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Sustainable investing performance during COVID-19 crisis

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Abstract:
ESG score has been gaining popularity in decision-making of individual and institutional investors as demand for actions for sustainable development is increasing. Sustainable investing and institutional frameworks have forced companies to take sustainability actions into consideration in terms of Corporate Social Responsibility (CSR). CSR performance can be measured with ESG score and investors could use that score in their investment decision-making together with traditional financial measures. There has emerged a remarkable increase of volume and product-offering related to sustainable securities, and it is more convenient for investor to choose certain thematic or best-in-class sustainable stocks that are align with individual investing targets. As a rather proactive investing style, sustainable investing aims to gain long-term returns, while balancing firms' possibilities and risks derived from ESG information. Relationship between ESG score and stock performance has been increasingly studied in academic research. This paper examines, whether firm's engagement to CSR pays off during market turbulence, more specifically during COVID-19 collapse period that is defined as a timeframe between 3. February and 23. March 2020. According to academic research, there is not clear consensus if high ESG companies manage to be more resilient during crisis.

The paper considers the market area of United States with dataset consisting of S&P500 companies. Empirical results show that ESG score explains significantly, but rather weakly the stock price performance. Other individual variables that are explaining stock returns during the period are related to financial flexibility and profitability measures. High ESG firms with momentum, profitability, cash reserves and low level of long-term debt are estimated to have increased possibility to be more resilient during the collapse period of COVID-19 crisis. This paper confirms the theory that firm's engagement to CSR can be seen as an element that increases investor's value and wealth, while it also decreases information asymmetry between shareholders and management. Company can reach more sustainable conditions, while maintaining competitiveness.

Keywords: Sustainable Investing, Corporate Social Responsibility, Sustainability, Crisis resiliency, CSR and Stakeholder Theory, Downside risk

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1 Introduction

Sustainable investing uses non-financial information together with traditional financial measures in analysis of investment decisions. The investing style is known also as ESG investing is part of broader concept of Socially Responsible Investing (SRI). *Environmental, Social and Governance (ESG)* investing style has become popular among institutional and individual investors. Socially responsible way of doing business has raised its importance as evaluating a firm. Individual persons are increasingly motivated to purchase products and services from a vendor, who takes ethical issues into consideration. That applies also to individual- and institutional investors that are increasingly willing to invest in firms that take actions to engage in corporate social responsibility (CSR) matters.

On the other hand, investors are motivated to consider investing in companies that handle ESG risks well and therefore these stocks are seen to be safer investments as regulation concerning sustainability is estimated to be increasing in the future. Institutional and governmental bodies are defining the future business environment with regulation and guidelines. They are increasingly focusing on sustainable development missions in their agenda. According to novel evidence, investing in sustainability themed assets is viewed as predictor of future financial returns (Hartzmark & Sussman, 2018). Though, there are debate in the academic literature, whether ESG score could be used as an indicator of company stock performance. It could be argued that engagement in CSR could narrow information asymmetry between management and investors. During crises, investors appear to be more committed to hold on these stock and due to lower information asymmetry and fact that these investments are serving individual purpose-based objective of investing.

Broadstock, Chan, Cheng & Wang (2021) state that in 2019 the ESG focused portfolios passed the capitalization of US$30 trillion in major markets, which explains the increased interest towards investing alternatives in question. Not only in 2020, but already in 2019, 300 mutual funds with ESG mandate received four times more net flows compared to 2018 (Gillan, Koch, & Starks, 2021). Gillan et al. (2021) continue by stating that 3000

institutional investors and service providers have currently signed the Principles of Responsible Investment (PRI) -agreement, which idea is to implement ESG measures and Corporate Social Responsibility (CSR) matters into their decision-making and investment analyzing process.

This study aims to discover, whether during market uncertainty, investors are considering ESG score in their decision-making of investments and whether they are more likely to hold high ESG stocks through market turbulence. The paper focuses on COVID-19 crisis, which is considered as exogenous, health-related crisis that landed unexpected to markets. As there is a growing interest towards SRI investments, it is relevant to be studied, whether element of increased ESG score leads to better stock returns during market turbulence. According to data concerning the financial crisis of 2007-2008, it appears to be beneficial for a firm to have engagement in social capital to have better stock resiliency when there is a shock in the market (Lins, Servaes, & Tamayo, 2017).

Compared to previous notable crisis that began in 2007, COVID-19 crisis has a different nature. Roots of financial crisis are related to untrust among investors as financial market could not be seen as reliable to be transparent and evaluate risks properly. It led to collapse of firms' stock valuations. Considering COVID-19 crisis, the issue is rather concerning the matter, whether firms could be resilient and survive the exogenous pandemic with all its side effects. As the unexpected shock hit the market, investors might be motivated to hold their investments or shift their investments in stocks with higher ESG ratio. That may be result of narrower information asymmetry, lower ESG risk or due to purpose-based investing style such as impact investing. Individuals are more committed to hold stocks of firms with engagement in sustainability and the firms are having more loyal customer base through sustainable branded products and services (Albuquerque, Koskinen, Yang, & Zhang, 2020). That may be one explanatory element of the phenomenon, why high ESG companies could be more resilient during market turbulence.

There is significant increase in the number of available academic studies concerning the matter with datasets that include different market areas and methodologies to examine the phenomenon. Broadstock et al. (2021) mention that the study concerning the volatility of ESG assets is studied among academics and there appears to be significant evidence that firms with well-managed CSR risk enjoy lower downside risk during market turmoil. Albuquerque et al. (2020) state that decreased oil prices in the first quarter of 2020 may explain worse performance of typically low ESG scoring industries but after excluding these companies out of the sample, they still find similar results confirming relationship of ESG score and stock performance during crisis. There may be risks that arise from wider information asymmetry that may be related to accounting, governance and other matters that are hidden in times of bullish market conditions. Events, such as housing- and IT bubbles have raised interest among investors to consider also non-financial aspects in valuation that could include ESG information. Firms that ignore ESG related standards tend to have significantly more ‘’hidden risks’’ (Díaz, Ibrushi & Zhao, 2021).

Some SRI strategies may explain some abnormal price changes as some investors are ready to give up returns for societal objective. According to Barber et al. (2021), impact venture capital funds tend to generate 4,7% lower internal rates of return ex-post than traditional funds. There is an underlying motivation of that investing style to find investments that have goal to gain some special purpose that is good for the society. The increased relevance of ESG information motivates to study the subject more and examine, how the CSR engagement of a firm pays off when encountering a crisis in market. Including that aspect in analysis may result a desired balancing element to overall investment portfolio.

1.1 Purpose of the study

The purpose of this study is to examine, if higher ESG score is connected to better stock performance during COVID-19 crisis. Sustainable investing is part of SRI strategies, which traditionally has old roots and involves also traditional religion-based screening methods. SRI involves multiple sub-strategies and they commonly have the idea to invest in firms that are operating in sustainable way and/or to reach some specific societal impact. More popularly, sustainability is measured with ESG score. The paper aims to find out, whether high ESG companies are related to better stock performance and lower stock price volatility during COVID-19 crisis.

The paper interprets shortly high ESG stock performance during the previous financial crisis and normal periods to gain information to benchmark. By constructing a comprehensive analysis of the research topic, the target of the paper is to help to understand the stock price performance characteristics of sustainable firms. The study is going to be using data of companies included in the S&P500 index during the most intense market collapse period of COVID-19. Paper applies OLS regressions to reveal the performance attribution of ESG score to stock price.

1.2 Hypothesis Development

The study aims to find an answer to research problem, whether firms with higher ESG scores are related to stock performance during COVID-19 crisis. The paper investigates the significance of ESG score during the collapse of pandemic, which is conceptualized between timeframe of 3. February and 23. March 2020 as used in paper by (Engelhardt, Ekkenga, & Posch, 2021). Using the most intense collapse period of the crisis, the paper intends to find out, whether the high scoring ESG companies have increased resiliency.

Overall, the paper is going to examine, whether firms could benefit of implementing better CSR coverage to have better stock performance during market uncertainty. The paper is also studying the investor behavior during market turbulence, whether investors are more likely to hold high ESG companies compared to other companies. That may be explained due to higher level of loyal customer base and higher profit margins obtained from product differentiation including more sustainable products and services that have less-elastic demand (Albuquerque et al., 2020).

Individual study by Lins, Servaes & Tamayo (2017) confirm that during the financial crisis companies with higher level of CSR had better stock performance compared to others. Previous statement could be partly explained by behavioral aspects as some investors gain utilization from non-financial outcomes that are according to their personal values (Renneboog, ter Horst, & Zhang, 2008). Financial gains may not be seen as the most important utility of the investment and therefore such investors might be more loyal to resilient hold high CSR stocks.

This paper examines the mentioned matter and is categorized as cross-sectional study. Goal is to gain results, whether at the peak of the market turbulence, theories related to sustainability and stock price performance are holding and if the results are significant. As a results, a comprehensive answer to the research question and hypotheses is formed. The hypotheses are stated as following:

H1*: Companies with high ESG score had better stock returns during the collapse period of COVID-19 crisis.*

H2: *Companies with high ESG score had lower stock volatility during the collapse period of COVID-19 crisis.*

The stock performance is measured using two different dependent variables that are cumulative raw stock returns and cumulative abnormal stock returns. Abnormal return is the difference between actual logarithmic return and expected return. The methodology is also used in similar papers such as studies by Albuquerque et al. (2020) Demers et al. (2020) and Engelhardt et al. (2021). To measure the second hypothesis, the paper uses volatility and idiosyncratic volatility as dependent variables to capture the result for the hypothesis. Idiosyncratic volatility is calculated from daily abnormal returns.

1.3 Contribution to the existing literature

This paper contributes to the existing literature by examining the capacity of high ESG stock to yield during crises. There are relevant papers concerning the topic as it is a theme, which has gained increased attention among investors studying the topic. Though, as a rather novel theme, there is still much to contribute for this research. This study can be considered as a continuation to study by (Lins et al., 2017) as they examined the performance of CSR stocks during the financial crisis in their paper ''*Social Capital, Trust, and Firm Performance: The Value of Corporate Social Responsibility during the Financial Crisis''.* Lins et al. (2017) concentrate specifically on social capital measured with social and environmental scores and the governance factor is left away from the study. Lins et al. (2017) use dataset of more than 1600 US companies and conclude that companies invested in social capital appear to yield better in the United States. This paper contributes to the study by using COVID-19 period as timeframe with slightly different dataset and methodology – still fundamentally aiming to derive significance of high CSR on stock performance during crises.

The overall market structure has changed significantly from the financial crisis until COVID-19 crisis. Central bank actions, market integration, nature of these crises and most importantly, the investors attitudes towards ESG information have developed. The research paper analyzes the ESG score attribution to stock performance during uncertainty and could be used as a benchmark study for the future for similarly themed papers.

Albuquerque et al. (2020) study the relationship of environmental and social (ES) scores with stock performance using dataset of 2171 US based firms. They research additionally, whether there is effect of advertising expenditures on stock performance. They find positive and significant results for social capital and advertising to company performance relationship. In their study they apply also a different-in-different regressions to capture the results of the different events during the first half of 2020. As a contribution to their study, this paper focuses on S&P500 companies, which is narrower dataset and uses slightly different methodology.

Similar study is conducted by Engelhardt et al. (2021). Engelhardt et al. (2021) use dataset of 1452 European firms and narrow the timeframe to 3. February. to 23. March 2020. Timeframe of my study is derived from their study. As a contribution to their paper, my study captures the effect in the US using the data of S&P500 firms that are considered as the largest public companies in the US. The methodology is similar to this paper. Broadstock et al. (2021) study the theme in their paper ''*The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China*''. Their adjustment of research question and hypotheses are closely related to my paper, though using different market area. The paper constructs two portfolios, top and bottom ESG performers and measure the performance during crisis and confirm that the top ESG portfolio tends to generate better returns.

