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The Performance of ESG Investments During Financial Turmoil

Evidence from Finland

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ABSTRACT:

Responsible investing, driven by legislation and growing consumer awareness, has gained prominence. This study investigates whether integrating sustainability into investment strategies yields superior returns during market turmoil like the Covid-19 pandemic and the Russia-Ukraine war. Focusing on markets, it evaluates whether Finnish ESG funds outperform market indices from 2020 to 2024. Utilizing event study methodology, the research assesses the performance of Finnish ESG funds against Finnish benchmarks during economically unstable periods.

Recent studies categorize findings on responsible investing, highlighting potential for superior returns and lower volatility in funds with higher ESG ratings. Discrepancies arise regarding responsible investing's impact during downturns, with some studies suggesting outperformance and others indicating no significant difference compared to conventional funds. Regional effects and varying methodologies contribute to these disparities. Despite mixed findings, responsible investing garners attention as investors balance financial returns and ethical considerations.

This empirical study focuses on Finnish ESG funds' performance during financial turmoil, using data from the Morningstar database. Morningstar's sustainability ratings, based on Sustainalytics' ESG scores, inform the analysis of funds' environmental, social, and governance criteria. Among 67 Finnish equity funds initially considered, a subset of 20 funds with globe sustainability ratings is selected. The study compares their performance against the OMX Helsinki GI index over four years, highlighting ESG funds' outperformance during challenges like the Covid-19 pandemic and the Russia-Ukraine war. Methodological constraints, including assumptions about fund performance and crisis impact periods, are carefully addressed to ensure validity.

By analyzing cumulative abnormal returns (CARs) and conducting statistical tests, this study confirms ESG funds' outperformance, particularly during the Covid-19 pandemic. However, they slightly underperform the benchmark index during the whole four-year sample period. The ESG funds also underperform the benchmark index during the initial year following the Russia-Ukraine war, reflecting sensitivity to geopolitical events. The findings support sustainable investment strategies' resilience and superior returns during financial turmoil, aligning with previous research. Despite sample size limitations, the study underscores the importance of sustainable finance and suggests avenues for future research to refine methodologies and enhance understanding.

KEYWORDS: ESG, Socially Responsible investing, Covid-19

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TIIVISTELMÄ:

Vastuullinen sijoittaminen, jota ohjaa lainsäädäntö ja kasvava kuluttajatietoisuus, on saanut merkittävän aseman viime vuosikymmenenä. Tässä tutkimuksessa selvitetään, tuottaako kestävyyden integroiminen sijoitusstrategioihin parempia tuottoja markkinoiden myllerryksissä, kuten Covid-19-pandemian ja Venäjä-Ukraina-sodan aikana. Painopisteenä ovat suomalaiset markkinat, ja tutkimuksessa arvioidaan, ylittävätkö ESG-rahastot markkinaindeksit vuosina 2020–2024. Hyödyntämällä ”event study” menetelmää tutkimus arvioi ESG-rahastojen suoritusta suhteessa vertailuindeksiin taloudellisesti epävakailla ajanjaksoilla.

Viimeaikaiset tutkimukset luokittelevat vastuullisen sijoittamisen löydökset, korostaen mahdollisuutta parempiin tuottoihin ja alhaisempaan volatiliteettiin rahastoissa, joilla on korkeammat ESG-luokitukset. Eroavaisuuksia esiintyy vastuullisen sijoittamisen vaikutuksessa laskusuhdanteissa, joissa jotkut tutkimukset viittaavat ylivoimaiseen suoritukseen ja toiset osoittavat, ettei merkittävää eroa ole verrattuna perinteisiin rahastoihin. Alueelliset vaikutukset ja vaihtelevat menetelmät vaikuttavat näihin eroihin. Sekavista löydöksistä huolimatta vastuullinen sijoittaminen herättää huomiota, kun sijoittajat tasapainottavat taloudellisia tuottoja ja eettisiä näkökohtia.

Tämä empiirinen tutkimus keskittyy suomalaisten ESG-rahastojen suoritukseen taloudellisen myllerryksen aikana, hyödyntäen tietoja Morningstar-tietokannasta. Morningstarin kestävyysluokitukset, jotka perustuvat Sustainalyticsin ESG-pisteisiin, ohjaavat rahastojen ympäristö-, sosiaalisten ja hallinnollisten kriteerien analyysiä. Alun perin harkitusta 67 suomalaisesta osakerahastosta valitaan 20 rahastoa. Tutkimus vertailee niiden suoritusta OMX Helsinki GI -indeksiin neljän vuoden ajanjakson aikana, korostaen ESG-rahastojen ylivoimaa haasteiden kuten Covid-19-pandemian ja Venäjä-Ukraina-konfliktin aikana. Tutkimukseen vaikuttavat rajoitteet on harkittu huolellisesti varmistaakseen tulosten pätevyyden.

Tutkimus vahvistaa suomalaisten ESG-rahastojen markkinaindeksiä paremman suoriutumisen, erityisesti pandemian aikana, analysoimalla kumulatiivisia poikkeamatuottoja (CAR) ja suorittamalla tilastollisia testejä. Ne kuitenkin alisuoriutuvat ensimmäisenä vuotena Venäjä-Ukraina-konfliktin jälkeen, heijastaen herkkyyttä geopoliittisille konflikteille. Tulokset tukevat kestävien sijoitusstrategioiden kestävyyttä ja parempia tuottoja lyhyellä aikajänteellä, mikä on linjassa aiempien tutkimusten kanssa. Vaikka tutkimuksen rajoitukset otetaan huomioon, niin silti tutkimus korostaa vastuullisen rahoituksen merkitystä ja tulevaisuuden tutkimuksen kannalta korostaa entistä tarkempia rajauksia, jossa näyte koko voisi olla isompi ja muuttuva lainsäädäntö huomioon ottaen.

AVAINSANAT: ESG, Socially Responsible investing, Covid-19

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1 Introduction

Responsible investing has become a central concept in the investment world over the past decade (PRI, 2024). For a long time, corporate responsibility was considered to be solely discretionary choice of companies. However, increased legislation, such as the EU's objectives to reduce carbon dioxide emissions to mitigate global warming, and growing consumer awareness of ethics and equality, have pressured companies towards more responsible practices (Badía, G., Cortez, M., & Ferruz, L., 2020). Consequently, corporate responsibility has emerged as a topic worthy of attention for investors as well. Also, other stakeholders, such as lenders, also evaluate a company's responsibility, with environmental negligence seen as a high-risk factor. Consequently, lenders may demand higher interest rates to bear this risk, thereby providing financial incentives for companies to adopt more responsible practices.

The term ESG (Environmental, Social, and Governance) has become widely adopted to categorically define the key areas of responsible investing (Eccles, N. S., & Viviers, S., 2011). It encompasses considerations related to environmental impact, social responsibility, and governance practices in investment activities. According to Silvola, H. & Landau, T., (2019), some perceive responsible investing as an opportunity that can lead to better long-term returns while simultaneously improving the world, and others see it as an alternative investment approach, potentially resulting in lower investment returns.

During significant events affecting the entire world and the economy with it, such as the Covid-19 pandemic in spring 2020 or the Russia-Ukraine war initiated by Russia in February 2022, investment prices exhibit greater volatility than usual. This heightened risk presents opportunities for investors, but many also face wealth loss during these times. Investors tend to reallocate their investments to safe havens during those times. The range of responsible investment products has exploded in recent years, attracting substantial new capital. According, Nofsinger, J., & Varma, A., 2014; Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2021), responsible investments may entail lower risk than

traditional investments and therefore exhibit lower correlation with other markets. Increasing exposure to responsible investments in a portfolio could provide some protection during financial turmoil, acting as safe havens for investors.

1.1 Purpose of the Study

The purpose of this study is to investigate whether incorporating sustainability considerations can achieve returns superior to market indices during periods of market turmoil caused by events such as the Covid-19 pandemic or the Russia-Ukraine war initiated by Russia in February 2022, and thus whether sustainable funds provide so-called safe havens for investors during crisis. Similar academic research has been conducted on US and European markets, but the prevailing academic opinion is not definitive. Several studies, such as those by Nofsinger, J., & Varma, A., (2014), Eccles, R. G., Ioannou, I., & Serafeim, G., (2014), and Lee, K., & Lu, S., (2021), have found correlations between sustainable investments and favorable outcomes during market downturns.

However, there is currently no research specifically focusing on Finnish markets in this regard. This study aims to investigate whether Finnish funds classified as sustainable funds offer safe havens for investors during financial turmoil. The research data is gathered from sustainable funds that invest only in Finnish stocks. The selection is facilitated by the uniform legislation in Finland, which dictates the criteria for funds to be classified as sustainable. Therefore, it can be assumed that the funds analyzed in the study are comparable, as they are governed by the same regulations. The study focuses on the most recent financial turmoil that have significantly impacted the global economy, such as Covid-19 and the Russian attack on Ukraine, deliberately excluding events such as the 2008 financial crisis to provide the most relevant assessment of the current situation.

1.2 Research Question and Hypothesis

This thesis focuses to answer for the research questions which is: Did Finnish socially responsible (ESG) funds outperform Finnish market indices during the economically unstable period between 2020 and 2024, where financial markets were impacted by both the Covid-19 and the Russia-Ukraine war initiated by Russia in February 2022? The beginning of the conflict between Russia and Ukraine, which started with Russia's annexation of Crimea in 2014, is disregarded in this study, as it can be argued that the conflict did not have effect on the Finnish financial markets in the years leading up to Russia's attack in February 2022. The exact time period used in this study is from February 14, 2020 (the day before the global stock markets crashed as a result of Covid-19) until February 14, 2024. The time period is thereby exactly four years long and encompasses both the Covid-19's and Russia-Ukraine war's initial 1-year effects on the Finnish financial markets, as well as more stable times, such as the periods between February 2021 and February 2022, as well as between February 2023 and February 2024.

Below are listed the hypotheses of this study. All the hypotheses are tested with event study. The studies are limited to Finnish market and are conducted with Finnish ESG funds.

H1: Finnish ESG funds outperformed the Finnish benchmark index over the entire sample period.

