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Sustainability In Times of Crisis

*An Empirical Look into the Relationship Between Financial and
CSR Performance During Times of Crises*

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Abstract

From Financial Crisis to Environmental Disasters to protests, corporations are facing numerous crisis that they must navigate through. As a result, corporations may find it hard to justify the need to invest into sustainable business and Corporate Social Responsibility plans, as the inevitability of a crisis gives managers strong incentives to instead avoid sustainable business, and instead invest resources into maintaining the profitability of the firm, and increasing business. The thesis first evaluates the existing literature to determine that there is greater significance to CSR as there are studies that provide evidence that there is a link between CSR and Financial Performance. The thesis then further analyses that CSR shares many of the similar features to crisis within the Crisis management literature, expressing the need for firms to evaluate sustainability not only as a tool for profitability but as an important crisis management and risk mitigation tool. The thesis performs a Multi Linear Regression to evaluate the relationship between Financial Performance and Sustainability through five defined periods of crisis. The findings of the thesis demonstrate there is evidence that CSR helps to mitigate the risks that a firm faces during times of crises, and as a result of risk mitigation helps improve a firm's financial performance especially during times of hardships.

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Terms and Abbreviations

CSR

Corporate Social Responsibility – a firm’s responsibilities towards social, environmental and governance obligations. Typically, large firms provide a CSR report, that indicates the initiatives a firm has towards these obligations, and third-party firms also measure the effectiveness of the firm’s ability to implement their CSR plans.

Sustainability

The ability for firms to provide services or products without depleting available resources for future generations and without increasing the burden of environmental, societal, and governance obligations to future generations.

Crisis

A period of uncertainty, imprecision or vagueness.

ESG

Environmental, Social, Governance – Typically the three metrics that a corporation’s sustainability (CSR) plan is measured against.

Environment (ESG Metrics)

The obligations a corporation has towards the impacts they have on the environment. Ecological disasters, as well as pollution are examples of factors that would negatively impact environmental performance.

Social (ESG Metrics)

The obligations a corporation has towards the impacts they have on society. Human rights, labour issues, are factors that would be of concern for social obligations.

Governance (ESG Metrics)

The obligations a corporation has towards their corporate governance structure. Management structure, employee and executive compensation, transparency are all factors that would be of concern for governance obligations. A strong corporate governance performance, most likely is conducive to strong CSR performance.

Greenwash

A corporation's ability to try and use the positive business effects of a strong CSR plan, such as promising environmental initiatives without fulfilling the responsibilities of the CSR plan. The performance of these sustainability initiatives is poorer than what the firm reports or promises to achieve.

Shareholder

Individual or firm that holds one or more shares in a corporation. They have a financial investment in the corporation.

Stakeholder

Individual, firms or groups in which they have a stake in the business. Both the business and the individuals or groups, affect each other, and have a direct relationship. Although stakeholders can have a financial stake in the business, not all stakeholders have a financial stake in the business. Examples of stakeholders who do not have a financial stake are non-profit organisations that hold firms accountable for the ecological or societal impacts.

NGO

Non-Governmental Organisations – They are firms or organisations that are run by individuals, and the operations that these organisations operate in is not for profit. Many NGOs are involved in holding firms accountable for their Corporate Social Responsibility.

KLD

A social index that covers ESG metrics, from the company MSCI.

1. Introduction

1.1 What is Sustainability and CSR?

Sustainability is a term that can have numerous different meanings depending on the context that sustainability is applied to. This is evident when we observe how sustainability can be applied to forestry (Jacobson, Smith, & Finley, 2016), fishing (Marine Stewardship Council, n.d.) and to finance (Taylor, 2019).

A common theme between different meanings and contexts related to sustainability is to ensure that our current activities can be sustained to ensure long-term operation or management of the resources that are being exploited.

For sustainability in fisheries, corporations have to manage fish stock, and to employ fishing techniques that minimize the environmental impact against the ability for the fish stock to replenish. (Marine Stewardship Council, n.d.)

In forestry, there is a need to observe the effects of soil levels, so that soil erosion from the lumber industry does not eliminate the ability for the land to be arable for future generations of lumber. There is also a need to observe and assess potential diseases, and ecosystem relationships that are vital to support the growth and development of lumber. (Jacobson, Smith, & Finley, 2016)

Sustainable finance focuses on diversifying and focusing on investments in companies that are concerned about long-term issues that may arise outside of purely financial measurements. Investors look for ESG based measurements in sustainability which are measurements that observe Environmental, Social, and Governance factors. (The Economist, 2018)

As corporations begin to pursue sustainability activities, the ability for a corporation to be sustainable, is measured by the success and ability of a corporation's Corporate Social Responsibility (CSR) plan, which is the plans that a corporation has to be responsible for their actions. These measurements include metrics such as environmental effects, social effects relating to society, and effects from a governance structure designed to conduce successful sustainable business performance. Organisations that measure sustainability performance, usually use a corporations' ability to successfully carry out their CSR plans to determine the effectiveness and level of a corporation's sustainability performance. Sustainability

performance can help provide insight to investors about whether or not a corporation is successful in sustainability and if they are at risk of certain governmental policies. (The Economist, 2018)

Environmental factors look at long-term stewardship of environmental ecosystem, so that there is the ability for sustained exploitation of natural resources. Social factors observe the social impact that corporations have and the ethical treatment of their workforce. Governance factors observe how a corporation is run, and the representation that a corporation has within the community as well as with government organisations such as from lobbying. (Taylor, 2019) The article “Environmental Sustainability: A definition for Environmental Professionals” by John Morelli, states that sustainability can be separated into five different categories. (Morelli, 2011)

1. Societal Needs.
2. Preservation of Biodiversity
3. Regenerative Capacity
4. Reuse and Recycle
5. Constraints of Non-renewable Resources and Waste Generation

These five categories provide a general insight into the general frame that sustainability fits in, regardless of the context. The thesis provides the following definition for sustainability: sustainability is the ability for firms to provide services or products without depleting available resources for future generations and without increasing the burden of environmental, societal, and governance obligations to future generations.

Corporations and organizations that are sustainable are more likely to be exposed to risks due to their ability to not only understand what types of factors can affect the sustainability and therefore the potential risks of their business, but also to proactively create business strategies in order to change their organizational structure to better match the sustainability of a business, and to better strategically position themselves in the market.

However, many corporations may choose not to opt into running a sustainable business, since it is not mandatory for the corporation to adhere to its sustainability plans, and therefore could be seen as a potential distraction to other more potentially profitable endeavours.

1.2 Why Observe Crisis and Sustainable Business?

The article “An Inconvenient Truth” by Christopher Wright and Daniel Nyborg, determined through interviews that managers are more likely to abandon prior sustainability promises and plans when a business is facing issues, because of the justification that the most important concern for the corporation would be to provide a return for shareholders, and to have enough capital to keep the company running. (Wright & Nyberg, 2017)

A possible reasoning behind this is that corporations that are facing a crisis, would be more willing to abandon their sustainability plans as they view the sustainability plan or a firm’s CSR capabilities as unimportant. This is interesting because the question then arises, why should corporations pursue sustainability if it’s not profitable for the business? There should be a deeper look at the ability for sustainability plans to determine whether these plans are truly beneficial to the firm. If sustainability does benefit the firm financially, then it would be illogical to abandon sustainability in a time when firms are in dire need of capital.

The thesis will follow these questions and attempt to find reasonings or findings to determine whether or not a firm should justify using a sustainability plan especially during times of crisis when a firm wants to only prioritize core business functions.

1.3 The Objective of this Research Paper

The objective of the thesis is to further explore one of the findings in Wright and Nyborg’s article about the reversal of corporation’s sustainability plans when the corporations are facing times of hardship. (Wright & Nyberg, 2017) Nyborg’s and Wright’s article highlights the management decisions of five corporations in Australia over a 10-year period. The thesis attempts to find justification and evidence supporting whether or not corporations should be reversing these sustainability plans.

This thesis focuses on the ideas of hardships, and how they can impact a corporation’s sustainability plans. It is easy for corporations to “greenwash” or be sustainable during periods of prosperity for a corporation. However, periods of international crisis are inevitable, and it is insightful to view how corporations will deal with these types of crises as they arise, and what are the relationships that affect corporations during different types of crises.

The thesis presents the following research questions:

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1. *Are there benefits to maintaining a sustainability plan during times of crises?*
 2. *What types of effects does an effective sustainability plan have in contrast to an ineffective one during times of crises?*

The goals for the research question are to provide a better understanding to the existing literature on how sustainability performance can affect a firm's financial performance when observed during periods of a crisis.

2. Literature Review

The following literature review will help explore existing literature on the subject of sustainability and crisis management to help develop the research background for the thesis, and approaches on how to answer the thesis's research questions.

The literature review first starts with exploring whether sustainability is worth further research and investigation. Afterwards, the thesis takes a deeper look into the existing literature of sustainability and the relationship with financial performance, to provide a background to the reasoning behind the research questions for sustainability within crisis. Finally, the literature review will explore existing literature relating to crisis and crisis management, to determine areas available for further research.

2.1 Sustainability and CSR

Determining whether firms should pursue CSR during times of crisis should be analyzed by examining some of the literature regarding sustainability to evaluate the current stance of business and academics on sustainability being part of the core business function.

2.1.1 The Argument Against Sustainable Business

Milton Friedman provided an article in *The New York Times Magazine* in 1970 titled "The Social Responsibility of Business is to Increase its Profits". (Friedman, 1970) The article argues that the responsibility of the firm, is to increase the profits for investors. That it is irresponsible for the firm to focus on objectives that are outside the objectives of shareholders and investors. This is based on the argument that corporations are artificial entities, and therefore do not have the same responsibilities to societies that individual people have. (Friedman, 1970)

Friedman's article furthers the argument that businesses have no place for activities focusing on social good and welfare since individuals are the ones responsible for deciding whether they would like to take part in these activities, not the entirety of the firm. The executive is employed by the firm which are backed by stakeholders and investors, therefore executive should not have the autonomy to make decisions that are outside of their assigned responsibility – to make as much money as possible. To do anything otherwise, would be

irresponsible, as it deviates from the objectives of the shareholders and investors, who want to maximize their returns. The manager themselves, can contribute towards society, through things such as charity, and participating in volunteering organisations, but these are the choices and responsibilities of the individual, and should not be passed to the corporation. If the executive were to be fully self-employed and have full-ownership of the corporation then the executive can and should exercise their option to pursue activities outside of pure profit-marking endeavours. (Friedman, 1970).

CSR is also difficult to measure compared to financial performance, because there are many different dimensions and points of views that can be measured in relation to CSR performance, (Carroll, Corporate Social Responsibility: Evolution of a Definitional Construct, 1999) (McWilliams, Siegel, & Wright, 2006) as a result it can be difficult to gauge whether CSR performance has been successful or not. This brings the argument that because CSR is hard to measure it can reduce the ability for shareholders and investors to evaluate whether or not the manager hired, is adequately doing a good job, as opposed to financial measures which are quantifiable and easily comparable. It may therefore be more desirable for investors and stakeholders to instead focus their attention on metrics that can be easily observable and quantifiable rather than having the uncertainty of relying on metrics that may be difficult to quantify.

2.1.2 The Argument for Sustainability

Friedman argues that because of property-rights, managers should follow through with the intent of the investors, that the employment contract should obligate the executive to only pursue profit maximizing activities. (Friedman, 1970) The argument that Milton Friedman makes is that other activities outside of profit-maximization is considered mutually exclusive. Executives who pursue activities that may not seem like obvious revenue-earning activities may in fact be activities that do increase the potential profitability of the company. It's possible that if executives do not pursue these activities that the firm would in fact financially suffer, and based on Milton's argument then, it would be irresponsible for executives and managers to not pursue these activities.