Study conducted by Demers, Hendrikse, Joos & Lev (2020) show that according to their methodology and data of 1652 US firms that ESG scores were rather negatively associated with returns during the second quarter of 2020. They find more relevance of firms' traditional financial measures such as liquidity and profitability to encounter crisis better. In addition, results are varied between industries as some industries have negative effect of high ESG score in relation to performance. Summarized, there is space left for debate and the theme needs to be further examined using certain data and methodology. This paper uses smaller set of data by focusing on the main stock index in the US consisting of largest companies included in S&P500 index.

1.4 Structure of the Paper

The research paper is divided into five main parts. After the introduction, the first main chapter reviews the fundamental information related to sustainable investing. The chapter includes relevant sub-strategies that are included in SRI set of strategies and interpret the relevance of ESG score to these strategies. The study focuses on ESG integration strategy as it is closely related to sustainable investing. Also, the other related SRI sub-strategies are introduced as most of them are utilizing ESG rating in the strategy design. The strategies could be used together as they are not exclusionary.

The second main chapter reviews the institutional framework standards that guide the SRI and company business environment. Following chapter itemizes the relevant theory related to CSR. The fourth main chapter consists of past literature concerning the theme are introduced and the main findings are interpreted. Also, studies concerning ESG and performance of companies during financial crisis and normal times are interpreted as they give benchmark information for the study. Following the fourth chapter, the last main chapter concerns the data and calculations that have been applied to conduct the research. At the end of the paper, summary and conclusions are specified.

2 Socially Responsible Investing

This chapter goes through the main themes concerning SRI and especially the development of the investing style and the strategies that have developed over time. The chapter reveals the most common terms related to the theme and is going to take a closer look at the meaning of ESG and its relevance in modern world especially in finance. Investors are increasingly motivated to consider sustainable factors in their portfolio as it has been profiled to generate returns and reduce risk in the portfolio (Broadstock et al., 2021).

The term can be characterized as central concept when it comes to investing in a way that takes non-financial information into account in investing. The investing style is divided into multiple sub strategies and investors can choose relevant strategy or combination of them that go align with individual purposes and values. ESG investors are motivated to reach long-term returns, while integrating ESG criteria in their valuations in stock picking. On the other hand, value-based investors tend to exclude some specific industries or implement impact investing strategy, which concentrates merely on the societal outcome of the investment as financial returns may be secondary motivation.

Kumar, Dayaramani & Rocha (2019) describe that there seems to be no clear consensus about the terminology and 56% of the ESG adopters are said to have lack of clarity over the terminology. In general, the terminology related to sustainable investing has always had closely related terms that can be used as synonyms in some contexts. Environmental, Social, Governance (ESG) investing, socially responsible investing, ethical investing, impact investing, green investing and sustainable investing are terms that are closely related but the fundamental definition and investment objective is slightly varied. Eurosif is considered as a well-recognized European community that aims to promote the development of SRI practices. The Eurosif association (2021a) profiles sustainable- and responsive investing as follows:

> *''a Long-term oriented investment approach, which integrates ESG factors in the research, analysis and selection process of securities within an investment portfolio. It combines fundamental analysis and engagement with evaluation of ESG factors in order to better capture long-term returns for investors, and to benefit society by influencing the behavior of companies.''*

The definition of SRI can be divided to separate sub strategies that serve some special purpose. Some main strategies are introduced later in this chapter. The modern SRI conceptual framework is separated into three main points that are 1) Values-based avoidance screens 2) Proactive sustainability-oriented analytics known as ESG or SR investing 3) Corporate engagement and impact investing (Townsend, 2020). Drivers of motivation concerning SRI is formulated by Uzsoki (2020) as the main interest of individual and institutional investors can be characterized as follows:

Private Investors:

- *Demand for products and services that are in line with their values.*

Institutional investors:

- *Demand from their stakeholders to integrate sustainability matters in their investments*
- *Policy risk – Arising from regulation and policies that may have risk in the future*
- *Enhanced understanding how to value ESG risks in their portfolios*

The underlying motivation behind SRI could be for example a tool to reach for abnormal returns, gain social acceptance, enhance brand value, or proactively respond to future regulation risks (Finsif 2021a). As interpreted, there is possible to be various driving forces that promote interest towards sustainable commitments and focus on these matters could differ between companies. Below graph describes the volume development of sustainable fund assets in the US. In the graph can be seen significant development of the total number of these assets. The proportion of passive ESG asset classes has increased and might be one explanatory thing to explain increased volume. That might

mean that the number of ETFs related to ESG screens has increased and attracted investor ability to invest in SRI themed alternative securities.

Figure 1. Sustainable Fund Assets in the US. (Morningstar, 2021)

SRI strategies are for example best-in-class investing, positive/negative screening and ESG integration. When evaluating, what stocks could be included in portfolio according to ESG integration strategy, may not be included in negative-screening strategy. Also, all companies that are included in SRI funds could not be profiled as ethical investments as typically they could be filtering for example unethical investments, but the limit could be that just maximum of 5% of turnover would be acceptable proportion to gain returns from for example tobacco industries so it is not that strict (Sparkes, 2001).

On the other hand, ESG investing or sustainable investing, incorporates ESG criteria into the valuation to reach long-term returns as seeing it being significant for the future firm performance. ESG integration is considered as proactive strategy, which incorporates ESG data into analysis to determine the companies that are most prepared to compete in future world with limited natural resources, increased regulatory and climate change (Townsend, 2020).

Lassala, Orero-Blat & Ribeiro-Navarrete (2021) interpret that firm complying with sustainability standards is possibly to reduce information asymmetry across stakeholders. According to agency theory, commitments towards sustainable actions is increasing trust among investors as it is more predictable if company is reporting about its sustainable information. This is eligible to strengthen investor's decision making as there is more available reporting related to ESG risks.

Companies could be at the same time on industry that is not traditionally considered as sustainable, such as oil industry, but could still be considered as good ESG performer if they have implemented reliable ESG policies in their strategy. That separates for example sustainability themed investments from ESG incorporation strategy. Though, there is tentatively estimated possibility that sustainability themed investments are managing ESG matters well such as renewable-energy firms that are fundamentally focusing on environmental matters and therefore tentatively have at least a good environmental score in ESG overall rating.

Investors and institutional demand for companies to increase CSR engagement might cause transformation costs for firms to disclose the CSR data. Though, according to Humphrey, Lee & Shen (2012), there is no significant risk-adjusted performance measure changes appeared in UK firms by adopting Corporate Social Performance (CSP) ratings. The society demand for companies to consider long-term responsibility has derived investment strategies that use environmental, social and governance factors as guidelines to construct an investing strategy.

2.1 Development of the terminology

SRI has been involving merely exclusionary strategy as today ESG investing has gained popularity and it is measured with ESG score or risk. Figure 2 on the next page describes some of the main events related to SRI presented be Principles of Sustainable Investing -organization. There is no clear consensus about the beginning of the SRI but according to the association on 1971 the first SRI fund was presented to investors. Though, some authors interpret that the concept of SRI was conceptualized in the modern world already in the 1920s with fund that had SRI characteristics that was focused on negative screening, which excluded for example tobacco, alcohol and gambling companies out of the portfolio holdings (Kumar et al., 2019). The SRI gained popularity in 1971 and remarkable step was taken with the Pax World Fund that was fully considered as SRI fund. As can be seen in the timeline, the speed of relevant milestones related to SRI has been increased in the 2000s.

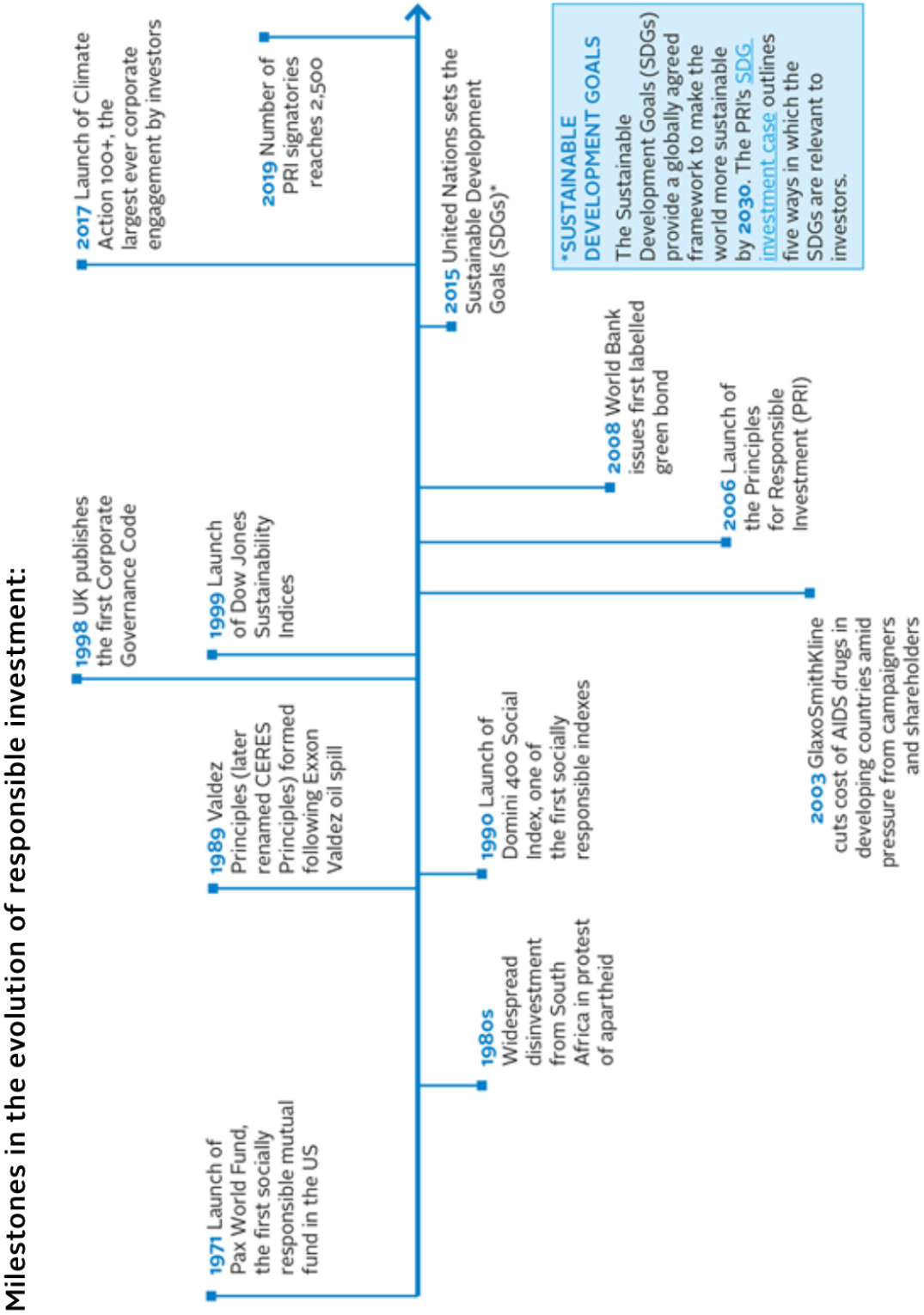

Figure 2. Development of the terminology of responsible investment. (PRI, 2021a)

Roots of term SRI can be traced back to hundreds of years, when investing principles were most commonly guided by religious norms guiding people not to support enterprises that were involved in unethical business such as war or drugs. The conceptual starting point of SRI is arguable as the investing style could have been present hundreds of years ago guided mainly by religion. The origin of SRI is built around value-based avoidance screens. 1920s is characterized as a starting point for use of terms related to SRI. Commonly, investments were strongly tied to values and guidelines implemented by church or negative attitudes towards wars et cetera. For instance, the Methodist Church negatively screened investing in firms that were against the community's values, like tobacco-, weaponry- and gambling industries (Renneboog, Horst & Zhang, 2008).

