non-normalized CSR rating is -4 and +4.

The following column states a negative *Raw return* with a mean of -24.5%, and a median with a similar percentage of -25.6%. The 25th percentile of Raw return of -33.8% and the 75th percentile of -15.7%, indicates a strong financial downturn which severely affected a majority of companies in the Nordics. Continuing, the *Abnormal return* does not deviate strongly from the Raw return, with a mean of -25.4%, median of -26.4%, which further establishes that the negative returns were widespread and not part of the historical trend. Looking at the correlation matrix of Table III we find a negative correlation between CSR and Raw return, as well as between CSR and Abnormal return.

B. Results from baseline regressions

Columns (1) and (2) in Table IV illustrate a small significant negative coefficient for the Raw return and Abnormal return showing that there is a negative dependence between the CSR score and company performance during the COVID-19 crisis, when not controlling for other factors. This negative dependence is shown to be statistically significant in the COVID-19 crisis with a p-value of less than 0.1. Also, if a company was to improve one standard deviation in CSR (1.0079) the returns would only be affected by approximately -2.07 percentage points, which shows that CSR was a small but statistically important factor for returns in the COVID-19 crisis. The effect is therefore not considerable, as it is notably smaller than the standard deviation of both raw return (0.159) and abnormal return (0.162) for Nordic companies, which ultimately shows that other factors than CSR have been more important during the crisis.

Columns (3) and (4) show the coefficients after taking the control variables into account. Companies with higher CSR performed statistically significantly worse during the COVID-19 crisis. The effect is however still smaller than the standard deviation of the returns, but larger than Columns (1) and (2) where the additional control variables were not taken into account. If a firm was to increase its CSR by one standard deviation (1), it would lead to approximately -3.6 percentage units lower returns. Other variables also have a strong effect on the returns, when looking at the change in return when altering the value of the explaining variable. Modifying the long term debt by one standard deviation (0.148) would change the raw return by 2.0 percentage points, which however is lower than changing the CSR by one standard deviation. Also, companies one standard deviation higher in momentum (0.457) and cash holdings (0.148) experienced 6.9 percentage points and 1.9 percentage points lower abnormal return during the crisis. CSR thus has an effect corresponding to 1.9 of cash holdings, and approximately half of momentum. CSR hence has a modest to strong effect on crisis returns in comparison to financial health factors.

As companies with higher CSR and therefore higher social capital experienced worse returns during the COVID-19 crisis, there seems to be a difference between crises based on exogenous shocks and endogenous shocks, as studies on endogenous shocks have found a positive effect of CSR on returns. As the negative effect on returns are significant the first null hypothesis of CSR not having an effect can be rejected, and the alternative hypothesis of social capital having an effect on returns can be implemented. The second hypothesis can however not be rejected, as the effect of CRS is negative.

Table IV)

Baseline regression with industry dummies and Fama-French factors.

	Raw Return	Std Dev Dev	Abnormal Return	Std Dev Dev	Raw Return	Std Dev	Abnormal Return	Std Dev
CSR	-0.0206 ***	0.008	-0.0207 ***	0.008	-0.0363 ***	0.009	-0.0368 ***	0.009
Ln(MarketCapBeforeCrash)					0.0325 **	0.014	0.0335 **	0.014
LongTermDebt					-0.1376 **	0.054	-0.1392 **	0.054
ShortTermDebt					-0.0321	0.042	-0.0327	0.042
CashHoldings					-0.1213 **	0.060	-0.1280 **	0.061
Profitability					0.0197	0.046	0.0181	0.047
BookToMarket					0.0035	0.011	0.0031	0.011
Momentum					0.1522 ***	0.016	0.1555 ***	0.016
IdiosyncraticRisk					-0.0005 **	0.000	-0.0005 **	0.000
BookToMarketNegativeDummy					0.1159	0.103	0.0917	0.104
N	373		373		373		373	
Adj. R^2	0.28		0.27		0.47		0.472	

Table V)

Regression with CSR quintiles. Also controlled by industry dummies and Fama-French factors.

	Raw Return	Std Dev	Abnormal Return	Std Dev	Raw Return	Std Dev	Abnormal Return	Std Dev
CSR2	0.0069	0.021	0.0079	0.022	-0.0341 *	0.020	-0.0342 *	0.020
CSR3	-0.040 **	0.022	-0.0398 *	0.022	-0.0653 ***	0.020	-0.0656 ***	0.021
CSR4	-0.0425 **	0.023	-0.0424 *	0.023	-0.0717 ***	0.023	-0.0726 ***	0.024
Ln(MarketCapBeforeCrash)					0.0251 *	0.014	0.0259 *	0.015
LongTermDebt					-0.1509 ***	0.054	-0.1528 ***	0.055
ShortTermDebt					-0.0460	0.041	-0.0469	0.042
CashHoldings					-0.1117 *	0.061	-0.1179 *	0.062
Profitability					0.0096	0.046	0.0077	0.047
BookToMarket					0.0063	0.011	0.0060	0.012
Momentum					0.1530 ***	0.016	0.1564 ***	0.017
IdiosyncraticRisk					-0.0004**'	0.000	-0.0004 **	0.000
BookToMarketNegativeDummy					0.1159	0.102	0.1135	0.104
N	373		373		373		373	
Adj. R^2	0.278		0.277		0.461		0.463	

Table VI)

Regression where the effect of different governance metrics are studied. Also controlled by industry dummies and Fama-French factors.

