



## BACHELOR'S THESIS FOR STUDY YEAR 2022- 2023

Aidar Oshakbayev

Bachelor's Thesis

Instructor: Inci A. Can

### **Declaration**

By completing this cover sheet and declaration, I confirm that this assignment is my own work, is not copied from the work (published or unpublished) of any other person, and has not previously been submitted for assessment either at Aalto University, or another educational establishment. Any direct or indirect uses of material (e.g.: text, visuals, ideas...) from other sources have been fully acknowledged and cited according to the conventions of the Harvard Referencing System.

Aidar Oshakbayev

**The comparison of Sustainable Mutual Funds in US,  
Germany, and Nordic regions**

**Bachelor's Thesis**

Aalto University

Mikkeli Campus

2023

Supervisor:

A. Can Inci

Programme:

Bachelor's of Science, Major in Business Administration

## **Abstract**

Sustainability issues have been increasingly receiving more attention during the recent decades with financial institutions rapidly developing environmental and social investments. Many studies have been conducted on effectiveness of such investment options in relation to regular companies and funds as well as among global markets. With that, this thesis research investigates mutual funds in three – US, Germany and Nordic regions using Morningstar Direct database to compare their performances through non-crisis and crisis periods. The sample resulted in 26 funds and researched time covers years from 2016 to end of 2022. The full sample period is divided into pre-pandemic (2016 to 2019) and post-pandemic (2020 to 2022) years. The results indicate that US had better sustainability scores in addition to better performance, especially during the pre-pandemic period. In 3 sub-sample periods of 2020, however, Nordic funds appeared to perform not significantly different from US funds in terms of relative Sharpe ratio as well as lower return volatility. Overall, German funds presented lower profitability and higher price fluctuations over the whole sample period while US funds appeared to be generally more favourable with Nordic funds showing similar resilience in times of high market uncertainty.

## TABLE OF CONTENTS

Introduction.....	3
Literature Review.....	4
Conceptual Framework.....	12
Data and Methodology.....	12
Findings and Analysis.....	16
Conclusion and further research.....	17
Reference List.....	18

## Introduction

Environmental and social sustainability related concerns became more prevalent since numerous countries and societies grew more aware of such problems in the recent years (Guido et. al. 2021; Joliet and Titova 2018; Lean and Pizzutilo 2021). Likewise, the financial sector has been one of the prominent industries to incorporate Environmental, Social, and Governance, or general social responsibility factors in its different aspects. This popular movement gained much attention from various researchers, economists, and market analysts to have an opportunity to explore this booming financial phenomenon.

With focus on sustainability and financial performance, this thesis has investigated mutual funds from United States, Germany, and Nordic countries to assess and compare these characteristics. A total of 26 mutual funds from these different regions were analysed, with investigated time covering years from 2016 to 2022, including the recent crucial health crisis COVID-19 and its impact on these sustainable funds. The outcomes of this thesis conclude that US funds to be higher in average sustainability ranking than the funds from other countries. Additionally, US funds presented better statistical performance before and after the start of health crisis. On the other hand, Nordic funds showed similar crisis resilience during the first year of the pandemic in 2020, followed by lagging performance of German funds in most cases.

The rest of the thesis is structured as follows: the next section on literature review explores various research, findings, and issues connected to sustainable funds and investments, followed by description of data for this research with analysis of the findings on the third part. In the end, this thesis concludes with further suggestions on various possible improvements to better understand sustainable investing.

## **2. Literature Review**

The rising concerns about the climate, environmental and social issues over the last few decades have been pushing many companies and corporations to acknowledge the issues and adopt measures that include sustainable operations. This hence has made many individual investors and mutual funds to also consider it in their portfolios and investment decisions which in turn prompted many researchers to study this relatively novel and ever-growing trend. This section will cover various literature concerning different mutual fund markets and their Environmental, Social and Governance (ESG) strategies.

