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Stock market response to unsustainable conduct within listed companies

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Abstract

News spreads quickly in our rapidly innovative world, which has implications for companies when scandals are exposed to the public. In this report, we explore whether there is a connection between unethical actions and the reaction and publication of those acts in terms of environmental and social issues. More specifically, an event study is undertaken to determine if there is a stock market reaction to the public announcement of corporate environmental and social scandals. To see whether there is a correlation between the publication of the scandals and a shift in the share price, a t-test is used. In addition, the test is used to determine if there is a major reaction. When the news about the social scandals was released, the share price of the social scandals fell more than the environmental scandals, according to the report. These assumptions may be focused on the values and ethics of investors. A comparison may also be drawn from the fact that the average value of CAR has decreased over time, which can be explained by the increased focus on sustainability in general.

Keywords: Corporate scandal, Social scandal, Unethical act, Environmental scandal, Stock price, Investing Reaction, CSR, Behavioral Finance, Sustainability

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1. Introduction

1.1 Background description

The companies in today's society have a growing responsibility in their operations. The outside world demands more responsibility in the form of sustainability. It is not only the active actions that are required for companies to prove sustainable, but also stakeholders are interested in the sustainable reflection in the reports.

Corporate scandals have plagued the business world in recent years with high profile corporate scandals appearing in the media. It is therefore not surprising to learn that companies often have terrible working conditions or engage in environmentally harmful behaviours in an effort to reduce operating cost. Apple, which is a well-known established company, has employees in China who have in the past been subjected to death threats if they fall asleep during work shifts who may experience death threats if they fall asleep during their work shifts (*The Guardian 2017*). When events like these are exposed in the media, they can create critical situations when the market and stakeholders have access to this information and thus act in a way that is to the detriment of the company. Another international example is the car company Volkswagen. In 2015, the company had made headlines in the media with their scandal, they showed that Volkswagen had manipulated emissions tests in some of their cars, this gave the illusion that their cars are more environmentally friendly than they actually are. (Krall & Peng, 2015). According to previous studies, such situations are associated with negative signals directed at the organization (Davidson et al., 1994; Bromiley & Harris, 2007; Davidson & Worrell, 1988; Jory et al., 2015). As previous research has demonstrated, a drop in the stock price may cause businesses to lose important main components such as company valuation, sales, and customers (Bromiley & Harris, 2007).

These are events that have an impact on the CSR reports and the companies' share price. And, as the importance of stakeholders participating in CSR has grown, so has the importance of reporting on that as well. In today's society, a company's conduct is more critical than ever, and this is expressed in their reporting and sets the conditions for the company's

competitiveness. Given the number of scandals involving social and environmental issues in this report, the CSR viewpoint is critical for investors' decision-making. It will thus be interesting to investigate this phenomenon and understand the consequences of the event and then review the decision-making of the investor. Given the focus on investors' decision-making processes, it is indeed critical to comprehend how their decisions impact the stock market. Behavioral finance is a term that will be emphasized since it helps to understand why markets become dysfunctional as it focuses on the behavior of financial practitioners (Sewell, 2001), which is crucial to this analysis since we want to track the business cycle of share price following a scandal.

A report from PwC contains statistics on investment choices. 77% of approximately 300 growing major institutional investors based in Europe say they will no longer invest in "non-ESG" products. ESG stands for environmental, social, and governance aimed at sustainability. In this report, the social and environmental factors will be studied to analyze their impact on the financial aspect. Sustainable Finance is a concept that has become more relevant for the fund industry, asset managers, and investors (Algottson, 2020).

Previous research into the reactions that occur when a scandal is revealed has revealed a substantial drop in the share price (Davidson et al. 1994), implying that an investor will respond negatively to such news. However, much of the research has focused on environmental scandals as opposed to social scandals. There have been virtually no studies published in the literature which examine the impact of social scandals On market performance (Flamel, 2013). This is a clear gap in the literature. According to, few studies have also compared the stock market reaction for both environmental and social scandals. Recent research, in contrast to older studies, have found a stronger connection between unethical behavior and stock price. Interestingly, Fogler and Nutt (1975) conducted a study on immoral behavior and investor reaction in 1975. Their findings were influenced by the fact that while some investors were unconcerned with social responsibility, the majority of investors were willing to purchase shares. According to Hamilton and Rao (1996), the basic view of unethical corporate behavior shifted during the nineteenth century. It is no longer accepted by customers and investors, among others, for unethical conduct (Hamilton & Rao, 1996).

1.2 Problem definition

As scandals attract a lot of media coverage, Bonini and Broaschi (2010) claim that investors receive negative signals, resulting in a lower business valuation as well as a lower share price. These studies have often focused on environmental or business management issues, however research has largely neglected the social aspect of sustainability, therefore studies are not providing the full picture in terms of the stock market reaction to corporate scandals. There is a lack of conclusions to why market responses to different occurrences vary. This study will clarify how the stock market responds to a scandal occurring from a social and environmental perspective. Accordingly, this study will contribute to the literature by examining the effect of both environmental and social scandals on stock market performances, as well as comparing the market reaction to both types of scandal.

Most studies would state that unsustainable behavior has a negative effect on stock markets and investments. This study will clarify how the stock market responds to a scandal occurring from a social and environmental perspective. The aspects we will study are the following:

- The company's investors
- Market reaction
- Potential stakeholders

The conclusions that will be drawn during this study will be based on the effects of the scandals and will be strengthened with statistics from stock prices that are affected. Thus, a comparison of the share price before the scandal and the share price after the scandal will be made.