	Raw return	Std Dev	Abnormal Return	Std Dev	Raw Return	Std Dev	Abnormal Return	Std Dev
CSR	-0.0227 **	0.009	-0.0232 ***	0.009	-0.0241 ***	0.009	-0.0248 ***	0.009
Governance Index	-0.0211 ***	0.008	-0.0213 ***	0.008				
E-Index					-0.0049	0.007	-0.0055	0.007
Chairman independent of Company					-0.0178	0.019	-0.0176	0.020
Board Size					-0.0004	0.005	-0.0007	0.005
Board Independence					0.0071	0.036	0.0058	0.037
N	373		373		373		373	
Adj. R^2	0.471		0.472		0.466		0.467	

C. Comparing CSR quantiles to return

In Table V we estimate a company's CSR as the quantile it belongs to, instead of the linear approach in the regression in Table IV. The estimation is achieved by creating dummy variables

for the quantile the company lies in. We have thus created dummy variables for the 2-4 CSR quartiles, as the intercept captures the effect of the first quartile. Looking at the effect of which quantile a company lies in shows whether the effects of CSR are higher at the extremes or whether there is an effect for companies in the middle of the curve too. The regression shows that for both raw return and abnormal return, companies in the third CSR quartile perform worse, whereas companies in the fourth and highest CSR quartile perform better than the third quartile. For the second quartile, there is no statistically significant result, but there seems to be a lower negative effect in the second quartile than in the other quartiles. The effects on returns from CSR are thus non-monotonic. The differences between the firms in the highest CSR quartile and the lowest are roughly 7.1 percentage points in Raw return, when taking control variables into account. For Abnormal return the difference is 7.2 percentage points. Companies in the third CSR quartile had a raw return 6.5 percentage points worse than firms with the worst CSR ratings.

Compared to financial health factors such as long term debt we see that a company improving one standard deviation on long term debt (0.148) would decrease its Raw return by 2.22 percentage points. Thus, the effect of being in the above average in CSR is important for explaining the returns during the COVID-19 crisis. For companies under the average CSR level the results become less significant, only showing a slight negative results for companies in the second quantile.

It seems like the negative effect of social capital is explained by the third and fourth CSR quantiles of companies having a significant negative effect on their returns. As previous research has found a significant positive effect on the third and fourth CSR quantiles during endogenous crises, exogenous crises seem to have different effects on firms with more than average social capital. Here, again, the first hypothesis is rejected as CSR still has an effect on returns. The second hypothesis is not rejected.

D. Control of the effect of Governance

CSR is still statistically significant in explaining Raw and Abnormal return after controlling for different indexes for governance, which historically has proven to improve company returns during crises. Therefore on the same basis as Table IV, with the addition of governance factors, Table VI has been constructed. The same set up; with main variables and control variables as in Table IV have been utilized. The findings indicate a negative correlation between CSR and Raw return as well as the governance index, with a statistically significant certainty. Two indexes for governance used; first a Governance Index using data from Nordic compass using the same method as when creating the subparts for our CSR rating of companies. The other index is Bebchuk, Cohen and Ferrell's E-index, which measures the entrenchment of a firm using six provisions and has been shown to be monotonic (Bebchuk et al. 2008). Due to data limitations it only consists of five out of the total six measurements required. The measurements for the E-index

are dummies which are added together to create a rating which spans from zero to five. The dummies span subjects such as *Charter amend limit*, which stands for limitations for shareholders to change the company charter, to *Golden parachutes* for executives.

The Governance index variable of CSR has a significant negative impact on the Raw return and Abnormal return during the COVID-19 crisis, which goes against findings from Lins et al. (2017) that the governance subpart of CSR had no significant impact on returns in crises. The E-index on the other hand had no significant impact on returns, as did no other measures on governance. As Governance has a significant effect on returns, it should be used as part of the CSR measure.

In conclusion, the findings of Table VI show that firms with high CSR ratings experienced significant worse financial results during the financial crisis, even when controlling for financial health and other financial metrics. Also, only governance factors connected to CSR had an impact, whereas entrenchment factors and other governance metrics could not significantly explain returns during the COVID-19 crisis. Therefore governance should be a subcomponent of CSR. However, inclusion of governance in CSR would not change the outcome of previous regressions as governance also has a negative effect on returns, and therefore the rejection of the first hypothesis still stands.