There are articles that explore how there are strategic benefits to firms pursuing CSR activities. (McWilliams, Siegel, & Wright, 2006), (Burke & Logsdon, 1996), whereas other articles that explore the relationship between sustainability and financial performance, (Cochran & Wood,

1984), (McGuire, Sundgren, & Schneeweis, 1986) the existing research demonstrates that there is existing studies on the benefits of CSR to firms, and legitimizes the need for firms to pursue CSR as both a strategic and financial tool.

Although CSR performance is much more difficult to quantify than financial performance, CSR performance may provide additional benefits to a corporation that are inherently difficult to quantify. CSR can provide a competitive advantage through strategic benefits that CSR activities can place corporations within a favorable position in the market. (McWilliams, Siegel, & Wright, 2006). CSR intersects with many different types of strategic advantages such as placing a company within a unique market segment, such as the green market, or by mitigating risk by navigating against uncertain market conditions and regulations. (McWilliams, Siegel, & Wright, 2006)

Although CSR metrics can be hard to quantify it can still provide beneficial information to investors and stakeholders. Since CSR metrics can provide qualitative and quantitative data on the effects and performance that a corporation has on a society, it can mitigate potential negative risks presented to the company due to unsustainable behaviour. (McGuire, Sundgren, & Schneeweis, 1986) This is because with a qualitative dimension CSR most likely will be able to cover dimensions that have not yet been fully identified and quantified. Positive press release, or positive sustainability rankings can indicate to shareholders and investors that a company is less likely to be a risky investment since the risk from regulations as well as negative press has been mitigated due to the company already practicing positive sustainability practices.

The arguments for CSR strengthen the need for research within CSR to help further determine what exactly are the causes for CSR. There are benefits for a firm's performance in relation to CSR, however further research is needed to help define and isolate variables that lead to these increases in performance. The following will be a brief overview of sustainability and CSR within the academic literature as well as provide areas of interest for research.

2.1.3 A Brief Overview of Sustainability

Sustainability and CSR is a concept that can be hard to define and pinpoint for both academics and managers who practice the theory. There are numerous industries that have different metrics of what is sustainable, as well as different fields of sustainability, such as environmental and social CSR responsibilities that the firm has.

Archie B. Carroll provides an outline for the historical definition for CSR. Originally in 1950s, CSR had a more general term, most of the responsibility in CSR is to avoid irresponsible behaviour. The definition the article uses for CSR: “It refers to the obligations of businessmen to pursue those policies, to make those decisions, or to follow those lines of action which are desirable in terms of the objectives and values of our society” (Carroll, Corporate Social Responsibility: Evolution of a Definitional Construct, 1999) The term originally provides some definition of CSR for managers to follow, however it does not provide any further instruction other than following the preconceived guidelines and policies set in place in society.

Carroll uses Keith Davis’ example of “businessmen’s decisions and actions taken for reasons at least partially beyond the firm’s direct economic or technical interest” (Carroll, Corporate Social Responsibility: Evolution of a Definitional Construct, 1999) to note that during the 1960s to the 1970s the obligations for CSR were starting to meander away from just following the policies and procedures of society, but instead to look at voluntary measures that help further a firm’s CSR effect in the society they operate in.

During the 1970s more theories were being implemented to try and solidify the idea of CSR. Theories such as the theory of utility maximization, were incorporated into CSR, to give managers a more concrete idea of how to approach CSR. “A socially responsible entrepreneur or manager is one who has a utility function...of the other members of the enterprise and that of his fellow citizens.” (Carroll, Corporate Social Responsibility: Evolution of a Definitional Construct, 1999) Therefore, many of the ideas of CSR in the 1970s were to mitigate the effects that corporations have negatively in their surrounding society, and to provide programs that could provide a positive effect on society. Carroll’s article also notes that CSR performance was also starting to be measured and mentioned within the literature of the time. (Carroll, Corporate Social Responsibility: Evolution of a Definitional Construct, 1999) As a result, corporations and organisations wanted to quantify and demonstrate the ability for CSR performance to stakeholders and shareholders.

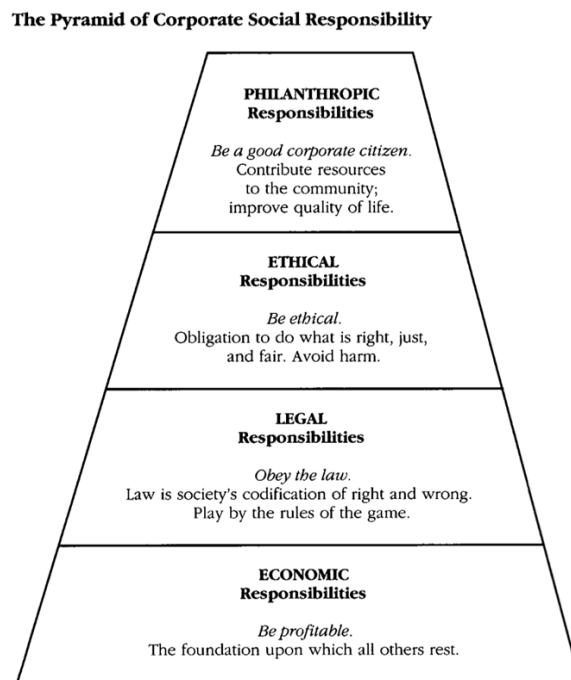
In the 1980s CSR was approaching a point in the literature where there were fewer attempts made to define CSR, and instead more research was made into the underlying factors that affect CSR. These include the performance measurements of CSR, policy, and stakeholder or management theories. (Carroll, Corporate Social Responsibility: Evolution of a Definitional Construct, 1999) This led to academics and managers to try and find underlying mechanisms

in which they were able to figure out what went into a successful CSR implementation, and what affects do policies and laws have on CSR. Understanding what themes and variables affect CSR could help with further quantifying and measuring a firm's CSR performance and success.

The 1990s highlighted a continuation of the exploration of underlying themes and factors that influence CSR. Models and themes were developed and used more extensively to help understand CSR. (Carroll, Corporate Social Responsibility: Evolution of a Definitional Construct, 1999)

Carroll uses his own model of the Pyramid of Corporate Social Responsibility, to help further understand and provide a concrete definition of CSR for corporations and academics to use to further their understanding of CSR. Carroll separates the responsibilities that the firm has into four hierarchies of responsibilities. The most basic responsibility is economic, where a firm should be able to be profitable. The second responsibility is legal, where a firm should obey the laws of countries and societies in which they operate in. Ethical responsibilities is higher, where a firm has the obligation to do what's "right, just and fair" (Carroll, The Pyramid of Corporate Social Responsibility, 1991) and avoid harm within the societies they are in. The final and highest hierarchy is philanthropic responsibilities, which are to be a "good corporate citizen". (Figure 1) The firm should contribute and contribute voluntarily to the community in order to further benefit and improve the lives of the society and environment in which the firm operates within. (Carroll, The Pyramid of Corporate Social Responsibility, 1991)

Figure 1: Pyramid of Corporate Social Responsibility



This pyramid follows closely with the history that Carroll highlights in terms of CSR. Originally the responsibilities of businesses were primarily of profit-earning activities as highlighted by Milton Friedman, Carroll states that in the 1950s CSR was defined as following rules and guidelines as determined in society. Within the 1970s, CSR had become more prevalent with theories such as utility maximization theories being applied, to notify that a firm's CSR should be to mitigate and limit the harm a corporation does to society. Finally, as CSR further develops within the 1980s and 1990s CSR was seen to be more of a responsibility to do more for the surrounding environment. As more themes and factors were being explored to see how corporations could further contribute to society, the measurements for sustainability became more robust, and as a result firms had more accountability for their CSR responsibilities.

This brief overview of CSR allows for a greater understanding of how sustainability came to be developed, as well as the theories behind it. It gives greater insight into the extent of which CSR is effective, and which corporations are making a conscious effort. Corporations that may be following the law, could be considered as a lackluster or even a lack of a CSR plan, after understanding the underlying themes and definitions of CSR. Understanding the definition of CSR, allows for a greater understanding of how to apply CSR, what makes a strong CSR plan, and future areas of research for CSR.

2.1.4 Strategic Implications of Sustainability

Corporate Social Responsibility and sustainability are becoming more attractive to managers and to academics because of the rising relevance that CSR can have within a firm. As firms operate internationally there are more environments and scenarios that corporations need to navigate. Managers must be mindful of the different laws and social environments that are prevalent within a global economy. CSR and sustainability can help with a corporation's goodwill towards the communities they operate in and avoid regulations and laws that may be detrimental to their business operations. There is a desire to also observe sustainable business, from a qualitative perspective to observe the benefits that it can have from a strategic viewpoint.

The article by Abigail McWilliams, Donald S. Siegel, and Patrick M. Wright, highlights the strategic benefits of a firm with a strong CSR performance, using strategic management theories.

The Resource Based View is a strategic theory in which firms can identify which resources they are able to exploit in order to gain a competitive advantage. CSR plays a role as a firm's CSR plans and implementation can be seen as a competitive resource, since a firm's CSR strategy can be used to differentiate the firm from the competition, and a firm's unique CSR plan is typically designed to be unique to the firm, so it's a resource that is difficult to imitate. This means that a firm who has designed and implement a strong CSR plan, is like to have a stronger competitive advantage in terms of the Resource Based View. (McWilliams, Siegel, & Wright, 2006)

Stakeholder theory is another strategic theory that is related to CSR. Stakeholder theory is the theory in which a firm acknowledges the stakeholders that could affect their business. Stakeholders such as NGOs, governments and corporations would most likely be interested in a firm that engages in sustainable business, since sustainability typically involves the stewardship of public goods, such as the environment. (McWilliams, Siegel, & Wright, 2006) Firms could therefore collaborate with governments or NGOs to form synergistic relationships such as NGOs providing insight into improvements on a firm's CSR plans, which can lead to positive consumer impressions. Firms can also work with governments in order to have insight into how to navigate against developing or current regulations. This provides the firm with a competitive advantage over firms that do not work and collaborate with these stakeholders.

The final theory that is covered is institutional theory. Institutional theory is the theory of how policies and theories are institutionalized. Institutions such as government institutions are becoming more aware of CSR considerations. This in turn can cause these institutions to either try and regulate or incentivize more sustainable behaviour. Firms that have the expertise, knowledge, and history with CSR activities would be much better placed competitively to navigate these institutional structures, as opposed to corporations that do not have prior experience to CSR activities. (McWilliams, Siegel, & Wright, 2006)

Since there are observed strategic benefits of CSR, intuitively, there should be some financial benefits to CSR. An exploration between the intersection of CSR performance and financial performance is therefore necessary to further explore the benefits and importance of sustainable business for firms.

2.1.5 Sustainability And Financial Performance

As CSR and sustainability further develops there is greater interest in the intersection of sustainability with other disciplines, to determine the relationship and correlations that CSR performance has on other disciplines. Going back to Milton Friedman's argument of the firm, looking at the intersection of sustainability and financial performance, can help to either weaken or strengthen Milton Friedman's argument that managers should only focus on profit-making activities of the firm. (Friedman, 1970) If sustainable business is positively correlated with financial performance then Milton Friedman's argument would strengthen the need for sustainability, as it would be the responsibility of managers to pursue revenue increasing activities, which would include a firm's CSR performance.

Sustainability Measurements

The article "Corporate Social Responsibility and Financial Performance: A Review of Measurement Approaches" by Adriana Galant and Simon Cadez observes that there is no concrete evidence for positive, negative or absence of effect between the relationship of CSR and financial performance. The article provides the hypothesis that this is because CSR is difficult to quantify since there are different types of measurements and variables to use as metrics to measure CSR performance. (Galant & Cadez, 2017) The article also states that there are different measurement systems for corporate social responsibility, such as Reputation Indices, and Content Analysis.