1.3 Purpose

The purpose of this research is to make an analysis regarding how and to what extent investment decisions and stock prices are affected by publication of social and environmentally unsustainable behavior within approximately a hundred listed companies. Hence, corporate scandals events will be studied in order to examine the stock market reaction to environmental scandals and social scandals whilst also comparing the market reaction to both environmental and social scandals. Hence, the following research questions have been formulated:

- Does the publication of a scandal have a significant effect on a company's stock price?
- Is there a significant difference between how the stock market reacts to unsustainable behavior of social or environmental nature?

1.4 Thesis structure

The thesis is structured in the successive order:

Theoretical framework and literature review: The theoretical frame of reference will be presented with the aim of finding pertinent theories to the subject of the study. The purpose is to create an understanding of how investors act in the event of a scandal. In the concluding part previous research and the study's hypotheses are presented.

Method: Initially research philosophy and research approach will be demonstrated. Further, the collection methods in the form of selection and data will be presented. The calculation models and the t-test are also explained. Finally, the limitations of the study are briefly mentioned.

Data: The data collection process is described and the obtained data is presented.

Empirical results: The results obtained from calculations and literature review are presented. Tables and figures are used to illustrate the result.

Discussion & Conclusion: Conclusions are drawn from the findings obtained from analyzing the data and the literature review. The hypotheses are once addressed and now answered. Lastly, a conclusion from the thesis is drawn and suggestions are given to future research.

2. Theoretical framework and literature review

2.1 Theoretical framework

2.1.1 Stakeholder theory

The theory of stakeholder described by Freeman(1984) is a theory that reflects the company's social responsibility. This theory lists and describes the various individuals and groups that have a consequence or influence the company's actions and further ask: " What are their legitimate claims on the business? " "What rights do they have with regard to the company's actions?" "What kind of responsibilities and obligations may they legitimately place on a certain company?"

The purpose of stakeholder theory can be viewed as incorporating social responsibility into organizations' activities without having a negative impact on value for investors. (Mansell, 2013) The stakeholder theory became a supplement to shareholder theory as it's main ideas concluded that the companies' main task should not only be to satisfy the shareholders but all stakeholders, such as suppliers, employees, partners, the state and others who may be affected by the outcomes of the firms' actions. According to stakeholder theory, maximization of the value for stakeholders leads to the value also being maximized for the shareholder. To consider every one of the company's stakeholders, a map consisting of all the firm's partners. The maps will differ from one another, however their aim is to distinguish the stakeholders and get an outline of how the different stakeholders influence the company. (Freeman et al, 2010)

Milton Friedman, an economist, offers another view on stakeholder theory (1970). This approach asserts that the company's sole goal is to maximize profits for shareholders, implying that the company's sole obligation is to manage its resources in such a way that profits are maximized. Friedman's argument is predicated on the assumption that businesses are ethical and do not commit fraud. In a similar line, advocate Levit (quoted in Branco & Rodrigues, 2007) feels that the most important focus should be on enhancing their productivity, income, and the societal problems that the state should be responsible for. Furthermore, the researcher supports Epstein's and Friedman's theories by defining corporate sustainability (CS), which focuses on achieving long-term equity value through the following guidelines: ethics, governance, transparency, business relations, financial reward, community

involvement, product value, recruitment management, and environmental protection (Epstein 2008). According to Sprinkle and Maines, the term Corporate Sustainability is used in addition to CSR (2010).

CSR (Corporate Social Responsibility) is a concept implying that companies should assume liability for their effects on shareholders, employees and on society from a social, economic and environmental perspective. (Turban & Greening 1997). According to ÅRL, large companies must prepare a sustainability report. The purpose of sustainability reports is that companies are able to openly share the sustainability issues they have attempted to address. (Azlan & Say, 2014).

Corporate choices influence the commercial notoriety and subsequently it is critical that organizations have clear rules in regards to social obligation and that they act accordingly. An organization ought to likewise consider the pressing factor of externalities to the degree that they can say that they consider the interests of the whole society. The greater duty a company disavows towards society, the more their public standing and their ability to retain devoted employees are influenced. (Cadbury, 2006)

Some proponents say that CSR is critical for developing long-term stock value, which has resulted in the birth of the strategic CSR motivation (Branco & Rodrigues 2007).

Furthermore, it strengthens the reasons for treating CSR decisions in the same manner as investment decisions are treated, implying that CSR should be regarded a sort of strategic investment (McWilliams, 2006 quoted in Branco & Rodrigues, 2007)

2.1.2 Efficient market hypothesis

The efficient market hypothesis is based on the efficiency of financial markets and is built upon the condition that the price of a share reflects all available and relevant information thus stock prices will be accurate and fair. In order for a market to be classified as efficient, a large number of investors need to act in a rational manner and react in a similar way to the available information. By this, the information is integrated into the current share price and the information takeover ceases.