The integration of sustainability by financial institutions has been gaining popularity almost exponentially over the last couple of decades, with managers, institutional and retail investors being attracted to the emerging opportunities (Emambakhsh et. al. 2022 Ning et. al. 2018). In terms of ESG investment size, between 2012 and 2014 global ESG asset allocation has risen by 61% from \$13 trillion to \$21 trillion, and sustainability investment assets grew from just 639 billion in 1995 to nearly 12 trillion in 2018 in US market alone, and according to Global Sustainable Investment Alliance, in 2022 it holds around 35 trillion in assets around the world (Lean and Pizzutilo 2021; Joliet and Titova 2018; GSIR 2020). This unprecedented rise was followed by extensive research and various criticisms regarding some “sustainable” investment practices.

### **ESG rating and fund returns**

One quite thoroughly investigated aspect of Socially Responsible Investments (SRI) is the correlation between fund returns and their ESG ratings. At the core, ESG and sustainability factors in general, are not considered to be funds’ and therefore firms’ financial part, namely returns (Ferriani and Natoli 2021; Guido et. al. 2021) which could mean that ESG should have limited influence on shareholders’ return expectation. It can be said, nonetheless, that more sustainable organizations will be expected to gain more confidence from investors since they may be more relevant being that green and renewable energy become increasingly important (Albuquerque et. al. 2020; European Commission 2021; Helliard et. al. 2022).

Past research had differing findings regarding firm/ fund financial return and their sustainability levels (Nofsinger and Varma 2014; Mao and Safa 2022). However, there may be a pattern to be identified, when looking at research in timeline perspective. One of the earlier studies conducted by Fowler and Hope (2007) who compared Domini 400 Social index and S&P 500 and found no substantial difference in performance, or, at times, slight underperformance of the former sustainable index. Partially supporting this, Climent and Soriano (2011) in their extensive research of US ESG and regular funds concluded that in the early years from 1997 to 2001 sustainable firms underperformed conventional peers, but in later period from 2001 to 2009 SRI funds achieved relatively similar risk- adjusted returns (Halbritter and Dorfleitner 2015; Ibikunle and Steffen 2017). Muñoz et. al. (2014) state that, although SRI funds do show signs of experiencing less risk during crises, they tend to underperform conventional funds during non-crisis times.

These findings, however, are becoming less in line with more recent studies.

A great example would be from Christos and Stephanos (2016), who conducted an evaluation of 2 Global indices, namely STOXX Global ESG leaders and STOXX Global Index that encompass 1800 top global companies show that firms that follow sustainability criteria undergo lower systematic risks, therefore show better performance. Also, one research from nearly the start of sustainability boom by Renneboog et. al. (2008) hinted at possible investor preference for companies with better SRI scores. Verheyden et. al. (2016) also found similar results, though they analyzed a broad set of equities in 2 large investment universes with suggestions that ESG may lower investment downside risk. Regarding specific regions, evidence for European markets by Soler-Domínguez et. al. (2021) show that funds with lower environmental impact experienced better compared to funds that are environmentally indifferent. This is complemented even further by a contemporary study by Helliard et. al. (2022), which observed more than 10000 funds from 22 different countries across the world and concluded that, when all the ESG funds are taken as a whole, the sustainable fund managers tend to show better expertise in picking stocks and better diversification compared to conventional funds. Going beyond the scope of this thesis, in terms of company operations, Eliwa et. al. (2021) add, that for 15 developed countries in the

European Union, companies with higher ESG scores bear less cost of debt from lending organizations, which may be important for future SRI regulations. Such ESG positive results may be reasonably expected since the growth of social and environmental responsibility as an ongoing trend has been encouraging institutional investors to follow the sustainability movement and support SRI investing (Grewal et. al. 2020, Ferriani and Natoli 2021).

Nevertheless, contrasting research still exists. A number of studies have found no substantial connection between companies' financial outlook and sustainability level and others claim for inferior returns generated by ESG inclined funds when compared to conventional mixed funds. Halbritter and Dorfleitner (2015) with a scope on US market, determined no significant effect of ESG ratings on company profitability. They also mention that ESG scores vary across different SRI agencies. In a similar vein, Lean and Pizzutilo (2021) gathered a sample of global social indices from MSCI database, and also suggested not outperformance of ESG over conventional ones. This may be in line with an article by Demers et. al. (2021), which presents somewhat valid claims against past research, stating that ESG might not be an important or decisive factor in firm performance during high volatility periods, rather, companies with more investments in intangible assets would show superior returns and that ESG scores may have limited affiliation with investments' financial performance, however this can be limited only to the US market.