VI - Robustness tests and discussion

A. Comparison to Ebola

Table VII)

Regression of the Ebola crisis where two measures of CSR have been used; one dummy for if the company has a positive CSR, and one linear measure of CSR.

	Raw return	Std Dev	Abnormal Return	Std Dev	Raw Return	Std Dev	Abnormal Return	Std Dev
Constant	0.00001	0.001	0.0008	0.001	0.0071	0.061	0.000048	0.001
CSR	0.0253 **	0.01	0.0270 ***	0.01				
CSR > 0 indicator					0.0117	0.019	0.015	0.020
N	125		125		125		125	
Adj. R^2	0.276		0.278		0.233		0.232	

We found that when using financial health factors and industry dummies as control factors, the linear definition of CSR had a significant positive impact on crisis returns during the Ebola crisis in the Nordic stock market. A firm one standard deviation higher in CSR (1.000) would enjoy approximately 2.5 percentage units higher Raw return during the crisis, compared to the 8% fall in the Nordic stock market during the crisis. However, the simpler CSR being over zero measure did not have any significant results, suggesting that the effect is more linear than monotonic in the Ebola crisis. This shows that companies with higher CSR enjoyed better returns during the Ebola crisis, to the contrary of the COVID-19 crisis.

Companies with high social capital thus had higher returns during the Ebola crisis, but not during the COVID-19 crisis, albeit these being similar crises with similar reactions from governments and markets. The crises were however on different scales, where COVID-19 has led to complete lockdowns in countries all over the world, whereas the Ebola crisis only created local lockdowns. This implies that CSR may have different effects according to the severity of the crisis, or that the nature of these different crises affected returns differently.

B. Returns before, during and after crisis

Table IIX)

Regression on monthly data. Each datapoint is one company during one month. Crisis, PreCrisis and Post-Crisis are dummies corresponding to the different time periods.

	Raw Return	Std Dev	Abnormal Return	Std Dev
CSR x Crisis	-0.0069 *	0.004	-0.0072 *	0.004
CSR x PreCrisis	0.0075 ***	0.002	0.0073 ***	0.002
CSR x Post-Crisis	0.0149 ***	0.002	0.0148 ***	0.002
N	17554		17554	
Adj. R^2	0.678		0.672	

CSR has a positive effect outside crises, both pre- and post-crisis, but has a significant monthly negative effect during the COVID-19 crisis. Albeit the negative effect during the crisis only has a significance of less than 10%, the span of the coefficients for the 95% confidence interval for CSRxCrisis in both Raw return and Abnormal Return are negative. Thus the effect of CSR during the crisis period is not zero. The difference between the companies one standard deviation from each other in CSR ratings is approximately 0.7 percentage units per month for both Abnormal and Raw return. Outside of crises, however, there is a significant positive performance for high CSR companies, where the difference between each standard deviation in CSR is approximately 1.5 percentage units.

Thus the null hypothesis of CSR having no effect in crises can be rejected, even when looking at monthly returns during the crisis. Social capital thus has a negative effect during the exogenous COVID-19 crisis, while having a positive effect outside crises. This goes against the notion of Lins et al. (2017) and our second hypothesis that social capital becomes more important during crises, while being statistically insignificant during high-trust periods.

C. Sweden compared to other Nordic countries

Table IX)

Regression on monthly data. Each datapoint is one company during one month. Crisis, PreCrisis and Post-Crisis are dummies corresponding to the different time periods. Also, a dummy for if a company is headquartered in Sweden has been inserted.

	Raw Return	Std Dev	Abnormal Return	Std Dev
CSRxCrisisxSweden	-0.0162 ***	0.005	-0.0162 ***	0.005
CSRxPreCrisisxSweden	0.0026	0.002	0.0028	0.002
CSRxPostCrisisxSweden	0.0089 ***	0.003	0.0090 ***	0.003
CSRxCrisisxNotSweden	-0.0115 ***	0.004	-0.0117 ***	0.004
CSRxPreCrisisxNotSweden	0.0035 *	0.002	0.0032	0.002
CSRxPostCrisisxNotSweden	0.0153 ***	0.003	0.0155 ***	0.003
N	17554		17554	
Adj. R^2	0.68		0.678	

CSR does not have a significant effect pre-crisis. Also, looking post-crisis a small significant positive effect from CSR is detected both for raw return and abnormal return, which corresponds with our hypothesis of CSR not having a strong effect outside crises. CSR does however have a significant effect during the crisis where the companies with the highest CSR performed three percentage units worse than the companies with the lower CSR each month in Sweden. Outside Sweden the difference is smaller, roughly two percentage units lower raw and abnormal returns.