There are three forms of efficiency: weak, semi strong and strong. The weak form is based on the market's share price being reflected in historical information. As the share price is based wholly on historical data, it is not possible for an investor to obtain an abnormal return. The semi-strong form is similar to the weak form, however the share price is not solely affected by historical data but also by the public information accessible to the market. Public information directly affects the share price of the underlying asset, which implies that most of the market investors do not have time to act before the share price changes. The strong form is based on the market share price being reflected by all historical data Including, all available public information and all private information. Since the share prices are reflected by all existing information, the prospect of insider information vanishes, and the possibility of abnormal returns and arbitrage is non-existent. (Fama, 1970)

2.2 Literature review

All available data is used to value the business, which determines whether or not to purchase or sell it. Investors' and stakeholders' actions, in addition to public knowledge, is crucial. This is something that can only be regulated by each individual investor. Some studies argue that CSR has provided greater value in today's society and is a contributing factor to stock price declines, while others claim that it has had no substantial impact on stock price declines. Around the same time as a share price drop occurs as a result of a scandal, another aspect that lowers the share price is the loss of prestige within the company.

Over the last decade, reports about corporate social responsibility have become more prevalent. This is something that all managers must deal with because it affects the reputation of their businesses. In an analysis of stock market reactions to news about environmental, social, and governance problems as ESG variables, Capelle-Blancard (2019) found that it was discovered that market value dropped by 0.1 percent, with ESG factors playing a significant role in the magnitude of the effect. While H. Russell Fogler and Fred Nutt (1975) examined social responsibility and its relation to stock valuation. Nine different companies were studied after major information regarding their pollution tendencies was published. Institutional transactions as well as price movement were examined to decide the effect of the adverse exposure. Furthermore, the article focuses on the relationship between profitability and adequate pollution control. The authors concluded that the news of the company's unethical

actions did not have a significant effect on the share price. This was explained by the majority of investors not caring about social responsibility. These people are therefore still prepared to invest in these kind of companies meanwhile ethical investors decide to sell their share due to a company's unethical actions.

Furthermore, Johansson (2004) addresses the phenomenon of scandals in the Swedish sector and its effect on the legitimacy that companies hold. Johansson writes that when a scandal occurs, the company drastically affects, this has consequences for the company's legitimacy and trust. He further writes that the recovery of the scandal is a way to investigate how the legitimacy decreases and how the company restores it. Survey questions are " What do scandals mean in the Swedish public sector? ". He believes that in the Swedish sector there are violations that are usually linked to a financial nature. If the violation is less expected to occur, there will probably be a stronger public reaction and thus a reduction in its legitimacy.

In addition to a scandal, concepts such as CSR are more important regarding investor behavior in today's society. McWilliams (2006) describes the company's social responsibility from a number of different perspectives. These authors use it to create a framework that takes into account the strategic sanctions of CSR. This framework that they have developed creates an understanding of theoretical and empirical research on the subject of CSR. They clarify the definition of CSR and address the difficulties with the concept, they further write that the concept's difficult definition creates problems with theoretical development but also the measurement. They claim that researchers take the step further and define and identify CSR activities in order to investigate the strategic role found in organizations. This is because there is a strong interest among various actors such as managers. These actors are aware of the business norms that exist in society and also regulations; it also puts a great deal of focus on assessing the demand stakeholders have for CRS.

There is also another view of stakeholder theory, ie Stakeholder Approach to Corporate Social Responsibility. The stakeholder theory is founded on the interaction between CSR and stakeholders, which is a factor of major assets that organizations must manage. CSR, on the other hand, seeks to identify the duties that businesses must meet, which leads to the stakeholder idea, which addresses the problem of responsibility and who the business should be accountable to. These two concepts have a lot in common conceptually. The CSR concept,

on the other hand, suffers from an abstraction level, whereas the stakeholder strategy provides a variety of possibilities for evaluating the company's and interest groups' results.

As a result, the stakeholder theory has experienced a new resurgence and supremacy in the context of CSR. Brenner and Chochran proposed in 1991 that stakeholder theory has the potential to become the theoretical focus of a field looking for functional paradigms.

Furthermore, Doh and Guay (2006) discovered an interest model assumption, which could be a useful and illuminating theoretical lens. This is due to its ability to detect social stakeholder issues and define precise performance criteria in a methodical manner.

In a similar way, a study found that today's consumers place a higher emphasis on ethical standards than they have in the past (Morgan Stanley, 2016). In comparison, James Smith and Lisa Koonce imply that the hypothesis that investors would have trouble overcoming known biases in management's earnings estimates is tested experimentally in this analysis. They assume that if the information regarding bias is quantitative and in EPS form, and if the investment's evaluation is consistent with the biased information, investors will most likely completely adjust. The results of their three studies indicate that quantification and compatibility are helpful in tearing up the leadership bias that can be observed, but not all investors can tear themselves up even under the conditions that are presented. They also show that the result is robust in the face of many moderator variables that capture factors that are common in the management income environment. Market leaders and investors should take note of the findings.

Based on the previously mentioned theories, we conclude that the share price for a company will decrease when the scandal becomes public. This is based on the fact that CSR and stakeholder theory advocate social responsibility in the sense that it has a positive impact on the company. Therefore, a lack of social responsibility should have the opposite effect which will lead to a drop in share price. Furthermore, this can also be strengthened with the efficient market hypothesis which states that all available information on the market must be reflected in a company's share price (Fama 1970) This leading to the thesis's first hypothesis:

Hypothesis 1: A company's share price will decrease in conjunction with the publication of a scandal. This applies to both environmentally and socially unethical acts.