Time period between 70s and late 80s has been used as a decade, when the term gained widespread popularity among individual investors as a byproduct of increased recognition how ethical, environmental, and social performance affects financial values (Bengtsson, 2008). Bengtsson (2008) states that the concept of SRI spread firstly in the US. The main purpose was to invest by the manner that was aligned with religious values. The development of SRI concept can be seen largely affected by certain catalysts that have been drivers to SRI strategies as for example, Vietnam war can be characterized as one important event affecting investor attitudes (Townsend, 2020). Today, climate change could be profiled as one relevant issue that guides the motives of investors across the world, whether looking it as a risk or possibility for a firm's future.

If the starting point of sustainable investing was earlier considered just a niche topic and may have been narrowed just to screening investing style, now it appears to be broader concept. Popularly, it is nowadays rather rare if an international company wouldn't have a CSR policy in their strategy (Albuquerque, Koskinen & Zhang (2019). Nowadays, market participants have gained more clear view how to incorporate CSR with the overall strategy construction. The belief that it would be not possible to balance CSR with financial performance, has been increasingly argued by academic studies (Friede, Busch, & Bassen, 2015). The concept of sustainable investing is included in the list of SRI strategies. The

investor includes metrics that measure sustainability quantitatively in the overall stock analysis as combining ESG information with financial measures. As a proactive investing style, sustainable investing aims to reach long-term returns, while measuring firms' possibilities and risks derived from ESG information. In the 2000s consumers globally are more conscious about the effects of consumerism, how different products consume the earth or issues related to use of unethical workforce. Themes such as inclusion, climate change, working life conditions, sustainable supply chains, ethical food producing are terms that consumers and companies are increasingly aware in their decision-making. Company reputation can be seen to be more vulnerable against negative news as consumers have better access to information.

Rather modern concept to CSR is shared-value principle, which takes a slightly different approach. Firms could be seen as creators of shared value and according to Porter & Kramer, (2019) it should even replace traditional CSR concept. They conceptualize it with three key points that are following: reconceiving products and markets, redefining productivity in the overall value chain and enabling development of local clusters to reach greater innovative and growth to gain better benefits for society. In the 2010s the idea of creating shared value was further developed and the main point of that concept was the definition of creating long-term value by simultaneously enhancing the social and economic conditions in communities through company processes and policies (Latapí Agudelo, Jóhannsdóttir, & Davídsdóttir, 2019).

Things that are shaping the modern concept of CSR is the consumer demand for products that fulfill their values. At present, term of ethical consumerism is shaping the company processes to reach better reputation and brand. Certain customer bases are ready to pay more for products that are produced in a way that serve sustainable development. Other key thing that matters largely on SRI is the regulatory environment, which is tightening as governments and institutions are shaping the global settings for sustainable development. These settings are shaped for example by UN Global Compact agreement and EU's Green Deal reconstruction plan. Enhanced ESG of a firm can be seen as a

strategy to decrease risk in the future arising for example from tightening standards. If a company is already engaged to CSR, it may be seen as attractive investment as company may face less risk of costs arising from demand for more sustainable processes.

With broad set of SRI strategies, individual investors and institutions have possibility to make direct investments in stocks or funds that are complying with SRI or ESG standards. Investors can check ESG score or ESG related risk characteristics of companies by global data providers such as Sustainalytics, Refinitiv and Bloomberg. Assets with ESG mandates have experienced significant growth in recent years. Figure 3 represents the growth in developed markets between years 2016 and 2018.

Region	2016	2018
Europe	$12,040	$14,075
United States	$8,725	$11,995
Japan	$474	$2,180
Canada	$1,086	$1,699
Australia/New Zealand	$516	$734
Total	**$22,890**	**$30,683**

Figure 3. Volume of assets with ESG mandates. Sustainable Investing Shaping the future of finance (Global Sustainable Investment Alliance, 2019)

SRI constructs of multiple strategies, where investor could choose or combine them according to their individual investment principles and values. Albuquerque et al. (2019) state that companies that have successfully implemented CSR in their processes have on average better profit margins, less elastic demand and higher firm value. According to findings by these authors, these firms encounter also less systematic risks and therefore be more favorable for risk-averse investors. That statement is aligned with the theory that certain consumers are willing to pay more for products and services that are matching to sustainable values. The main SR investing strategies are introduced in the next chapter.

2.2 Socially Responsible Investing Strategies

In this chapter is introduced the main strategies related to socially responsible investing. There are various strategies involved in addition to the ones interpreted in this paper, but these ones are generally identified as main strategies. They take certain viewpoints to define strategy settings as some of them are focusing more on values as other strategy is focusing more on long-term capital gains through investing in sustainable assets. ESG integration tends to be more profitable strategy than exclusionary strategies according to study that examined more than 1000 documented studies about the theme (Aybars, Ataünal, & Gürbüz, 2018).Presented strategies do not necessarily exclude each other but most commonly they could be used together as constructing an investment strategy. According to survey by Kumar et al. (2019), 56% of ESG adopters find it difficult to distinguish clear specification of ESG terminology.

Figure 4 shows the volumes of main SRI based strategy volumes in 2019. It can be interpreted that the traditional exclusionary strategy has maintained in popularity. Though, the ease of measuring negative screening strategy volume may explain the high volume of the assets identified under the strategy. ESG integration has been gaining popularity as the focus is to reach for long-term returns, while incorporating ESG information into the analysis. It can be characterized as quite novel approach of SRI strategies.

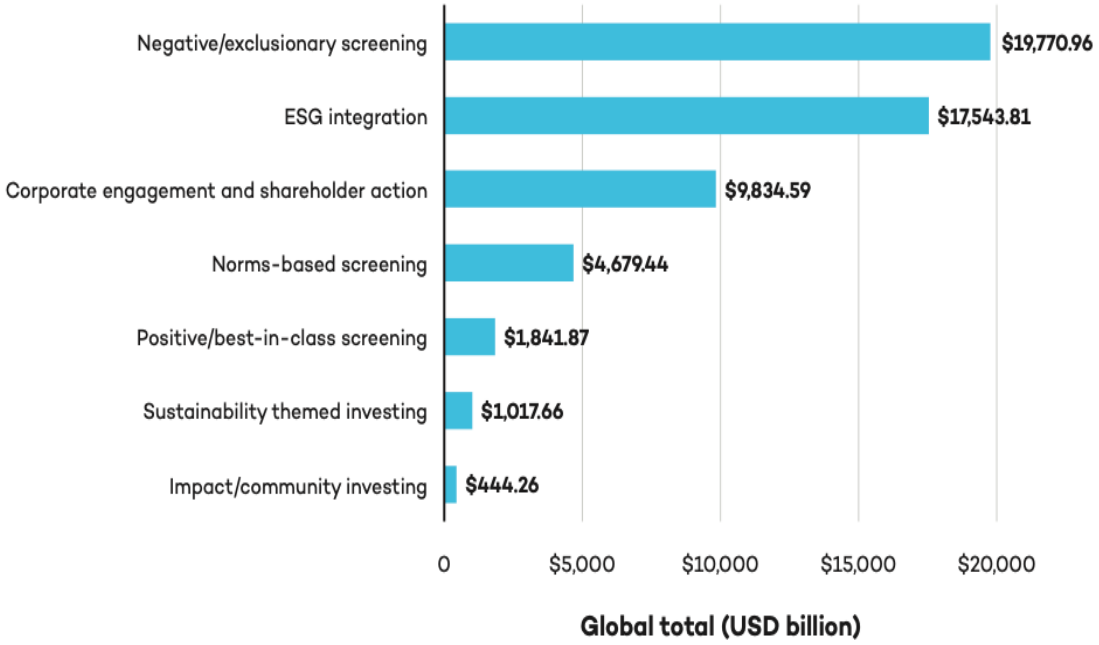

Figure 4. Asset volume of SRI strategies. (Global Sustainable Investment Alliance, 2019)

2.2.1 ESG Integration

Traditionally, other SRI styles have been focusing on investing in firms according to value judgements and negative screening. Traditional security analysis has been mainly conducted based on financial information found on financial statements. ESG analysis is important part of extension to these main pillars according to the strategy. ESG integration strategy is also known as ESG investing or used as synonym to describe sustainable investing. Way of measuring the ESG score can vary. It depends greatly on industry, where a company is operating. ESG integration has gained popularity in 2000s as it is taking a broader view on SRI. According to the principle, the strategy is focusing on finding long-term value in firms by implementing ESG information to support the valuation (CFA institute, 2021).

ESG refers to three-dimension term, which includes by environmental, societal and governance factors. The first one, environmental factor describes issues related to climate change, deforestation, biodiversity, waste management et cetera. It appears to be

important factor due to broad interest in climate finance and as being key focus in regulation (Broadstock et al., 2021). Environmental factor could be distinguished as the factor that measures for example total emissions and waste management depending on industry. Social factor contains measures of people & relationships in companies (CFA institute, 2021). The factor includes themes such as gender diversity, human rights, customer satisfaction that are primarily focusing on handling of social responsibilities in a firm. The third one, governance factor focuses for instance on executive compensation, board composition and shareholder rights. Relevant for that factor is matter, how well firms' executives are serving the interest of various stakeholders including transparency of financial reporting (CFI Institute, 2021).

One of the most used ESG data provider is Refinitiv. The data includes elements of sustainability indexes and measures as they are also calculating ESG scores for more than 10 000 companies around the world and in the US the coverage is of 3500+ firms (Refinitiv, 2021). Other popularly known ESG data providers are for example MSCI, Sustainalytics and Bloomberg MSCI. In this paper ESG data is obtained from Refinitiv. Refinitiv database use overall 450 company level ESG measures and weight individual factors (E,S and G) separately. Figure 5 is presenting the elements that overall ESG score is covering divided to these three categories.

Pillars	Catagories	Themes
Environmental	Emmission	Emissions
		Waste
		Biodiversity *
		Environmental management systems *
	Innovation	Product innovation
		Green revenues, research and development (R&D), and capital expenditures (CapEx)
	Resource use	Water
		Energy
		Sustainable packaging *
		Environmental supply chain *
Governance	CSR strategy	CSR strategy
		ESG reporting and transparency
	Management	Structure (independence, diversity, committees)
		Compensation
	Shareholders	Shareholder rights
		Takeover defenses
Social	Community	Equally important to all industry groups, hence a median weight of five is assigned to all
	Human rights	Human rights
	Product responsibility	Responsible marketing
		Product quality
		Data privacy
	Workforce	Diversity and inclusion
		Career development and training
		Working conditions
		Health and safety

Figure 5. ESG categories and definitions (Refinitiv, 2021)

One of the key success factors in this strategy is to avoid ESG risk and keep high estimations of returns for investments. Firm not complying with CSR characteristics can be seen as an avoided investment as it generates risk that can be named as ESG risk. Some data providers are additionally covering ESG risk data that takes slightly different approach against ESG as factor. There ESG is merely seen as ESG risk, and it reflects the possibility to encounter theme-related risks in the future. Relevant in the strategy is to analyze ESG

factors that possibly have positive or negative impacts on certain company performance in the mid- or long-term. ESG factors are calculated together as overall ESG score or -risk and the weight of the factors may vary based on different data providers.

2.2.2 Best-in-Class/Positive Screening

This strategy is closely related to momentum strategy, which picks stocks in portfolio that have had the best performance in the past within specific industry. Best-in-Class approach picks stocks that has highest ESG score in the industry. The security analysis can be made based on individual analysis, information from index or information provided by ESG data providers such as Bloomberg or Refinitiv. Positive screening aims to invest in companies in certain industries that are profiled as top ESG performers based on individual criteria. Positive screening could be used to identify companies that would be included in best-in-class portfolio. These industries could be related for example to clean energy and social enterprises. (PRI, 2021a)

2.2.3 Negative Screening/Norms-based Investing

Roots of negative screening strategy go back to 1920's, when there were restrictions to invest in certain industries and were guided by religions and social norms. For example, tobacco, alcohol, military weaponry and gambling are included in the basket of industries that are absolutely avoided investments as they are against the guidelines. Negative screening strategy avoids investing in certain industries. In negatively screened funds, there is conducted a screening, which excludes securities that are involved in certain industries or projects.