Thus CSR had effects to differing degrees in different countries, strengthening the results of Lins et al (2017) where countries with lower trust experienced a less positive effect from CSR on returns. Also, Sweden which experienced restrictions later and in a smaller degree than its neighbours had a lower positive effect from CSR post-crisis than average, suggesting that the crisis spilled over into the post crisis period.

D. Different definitions of crisis period

Table X)
Regression analysis during the time of restrictions on 50 people.

	Raw Return	Std Dev	Abnormal Return	Std Dev	Raw Return	Std Dev	Abnormal Return	Std Dev
CSR	-0.0092	0.029	-0.0090	0.029	0.0652	0.029	0.0645	0.028
Ln(MarketCapBeforeCrash)					-0.1479	0.046	-0.1458 ***	0.046
LongTermDebt					-0.2445	0.180	-0.2445	0.179
ShortTermDebt					-0.1022	0.140	-0.1021	0.139
CashHoldings					-0.0357	0.210	-0.0445	0.209
Profitability					-0.1182	0.155	-0.1202	0.154
BookToMarket					0.0312	0.022	0.0303	0.022
Momentum					0.3141	0.021	0.3139 ***	0.021
IdiosyncraticRisk					-0.0011	0.001	-0.0011	0.001
BookToMarketNegativeDummy					0.1096	0.341	0.109	0.342
N	373		373		373		373	
Adj. R^2	0.077		0.073		0.452		0.457	

Table XI)

Regression analysis during the time of restrictions on 500 people.

	Raw Return	Std Dev	Abnormal Return	Std Dev	Raw Return	Std Dev	Abnormal Return	Std Dev
CSR	-0.0173 ***	0.007	-0.0174 ***	0.007	-0.0068	0.008	-0.0075	0.900
Ln(MarketCapBeforeCrash)					-0.0149	0.013	-0.0136	0.013
LongTermDebt					-0.0221	0.051	-0.0228	0.051
ShortTermDebt					-0.0357	0.039	-0.0356	0.039
CashHoldings					-0.0285	0.059	-0.0348	0.059
Profitability					-0.0166 ***	0.044	-0.0182 ***	0.044
BookToMarket					0.0214 ***	0.006	0.0207 ***	0.006
Momentum					0.0553	0.019	0.0598	0.019
IdiosyncraticRisk					0.0001	0.000	0.0001	0.000
BookToMarketNegativeDummy								
N	373		373		373		373	
Adj. R^2	0.120		0.279		0.469		0.472	

Looking at the coefficients we find that high CSR still influences firms negatively during the COVID-19 crisis, however, the coefficients are not always statistically significant. Especially the very short time interval of two weeks for the 500 people restriction on Table XI shows no significant effect of CSR on returns when controlling for other financial measures. This period saw the heaviest drop in the Nordic stock markets in the COVID-19 crisis. The longer time period on Table X of the restrictions of 50 people does at the other hand show a significant negative coefficient for CSR when controlling for financial factors.

The non-significant results for the 500 people restrictions suggests that during heavy drops and high volatility in the stock market there may not be a significant effect of CSR, whereas for longer time periods there may be a preference for lower CSR firms. This weakens the rejection of the first hypothesis as there is evidence that during later parts of the crisis the relation between CSR and returns weakens.

We also made a robustness analysis of our baseline regression using another definition of CSR, which is in the Appendix I due to the similarities to the baseline regression of Table IV. Instead of using an equally weighted CSR, where each subpart of CSR is assigned equal value and which is used by data providers such as MSCI ESG Rating, we use the weight scheme proposed by Capelle-Blancard and Petit where different industries have different weights for the CSR value. Using these weights we still found a significant negative effect from CSR on raw and abnormal return. Therefore, the rejection of the first null hypothesis is robust when changing the CSR weights.

The results thus imply that CSR had a negative effect on returns during the COVID-19 crisis, especially in companies which were in the third CSR quantile. However, during the Ebola crisis CSR had a positive effect on returns. Also, robustness analyses imply that the measured time

period is important in regards to the effect of CSR. Early on in the crisis, during the time period of restrictions on 500 people and the time period of the baseline regression, CSR had a significant negative effect on returns. However, during later stages of the crisis the effect of CSR on returns became more ambiguous as CSR lost the significant effect it had on returns. When not in crisis, companies with high CSR rates in the Nordics had higher returns than companies with lower CSR rates.

This suggests that the social capital of companies had mixed effects during different parts of the crisis. During the initial phase of the crisis where a large exogenous shock hits the economy investors seem to punish companies with an above average amount of social capital. This goes against the findings of Lins et al (2017) who found that companies with an above average amount of social capital received higher returns during the entire part of the financial crisis.