Based on the efficient market hypothesis (Fama 1970), we assume that social and environmental scandals are of distinct natures, and thus the accessible information will not be symmetrical. As of this the thesis second hypothesis is:

Hypothesis 2: The stock price reaction will differ depending on whether the publication of a scandal is of social or environmental nature.

3. Method

3.1 Event study methodology

This research will examine the short term stock market reaction to the announcement of corporate scandals related to the environmental and the social aspect of sustainability. Around 84 individual events within the time frame 1990-2019 will be gathered manually. In order to gather this data, Factiva, an extensive newspaper database, will be used to search the Wall Street Journal to find admissible press coverage and time information. When conducting the search in Factiva, keywords like “emission”, “oil spill”, “discrimination” and “child labor” etc. were used to obtain relevant articles which were then read through carefully in order to decide wheater they contain the needed information. Companies undergoing other significant events that may affect the stock prices like, leadership changes or other significant announcements that may have an effect on the stock price were excluded. Subsequently, the Center for Research in Security Prices (CRSP) was utilized to collect stock market data. When the collection of events was done, the firm name and event date from each article was taken out and matched in CRSP. Appendix A lists all the events along with the corresponding keyword category. Following this, the composed firm level identifiers from CRSP were put in Compustat in order to accumulate firm size, profitability and market to book ratio.

3.2 Event study

This research is focused on events that were gathered as part of an event study. This form of analysis, according to Mackinlay (1997), is a widely used approach for analyzing the effect of a specific event on the company's valuation, as Abdul et al. have shown (2016). The efficient market hypothesis is a fundamental premise in an event analysis. This means that the price of the assets is automatically changed in response to new knowledge. The time frame under

investigation is relatively brief, and this is referred to as the event window. Since there is an interest in observing what the market looked like before the incident, as well as seeing how the response occurs afterward, the window typically lasts longer than the day or days of the event itself (Mackinlay, 1997).

3.3 Estimation and event window

This research investigates how environmental and social scandals influence investor and stock market responses, as well as what penalties are levied on share prices. As a result, an event analysis is an appropriate method for conducting this research. The day of the incident ($t = 0$) is when the scandal becomes public knowledge. The aim of the event analysis was to see how the stock price reacted before and after the news was published. It is also taken into account that the scandal may have occurred the previous day, or that the stock market does not react immediately. (Mackinlay, 1997). Therefore the event windows $(-1,1)$, $(0,1)$ and $(-1,3)$ have been used.

The event study analyzes the stock price response to publication of scandal events. The stock market response is measured by CAR (cumulative abnormal return) during the publication period. CAR computes how much a stock price differs from its expected value during the measurement period. (Flammer 2013)

3.4 Multivariate analysis

In addition to the univariate analysis, this study also employed regression analysis. More specifically, this study specified a simple regression model as the authors wanted to compare the cumulative abnormal return (CAR) of sample firms, who experienced a scandal, and also for a control group of 83 firms who did not experience a scandal (Lo, 2012). In order to ensure robustness of the analysis, The authors also wanted to control for variables such as firm size, ROA (profitability) and market-to-book ratio which could potentially impact the relationship between sample and control firms' CAR. Therefore the regression analysis expands on the univariate analysis outlined in the previous section by facilitating deeper insights in the relationships between firms scandals and the market by using a comparison

control group, while also enhancing the robustness of the study by maintaining a control sample and controlling for variables which may impact this relationship.

3.5 Creating a control group

In order to create a control group, the sample firms, who experienced a scandal were matched with a control group free from the event. The control group was checked in Factiva to ensure the control firm was free from any confounding events which were reported in the media during the event window. Firms were matched based on fiscal year, two digit SIC code and firm size. This approach is followed in similar studies which have conducted event studies in the past in terms of matching to create a robust control group (Lo et al 2012; De Jong 2014).

3.6 Regression analysis

This study therefore undertook a simple regression analysis to compare the sample and control firms CAR whilst also controlling or holding constant variables which may impact the relationship. In the regression analysis, the dependent variable is the CAR for sample and control firms, while the independent variable is the scandal (no scandal). The control variables were collected from Compustat and include, return on assets (ROA) the Market-to-book ratio and firm size. Firm size is a log of the firm's total assets, while ROA was collected to control for profitability of the both sample and control firms alongside the market to book ratio (Firm

value). A similar approach was followed by Flammer (2013) when conducting a regression analysis. ROA is simply computed as operating income/total assets while the market-to-book ratio was computed as share price multiplied by the number of shares outstanding/ book value of equity.

3.7 Estimation of cumulative abnormal returns

For each company, the market model was used to calculate the abnormal return. The coefficients a and b are determined by ordinary least squares on the basis of 200 trading days before the publication of the event. Therefore the event window (-210-11) was used when calculating the abnormal return. AR is given to us by:

$$AR_{it} = R_{it} - ER_{it}$$

$$ER_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_i + \alpha'$$

AR_{it} is firm i abnormal stock return at time t , R_{it} is firm i realized return at time t , and ER_{it} is firm i expected return at time t . ER_{it} is firm i expected return at time t , R_{it} is market return at time t , α_i is estimated for firm i , β_i is estimated for firm i . α is the measure of stock performance compared with the benchmark.