As it has been relevant for the longest period and is convenient to apply as investment strategy, it stays at the top of the list concerning most assets under management of SRI investing strategies (Uzsoki, 2020). Norms-based investing is closely related to negative

screening, though the main idea of that approach is to invest in accordance to their compliance with international standards and norms framework defined by institutions such as UN (Eurosif, 2021).

2.2.4 Sustainability Themed Investing

Investors can invest in thematical portfolios of securities consisting of stocks or bonds that are profiled as sustainable. The strategy is the fastest growing SRI strategy recently (Uzsoki, 2020). Key objective of the strategy is to combine suitable risk-return profiles with an idea to contribute indirectly to specific sustainable of social outcome (PRI, 2021a). One example is to invest in renewable energy stock fund, which is considered as thematically screened. A way to implement this investing style is to invest in funds that have an ESG analysis or screening of investments that are included in the portfolio (Eurosif 2021). This investing approach can include elements of impact investing.

2.2.5 Impact Investing

The investment strategy aims to pick stocks that are seeking to reach some positive societal outcome. Alternatively, the investment could be done to certain projects that are aiming to pursue some specific societal objectives. Barber, Morse & Yasuda (2021) interpret that according to their study results, investors are ready to give up 2.5-3.7 percentage points lower internal rate of return of investment in impact funds compared to traditional funds. One form of impact investing is community investing that aims to finance communities that would otherwise not receive funding (Kumar et al., 2019).

One way of investing according to this strategy is to invest in SIBs (Social Impact Bond), loans and capital investments (Finsif, 2021). The range of investments vary from below-market investments to market-rate investments, depending on individual requirements for yield and impact. In this strategy the key vision is the positive societal impact that is

be made possible through finance. Key characteristic of an impact investing related security is the commitment to measure and report the successfulness of intended impact of underlying investments, which ensures transparency and accountability (Global Impact Investing Network, 2021).

2.2.6 Active Ownership

Opposite of passive capital investment, investor can actively take part in the decision-making of a company to reach some outcome. The outcome could be influencing for example to more sustainable processes or market standard that could be for example to integrate ESG reporting requirements for target company (Finsif 2021). It is also considered as one of the fastest growing strategies in the field of sustainable investing (PRI, 2021a). Centric idea of the strategy is to gain influence in a firm to reach long-term value by taking CSR into consideration in decision-making. It can be done for example by actively discussing with stakeholders or through participation in general meetings to reach some societal outcome.

3 Framework of Standards

The number of companies reporting sustainable information in addition to traditional financial information has gained significant increase. It can be interpreted as trend since the number of sustainability reports of companies included in S&P 500 index has increased from 20% to 86% between 2011 and 2018 (Pinkston & Fischer, 2021). They continue those statistics show that companies providing sustainability reports has social benefits and also in terms of stock performance as benefits are including lower cost of capital, increased loyalty and satisfaction of employee and customer relations. In this chapter, the relevant governmental and institutional framework and standardization bodies related to CSR and SRI are introduced.

3.1 Sustainable Development Goals and Global Compact

The framework can be used as an integrated benchmark of general sustainable goals for both developed and developing nations to point out the most relevant objectives between 2015-2030 (le Blanc, 2015). Mission is to improve and maintain sustainability in long-term by implementing presented principles. The principles are closely related to idea behind the triple bottom line, which aims to improve organizations' financial performance by combining social and environmental aspects together with profits (Lassala et al., 2021).

ESG strategy could take influence from Global Compact and SDG's when designing their CSR agenda. Including these principles into decision making can increase financial performance as they are guidelines that are targeted to retain sustainable business and tackle risks in future. As the same underlying principles are signed by states, companies are encouraged to promote these agendas as governments are motivated to support these agendas through their budgets and financing. While integrating SGD targets and ESG criteria, it can be seen as a proactive approach against future risks.

The UN presented an UN Global Compact for companies around the world to engage in responsible practices (Lassala et al., 2021). It is specifically designed for companies that can adjust their policies, processes and reporting to be aligned with these standards in mission to serve their purpose for the society but also promote sustainable financial development. By 2021, there were almost 15 000 companies in 162 countries that had signed up to these initiatives through partnerships (United Nations Global Compact, 2021). The Global Compact initiative consists of Ten Principles that are related human rights, labor, environment and anti-corruption. Following is representing the 10 principles of UN Global Compact (2021), which are the focus points for companies to implement:

Human Rights
Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and
Principle 2: make sure that they are not complicit in human rights abuses.

Labour
Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;
Principle 4: the elimination of all forms of forced and compulsory labour;
Principle 5: the effective abolition of child labour; and
Principle 6: the elimination of discrimination in respect of employment and occupation.

Environment
Principle 7: Businesses should support a precautionary approach to environmental challenges;
Principle 8: undertake initiatives to promote greater environmental responsibility; and
Principle 9: encourage the development and diffusion of environmentally friendly technologies.

Anti-Corruption
Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

3.2 PRI

PRI stands for Principles for Responsible Investment and it is supported by the United Nations. PRI offers guidance, events, resources and networks for organizations and investors. The main offering is the guidance on how to integrate social responsibility into organization's investments and overall strategy. Organizations can join as signatories to show their commitment to sustainable investments. Main target groups are asset owners, investment managers and service providers. PRI is profiled as one of the main institutions that provides standards for investment decision-making for organizations that are willing to increase their creditability to comply with ESG criteria.

The institution publishes annual reviews and gathers relevant data for any interests towards sustainable investing. Nowadays there are funds that are meeting ESG criteria. As the service provider is signed to these PRI commitments, there could be sustainable funds that are able to act as alternative for traditional funds. Institutional investors have to commit for six principles if they want to be a signatory of PRI. These principles are following:

Principle 1: We will incorporate ESG issues into investment analysis and decision-making processes.
Principle 2: We will be active owners and incorporate ESG issues into our ownership policies and practices.
Principle 3: We will seek appropriate disclosure on ESG issues by the entities in which we invest.
Principle 4: We will promote acceptance and implementation of the Principles within the investment industry.
Principle 5: We will work together to enhance our effectiveness in implementing the Principles.
Principle 6: We will each report on our activities and progress towards implementing the Principles.
(PRI, 2021a)

3.3 Sustainability Accounting Standards Board

In response to traditional way of company accounting, there is increased demand for accounting framework that takes non-tangible assets into account. Arising from the increased investor demand for ESG information, companies are motivated to disclose information that serves broader information demand by taking sustainability measures into account. SASB's mission is to reimagine corporate reporting to integrate ESG and financial factors as mainstream practice and in 2019, there was 77 industry specific disclosure standards created by SASB to guide reporting (Jebe, 2019).

SASB is a non-profit organization founded in 2011 with purpose to help simplifying the communication between companies and their investors about the financial influence of sustainability actions. In 2021 established Value Reporting Foundation aims to simplify the standardization by offering a merged set of resources including Integrated Thinking Principles, the Integrated Reporting Framework and SASB standards (SASB,2021).

SASB is an independent organization that delivers standards for sustainability reporting and therefore possibly decreases information asymmetry between the stakeholders, especially between shareholders and management. SASB's standards divides companies into industries that have their own industry specific metrics that are categorized on certain impact-focused methodology based on Sustainability Classification System (SICS) (Pinkston & Fischer, 2021). While SASB reporting standards enable companies to disclose information about sustainability on more consistent basis, it serves investors on their plan to comply with ESG related strategies. These standards can be characterized as basis information frameworks for investors to channel capital into sustainable firms according to their individual sustainability investing strategies (Jebe, 2019).

3.4 The Paris Agreement

To decrease negative effects of climate change, nations across the world have signed for this common treaty. It has gained significant importance internationally as the agreement can be ratified only when the countries that cover more than 55% of total greenhouse gas emissions worldwide have signed to it. The agreement sets clear goals for the signatories to prevent climate warming by stating target of reducing global warming to below 2 and preferably to 1,5 celsius compared to pre-industrial levels (United Nations Climate Change, 2021). Signed in 2015 at the UN Climate Change Conference in Paris by 192 parties, the agreement binds the signatories to reinforce for the reduction of greenhouse gas emissions and support financially the developing countries to reach their targets. (United Nations, 2021).

Every five years countries have to submit their national climate action plan documents, known as NDC's. They are used to communicate the contributions towards the vision of Paris Agreement – What actions are done to reduce greenhouse gas emissions. Nations can also form long-term strategies to mitigate climate risks, but these reports are not mandatory. (United Nations, 2021).

Investors can take these treaties into consideration as making investment decisions since the Paris Agreement sets clear goals and visions for the future. Katowice rulebook provides standardized rules and guidelines that are made to help to dismount general agreement's strategy to smaller parts including detailed guides related for example to finance, transparency and implementation (European Commission, 2021b). Individual investor can make conclusions, where governmental support in terms of financing and grants are directed. For example, green loans have been used as one instrument to provide favorable financing for companies that are carrying out transformations towards more sustainable processes. These actions can lower the cost of capital of certain industry companies and therefore be valuable information for investors.

3.5 EU Taxonomy

For sustainable investments and actions across the Euro area there is a classification system called EU Taxonomy, which has emerged through demand for classify the EU sustainability development objectives, such as EU green deal and Paris climate agreement. Published in 2020, the main purpose of the taxonomy is to help investors, policymakers and institutions to identify companies and investments that are classified as environmentally sustainable. The classification system consists of six main environmental objectives that are:

- Climate change mitigation
- Climate change adaptation
- The sustainable use and protection of water and marine resources
- The transition to a circular economy
- Pollution prevention and control
- The protection and restoration of biodiversity and ecosystems

(European Commission, 2021a).

With help of classification system, capital flows towards environmentally sustainable investments are made more transparent as investors are more informed about the classifications and are therefore able for example to detach greenwashing activities out of them. Many international institutional initiatives have begun the process to implement frameworks to identify and measure sustainability in terms of certifications. Where institutional commitments of the EU towards sustainable development present general guidance and targets that have to be reached, EU Taxonomy is more specific in its guidance to provide specific requirements for industries to fulfill the above mentioned six environmental objectives (Lucarelli, Mazzoli, Rancan, & Severini, 2020). For example, company involved in automotive industry faces certain thresholds' according to EU Taxonomy. Accordingly, if the company is aiming to reach sustainable targets in terms of EU Taxonomy standards, it has to cut the emissions of the cars in production.

In general, the classification system can be used on two main layers, which are company- and project-level. The thing these have in common is the applicability to increase transparency, attract capital investments and lower the cost of capital (Schütze, Stede, Blauert & Erdmann, 2020). Sustainable companies and projects pursuing more sustainable investments are eligible to gain governmental funding. The taxonomy system gives companies encouragement to design their processes in accordance with certain sustainability themed thresholds.

4 Theoretical background

In this chapter, the main theories related to company social responsibility and socially responsible investing are introduced and interpreted. The definition of CSR is interpreted and thereafter related theories that define the theme of the study are introduced. Theories cover the fundamental purpose of a firm and how social responsibility is connected to them.

4.1 Corporate Social Responsibility

Businesses have natural economic interest to adapt to demand of the society to get their products and services sold. Ultimately, the demand for offerings derives from the interest of a consumer. There is a trending principle to consume products that are fit with the standards of sustainable development. In the 21st century the number of terms related to corporate social responsibility has increased and there has been increased attention towards sustainability related missions and actions of companies.

Companies that operate in the modern world are encouraged to widen their scope, how to operate to live up with society expectations and regulatory pressure from the institutions. Performance of a firm can be calculated with financial ratios but also with figures that reflect the efficiency of CSR engagement. CSR can be categorized as self-regulation of firms to reach societal goals. Useful way to measure firms' management of CSR is by examining individual ESG score, which gives a quantitative measure for CSR engagement. Traditionally, the CSR engagement is seen as a cost, regulatory commitment, or a set of actions to polish the brand. Though, it can be also seen as an opportunity to stand out of the competitors, promote innovation and reduce risk (Zhou, 2006). In addition to society pressure against sustainable development, clear and positive CSR reputation can attract potential employees and some are ready to cut their wage to work in a company that has focus on CSR matters (Handy, 2018).