The primary hypothesis centers on assessing the comprehensive performance of funds throughout the entirety of the sample duration. This period spans from February 14, 2020, to February 14, 2024, encompassing significant financial turmoil such as the Covid-19 pandemic and the Russia-Ukraine war initiated by Russia. Additionally, it encompasses the interim period between these crises, providing a natural timeframe for gauging overall performance, as well as a return to somewhat normal times between 2023 and 2024.

H2: Finnish ESG funds outperformed the Finnish benchmark index during the first year following the attack by Russia in February 2022.

The second hypothesis centers on examining the downside risk protection offered by ESG funds. The period under investigation begins on January 24, 2022, corresponding to exactly one month before February 24, the date when Russia initiated war against Ukraine, and concludes on February 24, 2023, exactly one year after the start of the attack. The reason why the time period for this hypothesis was chosen to begin one month prior to the actual attack on Ukraine is the fact that the financial markets were affected by instability in region and the fears of war already before February 24, 2024.

1.3 Structure of the Study

The research consists of nine main chapters. The first chapter introduces the topic and presents the motivation for the research. Chapter two is divided into four sub-chapters, which address responsible investing in general. Section 2.1 discusses the definition of responsible investing. Section 2.2. introduces the history of responsible investing and provides insight into how the demand for sustainability has evolved over the years. In Chapter 2.3, the significance of sustainability rating agencies for the comparability of studies is clarified, along with what the literature says about the credibility of these agencies. Chapter 2.4 summarizes the regulatory changes that have occurred in the field of responsible investing and outlines the regulations that oblige investment service providers to operate in the European markets. Chapter 2.5 covers various forms of responsible investing, explaining how portfolio managers, among others, can incorporate sustainability factors into their investment decisions.

Chapter three focuses on the central crisis addressed in the research. The chapter briefly introduces the Covid-19 pandemic and the Russian invasion of Ukraine, discussing their impacts on financial markets. The chapter four compiles previous research evidence from three different perspectives: studies investigating sustainability during market

downturns, studies indicating that high levels of sustainability are associated with better returns, and studies showing that high sustainability levels do not necessarily result in better returns.

In the fifth chapter, the theoretical framework of the research. The sixth chapter introduces the research data and used methodology. Chapter seven presents the results of the empirical section of the event studies on the performance of ESG funds and conducts an analysis and summary of the research findings. Discussion of the results is presented in the last chapter, as well as conclusions drawn from the study. The last chapter also discusses potential avenues for further research regarding the topic.

2 Responsible Investing

This chapter explores the phenomenon of socially responsible investing, beginning with a brief history, followed by an overview of the terminology, and concluding with a description of various SRI strategies. These discussions provide insights into the origins and current state of socially responsible investing.

2.1 History of Responsible Investing

The roots of responsible investing extend back hundreds of years to a time when religions strongly dictated societal norms. Renneboog, L., Ter Horst, J. & Zhang, C. (2008) and Scueth, S. (2003) note that even in medieval times, Christian lending practices were based on teachings from the Old Testament, which prescribed, among other things, the proper collection of interest. The Quakers, originating in 17th-century England, are mentioned in literature as the first movement emphasizing the importance of ethical investing. They refrained from investing in entities benefiting from war or the slave trade. In the 18th century, John Wesley, the founder of the Methodist Church, spoke in his sermon "The Use of Money" about abstaining from sinful trading, where one profits from the exploitation of others (Renneboog, L., Ter Horst, J. & Zhang, C. 2008). In the 1920s, Methodists considered companies in the alcohol, tobacco, and gambling industries as sinful investment targets.

Renneboog, L., Ter Horst, J. & Zhang, C. (2008) and Schueth, S., (2003) define modern socially responsible investing as having originated in the 1960s in the United States. Instead of relying on morality based on religions, investors then began to emphasize the importance of an individual's ethical and social convictions. Significant topics of the time included the Vietnam War and the Cold War, leading to discussions about individual and women's rights, making investors aware of how social issues could affect their investments.

In 1971, in the aftermath of the nuclear arms race, the world's first responsible fund, the Pax World Fund, was established, with the mission to oppose nuclear war and the arms industry in general. In the 1980s, the apartheid system in South Africa led investors worldwide to pressure fund companies to exclude South African companies from their portfolios. The Chernobyl nuclear disaster in 1986 and the Exxon Valdez oil spill in 1989 made investors aware of environmental issues related to industrial development. In the 1990s, responsible investing spread globally beyond the US and Europe. Consumers were willing to pay a premium for investments supporting their personal values (Renneboog, L., Ter Horst, J. & Zhang, C. 2008). Friede, G., Busch, T. & Bassen, A. (2015) observed in their study that in the 1970s, researchers began to explore the role of ESG values as an explanatory factor for companies' financial success.

In the 2000s, the definition of responsible investing took shape into its current form. Social, environmental, and ethically sound values were globally united for the first time under the United Nations. In 2000, the UN Global Compact initiative established ten principles to engage companies in responsible business (Global Compact, 2023). In 2006, the Global Compact formulated the Principles for Responsible Investments (PRI). PRI is a non-profit organization, and signatory organizations commit to incorporating ESG issues into their investment analyses (Silvola, H. & Landau, T., 2019). The six principles list, as part of responsible investing, the term ESG as a large-scale program. It is said that ESG challenges solidified their place as part of corporate financial assessment with the introduction of this program Hyrske, A., Lönnroth, M., Savilaakso, A. & Sievänen, R. (2020).

Hyrske & al., 2020 mention the founding of Finsif as a milestone in responsible investing in Finland. Sustainable Investment Forums, known as SIF consortia, serve as domestic responsible investing platforms. Finland established its own in 2010 with 18 founding members creating Finsif. Finsif acts as a disseminator of information on responsible investing in Finland and organizes open discussions and seminars for all interested parties.

2.2 Definition of Responsible Investing

The significance of responsibility and its integration into sustainable business practices has notably increased in recent decades. Responsible business conduct is now widely expected by various stakeholders, sparking significant discussions among ordinary investors looking for possible extra profits. Investors represent one of the company's most crucial stakeholders, and their investment decisions are increasingly influenced by how companies address responsibility-related factors in their business operations. Over the past few decades, other actors in financial markets have also gradually embraced responsibility-related issues by considering non-financial attributes in their investment decision-making, commonly referred to as ESG criteria (Badía, G., Cortez, M., & Ferruz, L., 2020).

Responsible investing entails considering environmental, social, and governance aspects as part of investment activities. The term ESG is commonly used to encompass these three dimensions. Another term often associated with responsible investing is SRI, derived from the words Socially, Responsible, and Investing (Berry, T., & Junkus, J., 2020). In addition to ESG and SRI, a third term, CSR, is often used to describe responsible investing practices. CSR stands for Corporate Social Responsibility and generally refers to a company's self-regulation of its responsibility, typically aimed at improving its image (Puttonen, T. & Puttonen, V., 2021).

It is challenging to provide a comprehensive description of what ESG, SRI, and CSR mean to individual investors and how they guide investor behavior. There are several approaches to responsible investing, and each investor selects the principles that best suit them (Berry, T., & Junkus, J., 2020). Responsible investing evokes differing opinions and attitudes among people. Some see it as an ideology that compromises profit objectives, while others view it as financially viable. In this juxtaposition, there is a shift towards economically viable responsible investing, and according to studies, responsible investing is becoming mainstream (Silvola, H. & Landau, T., 2019).

International norms and principles have significantly influenced responsible investing and its development. The Principles for Responsible Investment (PRI), announced in 2006 by United Nations (UN), have significantly impacted the approach of investors to responsible investing. UN PRIs are following:

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

Figure 1. The Principles for Responsible Investment (PRI, 2024).

Upon its inception in 2006, the PRI had 100 signatories. By 2023, this number had surged to 5391. Signatory numbers have increased 10% year on year, underscoring the ongoing robust expansion of companies adhering to the six principles of responsible investing. In 2023, the collective assets under management of these signatories totaled 121 trillion USD (PRI, 2024).

In addition to the UN's Principles for Responsible Investment, many other global frameworks standardize and promote responsible investing practices. Among these, the UN Sustainable Development Goals (SDGs), the UN Environmental Program, and the Global Compact initiative are the most significant (Silvola, H. & Landau, T., 2019). Legislation has also played a vital role in responsible investing for a long time, primarily through environmental regulation, which aims to directly influence companies' operations (Landier, A., & Lovo, S., 2020). Responsible investing regulations have also been established at the European Union level. In March 2021, the Sustainable Finance Disclosure Regulation (SFDR) came into force, aiming to standardize reporting obligations and prevent greenwashing (Bengo, I., Boni, L. & Sancino, A., 2022).

In addition to regulatory factors, economic considerations are driving companies towards responsible business conduct today. For example, lower costs of capital for responsibly operating companies have led many firms towards more responsible actions, indicating an evident economic interest (Landier, A., & Lovo, S., 2020).

Today, almost the entire responsible investing market operates based on the ESG framework (Hyrske & al., 2020; Puttonen, T. & Puttonen, V., 2021). By considering ESG factors, comprehensive assessments of investment-related risks and opportunities from environmental, social, and governance perspectives are sought (Silvola, H. & Landau, T., 2019).

Environmental factors involve assessing environmental impacts related to climate change, energy efficiency, emissions, biodiversity, circular economy practices, and various environmental programs (Silvola, H. & Landau, T., 2019). Studies have shown that careful consideration of environmental issues through ESG analysis can improve the risk-return profile of investments, as company valuations often do not fully reflect environmental risk factors (Landier, A., & Lovo, S., 2020). Especially high-quality consideration of environmental factors has been observed to have a significantly positive correlation with various factors, such as corporate financing costs, supporting the notion that effectively considering environmental issues in ESG analysis can offer an attractive risk-return profile for investors (Fulton, M., Kahn, B., & Sharples, C., 2012).

Social factors constitute one of the three main components of ESG analysis. Social responsibility can be examined by considering general human rights, personnel policies, labor rights, product responsibility, and children's rights (Silvola, H. & Landau, T., 2019). Additionally, key areas such as privacy protection, health, safety, and education can be included (Zaccone, M., & Pedrini, M., 2020). The significance of social responsibility has become a central topic since the early 2000s, both in the corporate world and among academic researchers. Social responsibility has been materialized, especially with the

growth of international trade, sparking discussions about the rights of workers in developing countries (Sorsa, K., 2010).