The CAR is thereafter calculated by adding all the abnormal returns for one time period. To analyze if environmentally and socially harmful behavior are discerned differently by investors. The sample is divided into environmental and social events. Subsequently, the CARs were calculated separately for the two groups. To further study if the stock market's reactions have varied over time, the sample was split into three time periods; 1990-1999, 2000-2009 and 2010-2019. (Flammer, 2013)

3.8 Univariate analysis

This study employs a univariate analysis to evaluate the hypotheses in this analysis. One sample t-tests are made for each period for environmental and social events for period (0,1). Two other longer event windows i.e. (-1,1) (-1,3) are also included. This to see whether those CARs are significant from zero. Further, the sample of firms is split into the two groups of social and environmental and a two sample t-test is made to evaluate if there is any difference between the two groups.

This approach is used to put various assumptions about a population to the test (Triola, 2015). The research has two populations: 83 observations that were manually collected consisting of social and environmental scandals. The observations were presumed to be normally distributed since, according to the central limit value theorem, a sample can be assumed to be normally distributed if it has more than 30 observations. This indicates that the values are similar to the mean and that the distribution is relatively symmetrical. For a t-test, this statement is important (Triola, 2015). The decision to perform a t-test was based on the t-test revealing the greatest impact on the stock price. The decision to employ an univariate t-test

analysis was based on the works of Flammer (2013) and Lo (2014) who employed t-tests in their studies to evaluate the effects of corporate events on stock market reaction and firm performance.

The study's aim is to look at how the stock market reacts when bad news about a company is released, and to see whether the stock price drops as a result. Numerous t-tests, one sample and independent, are carried out as a result. (Traviola, 2015).

3.8 Treatment of confounding events

When performing the search in Factiva, it was made sure that there were no other events in the same event window such as earnings announcements or CEO departures. etc. This strengthened the validity and reliability of the study. It should be noted that there is no confirmation that other variables, apart from the controversy, have an effect on the share price at the time of observation. However, factors that have influenced the share price for more than just an event window have been omitted by contrasting the abnormal return with the long-term trend, i.e. how the share price has looked and progressed over a longer period of time. Furthermore, it does not account for any effect on share price fluctuations that could have occurred during cyclical shifts or similar events between 1990 and 2019. As a result, having studied many years is a disadvantage; but, we needed to include these years in our 83 observations.

Since a quantitative analysis requires 30 observations to perform a sample and ensure that the sample is normally distributed, it is critical to be able to make broad assumptions (Trivola, 2015). However, when all scandals discovered are included in the analysis, it is not a random sample, but rather an entire population. As a consequence, increasing the number of observations without increasing the years has been impossible.

Additional limitations have emerged, such as the fact that the Factiva database only included businesses that are publicly traded in the United States, allowing some controversies and companies, such as H&M and Volkswagen, to be filtered out.

4. Data and empirical results

Table 1
Environmental descriptive statistics

Descriptive stats								
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Two.day.CAR	48	0.01	0.03	-0.05	-0.01	0.01	0.02	0.10
Five.day.CAR	48	0.01	0.04	-0.08	-0.02	0.002	0.03	0.11
Three.day.CAR	48	0.002	0.04	-0.14	-0.02	0.001	0.02	0.08
Firm.Size	48	10.33	1.62	5.57	9.37	10.37	11.41	14.00
ROA	48	0.04	0.08	-0.37	0.02	0.04	0.08	0.17
Market.to.book.ratio	48	2.65	2.64	0.00	1.38	1.71	2.77	12.15

Above, values for the change in the share price in the three event periods are presented in the for publication of environmental scandals. The CARs are positive for all event windows indicating that scandals do not have a negative impact on a companies share price within the specified time windows. Maximum and minimum values for all periods are relatively far apart.

Table 2
Social descriptive statistics

Descriptive stats								
Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Two.day.CAR	35	0.004	0.02	-0.06	-0.01	0.01	0.02	0.04
Five.day.CAR	35	-0.001	0.02	-0.05	-0.02	-0.004	0.02	0.05
Three.day.CAR	35	-0.002	0.03	-0.06	-0.02	-0.001	0.02	0.05
Firm.Size	35	10.29	2.01	6.02	8.92	10.26	11.97	14.46
ROA	35	0.29	1.16	-0.07	0.07	0.09	0.12	6.93
Market.to.book.ratio	35	6.64	11.80	-17.96	1.92	4.74	6.46	63.62

For social events the CAR for the two longer event windows is negative. This indicates that the return is lower than the long-term trend as the scandal was announced and the CAR decreased in connection with the news being published. Further, the two day CAR is not negative. This means that there is no negative variation in stock price from the day of the announcement to the day after. The negative effect is captured when measuring from the day before the publication.

Table 3
CARs

Environmental			Social		
Event window	CAR	Positive: Negative	Event window	CAR	Positive: Negative
[0.1]	0,00831292	31:18	[0.1]	0,00413976	23:12
[-1.1]	0.002023996	28:21	[-1.1]	-0,0019139	17:18
[-1.3]	0,0079326	26:23	[-1.3]	-0,0010577	13:22

For environmental events, $n=49$; for social events, $n=35$. Event time is expressed in days “CAR” is “Cumulative abnormal return”.

$p>0,1$

Two tailed test.