Institutions play an important role as companies that are investing in sustainable projects could be compensated with green loans. Finance availability does have a great effect on corporate strategy and therefore the risk concerning sustainable investments may be reduced. According to report conducted in 2013, CSR can be seen as playing a necessary role in many corporations' strategic decisions as resources are allocated based in accordance to increase shareholder and societal value through branding and goodwill creating processes (EY, 2013).

Structuring the social image of a firm can attract investors, who are considering themselves as sustainable investors, who take ESG criteria into account. Companies, who can differentiate themselves with great CSR profile from competitors are enjoying increased brand loyalty (Omura, Roca, & Nakai, 2021). Firms are interested to manage their overall image as negative events may decrease the reputation and cause reputational risk to realize. ESG score, which defines the handling of CSR has raised its importance as indicator to analyze a firm in comprehensive manner together with financial information.

4.2 The Triple Bottom Line

The term can be considered to present the corresponding framework of the traditional profit over purpose -approach to business. Consisting of sustainable elements, it can be seen as an approach to promote sustainability and innovation and can be incorporated to organizational target-setting and reporting. This accounting framework was introduced by John Elkington in 1994 as a challenge for organizational leaders to reimagine capitalism in ways of doing business by implementing social and environmental missions together with the profit maximization (Elkington, 2018).

Consisting of three P's the TBL (Trible Bottom Line) connecting Profit, People and Planet as elements to define organizational purpose. TBL incorporates Profit as one dimension so basically it could be used more generally and maybe more simple way to think organizational purpose that incorporates sustainable dimensions. There seems to be no

standard way of measuring the TBL performance, but the index of this three-dimensional definition can be modified for business, non-profit and governments. TBL can be conceptualized as essential organizational mission to include profit, human and environmental capital (Slaper, 2011).

4.3 Stakeholder Theory

Organizations hold responsibility to its stakeholders and the stakeholder theory concerns that relationship. It is a commonly cited theory that concerns the purpose of an organization for its stakeholders. According to the approach, companies should create value not only for shareholders but also to all groups that have stake for the firm, known as stakeholders. Traditionally, these stakeholders are groups that have some stake for a company and therefore includes shareholders, employees, customers, suppliers, lenders and society. Total stakeholders can be divided into two brackets, internal and external stakeholders. In the list of internal stakeholders are commonly included management and employees, whereas external stakeholders are for example customers and shareholders.

The stakeholder theory could be examined through different viewpoints. Traditionally, the stakeholder theory has been used also to analyze the ethicality issues related to company strategy. Freeman & Dmytriyev (2017) argue that CSR should be included in company responsibilities. Nowadays it is more popular to think that CSR activities should play a role in stakeholder theory. Though, particularly earlier the statement faced criticism. Supporters of ideology called *Chicago School* argued that CSR activities could be seen merely as stealing from shareholders as companies are using resources to solve non-business problems (Freeman et al. 2017). Participating and reporting about CSR can be beneficial for company in terms of stakeholder theory in modern times. According to Fernando & Lawrence (2014), it reduces information asymmetry across stakeholders and in return company can expect to improve its reputational status, attract new investors, raise lower cost of capital, improve employee retention and attract new ones as well.

The stakeholder theory can be considered as classic management- or ethics theory and the concept has lived over time. There is arisen alternative views and modifications to the fundamental concept. Roughly, the fundamental purpose of a business in society has been to maximize profits for its shareholders. There are no requirements in conducting voluntary social responsibility actions for the society, while the viewpoint derived from stakeholder theory considers that companies should serve the interest of all stakeholder groups – including society and common good (Branco & Rodrigues, 2007). Fundamentally, businesses have to settle with the demands of customers in the long-run and therefore management taking actions towards CSR can cause the business to be rewarded by the stakeholder groups. In accordance with stakeholder and agency theories, company management reward programs could include elements based on, how well CSR targets have been reached in addition to traditional reward system variables. Branco et al. (2007) present a modern view by stating that managers are not anymore stakeholder agents, but rather responsible of building of stakeholder relations.

4.4 Carroll's Pyramid of CSR

One way of viewing CSR is to examine it through the scope of hierarchy pyramid. In context of CSR, useful is to approach the theory through Carroll's pyramid of CSR that is designed for businesses. The original four levels of CSR hierarchy were introduced in 1979 and re-worked as pyramid in 1991 (Baden, 2016). It is divided in four parts based on the hierarchical responsibilities excepted from the society and ways to ideologically carry out these expectations. The set of four responsibilities do create the foundation or infrastructure, which is designed to help defining the framework for corporate responsibilities (Carroll, 2016).

As can be interpreted of the pyramid, on the base is the most fundamental traditional capitalist purpose of company, which is described as economic responsibility to generate profits for its shareholders. The four parts of the pyramids could be seen as representing

different stakeholders with specific requirements and priority levels. Economic responsibilities affect mostly shareholders and employees whereas philanthropic responsibilities are seen to affect mostly employees as studied to increase morale and engagement towards company (Carroll, 2016).

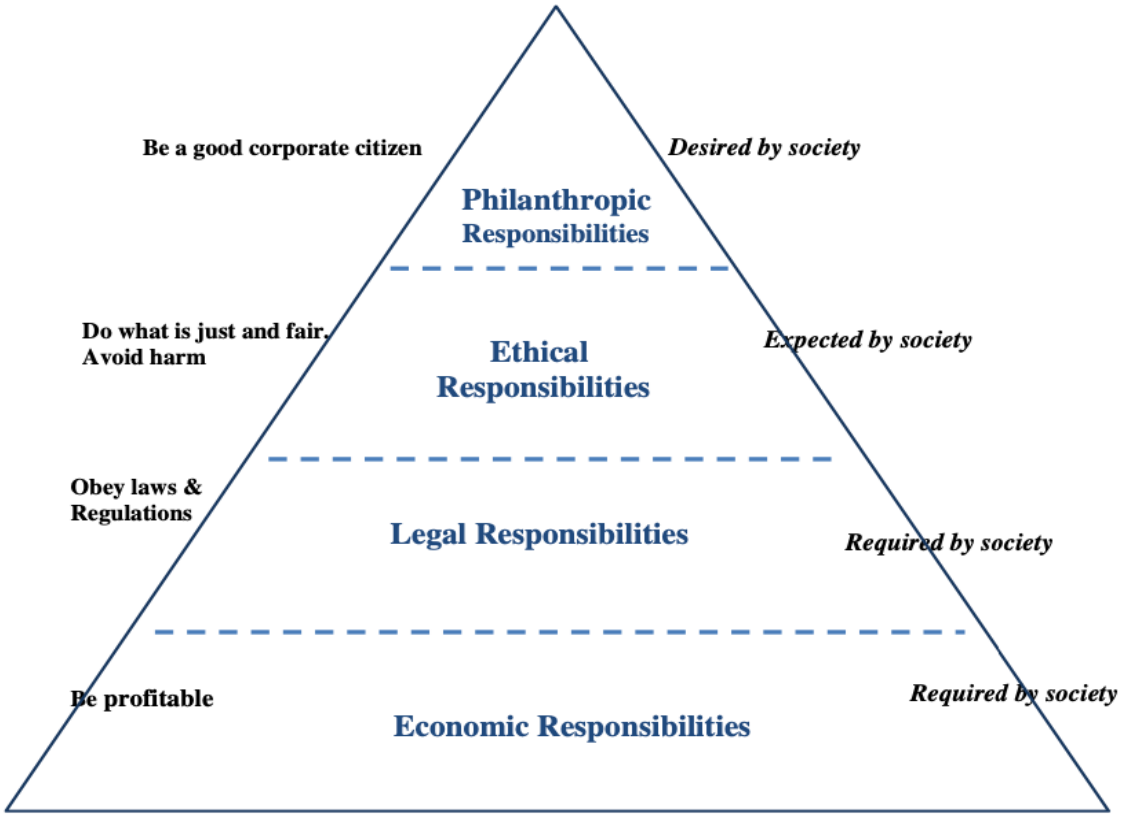

Figure 6. Carrol's pyramid of CSR (Carroll, 2016)

5 Literature Review

In this chapter the most relevant literature is explained and interpreted regarding corporate social responsibility profile and its matter to financial performance. Firstly, the current vision of how the high ESG score affects company performance during normal times is presented. Even though the paper does not study broadly the topic it is still relevant to understand how CSR and company performance is connected during normal times. After that, the latest crisis is going to be reviewed for informative reasons to help benchmark the COVID-19 crisis with the latest financial crisis. Nature of these crises are different as financial crisis was arising from untrust in financial markets and COVID-19 pandemic is merely exogenous health-related shock to the financial markets. Thirdly, research papers related to significance of ESG score for firm performance during COVID-19 pandemic are interpreted to conclude results of these benchmark studies.

5.1 ESG and Stock Performance

There is ongoing debate, whether ESG score affects positively on stock performance. Since the 21st century, the growing amount of literature concerning CSR and financial performance relation has been published as there have been a significant increase in volume of CSR investments and reports. Corporates that have focus on CSR, tend to have lower cost of capital, better reputation, employee engagement and market to book ratios (Malik, 2013). Opposite view is arising from agency theory as company executives may be motivated to improve firm's ESG score at the expense of shareholders to build their own personal reputation (Demers et al., 2020). Friede et al. (2015) state that after gathering data from 2000 empirical studies, it appears that there is a linkage between ESG and financial performance, especially in the US. Similar results are captured by (Busch et al., 2018) and (Malik, 2013).

It is found that environmental and social factors were associated with increased market performance in terms of Tobin's Q at the expense of ROA and ROE. Governance factor appears to be negatively associated with financial performance. (Alareeni & Hamdan, 2020). Gianfrate & Kievid (2021) interpret that according to multiple studies finding significant results, companies with high CSR profile are more resilient to shocks as socially responsible investors are less likely to conduct selling during shocks. The effect may prevail due to more investor trust and engagement with their investments.

Though, there are studies that have resulted neutral or negative view of company CSR engagement and financial performance relationship. For example, Renneboog et al. (2008) explain that there is no clear consensus that investors in general would accept social or ethical objectives of firms over financial performance. Halbritter & Dorfleitner (2015) state that comparison between high and low ESG portfolios show no significant results that would support the hypothesis of high ESG score increasing stock performance. Halbritter et al. (2015) interpret that those divergent results concerning the relationship can be explained due to different data providers and sample used in the research. SRI labeled funds tend to outperform conventional funds in terms of returns and downside risk during crisis but during non-crisis periods, the position is opposite (Nofsinger & Varma, 2014).

Different methodology and variables that are used in papers are also eligible to explain different coefficients and significance levels of these studies. Argues arise from the agency and stakeholder theory by questioning, whether the management is acting on behalf of stakeholder welfare or well-being. More specifically interpreted, whether the management is focusing on increasing profits or stakeholder value. In developed markets, where is increased society demand for company CSR, investors are favoring more companies that are better engaged in CSR (Bae, Ghoul, Gong & Guedhami, 2021).

5.2 Financial crisis 2007-2008

The previous market crisis affected overall financial markets across the world and the foundation of the crisis was mainly caused by excessive indebtedness. Apart from the latest COVID-19 health arisen crisis, the financial crisis occurred by finance related backgrounds. Also, the speed of the crisis is much more critical related to COVID-19 crisis and firms had less time to adjust their operations to the changes in financial environment.

Lins et al. (2017) study in their research paper *Social Capital, Trust and Firm Performance: The Value of Corporate Social Responsibility during the Financial Crisis*, the effect of high social capital to stock performance using dataset of roughly 3000 largest US companies. According to their statistics, they find positive correlation with high CSR rating and stock performance during the crisis period in terms of stock returns (4-7%), profitability, growth, and sales per employee in comparison with low-CSR companies. In their study, they concentrate on following ESG subcategory statistics: community, diversity, employee relations, environment, and human rights. As they are concentrating on social capital, governance related aspects are left out of the study.