Reputation Indices are the most common form of measuring a firm's CSR performance. Indices such as the KLD – a Social Index from the company MSCI, Fortune magazine reputation index, Dow Jones Sustainability Index, and Vigeo Index, look at a variety of factors and dimensions that affect a firm's CSR performance. Different aspects of sustainable business practices can be observed depending on the index. KLD observes environmental, community, employee and supply chain, customer, and governance and ethics, as metrics for a firm's CSR performance. While Fortune Magazine focuses more on management practices and how it can be conducive to sustainable business practices. This includes dimensions such as the use of corporate assets, the way people are managed, and the long-term investment value of a firm's sustainability strategy.

Although indices allow for a comprehensive look at the potential performance of a firm's CSR strategy, a firm's performance within each index may differ greatly depending on the index and the dimensions that the firm is being judged upon.

For research within CSR performance it is worthwhile to observe numerous indices in order to get a comprehensive look at how a firm's CSR plans differs between different metrics. This can be fruitful to determine what type of metrics are more effective for certain firms and industries, which can indicate further areas of study, such as by improving management strategies, or focusing on reducing environmental pollution.

Another measurement for CSR, is content analysis. (Galant & Cadez, 2017) The theory behind content analysis is to observe the documents and responses that corporations have towards their CSR plans and strategy. Different types of metrics can be used in this analysis such as counting the number of words related to CSR and observing if certain CSR topics have been covered by the firm, such as carbon dioxide emissions or worker safety. Although this type of measurement is relatively simple to produce results, it can lead to more subjective interpretation than reputation index, due to the nature of collecting textual data, and the metrics used to evaluate the data. Data provided is also less robust due to fewer metrics and dimensions being observed.

Other methods of evaluating CSR activities are more elementary in nature such as utilizing questionnaires or evaluating one criteria of a CSR plan, and determining if it has been fulfilled to a satisfactory level. (Galant & Cadez, 2017) These methods can be less intensive and require

less resources to achieve results, however they lose out on the robustness of data, and are also susceptible to bias.

Financial Measurements

The article “Corporate Social Responsibility and Financial Performance” by Philip L. Cochran and Robert A. Wood, compares and contrasts the differences between financial measures and measures of CSR.

The first financial measure discussed is the measure of observing the returns an investor receives: Investor Returns. (Cochran & Wood, 1984). Investor returns primarily focuses on the financial returns that an investor receives. Metrics such as stock performance, and dividend income are used in order to determine the income of investors. There are however questions on potential market biases that arise depending on the period of observation that a study was made in when comparing it to CSR performance. If a study was made during a bull market, it is likely that the results for the performance of the market would be seen as having a strong positive correlation with the firm’s CSR performance, even though the effects of a positive return could be a systemic effect rather than a specific firm effect.

The efficient market hypothesis – which is the theory that all prices in the market reflect all information that is readily available to the market, may also present a potential bias to investor return. That is, if a corporation provides information about their CSR performance, the information about the performance is already reflected into the asset price. (Cochran & Wood, 1984) This would mean that companies that have a strong change in their sustainability plan, both positive and negative would have the greatest change. Consistent rewards may not be seen as favourably as a sharp improvement in CSR plans. This would even be the case even if the consistent firm has greater CSR performances than the newly improved firm. Therefore, firms that have a reputation and history of being high CSR functioning would not be considered as performing as well when it relates to investor returns, based on the Efficient Market Hypothesis. Comparing the investor returns with a firms CSR performance and trying to find a relationship between the two may prove to have some biases, especially towards companies that have a history of performing well in terms of CSR performance.

The other method for financial reporting would be through Accounting Returns. (Cochran & Wood, 1984) Accounting returns are the metrics in which a firm would evaluate their own financial health. These are usually found within the financial statements of a corporation and

relate more to a corporation's internal success rather than the ability for the corporation to provide a return to investors. Financial reporting would however be more sensitive to different managerial policies, as well as difference in accounting practices, and the growth of a company. (Cochran & Wood, 1984).

Relationship Between Corporate Social Responsibility and Financial Performance

The article by Jean B. McGuire, Alison Sundgren, and Thomas Schneeweis observes corporate reputations, and evaluates firm financial performance and corporate responsibility to observe if a firm with strong CSR performance would be related to financial performance. The article hypothesized that corporate social responsibility and financial performance would have a positive relationship with each other. (McGuire, Sundgren, & Schneeweis, 1986) The reasoning is that strong CSR performance would most likely be able to make use of an increased positive public image due to the firm engaging in sustainable activities and will garner public goodwill towards the firm's goods and services. Firms that have positive sustainable actions could also signal to investors that the corporation has reduced risk, because the corporation is more likely to be better prepared for regulations and new policies regarding sustainable actions that the corporation may already have in place. The article find that accounting-based performance has a higher explanatory value in stock-market performance in contrast to investor returns. (McGuire, Sundgren, & Schneeweis, 1986)

The article by Jae-Joon Han, Hyun Jeong Kim, and Jeongmin Yu, titled "Empirical Study on Relationship Between Corporate Social Responsibility and Financial Performance in Korea", observes the Korean Stock Market and compares the performance of the stocks in the stock market with Bloomberg's ESG scores.

The article performs a regression analysis with corporate financial performance as the dependent variable and ESG measures as the independent variables. Various forms of financial measures were used as the independent variables such as Return on Equity, and Stock Returns. (Han, Kim, & Yu, 2016)

The Bloomberg ESG scores have scores for environmental, social and governance performance, in relation to a firm's CSR performance.

The results from the regression were that environmental and social scores were mixed and insignificant when regressed on ROE. Meanwhile government scores were however shown to

be positive and significant, for linear regressions. The article finds that CSR activities therefore only pay off after a certain threshold amount of CSR score has been accumulated, therefore, CSR score has to be quite high in order to see some significant effects. Additionally, based on the findings the article suggests that corporations and managers focus on governance performance in order to increase financial performance based on Return on Equity. (Han, Kim, & Yu, 2016)

The article “Addressing Endogeneity in the Causal Relationship Between Sustainability and Financial Performance” By Mehmet Ali Soytas, Meltem Denizel, and Damla Durak Usar, tries to evaluate endogenous variables that may affect the causal relationship between sustainability and financial performance. The article hypothesizes that potential variables that affects a firm’s ability are - the firm’s level of productivity, the marginal cost of sustainability initiatives, measurement error from measuring sustainability and financial measures, as well as the differences in financial returns between firms. (Soytas, Denizel, & Usar, 2019)

The article uses econometrics methods to control for these variables, using data gathered from a variety of reputation index. The findings from the article determine that when controlled for the following variables that were highlighted, the causal relationship between sustainable and financial performance is significant and positive. (Soytas, Denizel, & Usar, 2019)

Further findings show that marginal cost for sustainability are higher for firms that are productive. (Soytas, Denizel, & Usar, 2019) This may be because firms that already have an established and effective method of performing their business operations are less likely and are unwilling to change their business operations, especially if their business processes are already tried and proven to be effective in their field. The article finds that the size of the firm can also negatively impact the firm’s ability to perform well in sustainability. Higher financial returns on a firm’s CSR plans however are more likely to see increased sustainability investments from the firm. Having all these variables account together, it determines some of the potential variables that may cast doubt between sustainability and financial performance.

However, there should be further research into how sustainability is able to affect large companies, since the findings from the article only highlights how corporations that are not large and well-established are more likely to pursue sustainability. This relates back to previous articles observing sustainability and strategy, as sustainable business can help

position smaller firms that are not as established in the market to have a competitive advantage and position themselves in a favorable position amongst consumers.

The review on the relationship between financial and sustainability performance, has evidence and signs of a causal relationship between the two dimensions, and therefore warrants additional research into the subject matter.

2.2 Crisis Management

Observing crisis management can help further understand how corporations use CSR as both a strategic tool and a financial tool to help establish businesses in times of crises. Corporations that are in times of crisis are less likely to have an ample stream of revenue compared to times of prosperity to invest in other opportunities. Therefore, observing crisis management and the relationship with sustainability can help further the existing literature on the role CSR plays in the corporation, and where further research can be made.

First, defining the definition of crisis, will help develop ideas in whether sustainability related events can have relevance within the field of crisis management.

2.2.1 The Definition of Crisis

The article “Crisis” by Reinhart Koselleck, and Michaela w. Richter explores the definition of crisis and what it means in the modern context.

The article highlights that the word crises cover numerous structures. In political science, crisis typically refers to the conflict of opposing viewpoint, while in medicine, it is considered to be a symptom relating to the field of psychology. (Koselleck & Richter, 2006)

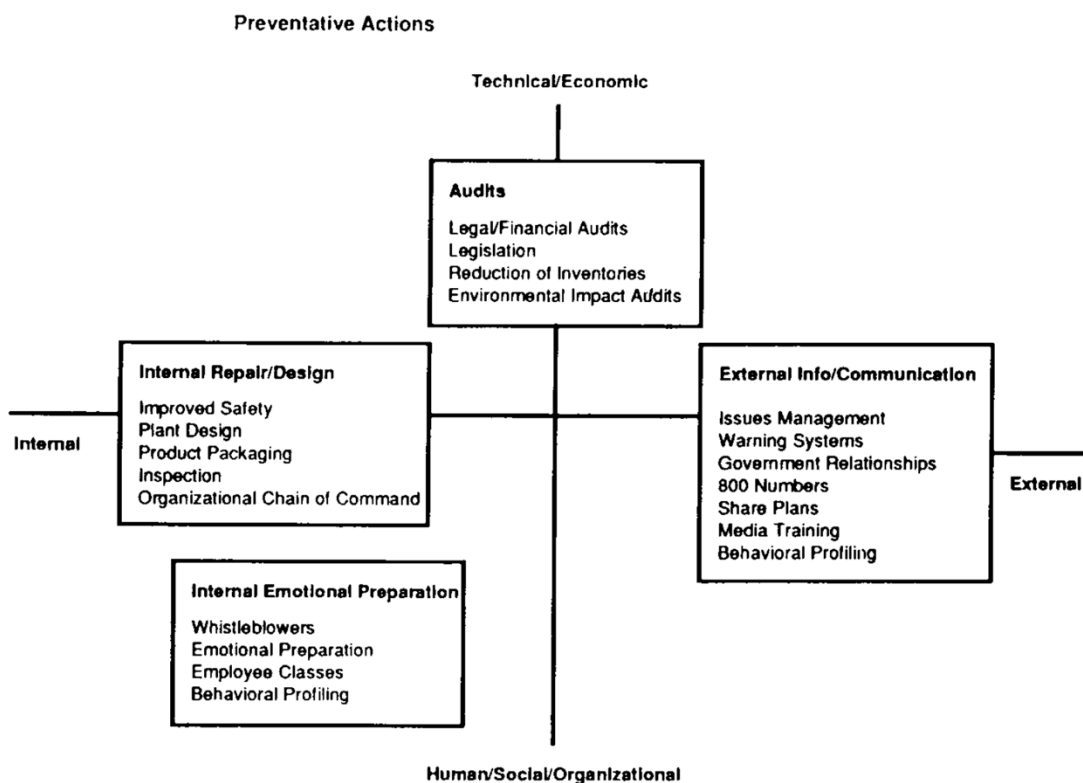
The article comes down with the conclusion that crisis in the modern-day context can be referred interchangeably with “unrest”, “conflict”, and “revolution” and relate to situations that typically have dramatic and emotional effects on the parties that are involved. Crisis in the modern context fits towards times of uncertainty, imprecision and vagueness of a certain situation. (Koselleck & Richter, 2006)

As observed previously with sustainability measures CSR is a field that also can have imprecisions as it is difficult to navigate as the field has metrics that are not quantifiable and can be considered vague by investors. With the reaction of institutions and governments CSR

is also a field in which many corporations face a lot of uncertainty, not knowing what will be the next type of regulation that could impact their business. As an overview of previous literature covered so far on CSR and sustainability, it fits within the modern context of crisis. Therefore, it would be fruitful to observe the current literature on crisis management and to observe potential gaps in the existing literature.