Accordingly to table 2, the announcement of an environmental scandal does not result in a negative CAR. This can be seen as the CAR for each of the event windows is positive. The left side of the table indicates that barely half of the individuals CARs generate a negative abnormal return. However, the average CAR is lower the bigger the event window which can also be noticed in table 3. This can indicate that the news of an environmental scandal takes a bit of time to reach the investors. Nevertheless, the result of the univariate analysis showed no significance in either of the significance levels used (0,10;0,05;0,01).. The fact that the result is not significant means that the fall in the share price is so small that it may have occurred by chance indicating the result of the publication of a scandal does not negatively affect a company’s stock price

We may also deduce from this research that the social aspect of controversies has a greater effect on the stock price than environmental scandals, as seen on the left side Table 2. This can be seen as the CAR for social events is negative in two of the three event windows and as approximately more than half of the events generate a negative abnormal return. Yet, the negative CARs do not show any significance at either of the significance levels, just as for the environmental CARs. This implies that it cannot be assumed with certainty that social scandals result in a decrease of share price.

As of this, the thesis’s first hypothesis: *A company’s share price will decrease in conjunction with the publication of a scandal*, must be partially rejected as even if the result from the

univariate analysis shows a negative CAR for social events, there is no significance in the CAR values.

Table 4

All events		
Event window	CAR	Positive;Negative
[0,1]	0,0065532*	54;30
[-1,1]	0,0003634	45;39
[-1,3]	0,0041415	39;45

n=84 Event time is expressed in days “CAR” is “Cumulative abnormal return”. One tailed test.

p>0,1

*p<0,01

The study's second hypothesis: *The stock price reaction will differ depending on whether the publication of a scandal is of social or environmental nature*, was developed to investigate a significant difference between how the stock market reacts to unsustainable behavior of social or environmental nature. There is a distinct difference in the result as per above paragraphs, the results presented for social CARs shows a bigger effect on the share price than the environmental CARs. The hypothesis can therefore be partially be confirmed as the findings in this research indicates that stock price is more affected by public social scandals as child labor and discrimination and not as much by for instance, pollution and oil spill.

Table 5

CAR [0,1] across decades

	Environmental	Social
Time period	CAR	CAR
1990-1999	0,02206752	0,01223273
2000-2009	0,001859628	0,00990209
2010-2019	0,002641767	-0,0001457

For environmental events, n=49; for social events, n=35. Event time is expressed in days “CAR” is “Cumulative abnormal return”.

p>0,1

One tailed test.

Accordingly with table 6, there is also a relation between CAR and the timeframe. The average CAR for both environmental and social events has decreased during the time

intervals indicating that there is also a relation between CAR and the timeframe. Withal, none of the CARs are significant at either of the significance levels.

Table 6

**Regression Model
Environmental**

<i>Dependent variable:</i>	
Two day CAR	
Constant	0.0083 t = 0.1684
Observations	96
R ²	0.0050
Adjusted R ²	-0.0056
Residual Std. Error	0.3419 (df = 94)
F Statistic	0.4753 (df = 1; 94)
<i>Note:</i>	*p<0.1; **p<0.05; ***p<0.01

Table 7

**Regression model
Social**

<i>Dependent variable:</i>	
Two Day CAR	

Constant	0.0041
	t = 0.8265

Observations	70
R2	0.0009
Adjusted R2	-0.0138
Residual Std. Error	0.0296 (df = 68)
F Statistic	0.0590 (df = 1; 68)

Note: *p<0.1; **p<0.05; ***p<0.01

The purpose of the regression analysis is to further examine hypothesis 1 to see if the announcement scandal negatively affects the stock price of a firm. The results from the regression analysis indicate the same results as the univariate analysis as no observed value is significant at any significance level, regarding both environmental and social scandals. This implies that there is no significant association between the publication of a scandal and a company's stock price. This further strengthens the rejection of hypothesis two strongly. By looking at the adjusted R squared, we can conclude that the additional input variables do not add value to the model as they are negative for both types of scandal events. This can be caused by the sample containing too many predictors or the sample size being too small.

6. Discussion and conclusion

The first hypothesis of the study was as follows: *A company's share price will decrease in conjunction with the publication of a scandal*

The completed t-test and regression do not support the hypothesis as the result concluded from the data and empirical results does not give negative nor significant CARs. This shows that as a whole, the publication of a scandal does not have a significant effect on a company's stock. Further, the majority of the CAR values give a positive result and the t-test shows no significance at any of the significance levels. As of this, the first hypothesis can confidently be rejected. Yet, this collides with previous research that demonstrates that mainly environmental, but also socially unsustainable events do in fact affect the stock price negatively. There are many factors involved in these questions. Some human variables can affect investment decisions greatly, and these are usually very hard to compute.

The question of whether a scandal impacts stock prices and investor behavior remains unanswered. However, our research indicates that although the publication of a scandal has no impact, other variables such as CSR have increased the valuation of a business, giving a positive impression to investors, the announcement of environmentally damaging actions creates a negative reaction. The environmental element is becoming more important, and more parties in society are taking notice, which is why when an organization breaches the institutional CSR norms, strong reactions are elicited. Companies who do not uphold the same level face harsher repercussions as a result of the increased credibility of greener businesses (McWilliams, 2006).

The study's second hypothesis is as follows: *The stock price reaction will differ depending on whether the publication of a scandal is of social or environmental nature,*

The conducted analysis may slightly indicate that socially unethical behaviour plays a bigger role in share price behaviour than eco harmful behavior. This can be concluded as the average CARs are mainly positive for social scandals in contrast to the positive CAR generated for environmental scandals. However, the t-test shows no significance for the negative CARs meaning that the abnormal CARs are not significant enough to conclude that they do not simply depend on chance. As of this, the thesis's second hypothesis is partially rejected.