Governance is the third main concept examined in ESG analysis. Good governance can be analyzed by examining actions against corruption and bribery, board selection, composition and independence, CEO and management actions, compensation policies, and tax payments (Silvola, H. & Landau, T., 2019). According to Khan, M., (2019), good governance plays a crucial role in efficient capital allocation and capital growth, both of which are vital for sustained long-term corporate growth. Sustainable growth also forms the basis for high employment rates, sustainable tax payments, investor returns, and societal development. Governance is therefore significant importance to all company stakeholders, and neglecting it can prove costly to stakeholders, including investors. Factors related to good governance have been observed to have a positive correlation with lower capital costs in companies since the early 2000s (Fulton, M., Kahn, B., & Sharples, C., 2012).

2.3 ESG Ratings

The number of sustainability rating agencies has increased over the past decade, providing a wealth of data; however, the growth in information poses challenges in interpreting divergent results. Silvola, H. & Landau, T., (2019) examined existing research on this topic and reflected on the discrepancies in findings. They identified differences in ESG data sources as a key factor contributing to these variations.

Studies have highlighted significant discrepancies in the risk factors used by different rating agencies and the scope of their analyses. Dorfleitner, G., Halbritter, G., & Nguyen, M., (2015) compared ESG ratings from three major agencies (ASSET4, KLD & Bloomberg) and found virtually no correlation in the information provided regarding corporate social responsibility for selected companies. Since investors and portfolio managers base their decisions on information provided by rating agencies, relying solely on one agency's data may lead to financially biased decisions, excluding certain companies.

Similarly, asset management firm Schroders (2018) conducted comparative studies on rating agencies, focusing on index based ESG investing, where underlying portfolio strategies are often unclear. They concluded that index investing oversimplifies complex issues and that ESG metrics used in index-based strategies lack consistency across different agencies. The firm suggested that active investment solutions are more effective in promoting ESG values. Additionally, Dorfleitner, G., Halbritter, G., & Nguyen, M., (2015) noted in their studies that larger companies tend to receive better ESG ratings than smaller ones. Schroders (2018) attributed this to larger companies having more resources to research ESG information and being under greater public pressure to act more responsibly.

Many studies comparing ESG returns discuss the impact of using different rating agencies on research outcomes (see, e.g., Li, F., & Polychronopoulos, A., 2020; Berg, F., Kölbel, J., & Rigobon, R., 2022; Aldieri, L., Amendola, A., & Candila, V., 2023). These studies often compare results from two or more rating agencies to reduce the dependency on any single agency's results.

Li, F., & Polychronopoulos, A., (2020) broadly categorized rating agencies into three groups based on the depth of their company analyses. Fundamental analysis relies on publicly available company data. Rating agencies such as Bloomberg and Refinitiv provide this type of analysis. Comprehensive rating agencies conduct deeper analyses using public data, employing their own methodologies. For example, Sustainalytics, classified as a comprehensive agency, actively engages with companies to understand their sustainability efforts (Steen, M., Taghawi, J., & Gjolberg, O., 2020). Another well-known comprehensive analysis provider used in research is MSCI and Morningstar. The highest level of in-depth analysis is provided by specialist agencies focused on specific sustainability themes, such as environmental issues or human rights. Companies like TruCost and Equileap fall into this specialist category.

Both the technical differences in rating agency methodologies and the quantity and quality of the data they use significantly influence research outcomes. These factors should be considered when collecting data. It is also advisable to align the comparison methods used in the research framework to match the study's setup, ensuring that results can be reliably compared.

2.4 SRI Strategies

Traditional portfolio theory assumes that an optimal portfolio is diversified across continents and industries. Diversification helps reduce the portfolio's beta coefficient, i.e., its riskiness.

The incorporation of ESG values into traditional investment strategies has introduced new value-based approaches to the industry. Similar to traditional modern portfolio theory, responsible investing aims to enhance the risk-return characteristics of a portfolio. Since studies, such as Verheyden, T., Eccles, R., & Feiner, A., (2016) have shown that incorporating ESG factors can impact a portfolio's risk-adjusted returns, it is assumed that responsible investing can yield financial benefits compared to investing in conventional companies.

Verheyden, T., Eccles, R., & Feiner, A., (2016) compared risk-adjusted returns of different portfolios in their own study and found that portfolios incorporating ESG criteria performed slightly better than conventional portfolios. They utilized best-in-sector screening as their ESG methodology. Similarly, Kempf, A., & Osthoff, P., (2007) also concluded in their study that companies with higher ESG scores outperformed lower-rated companies by up to 8,7%. The researchers constructed two different portfolios based on ESG scores using negative screening and best-in-sector screening methods. Below are introduced three of the most popular strategies.

2.4.1 ESG integration

Amel-Zadeh, A., & Serafeim, G., (2018) investigated the most commonly used sustainability methods by investors. According to the study, surveyed fund managers considered the integration of ESG information into their investment decisions to be the most useful method among all. The researchers also compared geographical differences and interpreted from the results that European investors are more optimistic about the benefits of ESG methods compared to American investors. European investors also consider integration to be the most useful method.

Integration of ESG values into investment decisions means that the influence of responsible values is considered in the valuation of investment targets (Silvola, H. & Landau, T., 2019). In this regard, PRI (2024) defines ESG integration as one of the important factors for the materiality requirement. It means that the decision-maker must be familiar with and understand the key ESG principles concerning the country and sector of the investment target and take them into account when making analyses. As the objective of investors' activities is to maximize profit and minimize risk, ESG analysis generally aims to avoid investments in risky assets. However, integration can also be used to seek investment targets, for example, in sectors where, despite ESG risks, good investment opportunities may exist. PRI (2024) provides an example of an automotive company that is embracing the trend of electrification as part of its business. This may signal a shift towards a more responsible direction for the investor and thus be a potential investment target. Without thorough analysis, investors would not be able to identify responsible deviations from the pool of investment targets by simply excluding the automotive industry from their portfolios.

Cappucci, M. (2018) presents in his own research the paradox related to integration. He seeks reasons why integration, identified as generally the most useful strategy, is still relatively underutilized among investors. Cappucci, M. (2018) lists reasons such as the inefficiency of the strategy if the investor only uses integration to avoid risks and does

not consider the objective of profitability. Another problem is cost-inefficiency. Integration requires a lot of data and analyses. ESG integration combines other investment methods such as active ownership and positive screening. Silvola, H. & Landau, T., (2019) also identify this expensive downside of integration and believe that positive screening has therefore increased in popularity among investors in ESG strategies. However, they justify the importance of integration by its versatility and thoroughness and state that it is an essential method for responsible investing.

2.4.2 Negative screening

Before the widespread adoption of ESG integration, negative screening, or exclusion, was a central method in responsible investing. Scholtens, B., & Sievänen, R. (2013) describe exclusion as pivotal during the early days of socially responsible investing, particularly concerning sin stocks. Based on ethical considerations and moral beliefs, sin stocks are deemed to involve harmful activities such as tobacco and alcohol production, gambling, and weapons manufacturing. Negative screening aimed to exclude companies from investment portfolios in these sectors. Ethical investors were willing to sacrifice potential returns on their investments to align their portfolios with their values. Hyrske, A., Lönnroth, M., Savilaakso, A. & Sievänen, R. (2020) highlight challenges associated with exclusion. For instance, if the goal is to completely eliminate the tobacco industry from a portfolio, should retailers selling tobacco products also be excluded? To address this definitional issue, percentage thresholds can be utilized to limit the share of harmful sectors in a company's revenue. If the share of tobacco products falls below the defined maximum threshold, investors may consider investing in a retail company using this method. The delineation between minimum and maximum thresholds is determined by the investor.

With the proliferation of responsible investment thinking, companies engaged in environmentally harmful activities have been added to the list of excluded companies by investors. Silvola, H. & Landau, T., (2019) discuss carbon risk, which adversely affects the profitability of investment targets relying on fossil fuels. For example, companies using

or mining coal are affected by changing legislation and shifts in consumer behavior. The decision to exclude such companies may stem not only from environmental awareness but also from economic considerations. Researchers take into account the subsequent decline in the company's valuation multiple due to exclusion and address the paradox of valuation as follows: When companies focusing on fossil fuels are simultaneously excluded by multiple investors, their market value decreases. A potential new owner notices the reduced price-to-earnings (P/E) ratio and may consider the target to potentially generate more value. For such a company to be a profitable investment, it should offer strong cash flows in the future. Additionally, the investor should be aware that the company's value would not further decrease from its current level due to, for example, new sales.

2.4.3 Shareholder activism

Investors who aim to influence the operations of the companies they own according to their own objectives commonly participate in shareholder meetings, thereby acting as active shareholders. According to the Companies Act (624/2006), shareholders are entitled to an equal number of votes as the shares they own. Thus, in principle, anyone can practice active ownership regardless of the number of shares they own.

However, in practice, real changes through active ownership are brought about by institutional investors and asset managers who own larger portions of companies. Majoch, A., E., Gifford, J., & Hoepner, A. (2012) discuss the opportunities for major shareholders to influence company affairs by participating in pre-meeting discussions before shareholder meetings. In these discussions, major shareholders can resolve potential conflicts of interest on the meeting agenda according to their own policies. Hvidkjær, S. (2017) notes that while such opportunities for influence apply only to the largest shareholders, through pre-meeting discussions, major shareholders can bring up issues beneficial to all shareholders—matters that holders of smaller voting shares might not be able to push through in a regular voting situation. Amel-Zadeh, A., & Serafeim, G., (2018) on the other hand, found a more skeptical view of the potential impact of active ownership among

large investors compared to smaller investors in their study. Active ownership was seen as a more influential means of change among European rather than American investment professionals, according to their research.

In addition to the agenda-based influence described above, dialogue between investors and companies can also be conducted proactively. Since investors conduct their own risk assessment of the company's current state and future prospects, they seek to proactively reduce potential investment risks and improve the company's sustainability through dialogue. Hyrske, A., Lönnroth, M., Savilaakso, A. & Sievänen, R. (2020) divide effective dialogue into proactive and reactive influencing processes. Reactive dialogue can be conducted, for example, following an event that has occurred, resulting in investors wanting unfavorable actions to cease. Both Silvola, H. & Landau, T., (2019) and Hyrske & al. (2020) note that forming investor coalitions is one effective way for small investors to influence company operations. Investors seeking support for their influencing processes can establish their own groups on the PRI platform and create their own initiatives for signature there.