2.2.2 Crisis Management Theories and Literature

Figure 2: Matrix of Crisis Management



The article “From Crisis Prone to Crisis Prepared: A Framework for Crisis Management” by Christine M. Pearson, and Ian I. Mitroff, highlights the different types of crisis that require focus. The article highlights crisis on a matrix, with the first dimension either being a technical issue or a social issue, and the second dimension being either an internal or external force that affects crisis. (Figure 2) The article highlights the importance for processes and policies for each of the potential crisis issues. (Pearson & Mitroff, 1993) The article also notes that crisis that are of a social concern and are affected by external factors will require more processes, than issues that are of technical concern and originate from internal factors, since technical issues are quickly remedied, and internal factors are easily located. The article highlights that

typically crisis caused by technical issues are from equipment malfunction rather than from managerial factors.

From the article's finding we can apply the same matrix to CSR to determine what type of crisis is CSR. CSR is typically affected by stakeholders and forces outside of the firm and are typically are issues that are of a concern to the surrounding society, such as environmental and human rights issues. Based on these definitions CSR is a crisis that can be classified as external and social in nature. As Pearson and Mitroff suggest, CSR is a type of crisis that requires firms to develop greater amounts of processes and regulations to remedy this type of crisis and is not a crisis that has a simple solution as opposed to other types of crises. This highlights a need for studies into the intersection of Crisis management and CSR, in order to determine how can corporations approach CSR and the issues that relate to it.

The article "The Interplay Between Post-Crisis Response Strategy and Pre-Crisis Corporate Association in the Context of CSR Crisis" by Weiting Tao, and Baobao Song questions whether previous goodwill from CSR can contribute towards how a corporation responds to a CSR crisis, as well as the success for a firm to recover from these crisis.

The literature that the article explores shows how crisis management in corporate literature usually involves "ability-related" crises. (Tao & Song, 2020) These crises are related to errors and wrongdoings that are caused by the corporation's own ability or inability to deliver a product. One example is how a company would be unable to deliver their product due to a defective product, resulting in product recalls. These types of crises focus on the company's failure to deliver quality products, rather than fulfilling social and ethical obligations.

The article highlights that there is a lack of focus and study on corporations that deal with CSR crises. (Tao & Song, 2020) CSR crises could be linked towards the firm's inability to have strong CSR performance since a firm with a strong CSR track record would be better equipped to handle CSR crisis than a firm that isn't prepared. Therefore, CSR performance would be related to the firm's ability to handle "ability-related" crises. The article compares and contrast corporation's customers before and after a crisis to see how well-equipped they are to handle a crisis, and whether the crises response is effective in mitigating negative effects against the firm. The article finds that customer attitudes towards a firm are negatively impacted from a CSR crisis, and that previous goodwill from the company does not mitigate this effect. (Tao & Song, 2020)

This article demonstrates firms cannot have previous CSR performance as an indicator on future success, and as “buffer” to be able to act unsustainable in times of crises. Additionally firms that greenwash would most likely suffer, and would not be able to use greenwashing as a device to mitigate the amount of harm that is presented during a CSR crises, as previous goodwill even if it is deceptive would not benefit a firm that is ill-prepared to face a CSR crises, and its ability to mitigate and resolve the issues presented in the crises.

The article titled “The Role of CSR in Crises: Integration of Situational Crisis Communication Theory and the Persuasion Knowledge Model” by Chang-Dae Ham, and Jeesun Kim also explores how customers react to firms after a CSR crisis and the firm’s crisis response message as a result. The article discusses how corporations can face damages to their reputation and image, and therefore firms would have strategies and policies in place to determine how they would react to these situations. The article also seeks to try and determine the responses that consumers have and how they interpret how corporations respond to CSR crises. (Ham & Kim, 2019)

The article finds that consumers have a lot of reactions and inferences to CSR activities. The article has developed a theoretical decision model, in which the consumer makes a decision based on a firm’s CSR motives, its CSR history, and the level of responsibility of the corporation in relation to their CSR plans. When corporations are facing a CSR crisis and are able to respond to the crisis with a strong CSR plan and response, it is positively correlated with consumers’ goodwill when deciding whether or not to purchase a product from the corporation. Therefore, the article finds that continued CSR performance after a crisis can be a good response to a CSR crisis. (Ham & Kim, 2019)

The article “The Buffering Effects of CSR Reputation in Times of Product-Harm Crisis” by Yeonsoo Kim, and Chang Wan Woo also examines how consumers react to crisis, however it examines the CSR performance of a corporation before the crisis occurs. The results from the article found that consumers who were exposed to the good CSR reputation, viewed the firm much more positively than consumers who were exposed to bad CSR reputation. The article further elaborates that consumers did not react differently to different industries. (Kim & Wan Woo, 2019)

The article concludes that CSR can be used to defer and mitigate the reputational harm that a company faces during a crisis, especially relating to their CSR reputation. CSR with negative CSR performances had even greater declines in their reputation.

From the current literature in crisis management we observe that CSR has a strong effect if consistent performance is utilized throughout a crisis. Previous performance of CSR would not be beneficial for the firm, however a firm that has a reputation of CSR in the past, would fare better than corporations who do not have a positive CSR reputation. The findings demonstrate a strong effect of CSR to mitigate a corporation's reputation during times of crisis, and therefore CSR can be an invaluable tool outside of a firm's competitive strategy, or as a marketing tool, but as a crisis management tool as well. A firm that has a lack of CSR can suffer major backlash from a sustainability crisis that is unable to garner the goodwill of consumers and other organisations if a corporation does not have a strong CSR plan in place in order to mitigate these types of claims.

2.3 Gaps in Literature

There is a gap in the literature involving the interdisciplinary combination of CSR with crisis management and financial performance. None of the literature observed, has looked at the intersection and effects that would affect a firm in crisis in relation to their CSR plans as well as financial ability.

The financial articles have not discussed in great detail about the different types of financial sources that could be measured by a firm, and how they are affected by CSR plans, specifically during specified periods of hardships. A CSR performance, as well as financial performance can change drastically depending on the market conditions and what types of external factors are affecting a corporation. A natural disaster that is affecting the community, in contrast to an economic depression could change how a company may carry out their CSR strategy, as such the periods in which firms work on CSR should also be observed.

The articles that covered firms that may use CSR as a crisis management tool, have not looked at different types of crisis outside of CSR-related crises (Ham & Kim, 2019) and a company's internal ability to respond to crisis. (Tao & Song, 2020) Crisis were also observed as an internal issue rather than an external issue (Tao & Song, 2020), therefore the articles have observed CSR as directly relating to the crisis in either the negative CSR performances, or

issues that are directly related to areas of CSR action. Firms usually respond to these crises by defusing rather than pre-emptively managing crises using CSR plans. (Ham & Kim, 2019). The articles on crisis management, also have not looked at the firm's personal financial performance in relation to CSR in times of these crisis, rather the observation was on the consumer's responses. It can be difficult to quantify how much of a firm's financial performance is affected based on the consumer's perception of the corporation after a crisis.

Finally, there is not a wealth of information about a comparison between different times of crisis or types of crisis. Articles observed a singular period of crisis and compare the performance and effects that a firm has before and after this singular event. Comparing multiple different events would be insightful as it would allow for an observation of how corporations react similarly during different times of market conditions, or if corporations change their strategies after a single instance of a specific type of crisis.

3. Methodology

3.1 Design of The Study

Based on the articles from the literature review, the study will be designed to include existing knowledge within the literature as well as to create new insights in the field.

There are numerous measures to measure sustainability (Galant & Cadez, 2017), however this study has chosen to use reputation index, as it provides numerous dimensions to determine a firm's ability to conduct sustainable business, which both allows for a more complete view of a corporation's CSR performance, as well as the ability to provide more variables to use for econometric analysis.

The study also uses financial statements from corporations to determine if there is any financial relationship with the data. This is because accounting-based performance can be consistent with a firm's internal performance, as well as because accounting-based performances has a higher explanatory value in stock-market performance compared to other measures of financial returns such as investor returns. (McGuire, Sundgren, & Schneeweis, 1986)

The article observes firms at times of crisis as a crisis can be defined since CSR crisis has been shown to be linked to a firm's inability to provide a CSR plan. (Tao & Song, 2020) The study will generalize these findings, by observing crisis that may not be from CSR in origin. However, since CSR can be defined as a type of crisis that originates from external forces, the crises that will be observed will also originate from external sources, to see if there are any effects.

3.2 Data

The study will involve the use of firms that are publicly listed from the database "S&P Global Market Intelligence: Compustat Fundamentals". Publicly listed corporations on North America stock markets were used. The top 150 performing companies by revenue were chosen, however the number of observations may be lower, due to missing information from some of the firms observed. The justification for choosing firm performance based on revenues is that firms with large revenues would most likely have large business operations affecting

communities internationally, and would have more financial data available for investors, thus, allowing for more information to be analyzed. With large revenues internationally these companies would have to be accountable to their CSR activities. Small firms that have CSR infractions may go unnoticed compared to large corporations.

The CSR data was gathered from the RepRisk database. The RepRisk database provides a score for a company's environmental, governance, and social performance, as well as an overall general score from zero to one hundred. The score represents the amount of potential risk that a corporation is exposed to from the metrics of analyzing news sources, previous infractions of CSR guidelines, and whether the company has had negative public image regarding their CSR performance. (RepRisk, 2020) The RepRisk perspective for CSR performance is in line with analysing how firms react in crisis, since usually firms are exposed to greater amounts of news coverage during a crisis, as there is more information to cover for worried investors as well as opinions, analysis and strategies covered for how firms would recover from these crises. RepRisk's approach to analyzing the sustainability threats facing a corporation due to their CSR performance, allows for the effects of the crisis to be internalized into the news and media coverage that RepRisk analyzes for a company's CSR performance. Since it evaluates the level of risk, RepRisk also internalizes a firm's CSR performance, as a firm with negative CSR performance is more likely to receive bad press, and increased risk related to sustainability compared to firms that are prepared.

The data is gathered at specific points in time. Each point in time represents a period in recent history where a major crisis has occurred. Each of these periods of crisis are then regressed using a multiple linear regression formula.

3.2.1 Definition For Periods of Crisis

The study focuses on crisis that are similar in nature to CSR. Using the CSR matrix, from the article by Pearson and Mitroff (Figure 2), the study will focus on crisis that are caused by external factors, and the issues are of a social nature, as CSR typically also deals with external factors and handles issues that are more of a social nature, rather than a technical one.

Periods of crisis have been selected based on observing crises that concern different disciplines and dimensions, for example, financial, environmental and health crisis. These types of crises influence different industries and can have varying effects on corporations. Finding similarities or differences between these different periods of crises can provide a broader sense

of how CSR reacts to a variety of different periods of crisis. For a diverse selection of results, five different types of crises have been chosen.