The research found that, on average, the disclosure of a scandal had no meaningful impact on a company's stock price. This could be related to our sample size; if we compare our sample size to that of Flamel (2013), we can observe that our sample size is substantially less, with

only 84 events compared to Flamel's 273. This could be a key cause in our study's failure to compute negative CAR values within event windows.

To further discuss hypothesis two, we discovered a stronger correlation between negative CAR and the public disclosure of a social issue, which was absent in environmental crises. The fact that more samples from the environmental aspect were from earlier years compared to the fact that many of the social scandals were from recent years, is a key factor in this theory. Furthermore, we may deduce from the literature that in recent years, an increasing number of people have begun to defend the guidelines for which CSR is responsible, implying a beneficial effect of people now accepting responsibility and taking a step back when unethical activity within firms occurs. As a result, the social components have a negative CAR because the events covered in that category are often newer and involve implications of the new behavior pattern that CSR preaches

Moreover, there is also a relation between CAR and the timeframe. The average CAR for both environmental and social events has decreased during our time interval, as shown in Table 6. In a research, the author Capelle (2019) explains how a scandal affects corporate value, and one of the major underlying causes is ESG factors, which have the effect of reducing credibility. This is strengthened by arguments for sustainability based on CSR considerations. Sustainability is becoming more important to people, and they want to contribute to a greener environment, as shown by their behavioral patterns. These factors also lead to increased legitimacy and financial returns, thus elevating the company's social standing (Mc Williams, 2006). The research therefore shows that the evolution of the importance of ESG factors over the past few years is very likely one of the factors for an increase in ethical investing.

This means that, according to Morgan Stanley's study (2016), investors put a greater emphasis on social background controversies, as more people opt to invest in equities, mutual funds, and equities that adhere to ethical standards. Furthermore, we can derive that a social scandal has an emotional impact on people, causing them to associate with the issue. This generates a bias in an investor's behavior pattern based on what motive the investor has; for example, if the motive is financial, there will be no significant effect; however, if the motive is moral, the investor will be motivated to "punish" the business, which will have an impact on the share price.

As a result, the social components have a negative CAR because the events covered in that category are mostly newer and involve implications of the new behavior pattern that CSR preaches. Technology has advanced recently, and knowledge is now freely flowing. In contrast to a few years ago, a novelty will now hit a far wider audience. An additional factor to take into account is that there is a chance that investors will not always receive the news of the scandal when information is made public. Insider trading and asymmetric information are two influencing factors in the fact that there is no drop in the share price within the days around the publication. This may also have caused an insignificance when conducting the univariate analysis which did not result in a considerable number of CARs that were significant for the three significance levels. However, this is something that has not been taken into greater consideration as it is not likely that so many scandals may have been leaked in advance, however, it may be a minor influencing factor.

As a result, variables such as social media play a role in consumer and investor reaction times. Because of advances in technology, information reaches investors faster than it did previously, as evidenced by the fact that contemporary social crises have a higher impact than earlier scandals. According to Morgan Stanley (2016), increased pressure on CSR not only produces a new pattern of behavior among investors, but it also produces societal pressure that requires corporations to behave in order to maintain their legitimacy. This leads to another factor contributing to the share price drop, the company's reputation, which has deteriorated as a result of the scandal; when the news breaks, it will be widely publicized, probably nationally if the news is significant enough. As previously stated, this is a result of investor activity that will trigger stock market reactions (Johansson 2004).

The long-term impact is not reflected by our event windows, which only extend three days after the scandal is published. As a result, our research ignores the long-term consequences that may emerge weeks after the news breaks. One conclusion could be that firms desire to maximize their profits and so limit the repercussions of the controversy, in keeping with Friedman's concept of shareholder theory (1970). As a result, the immediate effect of the share price fall is small. Yet, we do not have any data on the long-term consequences; however, it is possible that the share price will fall in the long run.

This is further strengthened by Johansson (2004) who drew a conclusion after analyzing scandals in Swedish companies. Johansson concluded that the scandals had a significant negative impact on the stock price. Also the research by Fogel and Nutt (1975) concluded that the similar result when looking at pollution scandals. It is therefore clear that many investors therefore change their investor behaviour according to how ethical a company is. As of this, it is likely that there is a significant effect on stock price when a scandal is announced that was not captured by the event windows, the sample size etc.

In conclusion, the results from this study are relevant for investors and companies. The question regarding ethical investing and stock market reaction is very complex and there are many factors to take into consideration. This plays a massive role in how companies act in different situations as the responses to their action may or may not be crucial. The results conducted show that the stock price of a company undergoing some sort of scandal, environmental or social, will not be negatively affected although sustainability and CSR play a major role in society, especially throughout recent years. The lack of reaction from investors may send signals to companies that they are able to go unpunished for unethical actions, resulting in less consideration into sustainability factors. Nonetheless, there are indeed factors that may have not been captured by this study as every study must have its limitations.

7. Future research

There has been a debate about investors' decision-making process that can be attributed to economic or ethical motivations in this report, with a stronger emphasis on whether the share price shifts or not. To further investigate the topic, an account of the investors' thoughts and reasoning could be made. It is possible to perform an interview-based survey with a sample of investors. This form of quantitative analysis will determine if there is a direct link between ethical motivations and the investor's decision to sell the stock in order to "punish" the company for its unethical conduct, or whether the decision is purely economic.