One possible explanation might be that trust during exogenous crises caused by epidemics and pandemics is not as severely reduced as in the endogenous crises studied by Lins et al (2017), at least initially. However, during later stages of the crisis as people are hurt by the recession the role of CSR is strengthened, in line with studies by Wilkinson and Pickett (2009) or Buttrick and Oishi (2017) who argued that recessions are negatively related to generalized trust. In summary, our results could indicate that in exogenous crises trust in society decreases, as the financial crisis after a while becomes an economic crisis. Therefore, from one point of view, using the logic of Lins et al (2017) that it solely is trust that affects the importance of CSR, there is evidence in our study which are in line with their findings.

The reason why high CSR has a negative effect on returns during the initial phase of the crisis is this far unclear. As CSR has a positive effect on firms when not in crisis, there may be an omitted factor correlated to CSR and to returns on the market. An example of this could be that primarily historically financially successful companies can afford to invest in CSR, perhaps due to a corporate culture of risk taking. Therefore the effect of CSR on returns may be dragged down during times of heavy downturns in the market, and vice versa. Also, the costs of CSR may have risen during the COVID-19 crisis as employee training and supply line control becomes more difficult when travel restrictions are in place.

There may also be a relation between uncertainty in the market and negative effects from CSR on returns, as Broadstock et al (2021) has shown that there is a link between stock volatility, which primarily occurs during recessions, and ESG, which is closely related to CSR. The effect of market downturns negatively affecting the effect of CSR on returns is however not that profound as it did not affect the results of the Ebola crisis, where CSR has a significant positive effect on returns.

Thus CSR might not be a reliable link to the social capital of firms, as the COVID-19 crisis has shown. Here the fault could be the definition of CSR or the notion that CSR at all should be a measure of the social capital of firms. Many researchers have pointed out the difficulties in measuring CSR due to lack of data and established methods. This also means that there may be different definitions of CSR, where each definition may be differently related to returns of companies.

VII. Conclusion

A. Results from the study

Previous research has found a significant positive effect from CSR in crises which are created by lack of trust, such as the financial crisis of -08 and the Enron 2001 crisis. This effect is pronounced in high trust societies such as the Nordic countries. In periods outside a crisis the effect from CSR has been mixed, when looking at Raw and Abnormal returns, where different studies have come to differing conclusions. There have not been many studies on the effect of CSR during the COVID-19 crisis, and none measuring the effects on the whole Nordic market. However, studies have shown that the inequality and vulnerability that follow crises such as the COVID-19 crisis results in reduced trust. Therefore, companies with high social capital should profit from higher returns even in a crisis which initially did not start with low trust levels.

Our study finds a significant negative effect from high CSR ratings on companies during the initial phases of COVID-19, suggesting that trust and social capital has a damaging effect on companies early on in a crisis. Thus the first null hypothesis that there is no relation between CSR and returns can be rejected. However, the second null hypothesis, that CSR has a negative effect on returns cannot be rejected. This result is robust when looking at monthly returns. However, there seems to be different effects of CSR on returns during different phases of the crisis. When looking at quantiles, only firms with above average CSR had negative results. Quantiles with lower than average CSR had statistically insignificant results.

However, when looking at similar external shock situations to COVID-19, as in the Ebola crisis, we find a significant positive effect of CSR and social capital and returns. More specifically this illustrates that the COVID-19 crisis distinguishes itself from other studied crises through high CSR firms suffering worse returns, at least initially during the crisis.

Firstly, the initial negative effect of CSR could be due to the exogenous shock which does not lead to a lack of trust on the capital markets and society during the initial phases of the crisis. The lack of trust may instead strike eventually as a reaction to the economical crisis, following the financial one. That in turn may explain the more positive effects from CSR later on, as CSR according to earlier research has a positive relation to a sudden decrease in trust of the society.

Secondly, this result could be due to CSR not being a reliable link to the social capital of firms during the COVID-19 crisis. Here the fault could be the definition of CSR, since as explained

earlier there are many different interpretations and distinctions of the factors that create the overall CSR rating. Another reasoning could be the lack of a unified measurement of social capital.

Thirdly, there may be another factor independent to the factors we have studied affecting the COVID-19 crisis, but not other crises. An example could be the cost of CSR, which may have risen during the COVID-19 crisis as employee training and supply line control becomes more difficult when travel restrictions are in place. Also, as CSR has a positive effect on firms when not in crisis, there may be an omitted factor correlated to CSR and to returns on the market, such as financially successful companies being able to invest more in CSR.

To conclude our null hypothesis was rejected as CSR has a significant effect on returns in the Nordic market during the COVID-19 crisis. Instead there is a negative effect from CSR on returns, especially during the initial part of the crisis. Hereby our contribution to previous and existing literature is thus that CSR has a significant effect during the COVID-19 crisis in the high trust region of the Nordics. However, unlike previous research the effect is negative, especially during the initial parts of the COVID-19 crisis. Our aspiration is that our study builds a foundation and creates the surge for further investigation of studies to be conducted on the mechanisms and consequences of exogenous shocks and more specifically of COVID-19.