If influencing efforts fail to bring about the desired change, for example, if the company does not take action to correct unfavorable issues or if the identified problems are such that the investor cannot accept them, selling their ownership may be the only option for the investor (Silvola, H. & Landau, T., 2019). In this case, the investor engages in negative screening, i.e., excluding the unfavorable company from their portfolio.

3 Financial Turmoil

Economic instability, often precipitated by various exogenous shocks and internal vulnerabilities, manifests through a spectrum of disruptive events that can profoundly impact financial markets, economies, and investor confidence. Causes of such instability may stem from factors including but not limited to geopolitical tensions, trade disputes, natural disasters, pandemics, and financial crises. Notably, the Covid-19 pandemic, originating in 2019, emerged as a seminal event exacerbating economic uncertainty worldwide. Furthermore, geopolitical conflicts such as the invasion of Ukraine initiated by Russia in 2022 have added layers of complexity to global economic dynamics, amplifying volatility and risk perception among investors. (Shehzad, K., Xiaoxing, L., Bilgili, F., & Koçak, E. ,2021). This chapter elucidates the intricate interplay of factors contributing to financial turmoil, offering insights into its origins, manifestations, and implications for economic resilience and policy responses.

3.1 Covid-19 Pandemic

The Covid-19 pandemic in the beginning of 2020 set off significant repercussions throughout the whole economy, culminating in the most severe worldwide economic downturn since the financial crisis early 2000s (World Bank, 2022). Acting as a symmetric external shock affecting nations worldwide, the coronavirus pandemic nonetheless yielded asymmetric consequences across countries and industries due to differing economic frameworks (European Commission, 2021). Its impact reverberated through production, trade, investments, employment, consumption, and financial systems, resulting in profound economic disruptions (Kok, C., Mongelli, F. P., & Hobelsberger, K. 2022).

In typical recessions, as outlined by Ehnts, D., & Paetz, M. (2021) familiar sequence unfolds: economic activity slows, investments dwindle, unemployment climbs, incomes drop, and consumer spending wanes. Throughout this cycle, the recession deepens until effective monetary and fiscal policies initiate recovery. Improved prospects for the future

drive investment, consumption, employment and production. However, pandemic deviated from this norm. Contrary to previous crisis, extensive and decisive economic policies were swiftly implemented to alleviate the pandemic's immediate human toll (World Bank, 2022). Nonetheless, these measures did not eradicate emerging risks, such as heightened private and public debt. These measures are hindering the economy and setting the economy up for recession without intervention.

Globally, the Covid-19 pandemic profoundly impacted economic expectations, reshaping perceptions, and attitudes toward future economic conditions (Ambrocio, G., 2022). The pandemic-induced disruptions to economic activity and uncertainty regarding the duration and severity of the crisis led to heightened caution among businesses, consumers, and investors. This caution translated into reduced investment, subdued consumer spending, and increased savings as individuals and businesses sought to shore up their finances amidst economic uncertainty. Additionally, the surge in public debt, resulting from extensive government stimulus measures, raised concerns about long-term debt sustainability and fiscal stability, further dampening economic expectations and confidence.

Figure 2. Selected US indices' performances from January 2020 to March 2021, indexed to March 2020 (Yahoo Finance, 2024).

The onset of the Covid-19 pandemic triggered widespread turmoil across global stock markets, with major indices such as the S&P 500, Nasdaq Composite, Dow Jones Industrial Average, and STOXX 600 experiencing sharp declines as uncertainty and fear gripped investors, as shown in the figure 2. According to Liu, Z., Huynh, T. L. D., & Dai, P. F. (2021). economic uncertainties caused by the pandemic led to widespread selling pressure, resulting in steep market declines. However, the authors describe that, central bank interventions, fiscal stimulus packages, and optimism surrounding vaccine development efforts helped spur a robust market recovery. As economies gradually reopened and vaccination campaigns gained momentum, investor sentiment improved, driving stock prices higher. Certain sectors, such as technology, healthcare, and e-commerce, performed well during the pandemic, benefiting from increased demand for remote work solutions, healthcare products, and online services. Conversely, industries reliant on physical presence, such as travel, hospitality, and retail, struggled amid lockdowns and social distancing measures. (Hoekstra, J. C., & Leeflang, P. S. 2020). Overall, the market's recovery and stabilization were fueled by a combination of supportive monetary policies, fiscal stimulus, vaccine optimism, and adaptive business strategies.

3.2 The Russia-Ukraine Conflict

The commencement of the Russian invasion of Ukraine in February 2022 marks a continuation of the ongoing conflict between the two nations that originated in 2014 with Russia's annexation of Crimea. On February 21, 2022, Russian President Vladimir Putin officially acknowledged the self-declared Luhansk and Donetsk republics as independent entities, followed by the announcement of a military operation on February 24, 2022 (Kokkonen, Y., & Romsi, V. 2022).

The incursion by Russia into Ukraine induced market and societal uncertainty due to the heightened risk of war escalation and potential nuclear incidents (Martins, A. M., Correia, P., & Gouveia, R., 2023). Caldara, D., & Lacoviello, M. (2022) assert that the impact of the military conflict between Russia and Ukraine on Europe is notably wider and more sig-

nificant compared to previous wars and political events since World War II. Their geopolitical risk index highlights the peak of geopolitical threat in Europe coinciding with Russia's assault on Ukraine (Martins, A. M., Correia, P., & Gouveia, R., 2023).

Research conducted by Ahmed, S., Hasan, M. M., & Kamal, M. R. (2023) delved into the repercussions of the Russia–Ukraine crisis on European stock markets. The study revealed that heightened geographical proximity, political uncertainty, and the imposition of new sanctions against Russia led to negative reactions in European financial markets. Specifically, a significant negative abnormal return in European stocks was observed on February 21, 2022, coinciding with Russia's recognition of the Donetsk and Luhansk regions as autonomous entities. Moreover, these adverse stock price reactions persisted following this event, with varying degrees of impact across industries, countries, and company sizes.

4 Previous Research

This section presents previous research conducted on responsible investing. Prior research serves as a framework for this study, with its results ultimately being compared to the findings of earlier studies. Previous studies have been categorized based on the outcomes they have obtained.

As noted in this study, sustainability has evolved significantly over the long term, particularly in the last decade. Therefore, this section focuses on examining only the most recent studies, whose observations are expected to serve as relevant benchmarks for the findings of this research.

4.1 Level of Sustainability on Better Returns

Recent research findings on the returns of responsible funds are available from the study by Abate, G., Basile, I. & Ferrari, P. (2021). They compared the monthly returns and risks of European ESG funds available on Morningstar from 2014 to 2019. The researchers used Data Envelopment Analysis to examine risk-adjusted returns for each fund based on various risk metrics, including standard deviation, Sortino ratio, and kurtosis, which indicates the distribution of returns around the mean. Their results showed that funds with higher ESG ratings not only achieved better returns compared to those with lower ESG ratings but also exhibited lower volatility. Additionally, they compared fund costs and found that high ESG-rated funds were more cost-effective than lower-rated ones.

Costs are a critical consideration in investment selection, as they can erode returns, especially over the long term. However, the impact of costs on fund performance history is typically taken into account, and reported returns are usually presented net of fees. Therefore, it is more informative for investors to understand how a fund has performed after accounting for expenses. Management fees are deducted from the fund's value

daily rather than charged directly to investors. For this reason, this study did not compare fund expenses as a separate component of fund returns. Abate, G., Basile, I. & Ferrari, P. (2021).

Cesarone, F., Marino, M., & Carleo, A. (2022) conducted mean-variance analysis on five major indices. They constructed pareto-optimal portfolios that maximized ESG values while minimizing risk. The research data was collected from stocks included in the indices from 2006 to 2020, and ESG values were obtained from Refinitiv. To examine the 15-year period more closely, the researchers divided the years into two periods: 2006–2013 and 2014–2020. Each index had 16 research portfolios. The results for the entire period were as follows: only portfolios composed of S&P 500 and Dow Jones indices yielded the best returns when considering companies with high ESG ratings. Before 2014, four out of five indices performed best with companies rated low in sustainability. During the period of 2014–2022, influenced by the Paris Climate Agreement, portfolios with higher ESG ratings outperformed those with lower ratings in four out of five indices.

These findings were consistent with major U.S. indices and the London FTSE100. However, returns from portfolios composed of the Euro STOXX 50 index, tracking the top 50 European companies, were best with companies rated lower in sustainability throughout the entire 15-year period. Therefore, portfolios constructed from the Euro STOXX index performed best with less sustainable companies. Cesarone, F., Marino, M., & Carleo, A. (2022) research findings underscore the importance of considering country and regional boundaries when comparing different studies to each other.

4.2 ESG on Market Downturns

Good ESG scores have been said to outperform broad market indices, especially during market crisis. Lins, K.V., Servaes, H. & Tamayo, A. (2017) compared company stock returns during the financial crisis of 2007–2009. They found that over this period, stocks with high corporate responsibility scores outperformed low-score stocks by as much as four to seven percent. Similarly positive abnormal returns in stocks were also observed

by Nofsinger, J., & Varma, A., (2014). They compared responsible U.S. equity funds to conventional equity funds and found that during market crisis (2000–2002 and 2007–2009), responsible funds outperformed conventional funds by an average of 1.18 percent.

Although Nofsinger, J., & Varma, A., (2014) identified excess returns by responsible funds during financial crisis, the long-term returns and those preceding or following the crisis no longer supported these excess returns. The researchers constructed their dataset by matching each responsible fund with three corresponding conventional funds based on their inception date and net assets. Risk-adjusted returns were evaluated using the CAPM model and Fama-French 3-factor and Carhart 4-factor models. Over a nine-year period, the average return for responsible funds was 2.56 percent, and for conventional funds, it was 2.60 percent, showing negligible differences over the long term. When the analysis was limited to the pre- and post-crisis years, conventional funds outperformed responsible funds by 0.67–0.95 percent depending on the analysis method used, indicating insignificant excess returns.

Lins, K.V., Servaes, H. & Tamayo, A. (2017) focused on the "G" component of ESG, i.e., corporate governance, during 2007–2009. Their dataset included 1673 non-financial companies, and ESG data was filtered through MSCI. Immediately after the financial crisis, researchers did not observe differences in returns between low and high corporate responsibility companies. Researchers interpreted this to suggest that the added value of responsibility is reflected in company stock prices during normal times. Nofsinger and Varma (2014) also stated that funds focused on corporate responsibility generated excess returns during crisis periods, up to 1.70 percent.