Table 1: Defined Crisis Table

<u>Period of Crisis</u>	<u>Crisis Detail</u>	<u>Type of Crisis</u>
January 2008	2008 Financial Crisis	Financial Based Crisis
April 2010	Deepwater Horizon	Environmental Crisis
September 2011	Occupy Wall Street	Governance Crisis
March 2014	Ebola Outbreak	Health Crisis
June 2017	US Announces Retracting their Involvement with Paris Climate Accord	Policy/Social Crisis

3.3 Econometric Formula and Variables

3.3.1 Formula

The formula that will be used for the multiple linear regressions are:

Equation 1: Econometric Model for Cash

$$\text{Cash} = \beta_0 + \beta_1 \text{RRI Index} + \beta_2 \text{Environmental Percentage} + \beta_3 \text{Social Percentage} + \beta_4 \text{Governance Percentage} + \beta_5 \text{Polluting Industry} + \varepsilon$$

Equation 2: Econometric Model for Retained Earnings

$$\begin{aligned} \text{Retained Earnings} &= \beta_0 + \beta_1 \text{RRI Index} + \beta_2 \text{Environmental Percentage} \\ &+ \beta_3 \text{Social Percentage} + \beta_4 \text{Governance Percentage} \\ &+ \beta_5 \text{Polluting Industry} + \varepsilon \end{aligned}$$

Equation 3: Econometric Model for Revenue

$$\begin{aligned} \text{Revenue} = & \beta_0 + \beta_1 \text{RRI Index} + \beta_2 \text{Environmental Percentage} \\ & + \beta_3 \text{SocialPercentage} + \beta_4 \text{GovernancePercentage} \\ & + \beta_5 \text{PollutingIndustry} + \varepsilon \end{aligned}$$

Equation 4: Econometric Model for Operating Expense

$$\begin{aligned} \text{OperatingExpense} \\ = & \beta_0 + \beta_1 \text{RRI Index} + \beta_2 \text{Environmental Percentage} \\ & + \beta_3 \text{SocialPercentage} + \beta_4 \text{GovernancePercentage} \\ & + \beta_5 \text{PollutingIndustry} + \varepsilon \end{aligned}$$

Equation 5: Econometric Model for Current Liabilities Total

$$\begin{aligned} \text{CurrentLiabilitiesTotal} \\ = & \beta_0 + \beta_1 \text{RRI Index} + \beta_2 \text{Environmental Percentage} \\ & + \beta_3 \text{SocialPercentage} + \beta_4 \text{GovernancePercentage} \\ & + \beta_5 \text{PollutingIndustry} + \varepsilon \end{aligned}$$

The formulas will allow an observation on what types of effects would environmental performance have on financial attributes of the firm.

3.3.2 Independent Variables

Cash

The variable name is ‘Cash’ in the econometric analysis.

Cash is used as a variable since available free cash can be an indicator of a company’s financial health during a crisis. Being able to pay off current liabilities, or to pay off unexpected costs, is essential for a firm’s financial health, especially during a crisis. A firm that has a larger amount of cash may be able to have higher environmental performance as a result and can mitigate the amount of financial risks a firm may have, if there is a sudden need for capital.

Current Liabilities

The variable name is ‘CurrentLiabilitiesTotal’ in the econometric analysis.

Current liabilities is the total current liabilities that a company has at the point in which the data was recorded. Typically positive financial returns are observed for studies involving CSR and financial returns, however looking at financial metrics that are considered as a loss for the firm’s overall profitability can be useful as it allows the corporation to evaluate what types of

CSR plans may suffer the most from negative financial performance. It can also indicate to firms which CSR metrics are most affected by current liabilities which can indicate a potential for firms to abandon CSR plans when financial health of the firm is not strong, such as during a crisis. Current liabilities are used as an independent variable over total liabilities since current liabilities represent the short-term liabilities that a firm has financial obligation for. This means that these liabilities would most likely be affected by the current crisis and the performance of the firm within the year, and likely have a stronger influence on the performance of a corporation's CSR plans due to the short-term nature of the financial obligation. As opposed to total liabilities which could have accumulated over a time period spanning years, and therefore would have less relevance than current liabilities.

Retained Earnings

The variable name is 'RetainedEarnings' in the econometric analysis.

Retained earnings is worthwhile to observe since it is the net income that a firm has remaining after paying out all of its financial obligations. This means that a corporation that has all of their financial obligations finalized would therefore have the remaining cashflow to spend on sustainability plans. This would provide information towards firm's attitudes of their CSR plans since if CSR performance increases when a firm's retained earnings are higher, it signals that a firm is more likely to invest in CSR initiatives when the firm has the means to invest in them.

Revenue

The variable name is 'RevenueTotal' in the econometric analysis.

Revenue is the income of a business from their business operations, such as from sales. This does not account for cost of goods, or other deductibles to the revenue, rather it is the gross income that a company makes after completing their business transactions. Firms with larger revenues that have positive CSR performance may have several implications, such as larger firms investing in CSR initiatives, as well as firms that are exposed globally being more exposed to the limitation of revenue.

Operating Expense

The variable name is 'OperatingExpenseTotal' in the econometric analysis.

Operating expense is the cost of operating the business. This allows for a greater understanding of the relationship between a firm's profitability and their CSR performance. If operating expenses result in a negative relationship with a firm's CSR metrics, it would indicate that expenditure on business operations would be taken away from these corporation's CSR initiatives. However, if CSR has a positive relationship with operating expenditure that would mean that these CSR initiatives are most likely considered a part of the business expenditure.

3.3.3 Dependent Variables

RRI Index

The variable name is 'CurrentRepRiskIndexRRI' in the econometric analysis.

The RRI Index provides a quantitative number for the level of sustainability related risks that a firm is exposed to. This is calculated from RepRisk's proprietary metrics, which attempts to capture the press, the number of infractions a firm has incurred, and the firm's personal statements and performance on CSR, among other sustainability related attributes. The score is ranked from 0 to 100, with 0 representing no risk, and 100 presenting absolute risk. (RepRisk, 2020)

Environmental Percentage

The variable name in the analysis is 'EnvironemntalPercentage'

Environmental percentage is the score given by RepRisk in terms of the percentage of the risk is based on environmental issues, such as pollution and environmental damage. The score is ranked from 0 to 100, with 0 representing no exposure to environmental risks, and 100 representing total exposure to environmental risks. The higher the score, the more environmental risks the firm has incurred.

Social Percentage

The variable name in the analysis is 'SocialPercentage'

Social percentage is the score given by RepRisk in terms of the percentage of the risk that is based on social issues, such as human rights, and the influence the firm has within the communities that it operates in. The score is ranked from 0 to 100, with 0 representing no exposure to social risks, and 100 representing total exposure to social risks. The higher the score, the more social risks the firm has incurred.

Governance Percentage

The variable name in the analysis is ‘GovernancePercentage’.

Governance percentage is the score given by RepRisk in terms of the percentage of risk that is based on governance issues, such as a company’s ability to be transparent, executive compensation, and the ability for a corporation to conduct corrupt business practices. The score is ranked from 0 to 100, with 0 representing no exposure to governance risk and 100 representing total exposure to governance risks. The higher the score, the more governance risks the firm has incurred.

Polluting Industry

The variable name in the analysis is ‘PollutingIndustry’.

Polluting industry is a binary variable given to indicate whether the company is with a traditionally “polluting” industry, with a value of 1 representing that the company is operating within an industry considered to be polluting, and a value of 0 if the company is not operating within these polluting industries.

The definition for polluting industry was originally defined in Charles H. Cho’s and Dennis M. Patten’s article “The Role of Environmental Disclosures as Tools of Legitimacy: A Research Note”. The article uses the SIC (Standard Industrial Classification) system in order to classify the industries in which a corporation operates in. The article defines corporations that have the SIC codes starting with the numbers 13 (for oil exploitation), 26 (for paper production), 28 (for chemical production), 29 (petroleum refining) or 33 (metal and mining industry) as industries where it is more environmentally sensitive and therefore more prone to environmental damage. (Cho & Patten, 2007) The thesis adds in additional SIC codes of: 10 (Mining), 12 (Coal), 20 (Meat/Animal Products). (United States Department of Labour, 2020)

4. Results

4.1 January 2008 – Financial Crisis

4.1.1 Cash

Results when analyzing cash as the dependent variable showed that the relationship for RepRisk Score, has a positive relationship with cash at the 5% significance level. Polluting Industry is also statistically significant at the 5% level. Environmental, and Social percentage have a positive relationship to cash, while governance percentage has a negative relationship to cash. The R^2 variable is 0.135.

What is interesting to note is that the RepRisk score has a positive relationship with cash, which means with increases in cash a company is more likely to experience increased exposures to risks in sustainability. Another interesting thing to note is that polluting industry has a negative relationship with Cash, which means that firms in non-polluting industries typically have more cash than firms in polluting industries. (Table 7)

4.1.2 Revenue

RepRisk score is significant at the 0.1% level with a positive relationship with Revenue, Social Percentage has a negative relationship with a significance level at the 5% level, and Governance Percentage has a negative relationship at the 10% level.

This signifies that revenue increases reputation score risks, and that with decreases in social and governance risks, revenue will also increase. The R^2 value is 0.428. (Table 8)

4.1.3 Retained Earnings

RepRisk score is significant at the 0.01% level with a positive relationship. No other variables are statistically significant at or below the 5% level. The R^2 value is 0.371.

This might mean that none of the new sources provide any concrete changes to retained earnings, it is however noted that all of the percentages, while not significant at the 5% level, are negative, with polluting industry being positive in its relationship. (Table 9)

4.1.4 Operating Expense

The RepRisk score is significant at the 0.1% level with a positive relationship with Operating Expense. Social Percentage is significant at the 5% level and has a negative relationship with operating expense. All other variables have a negative relationship with operating expenses. The R^2 value is 0.309.

This can indicate that firms from non-polluting industries have higher operating expenses, and that operating expenses increases as environmental, social or governance risk decreases. (Table 10)

4.1.5 Current Liabilities

RepRisk score is positively related with current liabilities, at a significance level of 0.01%. Social Percentage is significant at the 5% level and is negatively correlated with current liabilities, and polluting industry is significant at the 5% level with a negative relationship. The R^2 value is 0.421. (Table 11)

4.2 April 2010 – Deepwater Horizon

4.2.1 Cash

RepRisk score is significant at the 5% level and has a positive relationship with cash. Polluting Industry is significant at the 5% level and has a negative relationship with cash. The R^2 value is 0.107. (Table 12)

4.2.2 Revenue

RepRisk score has a positive relationship and is significant at the 1% level. All other variables are not significant at or below the 5% level. The R^2 value is 0.092. (Table 13)

4.2.3 Retained Earnings

RepRisk score is significant at the 5% level with a positive relationship to Retained Earnings. Polluting Industry has a positive relationship and is statistically significant at the 1% level. All other variables are not significant at or below the 5% level. The R^2 value is 0.221. (Table 14)

4.2.4 Operating Expense

RepRisk score is significant at the 5% level and has a positive relationship with Operating Expense. No other variable is statistically significant at or below the 5% level. The R² value is 0.079. (Table 15)

4.2.5 Current Liabilities

The RepRisk score is significant at the 1% level, with a positive relationship, no other variables have a significance level at or below the 5% level. It is interesting to note however that while environmental and governance percentages have a negative relationship, social percentages have a positive relationship. Polluting industry also has a negative relationship. The R² value is 0.182. (Table 16)

4.3 September 2011 – Occupy Wall Street

4.3.1 Cash

Only polluting industry has a statistical effect on cash, with a negative relationship. It is interesting to note, that only social percentage has a negative relationship while environmental and governance percentage has a positive relationship. The R² value is 0.091. (Table 17)

4.3.2 Revenue

The RepRisk score is statistically significant at the 0.1% level with a positive relationship. None of the other variables are statistically significant at or below the 5% level. Environmental, social and governance percentages are negative. The R² value is 0.287. (Table 18)

4.3.3 Retained Earnings

The RepRisk score is statistically significant at the 0.1% level, with a positive relationship. Polluting industry is significant at the 1% level with a positive relationship. The R² value is 0.316. All other percentages have a negative relationship with retained earnings. (Table 19)

4.3.4 Current Liabilities

RepRisk score has a positive relationship and is statistically significant at the 5% level. No other variables have a significance level at or below the 5% level. Governance percentage has a positive relationship while social, environmental, and polluting industries have negative relationships. The R^2 value is 0.269. (Table 20)

4.3.5 Operating Expense Total

The RepRisk score is significant at the 0.1% level, with a positive relationship. Governance is significant at the 5% level. Polluting industry, although is not significant, has a positive relationship with Operating Expense. The R^2 value is 0.260. (Table 21)