B. Further research opportunities

There is scarce data and few studies on the link between external shocks and trust in financial institutions. This means that the link between lower trust and higher returns for firms with high social capital becomes hard to pinpoint, which in turn could lead to more ineffective CSR efforts at companies. It would be interesting to gather data on trust in the society per month, and use this as a control in the baseline regression analysis we used. Today, trust data on societies are only collected once per year or more seldom.

Also, our study showed that companies in the third quantile of the CSR rating had the highest significant negative effect from CSR on returns. The reason behind this is not well understood. A theory could be that this is an area where the marginal product of CSR investments are low. Therefore a cost to gain ratio of CSR is interesting to study, as it could help companies develop more efficient CSR programs.

Also, going back in history to study other exogenous crises would increase the understanding of exogenous crises and if there are similar effects of CSR and social capital in these, which cannot be found in endogenous crises.

VIII. References

A. (2020, August). *Kenneth R. French - Data Library*. Data Library. http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

Ashwin Kumar, N. C., Smith, C., Badis, L., Wang, N., Ambrosy, P., & Tavares, R. (2016). ESG factors and risk-adjusted performance: a new quantitative model. *Journal of Sustainable Finance & Investment*, *6*(4), 292–300. https://doi.org/10.1080/20430795.2016.1234909

AVRAMOV, D., & CHORDIA, T. (2006). Predicting stock returns. *Journal of Financial Economics*, *82*(2), 387–415. https://doi.org/10.1016/j.jfineco.2005.07.014

Bebchuk, L., Cohen, A., & Ferrell, A. (2008). What Matters in Corporate Governance? *Review of Financial Studies*, *22*(2), 783–827. https://doi.org/10.1093/rfs/hhn099

Bergh, A. (2011). Nordics in Global Crisis: Vulnerability and Resilience. *Journal of Economic Literature*, *49*(1), 151-152. https://doi.org/10.1257/jel.49.1.129

Björkil, L. & Martinsson, M. (2020). ESG rating, a booster of stock performance during the Covid- 19 pandemic in Sweden? *University of Gothenburg.* https://gupea.ub.gu.se/bitstream/2077/67893/1/gupea_2077_67893_1.pdf

Blundell-Wignall, A., & Atkinson, P. (2009). Origins of the financial crisis and requirements for reform. *Journal of Asian Economics*, *20*(5), 536–548. https://doi.org/10.1016/j.asieco.2009.07.009

Breitz, C., & Partapuoli, P. J. (2020, May). *How is ESG Affecting Stock Returns? A Portfolio- and Panel Data Analysis of US Firms in the S&P 500*. Lund University. https://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=9022586&fileOId=9022590

Briand, S., Bertherat, E., Cox, P., Formenty, P., Kieny, M. P., Myhre, J. K., Roth, C., Shindo, N., & Dye, C. (2014). The International Ebola Emergency. *New England Journal of Medicine*, *371*(13), 1180–1183. https://doi.org/10.1056/nejmp1409858

Broadstock, D., Chan, K., Cheng, L. and Wang, X., 2021. The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. *Finance Research Letters*, 38, p.101716. https://doi.org/10.1016/j.frl.2020.101716

Brown, T., & Dacin, P. (1997). The Company and the Product: Corporate Associations and Consumer Product Responses. *Journal of Marketing, 61*(1), 68-84. 10.2307/1252190

Capelle-Blancard, G., & Petit, A. (2015). The Weighting of CSR Dimensions: One Size Does Not Fit All. *Business & Society*, *56*(6), 919–943. https://doi.org/10.1177/0007650315620118

Claeson, M., & Hanson, S. (2021). COVID-19 and the Swedish enigma. *The Lancet*, *397*(10271), 259–261. https://doi.org/10.1016/s0140-6736(20)32750-1

Clark, G. L., Feiner, A., & Viehs, M. (2014, October 22). From the Stockholder to the Stakeholder: How Sustainability Can Drive Financial Outperformance. *SSRN Electronic Journal*. Published. https://dx.doi.org/10.2139/ssrn.2508281

Cornett, M. M., Erhemjamts, O., & Tehranian, H. (2016). Greed or good deeds: An examination of the relation between corporate social responsibility and the financial performance of U.S. commercial banks around the financial crisis. *Journal of Banking & Finance*, *70*, 137–159. https://doi.org/10.1016/j.jbankfin.2016.04.024

COVID-19 Public Health Emergency of International Concern (PHEIC) Global research and innovation forum. (n.d.). World Health Organization. https://www.who.int/publications/m/item/covid-19-public-health-emergency-of-international-concern-(pheic)-global-research-and-innovation-forum

COVID-19 United States Cases by County. (n.d.). Johns Hopkins Coronavirus Resource Center. Retrieved April 13, 2021, from https://coronavirus.jhu.edu/us-map