Similar results are found by Nofsinger & Varma (2014) as their study consists of data between 2000-2011 resulting that SRI funds appear to outperform conventional funds during the crisis by 1.61-1.7%. Though, the results are the opposite during normal times as conventional funds tend to outperform SRI funds by 0.67-0.95% according to their study. Though, there are mixed results in SRI subcategories as for example negative screening focused funds were not outperforming the conventional funds during crisis. Their study results that SRI profiled funds appear to hold younger, smaller, profitable, and lower volatility firms.

Albuquerque et al. (2019) confirm that systematic risk appears to be lower for high ESG firms, which means that they are profiled typically with lower beta. It appears that most of the literature have made a consensus that during financial crisis, high ESG stocks are offering downside protection and slightly more returns. According to previous research,

it can be expected CSR engagement of a firm to have positive contribution to stock performance during crisis. Main attributes are estimated to be due to more loyal investors leading to increased stakeholder value and less systematic risk.

5.3 ESG and COVID-19 Crisis

This subchapter is taking a closer insight to the previous literature concerning the research question of the paper, if ESG score had attribution to stock performance during COVID-19 pandemic. Firstly, three relevant articles are interpreted. These papers consider either United States or Europe as geographical regions with each study involving more than thousand companies in their dataset. By taking different datasets and methods into consideration, these articles conclude their individual results to define answer to the research question. After the three main articles are introduced, other relevant papers are shortly interpreted to either confirming or rejecting the hypothesis.

5.3.1 *Engelhardt, Ekkenga & Posh* (2021)

Engelhardt et al. (2021) examine the hypothesis around crisis event between 3. February and 23. March 2020 in their paper *ESG Ratings and Stock Performance during the COVID-19 Crisis* by examining the overall ESG score. In addition to the main research question, they measure the effect by including country fixed effects of 16 countries to study if there are differences between European countries regarding the ESG and stock performance relationship.

Their sample consists of 1452 publicly listed European firms and they use ESG data from Refinitiv's database. As dependent variables they are using cumulative raw- and abnormal returns to capture different aspects to examine the hypothesis. Abnormal return is formulated by subtracting expected return from stock logarithmic return. Expected return is calculated by and using CAPM beta of individual stocks. They deploy similar

control variables that have been used also in other related literature. These are for example size, ROE, profitability, cash/assets, leverage, M/B, historical volatility and momentum. According to their empirical methods, they find statistically significant coefficient for ESG score with 5% significance level. Their findings confirm the hypothesis as high CSR profile companies performed significantly better and in addition have lower volatility during the collapse period. More specifically, the results were significant concerning abnormal returns and idiosyncratic volatility. Regarding control variables, items describing financial flexibility and profitability have stronger coefficients. In addition, they find that company CSR is more important from the viewpoint of investor in countries that are considered as low-trust and profiled with poorer regulation framework.

5.3.2 *Albuquerque, Koskinen, Yang & Zhang* (2020)

In their paper *Resiliency of Environmental and Social Stocks: An Analysis of the Exogenous COVID-19 Market Crash* the authors focus on firms' environmental and social score (ES) in the ESG framework to study the social capital attribution to financial performance of 2171 US stocks. They include advertising expenditures variable in their regressions to examine their secondary hypothesis, whether companies with high advertising costs tend to be more resilient. In addition to cross-sectional study, they deploy difference-in-differences analysis to study different event windows. As the main dependent variable, they are using abnormal returns. They capture period of the first quarter of 2020 divided to different subperiods as time period.

Their empirical methods results show positive relationship between company ES score and stock performance. High ES rating firms are captured under dummy variable, where are included firms that are ranked in the top quartile of the sample. Firms that have high ES score, Tobin's q, high cash holdings, lower leverage and are large performed better according to their study results. They show that companies with high advertising expenses are connected to better stock performance. It can be interpreted that companies

characterized with financial flexibility, high ES rating and advertising expenditures survived better the shock in the first quartile of 2020.

5.3.3 *Demers, Hendrikse, Joos & Lev (*2020*)*

ESG Didn't Immunize Stocks Against the COVID-19 Market Crash -research paper studies the effect with dataset of 1628 non-financial and -real estate firms in the US. They divide the regressions to two different time periods during the crisis: January-March and May-June to capture the possible different effects of the outbreak and the instant recovery period until end of the second quarter. As the main dependent variable, they use buy-and-hold abnormal return.

They interpreted that traditional accounting-based measurements are the ones that have the most remarkable effect on stock performance during crisis. Variables such as liquidity, leverage and industry are affecting mainly the crisis period returns. They reject the hypothesis by confirming that ESG is not a significant factor to explain stock price performance during the crisis in terms of abnormal returns. They disclose that companies' investments in intangible assets had significance to explain stock performance. In that category belongs for example investments in R&D, brand etc. ESG score does not appear to provide significant results in regressions as during the first quarter, ESG factor has only 1% share of relative contribution to explain stock price performance in their Owen-Shapley R^2 decomposition analysis.

5.3.4 Other Studies

There are relative studies that make their contribution to the research question. Emerging literature has been published since 2020 concerning the matter, whether high ESG rating is associated with increased stock price resiliency during COVID-19 pandemic. Though, increased attention towards the issue has produced different results and there

is a debate in the literature. Gianfrate et al. (2021) use sample of more than 6000 stocks in 45 countries and interpret that generally high ESG is not significantly explaining stock price performance. After controlling for country fixed effects, the high ESG firms are not showing better returns, but it was more significant if the firm was domiciled in country, where the general level of stock market development was better. Only exception is the US, where they find almost similar results in terms of significant abnormal returns of high ESG stocks as in study by Albuquerque et al. (2020).

Díaz et al. (2021) state that according to their study that uses data of United States, ESG score appears to be significant factor to explain stock returns during Covid19 pandemic. They continue noting that especially Environmental and Social dimensions could be identified as the main drivers for performance. Though, it appears that in most of the industries the ESG score was insignificant variable to explain profits in the US and Europe. Hassan et al. (2020) distinguish critical differences between industries and their performance during the crisis by stating that for example companies in technology industry had even positive effect for demand of their products during crisis whereas the effect is the opposite for firms operating in transportation industry. The remark concludes that it has an effect which market area, index or industry orientation is applied in the sample. That is when it comes to country level characteristics as states highly depending on oil prices probably suffered more negative side effects than countries with more technology orientated businesses.

Fahlenbrach et al. (2021) state that non-financial firms with greater financial flexibility pointing out especially high cash holdings, more profitability and lower leverage, are more resilient to stock price decline during the crisis. Ding et al. (2020) confirm the statement and add that companies that had more engagement towards CSR, experiences better returns, while increased CSR engagement is element to build trust among stakeholders such as suppliers, workers and customers. On the other hand, Bae et al. (2021) used sample data of 1750 US firms between period of 18. February and 20. March 2020 and found no relationship with company prior 2020 CSR engagement and crisis shock period

returns. Therefore, according to their study, pre-pandemic ESG engagement was not eligible to explain any protection of shareholder wealth during the most intense market turbulence. It appears that there is still space for debate when it comes to question, whether company ESG score offers any significant protection against COVID-19 pandemic. It is possibly explained by different ESG data providers, methodologies and market areas. Interpreted from above mentioned papers, the results of Gillan et al. (2021) have to be further inspected as they state that well-managed CSR tend to increase stock resiliency during crisis.

6 Data and Methodology

This chapter describes the process of sample construction and methodology applied to conduct the research. Firstly, this chapter describes elements of the data that has been used in the research. The data that has been utilized consists of stock market and accounting data of S&P500 companies together with ESG data to study the hypotheses. After the data description, the applied methodology is interpreted.

6.1 Data

The sample data consists of stocks that are included in the S&P500 index that is generally used as one of the main market indices in the US. Included are 505 largest firms in terms of market capitalization and they are listed in NYSE and Nasdaq stock exchanges. Accounting and stock price data is obtained from the Refinitiv's Datastream -databas. Refinitiv's ESG database has been chosen as the provider of ESG data, which can be considered as one of the main data providers when it comes to company ESG data.

Even though the availability and quality of ESG data has been improved, there is possibility to arise biases when it comes to ESG data comparability as different data providers form the ESG scores using individual weighing and calculation methods to define ESG scoring. Some researchers, such as Albuquerque et al. (2020) use MSCI's database in addition to Refinitiv in their robustness test, though finding equivalent results in their study. As there is lack of common guidelines for ESG data formulation, there is still left empty space for differing results in tests. Refinitiv updates the ESG scores for individual companies in scale of 1-100 once a year. Altogether, 504 of the 505 S&P500 companies have their ESG score available on the date of 31.12.2019. Accounting data of the companies included in the dataset are collected on the period of 31.12.2019.

By using stock market-, accounting- and ESG data of mentioned companies, the study is concentrating to either confirming or rejecting the stated hypothesis, whether high ESG score is in relation with resiliency during market turbulence in terms of stock returns and volatility. After these datasets are merged, the study conducts cross-sectional regressions concerning the given time period of stock market collapse during the first quarter of 2020, when the global stock market experienced the most intense collapse of COVID-19 pandemic. The time period for the study is 3.2. February to 23.3.2020 as used in study by Engelhardt et al. (2021) and originally defined by Fahlenbrach et al. (2021) that is characterized as the collapse period of stock market during COVID-19 crisis.

Figure 7. The S&P500 Index price chart January-June.

Figure 7 includes the collapse period that is examined in the paper. As can be interpreted, the market index was strongly influenced by the external shock that affected the valuations of companies. The shock had global effects and it was firstly landed in Chinese stock market and shortly afterwards in the US and other world. By focusing on the mentioned

time period in the study, the paper is capturing the results of the most intense market decline.

ESG scores provided by Refinitiv database combines the E, S and G factors with specific weightings as one combined measure that is measured in scale of 1-100 to describe the overall ESG score that is used to define ESG performance of company. Scores are based on self-reported information relative to three individual factors. These measures include information from annual reports, ESG reports, code of conduct, corporate website etc. Ratings at the end of year 2019 are used (31.12.2019) in the study. The overall ESG rating consists of ten categories as subdimensions that are resource use, emissions, innovation, workforce, human rights, community, product responsibility, management, shareholders and CSR strategy. Altogether the database uses 500+ ESG measures from public disclosures of companies. In below represented figure are the pillar weightings captured within the three factors (E,S and G).

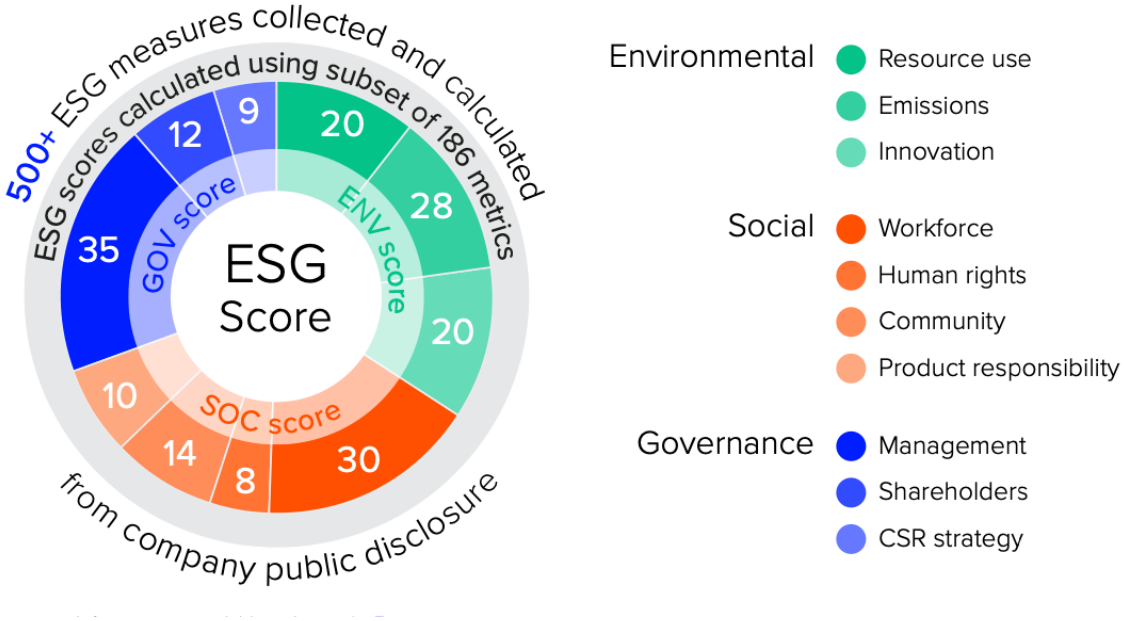

Figure 8. Weights of ESG subcategories (Refinitiv, 2021).