4.4 March 2014 – Ebola Outbreak

4.4.1 Cash

The RepRisk score has a relationship with cash and is significant at the 0.1% level. None of the other variables are statistically significant. All of the other metrics as well as polluting industry has a negative relationship with cash. The R^2 value is 0.190. (Table 22)

4.4.2 Revenue

The RepRisk score for revenue is positive and significant at the 0.1% level. All other variables are not significant at or below the 5% level. Interesting to note, that environmental percentage has a positive relationship while social, and governance percentages have a negative relationship. Polluting industry also has a positive relationship with revenue. The R^2 value is 0.252. (Table 23)

4.4.3 Retained Earnings

RepRisk score is significant at the 0.1% level and has a positive relationship with Retained earnings. Interesting to note, that although the other variables are not significant at or below the 5% level, environmental percentage and polluting industries has a positive relationship while social percentage and governance has a negative relationship with retained earnings. The R^2 value is 0.335. (Table 24)

4.4.4 Operating Expense

The RepRisk score is positive, at the 0.1% significance level. The other variables are not significant at the 5% level or lower, however environmental percentage has a positive relationship while social and governance percentage, and polluting industry has a negative relationship with Operating Expense. The R^2 value is 0.215. (Table 25)

4.4.5 Current Liabilities

RepRisk score is significant at the 0.1% level and has a positive relationship with current liabilities. Social and Governance Percentage are significant at the 5% level and have a negative relationship with current liabilities. The R^2 value is 0.337. (Table 26)

4.5 June 2017 – US Announces Leaving the Paris Climate Accord

4.5.1 Cash

RepRisk score is significant at the 5% level with a positive relationship. Polluting Industry is significant at the 1% level and has a negative relationship with cash. The other variables are not statistically significant at the 5% level or lower, and environmental percentage has a positive relationship while social and governance have a negative relationship. The R^2 value is 0.109. (Table 27)

4.5.2 Revenue

RepRisk score is significant at the 5% level and has a positive relationship with revenue. Polluting Industry has a significance at the 5% level and has a negative relationship. Interesting to note, is that environmental and governance percentages are positive, while social percentage is negative, however these variables are not significant at or below the 5% level. The R^2 value is 0.118. (Table 28)

4.5.3 Retained Earnings

RepRisk score for retained earnings is significant at the 5% level with a positive relationship. None of the other variables are significant at or below the 5% level. Environmental percentage

and polluting industry have a positive relationship with retained earnings, while social and governance percentage has a negative relationship. The R^2 value is 0.165. (Table 29)

4.5.4 Current Liabilities

The RepRisk score for current liabilities is significant at the 0.1% level with a positive relationship. Polluting industry is also significant but at the 1% level and has a negative relationship with current liabilities. The R^2 value is 0.261. Environmental percentage is the only CSR metric that has a positive relationship with current liabilities. (Table 30)

4.5.5 Operating Expense total

RepRisk score for operating expense is significant at the 5% level and has a positive relationship. Polluting Industry is also significant at the 5% level but with a negative relationship to Operating Expense. Both environmental and governance percentages have a positive relationship with Operating Expense while Social percentage has a negative relationship. The R^2 value is 0.113. (Table 31)

5. Implications and Contributions

5.1 Interpretation

5.1.1 Cash

Table 2: Comparison Table for Results from All Periods of Cash as Dependent Variable

Cash as Dependent Variable					
Period	RepRisk Score	Environmental Percentage	Social Percentage	Governance Percentage	Polluting Industry
Jan 2008	224.5*	1633.6	3159.2	-3062.1	-7480.7*
April 2010	218.1*	-11108.6	-3413.2	-613.9	-6642.0
September 2011	165.0	13278.4	-1778.2	5565.4	-6869.6*
March 2014	318.7***	-3998.0	-10530.2	-7921.6	-2708.0
June 2017	139.9*	9445.8	-8226.5	-1188.0	-6355.1**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

When observing cash as the dependent variable the analysis indicates that all but September 2011 (Occupy Wall Street) are statistically significant. This may indicate that although the Occupy Wall Street protests were against large institutions it did not have a statistical effect on the RepRisk score in relation to cash. It could mean that these types of protests did not hurt the cash on hand since firms were already in possession of the existing cash reserves. This could be because of a buffer that firms have in place to mitigate potential risks, or to provide greater liquidity for the firm. However, all RepRisk scores had a positive relation to cash, which meant that the more cash the corporation had the more likely it would be exposed to sustainability risks. One theory that could explain why that is, is that stakeholders that view

firms with excess cash are more likely to have the ability to enact sustainability changes, and therefore there is an increase in expectation for firms to do so.

January 2008 (2008 Financial Crisis), September 2011(Occupy Wall Street), and June 2017 (US Announces Retracting their Involvement with Paris Climate Accord) had statistically significant values for the dummy variable ‘Polluting Industry’ and its relationship with cash. All three had negative relationship which would indicate that being a firm in an industry not associated with pollution was more likely for the firm to garner more cash. The reasoning would be that these corporations would have less exposure to sustainability risks.

5.1.2 Revenue

Table 3: Comparison Table for Results from All Periods of Revenue As Dependent Variable

Revenue as Dependent Variable					
Period	RepRisk Score	Environmental Percentage	Social Percentage	Governance Percentage	Polluting Industry
Jan 2008	870.0***	-13793.7	-15520.8	-23916.8	2770.1
April 2010	389.1**	-3356.5	-5877.4	-12282.0	1175.6
September 2011	771.5***	-13297.2	-14740.9	-17729.0	5315.1
March 2014	607.0***	3540.9	-12784.0	-15996.5	405.5
June 2017	356.9**	22111.6	-8508.1	3341.2	-11189.2*

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

When comparing Revenue as the dependent variable all variables for RepRisk were significant, and positive. This indicates that an increase in potential sustainability risks, may be worth the risk as the trade-off may be additional business, since firms could be able to afford to take on additional business partners and transactions that would not be considered

sustainable business. For June 2017 (US announces leaving Paris Climate Accord) it is the only polluting industry coefficient that is statistically significant. It is also the only variable that has a negative relationship. It indicates that corporations that have not been within a polluting industry would have increased revenues. This could be because firms that are in industries that are typically environmentally polluting industries would be punished by regulations, and fines and this could be reduced from their revenue earnings. It's interesting to note, that the other coefficients for the variable 'Polluting Industry' are positive, this may indicate that firms are therefore not punished either because regulations were not as tough as they are in more recent times, or that more attention was given towards environmental firms when the US Announced their Departure from the Paris Climate Accord due to the environmental nature of the Paris Climate Accord.

5.1.3 Retained Earnings

Table 4: Comparison Table for Results from All Periods of Retained Earnings as Dependent Variable

Retained Earnings as Dependent Variable					
Period	RepRisk Score	Environmental Percentage	Social Percentage	Governance Percentage	Polluting Industry
Jan 2008	1456.1***	-8423.2	-28301.5	-21825.5	17154.0
April 2010	742.9*	3639.7	-8304.5	-15938.0	31628.2**
September 2011	1644.3***	-14741.2	-38617.6	-33225.5	31147.6**
March 2014	1439.2***	50396.1	-48930.3	-28413.8	29099.9
June 2017	1181.8**	42029.6	-47693.5	-33557.3	10919.4

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

When analyzing Retained Earnings as dependent variable all RepRisk scores are statistically

significant and are positively related to Retained Earnings. This means as there is an increase in revenue, a firm would incur additional risk. This might mean that for the corporation additional retained earnings, would also signal to stakeholders and investors, that with the amount of money left over after completing their financial obligations firms do not have an excuse to not improve on their sustainability performance, which can in turn increase the amount of risk of negative sustainability press from a firm, that incurs a large amount of retained earnings, and does not act on their CSR policies.

April 2010 (Deepwater Horizon) and September 2011 (Occupy Wall Street) had significant values for the coefficient of the variable ‘Polluting Industry’ and both have a positive value, which means that industries related to polluting industries earn more retained earnings. This is interesting since especially for the April 2010 Deepwater Horizon crisis it would seem that polluting corporations should be punished. One theory why it might not be the case is that, consumers may not have time to react to the incident, and therefore the retained earnings are still high. There is also the hypothesis that because of the large loss of oil from the Deepwater Horizon incident, investors and firms that are reliant on oil may panic from the fear of an oil shortage and as a result stock up on oil, which can lead to increase sales for oil companies, and as a result increased retained earnings.

As for September 2011, it could be likely that Occupy Wall Street protestors were focused on the governance issues of corporations that are primarily in the financial industry, therefore corporations that are in polluting industries, may not be affected by this crisis.

5.1.4 Operating Expense

Table 5: Comparison Table for Results from All Periods of Operating Expense as Dependent Variable

Table 5: Comparison Table for Results from All Periods of Operating Expense as Dependent Variable

Operating Expense as Dependent Variable					
Period	RepRisk Score	Environmental Percentage	Social Percentage	Governance Percentage	Polluting Industry
Jan 2008	786.4***	-13158.5	-14434.3*	-19864.6	-541.8

April 2010	318.1*	1629.2	-3094.8	-8210.7	-956.9
September 2011	666.4***	-14411.6	-13291.5	-18772.1*	4564.6
March 2014	506.9***	3698.6	-10275.8	-14524.4	-339.1
June 2017	298.7*	23785.8	-7814.7	270.7	-11279.0*

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The analysis for Operating Expense, shows that all RepRisk Scores are statistically significant, and are positive in relationship to Operating Expense. An explanation for why that might be the case, is that as corporations have incurred a higher amount of operation expense, it would mean that corporations have expanded their business capabilities and ability to operating in numerous societies and perhaps industries. This would mean that there is more likely a risk for sustainability issues that a corporation may face, as more workers are hired, and perhaps more resources need to be exploited, and the governance of the firm becomes more complicated, it can be harder to monitor and maintain a firm's CSR performance.

The social percentage for the financial crisis in January 2008, is also statistically significant with a negative relationship to operating expense. This would mean that as there is a decrease in social risks and CSR infractions related to society that there is an increase to Operational Expense, therefore firms that are less at risk of social issues have greater operational expense. This might be explained because of the increased costs that a firm has to incur in order to decrease the social risks that come with running a business. This can include expenses such as higher wages for workers, and increased investments into worker's well-being. The fact that it is only statistically significant for January 2008, during the Financial Crisis, might be due to the fact that corporations and firms may have to be more transparent with how they treat workers, since there might be more scrutiny to a firm's financial statement. Additionally, firms may have had a strong investment into workers due to the effects the 2008 Financial Crisis had on the economy. Corporations may have invested more in benefits and compensation packages to keep skilled workers. This is especially true for large corporations where having

a skilled workforce is part of their competitive advantage, such as within large technology firms, pharmaceutical companies or financial institutions.

The coefficient for Governance percentage was significant for Occupy Wall Street protests. The coefficient had a negative relationship with operating expense. This is likely because Occupy Wall Street was a governance crisis as many corporations were questioned on the transparency of corporations and the economic inequality that could be perpetuated due to how corporations could overcompensate executives and underpay workers. As Occupy Wall Street protests were happening corporations may have tried to restructure their corporations, either as an increased awareness of the issues that the protests brought up, or to reduce the risk of being targeted by protestors. Therefore, firms may have had to increase their operation expenses in order to restructure or to provide greater transparency to how their corporation are governed.

Both the Occupy Wall Street protests and the 2008 Financial Crisis share some similarities, as both of these cases involved the issues of how corporations ran their businesses, and primarily were focused on corporations that had large capacity to influence the surrounding society, such as financial institutions. The fact that social percentage was significant for the Financial Crisis and governance percentage was significant for Occupy Wall Street may signify some similarities, between the two different types of sustainability metrics.