Cryan, J. (2016, October 4). *Trust is the foundation of banking* [Tweet]. Twitter. https://twitter.com/Gottodix/status/783540243391737856

Dabla-Norris, E., & Bal-Gunduz, Y. (2012). Exogenous Shocks and Growth Crises in Low-Income Countries: A Vulnerability Index. *IMF Working Papers*, *12*(264), 1. https://doi.org/10.5089/9781475528510.001

Dang, T. L., & Nguyen, T. M. H. (2020). Liquidity risk and stock performance during the financial crisis. *Research in International Business and Finance*, *52*, 101165. https://doi.org/10.1016/j.ribaf.2019.101165

Du, S., Bhattacharya, C., & Sen, S. (2010). Maximizing Business Returns to Corporate Social Responsibility (CSR): The Role of CSR Communication. *International Journal of Management Reviews*, *12*(1), 8–19. https://doi.org/10.1111/j.1468-2370.2009.00276.x

ESG Investing: ESG Ratings. (n.d.). MSCI. Retrieved April 3, 2021, from https://www.msci.com/our-solutions/esg-investing/esg-ratings

Fama, E. F., & French, K. R. (2015). A five-factor asset pricing model. *Journal of Financial Economics*, *116*(1), 1–22. https://doi.org/10.1016/j.jfineco.2014.10.010

Fisher-Vanden, K. & Thorburn, K.S. (2011, November). Voluntary Corporate Environmental Initiatives and Shareholder Wealth, *Journal of Environmental Economics and Management*, vol. 62, no. 3, pp. 430-445. https://doi.org/10.1016/j.jeem.2011.04.003

Forster, M., & Cingano, F. (2014). FOCUS on Inequality and Growth. *OECD*. https://www.oecd.org/social/Focus-Inequality-and-Growth-2014.pdf

Fuentes, N., & Moder, I. (2021, February 5). *The scarring effects of COVID-19 on the global economy*. VOX, CEPR Policy Portal. https://voxeu.org/article/scarring-effects-covid-19-global-economy

Government at a Glance 2019. (2019). *Government at a Glance*. Published. https://doi.org/10.1787/8ccf5c38-en

Guiso, L., Sapienza, P., & Zingales, L. (2006). Does Culture Affect Economic Outcomes? *Journal of Economic Perspectives*, *20*(2), 23–48. https://doi.org/10.1257/jep.20.2.23

Hansen, T. (2014). The role of trust in financial customer-seller relationships before and after the financial crisis. *Journal of Consumer Behaviour*, *13*(6), 442–452. https://doi.org/10.1002/cb.1493

Hopkins, M. (2005). Measurement of corporate social responsibility. *International Journal of Management and Decision Making*, *6*(3/4), 213. https://doi.org/10.1504/ijmdm.2005.006549

International Monetary Fund. (2021). *World Economic Outlook: Managing Divergent Recoveries*. International Monetary Fund

International Organization for Standardization. (2018). *Discovering ISO 26000*. https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100258.pdf

Jonung, L. (2008). Lessons from Financial Liberalisation in Scandinavia. *Comparative Economic Studies*, *50*(4), 564–598. https://doi.org/10.1057/ces.2008.34

Kramer, R. M. (1999). TRUST AND DISTRUST IN ORGANIZATIONS: Emerging Perspectives, Enduring Questions. *Annual Review of Psychology*, *50*(1), 569–598. https://doi.org/10.1146/annurev.psych.50.1.569

Landi, G., & Sciarelli, M. (2018, October 26). Towards a more ethical market: the impact of ESG rating on corporate financial performance. *Social Responsibility Journal, 15(1), 11–27.* http://dx.doi.org/10.1108/SRJ-11-2017-0254.

Latif, K. F., & Sajjad, A. (2018). Measuring corporate social responsibility: A critical review of survey instruments. *Corporate Social Responsibility and Environmental Management*, *25*(6), 1174–1197. https://doi.org/10.1002/csr.1630

Lins, K.V., Servaes, H. and Tamayo, A. (2017), Social Capital, Trust, and Firm Performance: The Value of Corporate Social Responsibility during the Financial Crisis. *The Journal of Finance*, 72: 1785-1824. https://doi.org/10.1111/jofi.12505

Mitchel, M., 2021. *Top Corporate Social Responsibility Trends in 2020. SmartRecruiters*. [online] SmartRecruiters Blog. Available at <https://www.smartrecruiters.com/blog/top-corporate-social-responsibility-trends-in-2020/> [Accessed 16 May 2021].