Given that corporate responsibility encompasses multiple themes such as trust in company management or transparency in tax information, Lins, K.V., Servaes, H. & Tamayo, A. (2017) investigated how the level of corporate responsibility affected company returns in these different categories. The results indicated that excess returns were higher

for companies headquartered in regions where investors were more confident. This is an interesting observation, as when comparing companies by country, the emphasis is usually on the country or region where the company operates, rather than where it is listed. Based on this observation by researchers, it could be assumed that a company like UPM, a Finnish listed company headquartered in a high-trust country, receives good confidence. This occurs even if the reported conflicts are related to its foreign investments, potentially affecting foreign investors' perceptions of the entire company.

Folger-Laronde, Z., Pashang, S., Feor, L. & El Alfy, A. (2022) investigated returns during the most recent market shock, the Covid-19 crisis. They used ETF funds filtered through EcoFund classification. EcoFund is a classification site maintained by Corporate Knights, which provides ratings for ETF stock investments on a company-by-company basis. EcoFund is stricter in its classification compared to other rating agencies. If even one company included in an ETF is classified as the lowest level of irresponsible ("red-flag"), the entire ETF receives a 0 score in the overall rating. They also examined ETF weekly returns during the period from January 11, 2019, to February 21, 2020, representing the period before the market decline, and from February 28, 2020, to March 3, 2020, representing the first weeks after the Covid-19 news. The dataset included 278 ETFs. Regression analyses indicated that responsible funds did not provide protection during the market downturn. Folger-Laronde, Z. & al. (2022).

Folger-Laronde, Z. & al. (2022) discussed reasons why positive returns were reported for responsible investments during the financial crisis but not during the Covid-19 crisis. They also highlighted discrepancies in ESG ratings. Moreover, the difference between the crises was substantial. The financial crisis had its reasons, and it was to be expected, but the Covid-19 pandemic caught everyone by surprise. Could it be that in an unprecedented situation where the economic situation was uncertain, profits were sought from wherever they could be found, and responsibility took a back seat? The same assumption could be applied to the war in Ukraine. When electricity production is uncertain and

energy is needed, the priority is not renewable energy sources. As long as there is enough energy.

Engelhardt, N., Ekkenga, J. & Posch, P. (2021) also studied returns during the Covid-19 crisis in their comparative study of European companies. Like Lins, K.V., Servaes, H. & Tamayo, A. (2017); Engelhardt, N. & al (2021) specifically investigated the impact of corporate responsibility on return development. The research covered 1452 companies, and sustainability data was collected from the Refinitiv database. The study was conducted using multivariate regression analysis during the period from February 3, 2020, to March 23, 2020, covering the period just before the pandemic and immediately after its impact on the stock market. In their regression analysis, Engelhardt, N., Ekkenga, J. & Posch, P. (2021) found mixed results. When pure cumulative returns were used as the dependent variable, ESG scores did not exhibit statistical significance. However, when the dependent variable was switched to market-adjusted returns, i.e., returns after accounting for risk, the results were statistically significant. ESG scores were strongly associated with lower volatility.

4.3 No Impact of High Responsibility on Better Returns

Bruno, G., Esakia, M. & Goltz, F. (2021) compared large and mid-cap companies in developed markets over the period from January 1, 2007, to May 31, 2020. ESG data for the research was gathered from the MSCI database. The researchers employed multivariate regression as their methodology to investigate whether firm size, responsibility score, value, or productivity had explanatory power with ESG alpha. The researchers made the following observations: ESG strategies can achieve excess returns in the short term, but in the long term, they underperform market returns. This is related, according to the researchers, to the fact that when there is increased demand for a company, its stock prices rise. This increased demand led the studied companies to have their stocks produce less than their estimated average returns before the demand spike.

In their concluding remarks, Bruno, G., Esakia, M. & Goltz, F. (2021) noted that even if a company has high responsibility scores, these high scores do not automatically raise its return expectations. Thus, it is the investor's task to choose whether they want to invest based on return prospects or select companies with better ESG scores that align with their non-monetary values. One aspect examined in Bruno, G., Esakia, M. & Goltz, F. (2021) study was also whether high ESG scores provide protection during market declines. Since investors are reportedly more averse to losses during market declines than during market upturns, it is reasonable to investigate whether responsible companies mitigate the decline in investment portfolio value during market downturns. The study showed that even during market declines, companies with high ESG scores did not offer returns better than the overall market.

Similar negative return findings were also obtained by Dolvin, S., Fulkerson, J. & Krukover, A. (2019) in their comparative study of U.S. funds. Their dataset covered all U.S. funds listed on Morningstar that had been classified as responsible funds. The study period was from 2012 to 2016. Since Morningstar began producing sustainability data only from 2016 onwards, the researchers used the 2016 responsibility score for the entire study period. They also noted that not all funds had existed for the entire five years, so data for some funds was available only for part of the study period. Among other limitations, this constraint in their study was the reason for limiting the number of funds, ensuring that all funds had the same historical price data.

Dolvin, S., Fulkerson, J. & Krukover, A. (2019) used differences in annual returns and standard deviations to compare funds. Additionally, they examined risk-adjusted returns using Carhart alpha. The researchers noted that almost all funds with lower ESG scores contained small-cap stocks, whereas funds with the highest scores contained large-cap stocks. Since the research question was whether funds with higher ESG scores perform better than those with lower scores, the study practically compared small companies to large companies.

Dolvin, S., Fulkerson, J. & Krukover, A. (2019) also pondered the composition of fund holdings and how they are classified as responsible. They filtered their dataset through the Sustainable Investing Foundation (SIF) website, which provided a comparison of funds maintained by a U.S. sustainable investing organization. From these funds, they cross-referenced with Morningstar to verify the availability of sustainability data. Consequently, their dataset was limited to 31 funds. The contradiction lies in how funds self-classify as responsible, but based on the additional analysis by researchers, they might not actually be as responsible. Among these 31 funds, 35 percent received a low responsibility rating. The researchers also noted that their dataset included many funds that did not market themselves as responsible but received higher responsibility scores than funds that called themselves responsible.

In their concluding remarks, Dolvin, S., Fulkerson, J. & Krukover, A. (2019) stated that they did not find a difference in risk-adjusted returns between funds with high and low responsibility scores. However, funds with high responsibility scores, containing large-cap stocks, had a good risk profile. Nevertheless, by limiting the study to only these funds, it may be difficult for an investor to build a diversified portfolio that also meets responsible investing criteria. Although researchers observed poorer returns with responsible funds compared to non-responsible funds, they acknowledged that future research might yield different results. This is because, even though the Morningstar data used in their study is relatively recent, more rating data will become available in the future, potentially altering the analysis accordingly.

5 Theoretical Framework

This paragraph introduces the relevant models of financial theory and economic theory that form the theoretical framework of the thesis, presented in chronological order from oldest to newest.

5.1 Efficient Market Hypothesis

The concept of efficient market has been around at least since 1889 when George Gibson wrote about the formation of stock prices in open markets (Gibson, G. 1889). Initially the term efficient market hypothesis (EHM) was introduced in 1967 by Harry Roberts (Roberts, H. 1967). Robert's research served as the basis when Fama, E. F. (1970) introduced his research and assesses the extent to which asset prices reflect available information in financial markets. In an ideally efficient market, securities are traded at their true intrinsic values, eliminating opportunities for arbitrage, and preventing securities from being either under- or overvalued. However, achieving perfect market efficiency is theoretical, and three distinct forms of efficiency — weak, semi-strong, and strong — have been conceptualized.

In the weak form of efficiency, market prices only incorporate past security price information, following a random walk pattern that renders future price predictions impossible. Thus, analyzing historical prices does not yield abnormal returns. Moving to the semi-strong form, market efficiency extends to encompass all publicly available information, including events like initial public offerings (IPOs), mergers and acquisitions (M&A), and regulatory disclosures. The strong form of efficiency extends this concept further to include insider information about securities. (Fama, E. F., 1970).

Fama, E. F. (1991) expanded on this theory by introducing more comprehensive tests for market efficiency. The weak form was broadened to incorporate variables beyond price information, such as dividend yields and interest rates, to predict future returns. However, testing for market efficiency is intricately linked to equilibrium pricing and presents

a joint hypothesis problem — efficiency tests challenge both the market's efficiency and the accuracy of the pricing model used. Fama, E. F. (1991) emphasized event studies as a robust method to assess market efficiency, demonstrating how quickly asset prices reflect new public information upon release. The strong form, once focused on insider information, shifted towards assessing the impact of private information on market efficiency.

Contrary to EMH assumptions, behavioral finance acknowledges that investors may not always act rationally. Fama, E. F., & French, K. R. (2007) noted that disagreements among investors about future investment payoffs can lead to irrational behavior. Additionally, some investors view investments as consumption goods, introducing preferences beyond profit maximization and risk minimization — such as social responsibility considerations. Institutional investors, according to Hwang, C., Titman, S., & Wang, Y. (2022) prioritize responsible investments and influence companies to align with their preferences. Cao, J., Titman, S., Zhan, X., & Zhang, W. (2023) found that socially responsible investing (SRI) affects pricing efficiency; institutions with SRI preferences are less likely to engage in arbitrage, contradicting EMH assumptions. Responsible investing data, though informative about future risks and profits, also influences investor behavior in ways not wholly rational, as suggested by Beal, D. J., Goyen, M., & Philips, P. (2005). In summary, while EMH assumes investor rationality, behavioral finance acknowledges that investors have diverse preferences beyond profit maximization, challenging the notion of market efficiency.

5.2 Portfolio Theory

Markowitz, H. (1952) developed a portfolio construction model aimed at minimizing the overall risk of a portfolio. The two key assumptions of Modern Portfolio Theory (MPT) are that rational investors seek to maximize returns at all levels of risk and that risk can be reduced by assembling a portfolio of individually independent stocks. Additionally, the model assumes that an investor is risk-averse and will only accept increased portfolio risk if expecting higher returns on investments. Stock selection is based on the historical

correlations between their returns. The optimal portfolio according to the theory is achieved by selecting stocks with the lowest possible correlation between their returns. The following equation represents Markowitz, H. (1952) optimization problem,

$$\max \alpha \mathrm{E} - \beta \mathcal{V}^2 \quad (1)$$

where:

α is profit

β is risk

E is expected return

$\mathcal{V}^2$ is variance.