Firms in non-polluting industries saw an increase in operation expense for June 2017 when the US announced leaving the Paris Climate Accord, as the coefficient for polluting industry is negative and statistically significant. This may be in effect because corporations which are in polluting industries have decreased operating expenses, because of the signalling from the US leaving the Paris Climate Accord would allow firms in polluting industries to relax their own regulations, and perhaps as a result costs associated with regulations from the US would be lowered, since the US relaxes its position on regulation on pollution. This in turn would affect firms that are not in polluting industries, which have nothing to gain from this news or crisis and therefore as a result would face higher Operating Expenses in comparison to firms that are in polluting industries.

5.1.5 Current Liabilities

Table 6: Comparison Table for Results from All Periods of Current Liabilities as Dependent Variable

Current Liabilities as Dependent Variable					
Period	RepRisk Score	Environmental Percentage	Social Percentage	Governance Percentage	Polluting Industry
Jan 2008	998.1***	2459.5	-16594.7*	-27367.6	-12540.4*
April 2010	568.4**	-7360.0	2975.4	-3955.0	-6247.8
September 2011	952.4***	-3998.0	-6805.9	1085.3	-3796.0
March 2014	1077.6***	-19762.1	-35849.2*	-30467.3*	-9714.7
June 2017	933.2***	19539.6	-26868.8	-1524.0	- 24443.1**

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

When compared with Current Liabilities as the dependent variable all of the RepRisk scores are statistically significant and have a positive relationship with current liabilities. This could mean that as corporations have incurred more financial obligations, it can signal to stakeholders that the firm is losing its ability to invest in sustainable actions, and therefore it would mean that the firm is more likely to be unable to fulfill their obligations of their CSR plans.

Social Percentage is statistically significant and has a negative relationship with current liabilities for the financial crisis in 2008 and, the Ebola Outbreak in March 2014. This would mean that firms that are more responsible in terms of social responsibilities, will incur more current liabilities. This may be the case since with the Financial Crisis in 2008, the economy was largely negatively affected, especially the workforce. As a result, many firms may have invested in providing benefits and welfare packages for their employees, as a result to have

their skilled workforce stay with the firm. This would mitigate the brain drain of skilled employees leaving the firm, due to the effects of the recession. Additionally corporations that provide care packages for employees during a financial recession would most likely garner goodwill from both the societies in which the firm operates in as well as good press, which can be used as a marketing tool to garner business, during a period in which business may be hard to obtain. As a result, corporations would be more willing to incur greater amounts of financial obligation in order to fulfill their social obligations.

As for the Ebola Outbreak, firms may be worried about the health and safety for their employees, and as a result they would most likely want to invest in the health of their employees to protect the work environment of their firms, and to maintain productivity, lest the corporation experiences an outbreak of the Ebola virus within their own workforce.

Governance percentage is also statistically significant in March 2014 during the Ebola Outbreak crisis and is negatively associated with firms. It seems that firms would be more likely to incur greater financial debt or obligations to mitigate governance risks. This could most likely be due to the fact that with the outbreak, firms would need to implement internal health policies in order to protect their workforce, in order to do that they would need to have stronger governance structures within the corporation to ensure that these governance plans would be successful as a result, corporations could therefore protect themselves from the crisis and as a result increase their governance performance in relation to sustainability.

Firms seem to be more likely to invest in social related issues, when firms are navigating crises in which the workplace is at risk because of the crisis, such as health risks or financial issues.

For polluting industries both in the periods of January 2008 during the Financial Crisis, and in June 2017 when the US Announced their Departure from the Paris Climate Accord, the coefficient for polluting industries are statistically significant. For January 2008 during the 2008 Financial Crisis, the relationship between firms in polluting industries and current liabilities were negative. This indicated that firms that were not in polluting industries incurred more current liabilities than polluting firms. One theory might be that during the Financial Crisis firms that relied on intangible assets were more at risk due to the recession from the Financial Crisis. Firms that were in polluting industry, were firms that relied much more on tangible assets, as they were in the business of resource exploitation, which produces tangible assets. This allowed firms that have tangible assets to have more stable prices for their assets,

as opposed to firms that primarily had intangible assets. This uncertainty in the value of intangible assets, may have led firms with intangible assets to incur additional current liabilities to cover their business expenses, and help provide liquidity to their business. Firms that had tangible assets were more likely able to take advantage of stable prices and did not need to incur additional liabilities in order to improve the liquidity of the firm.

For June 2017 the relationship between polluting industries and current liabilities was also negative. This would indicate that firms from non-polluting industries incurred more current liabilities. This may be because as the US pulled out of the Paris Climate Accord, investors may have found polluting firms to be more attractive since there would be less regulation imposed on these firms in the near future. In comparison since firms from non-polluting industries do not gain from the US leaving the Paris Climate Accord, it is possible that these firms instead had a decrease in investor funding and therefore had to rely on short-term financial obligations in order to meet their business needs, thus incurring a greater amount of current liabilities as opposed to polluting firms.

5.2 Discussion

As almost all RepRisk scores are statistically significant (except during September 2011, when Cash is the dependent variable), it would be insightful to observe the magnitude of the coefficient for each of the different observations. With how RepRisk is calculated, a higher value of RepRisk score would indicate increased sustainability risks. Therefore, the larger the coefficient from an increase of one unit (one million USD) of the dependent variable the more risk a corporation would incur. Therefore, the largest RepRisk coefficient would therefore be the independent variable that incurs the greatest amount of risk, with the variable containing the lowest coefficient incurring the least amount of risk.

Retained earnings has on average the highest RepRisk coefficient. This would indicate that the financial measure which has the greatest amount of sustainability risk is Retained Earnings while cash incurred the least amount of sustainability risk based on the average coefficient of the RepRisk score. This may be because Cash is constantly changing and therefore would not be a steady indicator of how a firm can conduct their sustainability business. One potential reason why Retained Earnings had the greatest exposure to sustainability risk, was because retained earnings would cause a firm to have strong business capabilities and would signal to investors and stakeholders the firm's financial ability and health. As a result, that would mean

that firms have a greater expectation and responsibility to increase sustainability performance, since investors and stakeholders can evaluate and observe the amount of capital available for a business to pursue their sustainability initiatives.

It is also noteworthy that although almost all RepRisk scores were statistically significant, the ESG measures provided by RepRisk were not as prevalent in being statistically significant. This could indicate that RepRisk has some proprietary metric that could explain why their score is consistently statistically significant, but the metrics that make up this score rarely is statistically significant.

From the interpretation of the data, firms from non-polluting industries were seen to have greater financial burden, such as having larger current liabilities, larger operating expenses, and lower retained earnings than firms that were from polluting industries. This signals that CSR performance may not lead to direct increases in financial earnings, especially during times of crisis. Instead it could indicate that CSR performance can lead to a deferral of potential losses as a result of a crisis. Firms from non-polluting industries had evidence of having larger amounts of cash, relative to firms in polluting industries. Larger amounts of cash could signify more financial stability since it increases the liquidity of a firm, which is especially beneficial during periods of crisis. Additionally, cash had the lowest amount of sustainability related risks when comparing with the other metrics. Intuitively mitigating risks requires lower returns, and perhaps increased expenses in order to lower the level of risks, this is in line with the results as expenses and liabilities have increased, which could signal a firm investing more into a sustainability plan, which in turn lowers the potential risk that the firm is exposed to. The money used to maintain a strong CSR performance, could be seen as an investment or insurance to reduce the risk that the firm would be exposed to, especially during a crisis.

Another theory could be that firms with a large amount of excess earnings could have a greater ability to commit unsustainable actions, such as corruption or expanding into businesses that could further the negative sustainable impacts that the firm is responsible for and as a result expose the firm to more risk. Additionally, as a firm expands it is likely to incur more risks and exposure to unsustainable actions simply from the fact that the firm has increased capacity to do more business. This is in line with the econometric results as every financial metric had a positive relationship with RepRisk score, indicating that with the increase of all the financial measures observed, sustainability risk also increases. This would mean that in order for a

business that is expanding to have strong sustainability performances, they would have to have their sustainability performance, overshadow their business growth, and therefore means that as a business grows and expands, the larger and more aggressive a sustainability plan has to be. This may be an unattractive alternative to managers, as it takes away capital from the firm to either compensate employees and investors, or to reinvest into the business to expand their profit-making activities.

5.3 Contributions

The thesis contributes to the existing literature by providing another measure for the relationship between sustainability and financial performance, but within the lens of a crisis. As observed from the econometric results: sustainable businesses are more likely to garner expenses and liabilities but have larger amounts of cash on hand, and firms in unsustainable industries have higher retained earnings. The econometric analysis reveals that Retained Earning is the financial metric with the most risk to businesses, while cash adds the least amount of risks to a business. This view changes sustainability from a profit-earning mechanism to a risk-reducing mechanism.

As well as the findings that RepRisk sustainability scores shows Retained Earning as the financial metric that incurs the most risk for a business. It expands the literature on the mechanisms behind how a firm may take advantage of CSR performance to either respond to a crisis, or to evaluate its financial benefit to the firm. From the findings, CSR performance is a strong risk mitigation tool, that indirectly can save firm's money as a result of reducing the amount of risks that firms may induce, especially during times of crisis. This can allow for further insights for researchers interested in further evaluating factors that can affect investors risk exposure for a corporation, as well as crisis management researchers and how they can evaluate how CSR as a risk mitigation tool could be an effective crisis management tool as well. Managers may find the findings insightful in how to further reduce and mitigate potential risks, especially for firms that are operating in industries that incur additional risks, finding areas to mitigate risks can be beneficial when the industry risks for a certain firm is particularly high.

5.4 Limitations and Further Areas of Research

Further areas of research for the thesis include repeating the econometric experiment with different CSR reputation indices to evaluate whether or not similar results occur. This may provide greater insight into determining the limitations, and differences RepRisk has in contrast with other research indices. As indicated from the econometrics analysis, it is likely that there are some unknown metrics that also influence the RepRisk score, as typically only the RepRisk score is statistically significant, not the ESG scores that help to derive the RepRisk score. Being able to further identify the metrics that make a sustainability scoring system statistically significant can be insightful for future research.

Studies into individual firms, with both strong CSR reputations as well as firms that have low CSR reputations, and evaluating these firms over a period of time, such as through time-series analysis may be fruitful to compare and contrast how firm's sustainability plans differ during periods of crisis and periods of prosperity, and can provide further insight into the risks that are mitigated from increasing CSR performance.

There can also be further studies into the liabilities of a firm, and how these liabilities may impact CSR, since as observed from the econometric analysis, firms that are sustainable also incur larger liabilities and operating expenses.

The thesis also provides a differing viewpoint on how sustainability may not be a tool to increase profits, but instead can increase the profitability of a firm, through risk mitigation. Further research into risk mitigation and CSR can be fruitful for future research.

5.5 Conclusion

The findings from the thesis on how sustainable business practices can help mitigate a firm's risks helps to answer the thesis's research questions. The first research question regarding whether there are any benefits to maintaining a sustainability plan during times of crisis can be seen from the econometrics results. Firms that pursue sustainability plans will see reduced risk, from the observation of sustainable firms having larger cash on hand, with the trade-off of lower retained earnings. These findings can benefit investors that are determining an accurate valuation of risk for the firm, as well as for managers and stakeholders, as they can recognize the value of a sustainable business plan as it helps to mitigate potential risks, which

is extremely useful for the survival of the firm during times of crisis. Academics will also find it insightful to further research the benefits of sustainability plans through the lens of risk mitigation in contrast to the existing lens of profit making. From the results of the analysis, the second research question of the differences between an effective sustainability plan to an ineffective sustainability plan is the possibility of reducing the risk between the firms. The financial differences observed were that firms with poor performing sustainability plans had higher retained earnings, while firms with strong performing sustainability plans had higher cash on hand. This can be insightful to managers and stakeholders as they can decide whether having more cash flow to help the survivability of the business is more important or if a business which achieves higher amounts of retained earnings is more important.