Nollet, J., Filis, G., & Mitrokostas, E. (2016). Corporate social responsibility and financial performance: A non-linear and disaggregated approach. *Economic Modelling*, *52*, 400–407. https://doi.org/10.1016/j.econmod.2015.09.019

Ortiz-Ospina, E & Roser M. (2016, July 22). *Trust*. Our World in Data. https://ourworldindata.org/trust

Phillips, C. H. (2012). S&P Capital IQ. *Journal of Business & Finance Librarianship*, *17*(3), 279–286. https://doi.org/10.1080/08963568.2012.685022

Revelli, C., & Viviani, J. L. (2014). Financial performance of socially responsible investing (SRI): what have we learned? A meta-analysis. *Business Ethics: A European Review*, *24*(2), 158–185. https://doi.org/10.1111/beer.12076

Rosnan, Herwina & Saihani, Sham & Yusof, Nuryusmawati. (2013). *Attitudes Towards Corporate Social Responsibility among Budding Business* Leaders. Procedia - Social and Behavioral Sciences. 107. 52-58. 10.1016/j.sbspro.2013.12.398

Rousseau, D. M., Sitkin, S. B., Burt, R. S., & Camerer, C. (1998). Not so different after all: A cross-discipline view of trust. *Academy of Management Review, 23*(3), 393-404.

Schnietz, K. E., & Epstein, M. J. (2005). Exploring the Financial Value of a Reputation for Corporate Social Responsibility During a Crisis. *Corporate Reputation Review*, *7*(4), 327–345. https://doi.org/10.1057/palgrave.crr.1540230

Seabold, S., & Perktold, J. (2010). Statsmodels: Econometric and Statistical Modeling with Python. *Proceedings of the 9th Python in Science Conference*. Published. https://doi.org/10.25080/majora-92bf1922-011

Sheehy, B. (2014). Defining CSR: Problems and Solutions. *Journal of Business Ethics*, *131*(3), 625–648. https://doi.org/10.1007/s10551-014-2281-x

Sirdeshmukh, D., Singh, J., & Sabol, B. (2002). Consumer Trust, Value, and Loyalty in Relational Exchanges. Journal of Marketing, 66(1), 15–37. https://doi.org/10.1509/jmkg.66.1.15.18449

Sornette, D. (2006a). Endogenous versus Exogenous Origins of Crises. *Extreme Events in Nature and Society*, 95–119. https://doi.org/10.1007/3-540-28611-x_5

Tuters, S. (2012). Wilkinson, R., & Pickett, K. (2009).The Spirit Level: Why More Equal Societies Almost Always Do Better. London: Allen Lane. *Leadership and Policy in Schools*, *11*(1), 129–134. https://doi.org/10.1080/15700763.2011.577928

United Nations Development Programme, (2021). *COVID-19*. Available at: https://www.undp.org/content/undp/en/home/coronavirus.html

van Marrewijk, M. (2003). Concepts and Definitions of CSR and Corporate Sustainability: Between Agency and Communion. *Journal of Business Ethics*, *44*(2), 95–105. https://doi.org/10.1023/a:1023331212247

Wendling, Z. A., Emerson, J. W., de Sherbinin, A., Esty, D. C., *et al.* (2020). 2020 Environmental Performance Index. *New Haven,* CT: Yale Center for Environmental Law & Policy. Epi.yale.edu <https://epi.yale.edu/epi-results/2020/component/epi> [Accessed 14 April 2021].

World Business Council for Sustainable Development (2000). Corporate Social Responsibility: Making Good Business Sense (Geneva, Switzerland).

Yamagishi, T. (2011). *Trust: The Evolutionary Game of Mind and Society (The Science of the Mind)* (2011th ed.). Springer.

Yoon, Y., Gürhan-Canli, Z., & Schwarz, N. (2006). The Effect of Corporate Social Responsibility (CSR) Activities on Companies with Bad Reputations. *Journal of Consumer Psychology, 16*(4), 377-390. https://doi.org/10.1207/s15327663jcp1604_9

IIX. Appendix

A. Appendix I

Table over results from regression analysis when using weights by Capelle-Blancard and Petit.

	Raw Return	Std Dev	Abnormal Return	Std Dev	Raw Return	Std Dev	Abnormal Return	Std Dev
CSR	-0.0183 **	0.008	-0.0184 **	0.008	-0.0338 ***	0.009	-0.0344 ***	0.009
Ln(MarketCapBeforeCrash)					0.0311 **	0.014	0.0321 **	0.014
LongTermDebt					-0.1461 ***	0.054	-0.1478 ***	0.054
ShortTermDebt					-0.0379	0.042	-0.0385	0.042
CashHoldings					-0.1189 **	0.060	-0.1255 **	0.061
Profitability					0.0198	0.046	0.0182	0.047
BookToMarket					0.0050	0.011	0.0046	0.011
Momentum					0.1526 ***	0.016	0.1560 ***	0.016
IdiosyncraticRisk					-0.0005 **	0.000	-0.0005 **	0.000
BookToMarketNegativeDummy					0.0982	0.101	0.0955	0.103
N	373		373		373		373	
Adj. R^2	0.26		0.276		0.465		0.468	