Equation (1) describes a situation where returns are maximized for a constrained level of risk. Efficiency is maximized, and any criterion of the portfolio cannot be improved without compromising another.

MPT aims to model an optimal portfolio where the highest possible return is achieved at a selected risk level. This is achieved through the concept of the efficient frontier, a key tenet of MPT. The efficient frontier represents a set of optimal portfolios that offer the highest expected return for a given level of risk or the lowest risk for a desired level of return. It is formed by plotting the standard deviation (a measure of risk) of a portfolio against its expected return. Portfolios that lie on the efficient frontier are considered optimal because they provide the best trade-off between risk and return.

At a certain point on the efficient frontier lies the market portfolio, denoted as point T. The market portfolio comprises all investable assets in the market, weighted according to their market capitalizations. It represents the optimal risk-return ratio available to investors in the market. In other words, the market portfolio offers the highest expected return for a given level of risk.

The Sharpe ratio, developed by William F. Sharpe, is a key metric in MPT. It measures the excess return of a portfolio per unit of risk (standard deviation). A higher Sharpe ratio indicates better risk-adjusted performance. From the perspective of MPT, the portfolio that maximizes the Sharpe ratio is considered the most efficient. (Sharpe, W. F. 1966). This portfolio lies at the point where the tangent line to the efficient frontier is equal to the slope of the capital market line (CML). The CML represents the efficient combination of the risk-free asset and the market portfolio.

Therefore, in MPT, investors aim to construct portfolios that lie on the efficient frontier or, ideally, maximize the Sharpe ratio to achieve the best risk-adjusted returns. By diversifying across assets with different risk and return characteristics, investors can optimize their portfolios to achieve their investment objectives while minimizing risk.

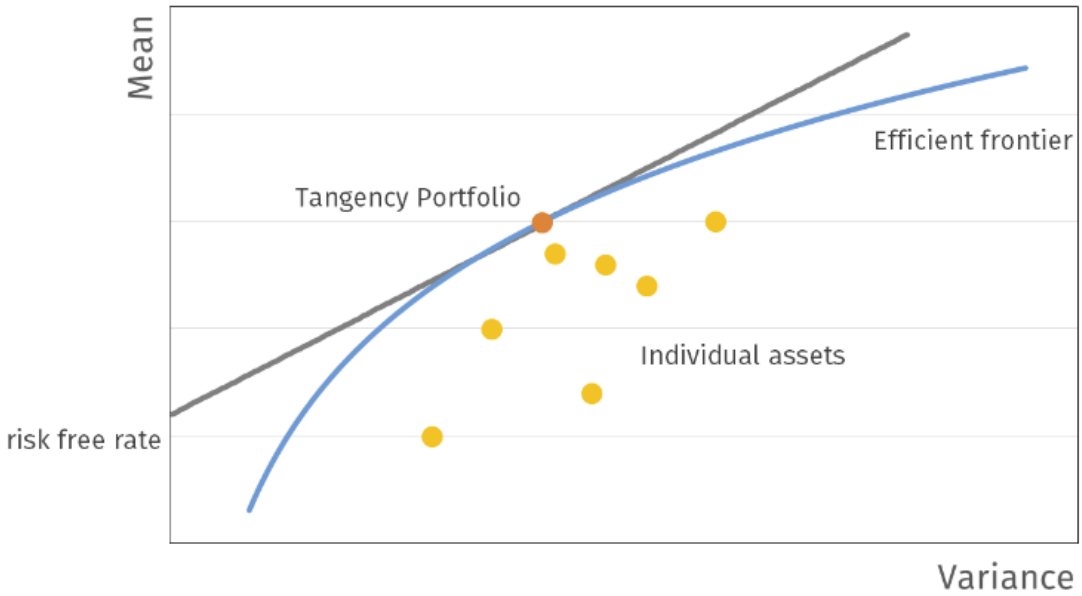

Figure 3. Efficient Frontier (Markowitz, H., 1952).

Responsible investment methods have challenged the portfolio theory's assertion that an optimal portfolio is achieved solely through diversification of investment assets. Studies such as Hoepner, A. & Schopohl, L. (2018), and Verheyden, T., Eccles, R & Feiner, A.

(2016), have demonstrated that selecting investments based on their ESG ratings reduces individual asset risk, thereby lowering the overall risk of an ESG-screened portfolio.

6 Data and Methodology

This chapter outlines the data and methodology used in this study. It begins by detailing the selected funds, including their characteristics and construction methods. Following this, the chapter introduces the descriptive statistics and provides a comprehensive explanation of the applied methodology.

6.1 Data Description

The performance of Finnish ESG funds is investigated using data collected from the Morningstar database. This database was chosen because Morningstar provides sustainability ratings for investment funds. The sustainability ratings are based on company specific ESG scores from the rating agency Sustainalytics (Morningstar, 2024). As described in chapter 2.3. comprehensive rating agencies, such as Sustainalytics, conduct deeper analyses using public data, employing their own methodologies and actively engages with companies to understand their sustainability efforts (Steen, M., Taghawi, J., & Gjolberg, O., 2020).

Morningstar uses a globe rating system ranging from 1 to 5 in its sustainability classification of funds. In the dataset, Morningstar covers 67 Finnish equity funds. These funds exclusively consist of equities without any fixed-income investments such as government bonds. Equity weights of the funds range between 95-98%. The dataset has been narrowed down to include 20 funds that have classified with at least one globe sustainability rating. Also, funds with share classes intended, for example, institutional investors have been excluded from the scope of this analysis. Also, the ESG fund daily prices were obtained from the Morningstar database.

In this study, the comparison index used is the OMX Helsinki GI (OMXHGI). The chosen index takes into account both the capital appreciation of the stocks and the dividends they distribute (Gross Index). The index was chosen because it includes Finnish companies of all sizes: small, medium, and large. Therefore, the index content aligns with the

funds under investigation and is suitable for comprehensive comparison with the entire dataset. The daily prices for the OMX Helsinki GI (OMXHGI) index were retrieved from Bloomberg which offers analysts the ability to specify their desired time frame. This flexibility allowed for the extraction of detailed historical datasets suitable for analysis.

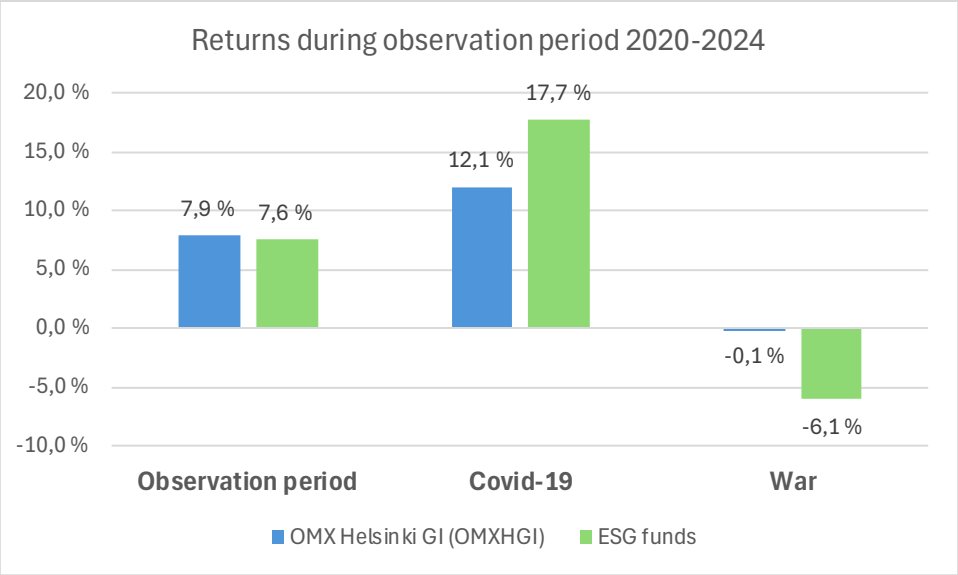

Figure 4. Index and ESG funds' return during observation period 2020-2024.

As seen in Figure 4, during the observation period from 2020 to 2024, the ESG funds exhibited a strong performance compared to the OMX Helsinki GI index. The ESG funds recorded a cumulative return of 7.6% over the entire four-year period, slightly underperforming (-0.3 percentage points) the OMX Helsinki GI, which achieved a return of 7.9% during the same period.

Although not specifically considered a hypothesis, this study also analyses the performance of ESG funds compared to the financial market during the first year following the Covid-19 outbreak, which is defined as period from February 14, 2020, which marked the day before the financial markets crashed due to the epidemic and concluding exactly one year later on February 14, 2021. Here, the aim is to examine whether the ESG funds demonstrate superior performance compared to the market index during the initial

Covid-19 crisis period, which was one of the first monumental events impacting financial markets in a long period of time.

Amid the Covid-19 crisis within the same observation period, ESG funds demonstrated robust performance with a cumulative return of 17.7%. In contrast, the OMX Helsinki GI index experienced a return of 12.1% during this crisis period. This significant divergence underscores the favorable market dynamics and investor sentiment towards ESG investments during times of heightened uncertainty and market volatility.

However, during the subsequent war period from 2022 to 2023, ESG funds faced challenges, experiencing a cumulative decline of 6.1% compared to a marginal decrease of 0.1% for the OMX Helsinki GI index. These findings illustrate the varying performance of ESG funds relative to market indices across different phases of market conditions.

In summary, the analysis of ESG fund performance over the four-year observation period highlights their resilience and strong returns compared to traditional market indices during certain crises, such as the Covid-19. However, very similar returns through the entire 4-year observation period indicate that this effect was not observed when both stable and unstable times were encompassed. Nonetheless, the impact of prolonged economic turmoil, as observed during the war period, underscores the importance of considering broader market dynamics and risks associated with sustainable investments for long-term investment strategies.

6.2 Methodology

The performance of funds based on ESG criteria was analyzed through an event study conducted specifically during a period of financial turmoil. This event study examined the performance of ESG funds over a one-year period following their inception during the financial turmoil. The study focused on assessing both short-term and long-term returns after the fund launch, specifically observing the fund's performance one year after

its inception. This analysis aimed to provide insights into the fund's performance and investor sentiment amid the financial turmoil over the longer term.