Main dependent variables used in the study are cumulative raw stock return in addition to abnormal return. Abnormal return is calculated as market-model estimation, which is similar to Engelhardt et al. (2021) and Albuquerque et al. (2020). Abnormal returns are calculated as the difference between the logarithmic stock return and expected stock return, where expected stock return is calculated by multiplying individual CAPM betas with market log returns. Betas are calculated based on realized returns of 2019 using S&P500 as market index. Main independent variable is ESG score provided by Refinitiv's database. Control variables that are used are similarly related to studies such as Engelhardt et al., (2021, Albuquerque et al., 2020; Gianfrate et al. (2021). Main control variables are defined as following: Size (log of firm's total sales), ROE (net income divided by market capitalization), Profitability (operating income divided by total assets), , Cash/Assets (cash divided by total assets), Short-term Debt/Assets (Short-term debt divided by total assets), Long-term Debt/Assets (Long-term debt divided by total assets), Leverage (Book value of debt divided by total assets), Market-to-Book (market capitalization divided by the book value of equity) Historical volatility (stock volatility calculated from stock returns during previous year) and Momentum (cumulative logarithmic stock returns during previous year). Dummy variables have been set for high ESG and negative B/M measures to capture their separate effects.

In the Table 1 presented can be seen the summary of the variables that have been used in the study. Sample consists of companies included in the S&P500 stock index. After limitations due to data availability and winsorizing of certain variables, the total sum of companies included in the sample is 456. ROE and Market-to-book variables are winsorized at the 3% of the top and bottom values to avoid extreme values. Information about the variables is found in Appendix 1. Similar numbers that are in line with the results are found by Engelhardt et al. (2021) in their study, though using a different sample including different geographical settings and sample volume. The mean cumulative stock returns are strongly negative (33,3%) with standard deviation of 15,9%, which shows that during the collapse period there are remarkable differences between how dramatically the stock prices did fell. To be considered is the influence of such health-related shock to

certain stocks. For example, Delta Airlines that is operating in airline industry, experienced -61,69% loss of stock price in terms of raw returns during collapse period. Whereas the reaction to stock price was fiercer in certain industries, there were firms that faced softer decline of share price, such as Amazon Inc. (-8%). Overall, the mean value of -33,3% stock price development of the market can be considered a strong change in stock prices.

Table 1. Descriptive Statistics.

	Mean	Median	Maximum	Minimum	Std.Dev.	Obs.
Cumulative Raw Returns	-0.3339	-0.3311	0.2974	-0.8524	0.1593	456
Cumulative Abn. Returns	-0.0907	-0.1158	1.1240	-0.7979	0.2663	456
Volatility	0.0528	0.0496	0.1506	0.0254	0.0152	456
Idiosyncratic Volatility	0.0355	0.0317	0.1446	0.0113	0.0169	456
ESG Score	61.924	64.815	92.910	16.310	16.026	456
Size	16.204	16.137	20.076	13.144	1.2321	456
ROE	21.879	16.080	153.46	-14.030	22.286	456
Profitability	0.0913	0.0779	0.3392	-0.0409	0.0640	456
Cash/Assets	0.1094	0.5186	0.7494	0.0003	0.1399	456
Short-term Debt/Assets	0.0287	0.0186	0.2186	0.0000	0.0338	456
Long-term Debt/Assets	0.2461	0.2471	0.7587	0.0000	0.1511	456
Leverage	0.2748	0.2819	0.7830	0.0000	0.1613	456
Market-to-Book	5.5696	3.4500	58.710	-17.180	6.9211	456
Historical Volatility	0.0154	0.0144	0.0450	0.0078	0.0050	456
Momentum	0.2615	0.2524	3.2135	-0.5532	0.2740	456

ESG score has a mean value of 61,92 and can be considered as relatively high relative to benchmark studies and could be explained by the inclusion of the index that consists of large US firms. In the study by Gianfrate et al. (2021) the mean ESG score of almost 7 000

global firms was just 42 and in the study by Engelhardt et al. (2021) the score respectively is 53,29 with sample of 1452 European firms. That indicates that on average, firms used in my study have put more focus on enhancing their ESG profile to pursue increased score. Regarding control variables, on average firm has ROE of 21,87%, leverage of 27,48% and cash-to-assets ratio of 10,94%. The average market-to-book value is 5,56%.

Table 2. Correlation Analysis.

Obs: 456	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(1) Cumulative Raw Returns	1.00															
(2) Cumulative Abn. Returns	0.76	1.00														
(3) Volatility	-0.70	-0.49	1.00													
(4) Idiosyncratic Volatility	-0.53	-0.45	0.80	1.00												
(5) High ESG	0.10	0.01	-0.00	-0.03	1.00											
(6) ESG Score	0.07	0.01	-0.04	-0.08	0.80	1.00										
(7) Size	-0.00	-0.03	-0.03	-0.19	0.36	0.37	1.00									
(8) ROE	0.22	0.25	-0.14	-0.15	0.02	0.01	0.04	1.00								
(9) Profitability	0.29	0.37	-0.25	-0.20	-0.07	-0.07	-0.07	0.58	1.00							
(10) Cash/Assets	0.22	0.48	-0.12	-0.13	-0.12	-0.09	-0.12	0.25	0.38	1.00						
(11) Short-term Debt/Assets	-0.01	-0.10	-0.07	-0.08	0.21	0.20	0.27	0.10	-0.10	-0.13	1.00					
(12) Long-term Debt/Assets	-0.07	-0.19	0.08	0.22	0.13	0.12	-0.05	0.11	-0.05	-0.25	0.20	1.00				
(13) Market-to-Book	0.21	0.26	-0.15	-0.10	-0.03	-0.04	-0.08	0.74	0.49	0.31	0.02	0.16	1.00			
(14) Historical Volatility	-0.14	0.29	0.32	0.29	-0.12	-0.16	-0.15	0.04	0.15	0.41	-0.18	-0.10	0.06	1.00		
(15) Momentum	0.09	0.17	0.01	-0.10	-0.11	-0.13	-0.17	0.20	0.14	0.13	-0.04	0.00	0.16	0.04	1.00	
(16) Leverage	-0.07	-0.20	0.06	0.19	0.17	0.15	0.01	0.13	-0.07	-0.26	0.40	0.98	0.15	-0.13	-0.01	1.00

In the Table 2 is presented correlation matrix of the variables. Generally, it can be interpreted that the pairwise correlations are relatively weak except some specific variables. The main dependent variable cumulative raw is weakly correlated with the main independent variable ESG score with 0.07, whereas the correlation with cumulative abnormal returns is 0.01. Pairwise correlation forms between firms' profitability together with cash/assets ratio that are positively related to cumulative returns. Profitability is associated with 0.29 (0.37) correlation in relation with cumulative raw (abnormal) returns and

cash/assets have ratios of 0.22 and (0.48). Leverage is negatively correlated with returns with measures -0.07 and -0.2. Regarding correlations between control variables, appears that size and ESG score has a correlation coefficient of 0.37 that is considered as significant result in the matrix. Companies that have positive measure on profitability, have positive cash reserves and have had a successful momentum variable appear to have positive correlation to stock returns.

In table 3 characteristics between high ESG and low ESG firms are presented. In category high ESG is included firms that have better than median result for ESG score whereas the Low ESG category represents the firms that have worse than median ESG score in the overall sample. It appears that high ESG companies are slightly bigger in size and are more leveraged than the other category. In terms of Tobin's Q, which presents the relationship between market- and intrinsic valuation, low ESG firms have higher measure. In addition, low ESG firms have greater measure concerning momentum and cash/assets ratio, whereas high ESG firms tend to be more leveraged.

Table 3. Characteristics of High and Low ESG firms in the sample.

	High ESG		Low ESG		
	Mean	Median	Mean	Median	Obs.
Tobin's Q	1.6823	1.1692	2.1674	1.4751	228
Size	16.642	16.483	15.765	15.793	228
ROE	22.217	16.055	21.541	16.540	228
Profitability	0.0865	0.0727	0.0960	0.0868	228
Cash/Assets	0.0922	0.0498	0.1266	0.0554	228
Short-term Debt/Assets	0.0356	0.0273	0.0217	0.0104	228
Long-term Debt/Assets	0.2660	0.2738	0.2262	0.2269	228
Leverage	0.3017	0.3043	0.2480	0.2395	228
Market-to-Book	5.3835	3.3750	5.7557	3.5550	228
Historical Volatility	0.148	0.0140	0.0160	0.0151	228
Momentum	0.2316	0.2429	0.2914	0.2685	228

6.2 Methodology

In this study is examined, whether ESG rating can explain returns during COVID-19 pandemic collapse period and to support the research significance, various control variables are used. The stock performance is measured with cumulative raw returns and abnormal returns to capture two different viewpoints for the study. To measure the relationship, ordinary least squares regression is deployed and estimated as following:

$$\text{Stock Performance}_i = ß_0 + ß_1\ \text{ESG Score}_i + \sum ß\ \text{Control Variables} + \varepsilon_i \quad (1)$$

Timeframe of the study is between 3. February. -23. March 2020 defined as collapse period in study by Engelhardt et al. (2021). In the equation stock performance is measured by two versions of cumulative returns, namely raw and abnormal plus i describes the firm. To test the second hypothesis of the study, volatility and idiosyncratic volatility are used as dependent variables in the second regression table. On the right side of the equation are variables and ESG score is used as main independent variable. Other variables used are volatility, idiosyncratic volatility, size, ROE, profitability, cash/assets, short-term debt/assets, long-term debt/assets, leverage, market-to-book, historical volatility and momentum. In addition to control variables derived from accounting, there is a couple of variables formed to support the regressions. These are historical volatility and momentum. Dummy variables are set for high ESG and negative market-to-book to capture effect of these qualities for the results.

7 Empirical results

This chapter presents the results of the empirical research. The main hypothesis is to examine, whether there the main individual variable ESG score has significant relationship to stock returns. The research question is tested with OLS regressions. Regressions are made for time period between 3. February to 23. March considered also as collapse period of COVID-19 crisis. In table 4 is presented regression measures, whether together with control variables, there is significant results found for the relationship.

Table 4 presents the regression results that are capturing the return measures together with variables. In columns (1) and (3), the main dependent variable is set as cumulative raw returns, whereas columns (2) and (4) are having cumulative abnormal returns as dependent variable. *, ** and *** marks in the regression table after the coefficients signal the statistical significance level at 1%, 5% and 10% confidence level respectively. In the parentheses are represented t-values. Historical volatility is left out of the regressions since it resulted biased measures. In addition, ROE and Market-to-Book ratios were winsorized at the 3% of top and bottom values to avoid extreme numbers and therefore gain more significant results. The table is referencing to hypothesis H1, which is stated as following:

H1*: Companies with high ESG score had better stock returns during the collapse period of COVID-19 crisis.*

Contrasting to the above stated hypothesis, there appears to be significant results for ESG Score variable as it has positive and significant (at 5% and 10% confidence level) correlation with raw- and abnormal returns, when controlling for variables. Even though these variables indicated significant results, the coefficients are weak. Regression results concerning column (4) are having significant R^2 ratio, which indicates that the results of that column are explaining the results most accurately. More specifically, about 30% of the observed variation of dependent variables can be explained by the input of the model. Though, variables indicating financial flexibility and profitability show significant

results as both, profitability and cash/assets ratios have stronger coefficients of 0.8084 and 0.6735 with confidence level of 1% with abnormal returns. Together with these variables to define financial flexibility, long-term debt/assets variable shows negative and significant coefficient of -0.176 with 5% significance level in relation to abnormal returns. Momentum variable shows significant result with 1% significance level to explain abnormal returns.