In addition, a more in-depth investigation in the field may be conducted on a more central part of the company, i.e. the company's management. By looking at how different businesses react to a scandal and how they manage the situation. If the company management decides to accept responsibility and issue an apology, it should be investigated. If the company does not want to accept responsibility it should be investigated.

As we throughout this research manually have built a novel dataset on social and environmental scandals, this dataset could be used to explore the industry effects of scandals in future research. An example as to how this could have been taken further would be to analyze if some industries may have a bigger reaction to scandals than others.

Appendix A

Events listed by type

Company's name	Environmental issue	Announcement date
Exxon corp	Oil spill	1990-04-12
Chrysler corp.	Emission	1990-05-08
Fuji Photo Film Ltd.	Recycling	1990-09-25
Cooper Industries Inc.	Pollution	1991-02-22
Coca Cola Co.	Recycling	1991-03-13
Mobil Corp.	Emission	1991-06-21
Ohio Edison Co.	Emission	1991-09-13
New England Electric System	Ecosystem preservation	1992-08-04
Equitable Resources Inc.	Emission	1993-03-3
International Paper Co.	Recycling	1993-05-24
Texaco Inc.	Pollution	1994-02-16
Crown Cork & Seal Co. Inc.	Recycling	1994-03-30
Dell Computer Corp.	Recycling	1996-11-05
Cinergy Corp.	Emission	1997-09-24
B P Amoco PLC	Global warming	2000-05-04
Toyota Motor Corp.	Emission	2000-10-02
International Business Machs Co.	Recycling	2000-11-14
Coastal corp.	Emission	2000-06-05
U S X Marathon Group	Hazardous waste	2001-05-14
Eog Resources Inc.	Global warming	2002-01-15
Domtar Inc.	Ecosystem preservation	2002-04-25

Company's name	Environmental issue	Announcement date
Navistar international corp.	Emission	2003-05-29
United Technologies Corp.	Emission	2003-06-27
Intel corp	Global warming	2004-02-26
Sony corp	Global warming	2004-07-28

ConocoPhillips	Emissions	2005-01-28
FirstEnergy Corp.	Pollution	2005-03-21
Newmont mining corp.	Pollution	2005-04-04
JP Morgan Chase & CO	Global Warming	2005-04-25
Du Pont E I De Nemours & Co.	Contamination	2006 -02-10
Smithfield Foods Inc.	Pollution	2006-01-23
Weyerhaeuser Co.	Emission	2006-06-22
Citigroup Inc.	Global warming	2007-05-09
Dell inc	Emission	2007-06-06
Exxon mobil corp.	Global warming	2007-01-04
Dow Chemical Co.	Contamination	2008-06-04
Transocean Ltd.	Oil spill	2010-09-15
Exxon Mobil corp.	Emission	2010-12-14
Royal Dutch Shell PLC	Oil spill	2011-08-12
Chevron corp.	Oil spill	2011-11-21
Royal Dutch Shell PLC	Oil spill	2012-03-23
Transocean ltd.	Oil spill	2013-01-03
BP PLC	Emission	2013-09-10
Halliburton co.	Oil spill	2013-07-25
Caterpillar Inc	Emission	2014-06-12
Ford motor Co.	Emission	2019-02-22
Fiat Chrysler Automobiles	Emission	2019-09-24

Company's name	Social issue	Announcement date
Home Depot Inc	Sexual discrimination	1994-12-21
Coors Adolph co	Sexual harassment	1997-11-14
Pennzoil co.	Racial discrimination	1998-11-12
Coca cola	Racial discrimination	1999-04-23
Johnson & Johnson	Racial discrimination	2001-11-19
Coca Cola	Ethical problem	2002-12-09

Polo ralph lauren	Racial discrimination	2002-02-26
Wal mart stores	Bad working conditions	2003-11-14
Krispy kreme doughnuts inc	Sexual harassment	2003-05-21
Foot locker inc.	Homosexual discrimination	2004-12-17
Toyota motor corp	Sexual harassment	2006-05-03
Apple computer inc.	Working violations	2006-06-16
GAP	Child labor in India	2007- 10-29
Nike	Worker abuse	2008-08-04
American eagle outfitters inc.	Transgender discrimination	2010-05-12
Walt disney	Child labor	2010- 11-11
Microsoft corp.	Worker abuse	2010-06-10
Kohls corp.	Disabilities discrimination	2011-08-23
Kohls corp.	Disabilities discrimination	2011-08-23
Pepsi co inc.	Race discrimination	2012-01-11
Wal mart stores	Child labor	2013-11-18
Ford motor co.	Sexual harassment	2014-11-04
AT&T inc.	Racial discrimination	2015-04-28
Wipro	Sexual harassment	2015-10-08
Abercrombie and fitch co.	Religious discrimination	2015-06-01
Domino's pizza inc.	Wage theft	2016-05-24
Signet jewelers	Gender discrimination	2017-03-29
Tesla inc.	Racial discrimination	2017-11-14
Amazon	Toxic work environment	2018-09-11
Starbucks corp.	Racial discrimination	2018-04-15

Company	Social issue	Announcement date
Wells fargo	Gender bias	2018-08-31
Johnson & Johnson	Cancer-promoting substance	2019-10-18

Apple inc	Worker abuse	2019-09-09
Amazon com inc	Bad working conditions	2019-10-23
Mcdonalds corp.	Labor violations	2019-11-25

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