6.2.1 Methodological Constraints

In conducting the event study for this thesis, several methodological constraints were carefully considered. Firstly, given the large number of ESG funds included in the analysis, the assumption that alpha (excess return) equals zero and beta (market sensitivity) equals one was made. While this assumption may introduce limitations in the methodology, it was reasoned that the actual alpha and beta values likely approximate the chosen values in reality, given the diverse nature of the ESG fund universe.

Secondly, a significant challenge arose in accurately estimating the exact time periods impacted by the selected crises, namely the Covid-19 pandemic and Russia-Ukraine war. Due to this uncertainty, the decision was made to focus on observing the initial one-year periods following the onset of these crises. It was assumed that market conditions would return to a more stable state after these durations, allowing for a clearer assessment of the ESG funds' performance under crisis conditions.

Lastly, the analysis was constrained by the exclusion of other potential impacts on ESG funds and investments, such as changes in legislation or regulatory frameworks. By focusing solely on the performance of ESG funds during the defined observation periods affected by the crises, the study aimed to isolate the direct effects of these significant events on fund performance.

These methodological constraints underscore the complexity inherent in conducting event studies within financial research. Despite these limitations, careful consideration was given to ensure the robustness and validity of the study's findings, emphasizing the need for cautious interpretation and contextual understanding when analyzing the performance of ESG funds under crisis conditions.

6.3 Market Adjusted Model

The market adjusted model is a valuable alternative to the standard market model when analyzing the returns of securities, especially in cases involving limited data or the absence of pre-event information, as suggested by MacKinlay, A. C. (1997). This model represents a constrained version of the market model, where predetermined coefficients are utilized. Also, the model eliminates the need of using parameter estimation.
MacKinlay, A. C. (1997) suggests exercising prudence when utilizing the market adjusted model, highlighting its limitations that could potentially establish biases to the findings. However, in circumstances where acquiring pre-event market data presents challenges, the model emerges as a pragmatic and appropriate method. For example, Friede, G., Busch, T. & Bassen, A. (2015) effectively applied this model to assess the performance of ESG funds.

Also, ElBannan, M. A. (2024) support MacKinlay, A. C. (1997) perspective, highlighting the utility of the market adjusted model when there is only limited data available. The authors also stress the importance of using this model judiciously to avoid potential biases in the analysis. Despite its restrictions, the market adjusted model stays popular, particularly in studies focusing on the performance analysis of ESG funds.

To understand the market model is essential to grasp the concept of the market adjusted model. The market model assumes that returns are influenced by a single factor. The calculation of returns in the market model follows a specific formula:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (2)$$

where:

R_{it} is the return of fund i during period t

R_{mt} is the benchmark for the same period.

ε_{it} accounts for any unexplained variability in the fund's return

α_i and β_i are specific to the market model and describe the relationship between the fund's returns and the market returns.

Next, abnormal returns (ARs) are computed from the equation (3) by determining the difference between the actual return of the fund and its expected return based on the market model.

$$AR_{it} = R_{it} - (\alpha_i + \beta_i R_{mt}) \quad (3)$$

With the previously mentioned assumptions of alpha = 0 and beta = 1, ARs are computed using the following approach:

$$AR_{it} = R_{it} - R_{mt} \quad (4)$$

Once ARs have been calculated for every fund at a specific time, the next stage is to calculate cumulative abnormal returns (CARs) for every fund. CARs are computed by aggregating the ARs over consecutive days. The formula for CARs is:

$$CAR(t_1, t_2) = \sum_{t=t_1}^{t_2} AR_{it} \quad (5)$$

After calculating the CARs for each fund, the subsequent phase is to determine the cumulative average abnormal returns (CAARs) across all funds during the sample period. The CAARs represents the average returns of the dataset, taking into account all of the observations during the sample period. The formula for calculating CAARs is as follows:

$$CAAR = \frac{1}{N} \sum_{i=1}^{n} CAR(t_1, t_2) \quad (6)$$

For the last stage it is necessary to evaluate the statistical significance of the results. This usually includes using both parametric and nonparametric tests. To assess the significance of the findings, a parametric test such as a t-test will be employed. This test allows

for the determination of whether observed differences in abnormal returns are statistically significant and not merely due to random chance. The t-test compares the means of the abnormal returns against a null hypothesis of no difference, helping to establish whether the observed effects are meaningful and reproducible across the sample data.

7 Results

In the following, the outcomes of the empirical study and its calculations are presented and the reasonings behind the findings discussed. The main aim of the study is to compare and analyze the performance of selected Finnish ESG funds with the Finnish market index OMX Helsinki GI during the observation period spanning from 2020 to 2024. As previously mentioned in Chapter 1.2, this specific timeframe was chosen to assess ESG fund performances amidst global instability, notably driven by the Covid-19 pandemic as well as the Russia-Ukraine war. Notably, financial markets exhibited periods of stabilization between 2021-2022 and again from 2023-2024.

This section presents CARs for each subset of data, along with descriptive statistics and the outcomes of parametric t-tests conducted across all three subsets of data. The abnormal returns were computed based on a sample comprising 20 Finnish ESG funds during the specified observation period and the subsequent one-year intervals following the onset of the crises. The CARs were derived utilizing a market adjusted model. The initial average performance of the selected ESG funds in relation to the benchmark index, i.e. their abnormal returns, during each of the periods analyzed, is presented below in Figure 5. It is clear to see that the ESG funds underperform the market index during the entire observation period but outperform the first year following the outbreak of Covid-19. During the first year of the Russia-Ukraine war, OMX Helsinki GI on the other hand outperformed the selection of Finnish ESG funds. The descriptive statistics as well as the outcomes of the statistical tests are discussed in the following section.

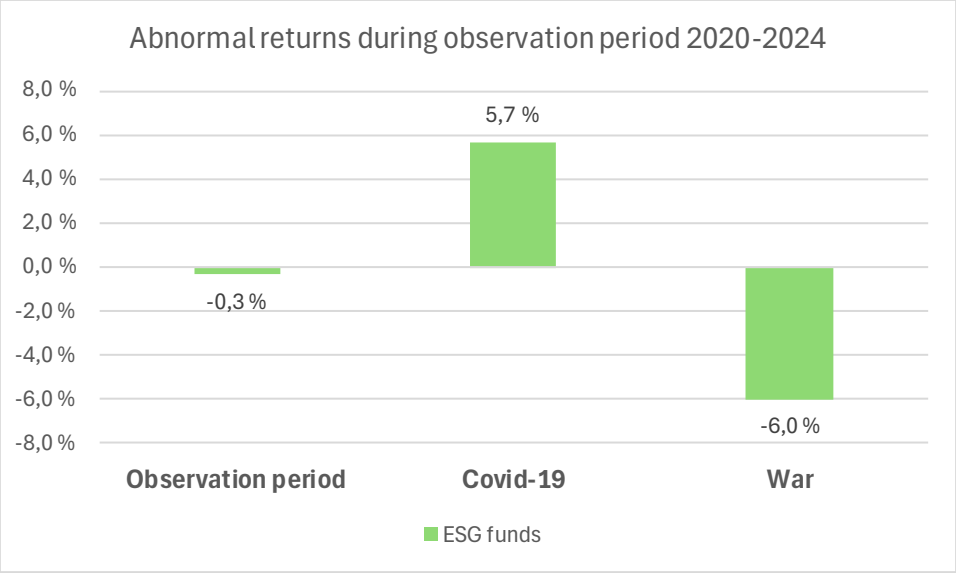

Figure 5. ESG funds' mean abnormal returns during observation period 2020-2024.

ESG Funds' CARs	
Observations	20
Mean	-0,3 %
Median	2,6 %
Maximum	19,5 %
Minimum	-19,6 %
Standard Deviation	0,11
Skewness	-0,31
Kurtosis	-0,71
T-stat	7,07
Jarque-Bera	11,82
Count of Negative	9
Count of Positive	11

Table 1. Descriptive statistics of ESG funds' CARs during observation period 2020-2024.

ESG Funds' CARs	
Observations	20
Mean	5,7 %
Median	3,1 %
Maximum	27,2 %
Minimum	-7,7 %
Standard Deviation	0,10
Skewness	0,78
Kurtosis	-0,45
T-stat	4,64
Jarque-Bera	11,95
Count of Negative	8
Count of Positive	12

Table 2. Descriptive statistics of ESG funds' CARs during first year of Covid-19.

ESG Funds' CARs	
Observations	20
Mean	-6,0 %
Median	-3,6 %
Maximum	1,8 %
Minimum	-21,8 %
Standard Deviation	0,07
Skewness	-1,23
Kurtosis	0,14
T-stat	-3,68
Jarque-Bera	11,86
Count of Negative	17
Count of Positive	3

Table 3. Descriptive statistics of ESG funds' CARs during first year of the war.

The descriptive statistics for the observation period 2020-2024 reveal valuable insights into the performance of the 20 selected ESG funds. Despite a mean cumulative abnormal return (CAR) of -0.3% during the 4-year observation period, indicating a very minimal overall downturn, the median CAR of 2.6% suggests a more favorable middle value, with certain funds demonstrating noteworthy positive performance. The maximum CAR recorded among the ESG funds is 19.5%, showcasing the potential for substantial returns within the sample. However, the minimum CAR of -19.6% highlights the presence of underperforming funds, with 9 out of 20 funds returning negative CARs.

The t-statistic of 7.07 indicates strong evidence against the null hypothesis of zero mean CAR at a 1% significance level, which implies statistical significance of the results indicating that the calculated CARs were close to zero. The low standard deviation of 0.11 suggests relatively clustered CARs around the mean, indicating less variability in returns and therefore higher correlation between the ESG funds. While the skewness of -0.31 suggests a slight leftward skew in CAR distribution, and the negative kurtosis of -0.71 implies a flatter distribution with thinner tails compared to normal, the Jarque-Bera statistic of 11.82 further corroborates deviation from normality.

In summary, despite the mean CAR reflecting a slight downturn, the statistical significance derived from the t-statistic provides robust evidence of performance disparities among the selected Finnish ESG funds during the specified timeframe. With a majority of funds experiencing positive returns, albeit with notable variations, this analysis underscores the importance of considering both median and t-test results for a comprehensive understanding of fund performance.