These findings go align with topic-related theories such as findings by Fahlenbrach et al. (2021) as stating that financial flexibility can be considered as the most significant quality to explain stock price resiliency during pancemic. Though, hypothesis H1 can be confirmed as one point increase in ESG score increases raw returns by 0.001 and abnormal returns by 0.0013. To confirm robustness, panel B uses dummy variable high ESG as the main independent variable. In panel B can be found similar results confirming existing findings, though with stronger coefficient and significance levels. It can be concluded that firms scoring better in terms of ESG score tend to have better returns.

Table 4. OLS regression for returns

Panel A	(1)	(2)	(3)	(4)
Dependent Variable:	Raw Returns	Abn. Returns	Raw Returns	Abn. Returns
C	-0.3662	-0.0928	-0.4172	-0.3849
ESG Score	0.0005	2.35E-05	0.0011**	0.0013*
	(1.166)	(0.031)	(2.266)	(1.864)
Size			-0.0031	0.0046
			(-0.478)	(0.469)
ROE			1.15E-05	-0.0003
			(0.021)	(-0.460)
Profitability			0.5369***	0.8084***
			(3.734)	(3.757)
Cash/Assets			0.1099 *	0.6735***
			(1.888)	(7.728)
Short-term Debt/Assets			0.1084	-0.2485
			(0.478)	(-0.732)
Long-term Debt/Assets			-0.068	-0.176**
			(-1.324)	(-2.290)
Market-to-Book			0.0020	0.003
			(1.2629)	(1.406)
Negative Market-to-Book			0.350**	0.3566
			(2.237)	(1.521)
Momentum			0.0244	0.1041***
			(0.912)	(2.592)
Observations	502	502	456	456
R-squared	0.0027	0.0000	0.1271	0.3000

Panel B	(1)	(2)	(3)	(4)
Dependent Variable:	Raw Returns	Abn. Returns	Raw Returns	Abn. Returns
C	-0.3459	-0.0943	-0.3532	-0.3122
High ESG	0.0256*	0.0057	0.0458***	0.0528**
	(1.768)	(0.2410)	(2.992)	(2.301)
Observations	502	502	456	456
R-Squared	0.0062	0.0001	0.1344	0.3030

While the Table 4 focused on measuring the return performance of stocks, Table 5 is calculating stock volatility characteristics. In that table is investigated, if high ESG score stocks experience lower volatility. OLS regression is performed to test causality with ESG rating and volatility. Volatility is measured with two different measures. In columns (1) and (3) dependent variable is volatility and in columns (2) and (4) are presented idiosyncratic volatility. Main independent variable is ESG score and in Panel B, it is dummy variable High ESG. Same control variables have been deployed as in Table 4 to maintain comparability. Table 5 focuses on either confirming or rejecting the H2 hypothesis, which is stated as following:

H2: *Companies with high ESG score had lower stock volatility during the collapse period of COVID-19 crisis.*

Derived from the results of the below OLS regression for volatility, it appears that ESG score and stock volatility show significant results without controlling for variables. As control variables are included, the significance disappears. Again, variables describing profitability, momentum and financial flexibility have significance to explain stock price resiliency. In addition, size appears to be contributed to less stock volatility with coefficient of -0.002. Therefore, it can be concluded that H2 should be rejected as ESG score is not able to explain volatility changes.

Table 5. OLS regression for volatility

Panel A	(1)	(2)	(3)	(4)
Dependent Variable:	Volatility	Idiosyncratic Volatility	Volatility	Idiosyncratic Volatility
C	0.0565	0.0422	0.0595	0.0771
ESG Score	-5.70E-05	-9.95E-05**	-4.76E-05	-5.67E-05
	(-1.316)	(-2.016)	(-1.005)	(-1.113)
Size			3.35E-05	-0.0022***
			(0.052)	(-3.259)
ROE			6.25E-05	-8.65E-06
			(1.193)	(-0.153)
Profitability			-0.0627***	-0.0451***
			(-4.455)	(-2.981)
Cash/Assets			-0.0008	-0.0014
			(-0.1427)	(-0.228)
Short-term Debt/Assets			-0.0503**	-0.0454*
			(-2.266)	(-1.900)
Long-term Debt/Assets			0.0103**	0.0265***
			(2.051)	(4.899)
Market-to-Book			-0.0002	-0.000
			(-1.538)	(-0.598)
Negative Market-to-Book			-0.0156	-0.0101
			(-1.020)	(-0.614)
Momentum			0.0018	0.0771***
			(0.715)	(7.055)
Observations	502	502	456	456
R-squared	0.0034	0.0080	0.0901	0.1477

Panel B	(1)	(2)	(3)	(4)
Dependent Variable:	Volatility	Idiosyncratic Volatility	Volatility	Idiosyncratic Volatility
C	0.0535	0.0372	0.0598	0.0776
High ESG	-0.001	-0.0020	-0.0002	-0.0001
	(-0.073)	(-1.314)	(-0.141)	(-0.087)
Observations	502	502	456	456
R-Squared	0.0010	0.0034	0.0881	0.1454

8 Conclusions

The paper is contributing to the discussion, whether firm ESG engagement is related to better resiliency of stock price during times of crisis. This paper focuses on the most recent crisis that is arising from COVID-19 pandemic. As an exogenous and unexpected health-related shock landed to stock markets, company valuations experienced a significant change. Unlike the study by Lins et al. (2017), which considers the financial crisis of at the end of 22nd century, this paper contributes to findings with novel data related to COVID-19 pandemic. Even though there has been a significant increase in asset volumes related to responsible investing during last years, there is still debate about the matter if investing in high ESG companies could be seen as a risk-mitigating strategy. Results of the paper suggest that firms considered operating in sustainable way as having high ESG rating are characterized with better stock performance in terms of raw and abnormal returns in the US, more specifically consisting of S&P500 firms.

Whereas studies by Albuquerque et al., (2020) and Demers et al. (2020) use dataset consisting of more than 1500 US firms, this paper focuses merely on the S&P500 firms. It can be interpreted that these stocks were more resilient during the crisis collapse period in terms of returns. Though, ESG score is not indicating to be related to lowered volatility during the period. Derived of the results, the hypothesis H1 can be confirmed as it appears that ESG score was significant to explain cumulative stock returns during the collapse period between 3.2.-23.3.2020. On the other hand, hypothesis H2 is rejected as there appeared not to be significant results in the OLS regression regarding ESG score and volatility relation.

H1*: Companies with high ESG score had better stock returns during the collapse period of COVID-19 crisis.*

H2: *Companies with high ESG score had lower stock volatility during the collapse period of COVID-19 crisis.*

After capturing relationship with ESG score and performance, additional evidence can be found from company balance sheet and variable indicating profitability that experience strong and significant results in regressions. Profitability, cash/assets ratio and long-term debt/assets have significant and stronger relationship to explain both, cumulative and abnormal return dependent variables. In addition, momentum and long-term debt/assets ratio appeared to explain abnormal returns. That goes in line with finance theories that suggest that variables indicating financial flexibility to be seen as the most significant factors affecting performance attributes during crises (Demers et al., 2020). Also, previous year good performance can be interpreted to be related as resilience factor during the COVID-19 collapse.

As table 3 compared characteristics of high and low ESG portfolios giving robustness to calculations, it can be interpreted that certain variables have meaningful attributes to overall conclusions. In the table can be seen that variables profitability, cash/assets ratio, lower level of leverage and momentum are in favor for low ESG companies. Derived from the comparison, low ESG firms are having on average, better financial flexibility to encounter crisis and therefore the positive attribution of ESG score is left only as weak measure in regressions. Findings of this paper are in line with previously mentioned studies by (Demers et al., 2020; Ding, Levine, Lin & Xie, 2020; Fahlenbrach et al., 2021). Despite the mixed evidence of research conducted about the topic, this paper contributes with results supporting the theory that companies can have better level of sustainability and the same time have good stock performance. These matters should not be seen as excluding factors. Investors are valuing high CSR firms during crisis.

Traditional stakeholder theory suggests that firm focus on CSR could be seen as stealing from shareholders (Freeman et al. 2017). This paper confirms the opposite view as CSR engagement could be merely seen as factor that increases the overall stakeholder value and should not to be seen as element that affects negatively on firm performance. Increased focus on CSR matters reduces information asymmetry among stakeholders (Lassala et al. 2021). Apparently, high ESG firms are seemingly not facing agency costs that

could have a significant effect on competitiveness. In addition to decreased information asymmetry across stakeholders, high CSH companies tend to have better reputational status, attract new investors, raise lower cost of capital and attract new employees (Fernando et al. 2014). These theories are able to explain the positive attribution of high ESG score to stock performance. Focus on CSR appears to be paying off during market uncertainty and therefore company management should commit to increase the engagement to CSR in the overall strategy design. Investors with preference on high ESG stocks are more committed to hold their investments and less likely to sell during shocks (Gianfrate et al.,2021). These investors tend to be more resilient to uncertainty and therefore these assets are sold less during crisis. Financial returns could just a secondary motivation for certain investor base (Barber et al. 2021).

This paper has specific limitations as many other related studies studying the theme. Limitations to robustness could occur of various data providers, methodologies and samples that are used in research. This study captures the data of rather small group of stocks in certain market area and therefore the results could not be fully benchmarked to other market areas and larger datasets. Secondly, the time period of the study is limited to the most intense collapse of the stock prices during the crisis. As capturing the short-term results indicating that high ESG provides stock resiliency during the pandemic, the paper does not participate in the discussion about long term performance attribution of ESG score to firm performance. By using only one ESG data provider, the study leaves space for possible differing results if the other database is used. For future research this paper suggests studying the theme by using longer time period and compare different market areas to capture results. As there is increased interest towards sustainable development, it would be relevant to include more aspects of behavioral finance and underlying motives that lead to interpretation of future development of sustainable investing. This paper could be used as a benchmark study for future research concerning similar topic. Results could be used for designing an individual investing strategy that takes firm's ESG score into account as aiming to balance portfolio to encounter crises.

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Appendix

Appendix 1. Detailed description of variables used in the research.

Variable	Definition
Dependent variables:	
Raw returns	Cumulative daily logarithmic stock return
Abnormal returns	Cumulative daily abnormal stock return (logarithmic stock return minus the expected return, which is based on market model estimation over a year from 2019 until 2020 using S&P500 as market index. Individual betas calculated using CAMP)
Volatility	Stock volatility calculated from daily returns
Idiosyncratic volatility	Stock volatility calculated from daily abnormal returns
Independent variables:	
ESG Score	Refinitiv's ESG Score of a firm
High ESG	Dummy variable for firms scoring higher than median value of ESG score
Control variables:	
Tobin's Q	Market capitalization divided by total assets
Size	Natural logarithm of total sales
ROE	Net income divided by shareholders' equity
Profitability	Operating income divided by total assets
Market-to-Book	Market capitalization divided by the book value of equity
Negative Market-to-Book	Dummy variable for firms having negative value on market-to-book
Cash/Assets	Total cash divided by total assets
Short-term Debt/Assets	Short-term debt divided by total assets
Long-term Debt/Assets	Long-term debt divided by total assets
Leverage	Book value of debt divided by total assets
Historical Volatility	Volatility of stock measured from daily stock returns in 2019
Momentum	Stocks cumulative logarithmic return in 2019