6. Tables

6.1 January 2008

Table 7: Regression Results for Cash, January 2008

	(1) Cash
CurrentRepRiskIndexRRI	224.5* (2.06)
EnvironmentalPercentage	1633.6 (0.24)
SocialPercentage	3159.2 (0.57)
GovernancePercentage	-3062.1 (-0.34)
PollutingIndustry	-7480.7* (-2.15)
_cons	3878.7 (1.39)
<i>N</i>	91
<i>R</i> ²	0.135

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 8: Regression Results for Retained Earnings, January 2008

	(1) RevenueTotal
CurrentRepRiskIndexRRI	870.0*** (7.47)
EnvironmentalPercentage	-13793.7 (-1.92)
SocialPercentage	-15520.8** (-2.81)
GovernancePercentage	-23916.8* (-2.37)
PollutingIndustry	2770.1 (0.76)
_cons	13664.1*** (4.88)
<i>N</i>	109
<i>R</i> ²	0.428

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 9: Regression Results for Cash, January 2008

	(1) RetainedEarnings
CurrentRepRiskIndexRRI	1456.1*** (5.10)
EnvironmentalPercentage	-8423.2 (-0.49)
SocialPercentage	-28301.5 (-1.96)
GovernancePercentage	-21825.5 (-0.89)
PollutingIndustry	17154.0 (1.83)
_cons	145.7 (0.02)
<i>N</i>	94
<i>R</i> ²	0.371

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 10: Regression Results for Cash, January 2008

	(1) OperatingExpenseTotal	(2) OperatingExpenseTotal
CurrentRepRiskIndexRRI	786.4*** (5.91)	786.4*** (5.91)
EnvironmentalPercentage	-13158.5 (-1.63)	-13158.5 (-1.63)
SocialPercentage	-14434.3* (-2.23)	-14434.3* (-2.23)
GovernancePercentage	-19864.6 (-1.76)	-19864.6 (-1.76)
PollutingIndustry	-541.8 (-0.13)	-541.8 (-0.13)
_cons	12307.8*** (3.84)	12307.8*** (3.84)
<i>N</i>	106	106
<i>R</i> ²	0.309	0.309

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 11: Regression Results for Cash, January 2008

	(1) CurrentLiabilitiesTotal
CurrentRepRiskIndexRRI	998.1*** (5.82)
EnvironmentalPercentage	2459.5 (0.25)
SocialPercentage	-16594.7* (-2.11)
GovernancePercentage	-27367.6 (-1.03)
PollutingIndustry	-12540.4* (-2.48)
_cons	13379.5*** (3.58)
<i>N</i>	83
<i>R</i> ²	0.421

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6.2 April 2010

Table 12: Regression Results for Cash, April 2010

	(1) Cash
CurrentRepRiskIndexRRI	218.1* (2.18)
EnvironmentalPercentage	-11108.6 (-1.54)
SocialPercentage	-3413.2 (-0.58)
GovernancePercentage	-613.9 (-0.09)
PollutingIndustry	-6642.0* (-2.06)
_cons	11118.1** (2.76)
<i>N</i>	107
<i>R</i> ²	0.107

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 13: Regression Results for Revenue, April 2010

	(1) RevenueTotal
CurrentRepRiskIndexRRI	389.1** (2.77)
EnvironmentalPercentage	-3356.5 (-0.33)
SocialPercentage	-5877.4 (-0.71)
GovernancePercentage	-12282.0 (-1.24)
PollutingIndustry	1175.6 (0.26)
_cons	19178.7*** (3.39)
<i>N</i>	108
<i>R</i> ²	0.092

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 14: Regression Results for Retained Earnings, April 2010

	(1) RetainedEarnings
CurrentRepRiskIndexRRI	742.9* (2.45)
EnvironmentalPercentage	3639.7 (0.17)
SocialPercentage	-8304.5 (-0.49)
GovernancePercentage	-15938.0 (-0.74)
PollutingIndustry	31628.2** (3.24)
_cons	8412.9 (0.74)
<i>N</i>	99
<i>R</i> ²	0.221

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 15: Regression Results for Operating Expense, April 2010

	(1) OperatingExpenseTotal
CurrentRepRiskIndexRRI	318.1* (2.46)
EnvironmentalPercentage	1629.2 (0.18)
SocialPercentage	-3094.8 (-0.41)
GovernancePercentage	-8210.7 (-0.90)
PollutingIndustry	-956.9 (-0.23)
_cons	14342.4** (2.75)
<i>N</i>	108
<i>R</i> ²	0.079

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 16: Regression Results for Current Liabilities, April 2010

	(1) CurrentLiabilitiesTotal
CurrentRepRiskIndexRRI	568.4** (3.35)
EnvironmentalPercentage	-7360.0 (-0.65)
SocialPercentage	2975.4 (0.30)
GovernancePercentage	-3955.0 (-0.35)
PollutingIndustry	-6247.8 (-1.28)
_cons	15801.0* (2.58)
<i>N</i>	88
<i>R</i> ²	0.182

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6.3 September 2011

Table 17: Regression Results for Cash, September 2011

	(1) Cash
CurrentRepRiskIndexRRI	165.0 (1.52)
EnvironmentalPercentage	13278.4 (1.28)
SocialPercentage	-1778.2 (-0.23)
GovernancePercentage	5565.4 (0.74)
PollutingIndustry	-6869.6* (-2.10)
_cons	3607.2 (0.59)
<i>N</i>	106
<i>R</i> ²	0.091

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 18: Regression Results for Revenue, September 2011

	(1) RevenueTotal
CurrentRepRiskIndexRRI	771.5*** (5.51)
EnvironmentalPercentage	-13297.2 (-1.04)
SocialPercentage	-14740.9 (-1.59)
GovernancePercentage	-17729.0 (-1.90)
PollutingIndustry	5315.1 (1.30)
_cons	14866.6* (2.02)
<i>N</i>	109
<i>R</i> ²	0.287

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 19: Regression Results for Retained Earnings, September 2011

	(1) RetainedEarnings
CurrentRepRiskIndexRRI	1644.3*** (4.55)
EnvironmentalPercentage	-14741.2 (-0.42)
SocialPercentage	-38617.6 (-1.43)
GovernancePercentage	-33225.5 (-1.24)
PollutingIndustry	31147.6** (2.74)
_cons	5128.9 (0.23)
<i>N</i>	99
<i>R</i> ²	0.316

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 20: Regression Results for Operating Expense, September 2011

	(1) OperatingExpenseTotal
CurrentRepRiskIndexRRI	666.4*** (5.11)
EnvironmentalPercentage	-14411.6 (-1.21)
SocialPercentage	-13291.5 (-1.55)
GovernancePercentage	-18772.1* (-2.18)
PollutingIndustry	4564.6 (1.20)
_cons	14406.1* (2.12)
<i>N</i>	107
<i>R</i> ²	0.260

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 21: Regression Results for Current Liabilities, September 2011

	(1) CurrentLiabilitiesTotal
CurrentRepRiskIndexRRI	952.4*** (5.03)
EnvironmentalPercentage	-3998.0 (-0.21)
SocialPercentage	-6805.9 (-0.49)
GovernancePercentage	1085.3 (0.08)
PollutingIndustry	-3796.0 (-0.66)
_cons	5460.5 (0.48)
<i>N</i>	91
<i>R</i> ²	0.269

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6.4 March 2014

Table 22: Regression Results for Cash, March 2014

	(1) Cash
CurrentRepRiskIndexRRI	165.0 (1.52)
EnvironmentalPercentage	13278.4 (1.28)
SocialPercentage	-1778.2 (-0.23)
GovernancePercentage	5565.4 (0.74)
PollutingIndustry	-6869.6* (-2.10)
_cons	3607.2 (0.59)
<i>N</i>	106
<i>R</i> ²	0.091

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 23: Regression Results for Revenue, March 2014

	(1) RevenueTotal
CurrentRepRiskIndexRRI	771.5*** (5.51)
EnvironmentalPercentage	-13297.2 (-1.04)
SocialPercentage	-14740.9 (-1.59)
GovernancePercentage	-17729.0 (-1.90)
PollutingIndustry	5315.1 (1.30)
_cons	14866.6* (2.02)
<i>N</i>	109
<i>R</i> ²	0.287

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 24: Regression Results for Retained Earnings, March 2014

	(1) RetainedEarnings
CurrentRepRiskIndexRRI	1644.3*** (4.55)
EnvironmentalPercentage	-14741.2 (-0.42)
SocialPercentage	-38617.6 (-1.43)
GovernancePercentage	-33225.5 (-1.24)
PollutingIndustry	31147.6** (2.74)
_cons	5128.9 (0.23)
<i>N</i>	99
<i>R</i> ²	0.316

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 25: Regression Results for Operating Expense, March 2014

	(1) OperatingExpenseTotal
CurrentRepRiskIndexRRI	666.4*** (5.11)
EnvironmentalPercentage	-14411.6 (-1.21)
SocialPercentage	-13291.5 (-1.55)
GovernancePercentage	-18772.1* (-2.18)
PollutingIndustry	4564.6 (1.20)
_cons	14406.1* (2.12)
<i>N</i>	107
<i>R</i> ²	0.260

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 26: Regression Results for Current Liabilities, March 2014

	(1) CurrentLiabilitiesTotal
CurrentRepRiskIndexRRI	952.4*** (5.03)
EnvironmentalPercentage	-3998.0 (-0.21)
SocialPercentage	-6805.9 (-0.49)
GovernancePercentage	1085.3 (0.08)
PollutingIndustry	-3796.0 (-0.66)
_cons	5460.5 (0.48)
<i>N</i>	91
<i>R</i> ²	0.269

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

6.5 June 2017

Table 27: Regression Results for Cash, June 2017

	(1) Cash
CurrentRepRiskIndexRRI	139.9*
	(2.27)
EnvironmentalPercentage	9445.8
	(1.45)
SocialPercentage	-8226.5
	(-1.46)
GovernancePercentage	-1188.0
	(-0.22)
PollutingIndustry	-6355.1**
	(-2.72)
_cons	9457.3*
	(2.13)
<i>N</i>	112
<i>R</i> ²	0.109

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 28: Regression Results for Revenue, June 2017

	(1) RevenueTotal
CurrentRepRiskIndexRRI	356.9**
	(2.81)
EnvironmentalPercentage	22111.6
	(1.64)
SocialPercentage	-8508.1
	(-0.73)
GovernancePercentage	3341.2
	(0.30)
PollutingIndustry	-11189.2*
	(-2.32)
_cons	17102.4
	(1.86)
<i>N</i>	113
<i>R</i> ²	0.118

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 29: Regression Results for Retained Earnings, June 2017

	(1) RetainedEarnings
CurrentRepRiskIndexRRI	1181.8** (2.83)
EnvironmentalPercentage	42029.6 (0.97)
SocialPercentage	-47693.5 (-1.31)
GovernancePercentage	-33557.3 (-0.93)
PollutingIndustry	10919.4 (0.69)
_cons	27313.3 (0.95)
<i>N</i>	104
<i>R</i> ²	0.165

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 30: Regression Results for Operating Expense, June 2017

	(1) OperatingExpenseTotal
CurrentRepRiskIndexRRI	298.7* (2.54)
EnvironmentalPercentage	23785.8 (1.91)
SocialPercentage	-7814.7 (-0.73)
GovernancePercentage	270.7 (0.03)
PollutingIndustry	-11279.0* (-2.54)
_cons	15647.5 (1.84)
<i>N</i>	113
<i>R</i> ²	0.113

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 31: Regression Results for Current Liabilities, June 2017

	(1) CurrentLiabilitiesTotal
CurrentRepRiskIndexRRI	933.2*** (4.41)
EnvironmentalPercentage	19539.6 (0.82)
SocialPercentage	-26868.8 (-1.41)
GovernancePercentage	-1524.0 (-0.08)
PollutingIndustry	-24443.1** (-3.14)
_cons	18508.0 (1.19)
<i>N</i>	95
<i>R</i> ²	0.261

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

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