During the first year of Covid-19 (February 14, 2020 – February 14, 2021) the mean CAR of 5.7% indicates a positive average performance among the ESG funds during this timeframe. This performance differs significantly from the previously mentioned results from the entire observation period (2020-2024). Therefore, it could be argued that the ESG funds were able to perform better in during the initial year of the pandemic and the resulting market environment, whereas this effect was not observed when more normal times were included in the observation period.

The median CAR of 3.1% is slightly lower than the mean, whereas the maximum CAR recorded among the ESG funds during this period is 27.2%, indicating strong performance by certain funds. During the first year of Covid-19, 40% (8) of the selected ESG Funds underperformed in comparison to OMX Helsinki GI.

The t-statistic of 4.64 indicates that the mean CAR for the first year of COVID-19 (2020-2021) is significantly different from zero at a 1% significance level ($p < 0.01$). This indicates strong evidence against the null hypothesis of a zero mean CAR, demonstrating statistical significance in the observed CAR during this period. The standard deviation of 0.10 suggests that the CARs are relatively clustered around the mean, indicating lower variability in returns compared to the overall observation period, assuming normal distribution.

The positive skewness of 0.78 suggests a rightward skew in the distribution of CARs, indicating a majority of funds with positive returns but a tail towards higher returns. The negative kurtosis of -0.45 suggests that the distribution of CARs is less peaked and has thinner tails compared to a normal distribution. The Jarque-Bera statistic of 11.95 further tests the assumption of normality in the distribution of CARs, showing some deviation from normality.

In summary, the descriptive statistics generally highlight the positive performance of the selected Finnish ESG funds compared to the overall financial markets during the first year of the Covid-19 pandemic (2020-2021), with the mean CAR significantly different from zero and a majority of funds experiencing positive abnormal returns. Despite the challenges posed by the pandemic, the ESG funds in the sample demonstrated resilience and achieved notable returns during this period.

In the third subset of data, namely the CARs during the first year of the Russia-Ukraine war (2022-2023), the returns of the ESG funds over this particular period of geopolitical tension are evaluated. The mean CAR of -6.0% indicates an average negative performance among the ESG funds during the initial year of the war. This suggests that, on average, the ESG funds experienced negative abnormal returns in the beginning of the war.

The median CAR of -3.6% is close to the mean, indicating consistency in the distribution of CARs, with a majority of funds (85% or 17 funds) experiencing negative returns. The maximum CAR recorded among the ESG funds during this period is 1.8%, indicating that even the best-performing fund had only a slight positive return, underscoring the overall challenging market conditions during the war period. Conversely, the minimum CAR of -21.8% indicates that substantial negative returns during this period were recorded.

The t-statistic of -3.68 suggests that the mean CAR for the first year of the Russia-Ukraine war (2022-2023) is significantly different from zero at a 5% significance level ($p < 0.05$), indicating that the result is not as statistically significant as in the two previously evaluated subsets of data. In other words, the significance threshold was slightly higher compared to the entire observation period and the first year of Covid-19. However, there is sufficient evidence to reject the null hypothesis of a zero mean CAR, demonstrating statistical significance in the observed CAR during the first year of the war. The standard deviation of 0.07 suggests that the CARs are relatively tightly clustered around the mean, indicating lower variability in returns compared to other observation periods.

The negative skewness of -1.23 suggests a leftward skew in the distribution of CARs, indicating a majority of funds with negative returns and a tail towards more negative returns. The positive kurtosis of 0.14 suggests that the distribution of CARs is more peaked and has thicker tails compared to a normal distribution. The Jarque-Bera statistic of 11.86 further tests the assumption of normality in the distribution of CARs, showing some deviation from normality.

In summary, the descriptive statistics highlight the challenging performance of the selected Finnish ESG funds during the first year of the Russia-Ukraine war (2022-2023), with the mean CAR significantly different from zero and a majority of funds experiencing negative abnormal returns. The negative market sentiment and heightened geopolitical risk during this period probably contributed to the overall negative returns observed in the sample of ESG funds.

8 Discussion and Conclusions

The observed performance of ESG funds during distinct market periods from 2020 to 2024 underscores the interplay between investment philosophies and prevailing market conditions. Throughout the entire observation period encompassing 2020 to 2024, which included both stable and unstable times, on average the selected Finnish ESG funds did not exhibit performances differing significantly from the used market index. The authors such as, Bruno, G., Esakia, M. & Goltz, F. (2021) and Dolvin, S., Fulkerson, J. & Krukover, A. (2019) had also come to the same conclusion in previous studies. However, during the first year of the Covid-19 pandemic, the ESG funds were observed to have outperformed the overall financial market. This outperformance can be attributed to the burgeoning interest among investors in sustainability-driven investment strategies during this timeframe. However, this impact was not observable when considering the whole observation period.

As mentioned, the outbreak of the Covid-19 pandemic in 2020 further accentuated the positive performance trend of ESG funds. Amid global uncertainties and market volatility triggered by the pandemic, ESG funds demonstrated resilience and garnered increased capital inflows. Engelhardt, N., Ekkenga, J., and Posch, P. (2021) similarly observed that ESG ratings are associated with more stable returns. Therefore, it could be assumed that one reason why high sustainability-rated companies outperformed lower-rated ones during the Covid-19 pandemic is their higher level of responsibility. This phenomenon can be attributed to the perception of ESG investments as stable and aligned with long-term sustainability goals, resonating with risk-averse investors seeking “safe-havens” during turbulent times.

Conversely, the period coinciding with the Russia-Ukraine war in 2022 and 2023 presented a contrasting narrative, characterized by negative performance among ESG funds. The observed decline underscores the impact of heightened geopolitical risks on investment outcomes, as investors likely shifted towards safer assets in response to increased uncertainty and market instability associated with the conflict. Dolvin, S., Fulkerson, J. &

Krukover, A. (2019) arrived at similar conclusions when investigating the performance of ESG funds over the short term. Their study did not reveal significant differences even when the entity providing the ESG rating was changed, although it did demonstrate the presence of rating-specific distinctions. This negative performance during the war period highlights the sensitivity of ESG funds to broader geopolitical events and underscores the importance of risk management in sustainable investment strategies.

In summary, the statistical findings gleaned from the analysis of ESG fund performance across distinct market periods provide valuable insights into the dynamics of sustainability-focused investments. The observed trends emphasize the growing relevance of sustainability considerations in investment decision-making, while also highlighting the need for robust risk management strategies to navigate periods of heightened market volatility and geopolitical uncertainty.

The empirical study conducted in this research aimed to investigate the performance of ESG funds relative to a benchmark index (OMX Helsinki GI) over distinct market periods, specifically during the first years of the global Covid-19 pandemic and the Russia-Ukraine war. The study employed statistical analysis to test two hypotheses formulated to assess the outperformance of ESG funds compared to the benchmark index under varying market conditions.

The first hypothesis (H1) posited that Finnish ESG funds would outperform the Finnish benchmark index over the entire sample period from 2020 to 2024. The statistical analysis, as presented and discussed, does not support this hypothesis fully. Although the descriptive statistics, including CARs and t-statistics, showed significant statistical results, the ESG fund returns did not differ much from the overall market returns. The empirical evidence therefore does not fully support the notion that sustainable investment strategies outperformed traditional benchmarks during the timeframe including both stable and unstable times.

The second analyzed subset of data focused on the performance of ESG funds during the first year following the financial turmoil induced by the Covid-19 pandemic (2020-2021). Statistical analysis of CARs and t-statistics demonstrated that ESG funds indeed outperformed the benchmark index during this period. Despite the market volatility and economic uncertainties associated with the pandemic, ESG funds exhibited resilience and attracted capital inflows, thereby validating the hypothesis.

Lastly, the second hypothesis (H2) examined the performance of Finnish ESG funds during the initial year following the Russia-Ukraine war, which began in February 2022. The analysis revealed a contrasting outcome, with ESG funds underperforming the Finnish benchmark index during this period. Heightened geopolitical risks and market instability influenced investor behavior, leading to a shift towards safer assets and impacting the performance of ESG funds negatively. Nonetheless, the statistical findings provide empirical support for the tested hypothesis.

In summary, the empirical study provides compelling evidence that selection of ESG funds in Finland did not outperform nor underperform the benchmark index OMX Helsinki GI over the entire sample period. However, the outperformance of the market was observed during the first year following the Covid-19 pandemic. The empirical findings align with several previous studies, such as Engelhardt, N. & al (2021); Abate, G. & al (2021). The results from the first year of Covid-19 underscore the relevance of sustainability considerations in investment decisions and highlight the potential of ESG strategies to deliver superior returns amid evolving market conditions. However, the study also highlights the sensitivity of ESG funds to geopolitical events, such as the Russia-Ukraine war, emphasizing the need for robust risk management strategies in sustainable investment portfolios. Overall, the findings contribute to the growing body of literature on sustainable finance and offer valuable insights for investors, policymakers, and researchers interested in responsible investing practices.

8.1 Further research

While the research's findings shed light on the average underpricing ESG funds during financial turmoil, further research is essential to validate and expand upon these conclusions, considering the research sample size, geographic limitations, and other limitations. It's crucial to progress the insights gleaned from this research with a critical perspective, acknowledging its inherent constraints.

Notably, the research's sample size is quite small, consisting of 20 ESG fund observations. This limitation primarily stems from the limited availability of ESG funds in the Finnish market, which is characterized by its smaller scale compared to more prominent financial markets. Therefore, this constrained sample size may compromise the robustness and explanatory capacity of the regression analyses conducted within the study.

One avenue for future investigation involves refining the approach to estimating alpha and beta values for ESG funds. While this study assumed alpha to equal zero and beta to equal one for simplicity, future research could explore more nuanced methodologies to capture the true risk-adjusted performance of ESG funds in varying market conditions.

Another important area for future inquiry is improving the accuracy of crisis impact assessment on ESG fund performance. Given the challenges in determining exact crisis durations, researchers could employ more sophisticated econometric techniques or alternative data sources to capture the dynamic effects of crises on fund returns over time.

Furthermore, future studies could expand the scope beyond the observed crisis periods to include longer-term analyses incorporating legislative and regulatory changes impacting ESG fund performance. By integrating a broader range of factors, researchers can provide a more comprehensive understanding of the multifaceted influences on ESG fund returns during crisis events.

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