Furthermore, Dreyer et. al. 2023 explain that ESG investments should, in fact, perform worse, perhaps since investors who target SRI opportunities extract non-financial or emotional benefit which increases demand and lowers investment return.

Overall, although research results may vary, it may be seen that over time more findings identify positive correlation between fund and firm returns and their corresponding SRI rating. This can suggest that Sustainability movement is Even further insight may be retrieved from times of elevated market volatility and crises such as market crashes, natural disasters and global health pandemics.

### **Role of sustainability in times of high volatility**



On the topic of crises and role of Socially responsible asset management, some evidence suggests that SRI can act as a hedge against risk (Albuquerque et. al. 2020; Janik and Płuciennik 2022; Lean and Pizzutilo 2021). Recent global COVID- 19 pandemic, for instance, presented more opportunities to explore the nature of sustainability linked investments. Giakoumelou et. al. (2022) overview and compare the significance of ESG during both 2008 market crash and 2020 pandemic and find that sustainability as risk component was considered in both crisis periods. For US and European markets covering nearly 500 funds, higher ESG levels appear to reduce portfolio risk. Additionally, in an investigation of behaviors of 3 types of indices – Islamic, Sustainable, and regular market index in US markets- Jawadi et. al. (2022) find that the two socially responsible (SR) indices performed better during the pandemic and 2008-09 financial crisis. Ferriani and Natoli (2021) using the Morningstar Direct database analyzed the first few months of the global health crisis, and revealed that ESG factors were considered by investors more, though further help was also provided in forms of governmental support to alleviate the crisis impact. Additionally, Morningstar's globe system for ranking firms' sustainability showed that, on average, funds with 5 globes annually performed 1.32% to 6.96% better than companies with low sustainability rating. This becomes even more apparent during the COVID-19 pandemic, where outperformance of high SR funds rises to nearly 5%- 6% (Fang and Parida 2022).

The nature of ESG as a risk managing instrument is, however, still debated. In the Nordic market, for instance, some ESG portfolios presented lower returns in normal market conditions but tend to outperform in market crises (Saarteinen 2019). In line with this, Espelund and Medby (2021) report an underperformance of SRI funds in normal market conditions and only slightly better returns in crisis times. These perspectives from Nordic markets are, contrasted by Mao and Safa (2022), who demonstrate results from Swedish market which show no difference in performance of high or low ESG rated funds. This means, that even in a comparatively smaller Nordic market, results may vary between countries, markets and through time, though some degree of effectiveness of ESG ratings still persist. For this reason, It might also be more useful to look at different regions' applications of SRI strategies.

### **SR investing across regions**

When it comes to comparing mutual funds and any institution that practices SRI, there are a number of hurdles that may often emerge. As addressed by Sandberg et. al. (2009) there are many differences between how various regions define socially responsible practices. These may include cultural and ideological distinctions, values and norms that are unique to each nation. This, therefore, influences and diverges the SRI implementation, which call for standardization. This is possibly why there is not as much of literature that focuses on comparison of cross border ESG implementation. Still, some articles have investigated this matter.

One closely related article to the topic of this thesis is by Auer and Schuhmacher (2016), who claim that investors in US markets do not sacrifice returns for sustainability, which is contrasted by EU area, where in some industries, SRI investors achieve lower-than-benchmark returns. Their claim could be supported by an earlier survey from Maignan (2001), suggesting that French and German consumers are more concerned about “legal and ethical” practices of companies, while in the US they tend to desire more of firm economic performance. The inclination of United States’ markets towards better economic advantage is also addressed by Foo and Witkowska (2015), who compared regular mutual funds among US and some developed EU countries with evidence that US capital market performed best.

Regarding the COVID- 19 pandemic, Abedifar et. al. (2022) found similar outcomes. During the crisis, US companies’ ESG companies had lower volatility than nonn- ESG stocks, while in UK and Japan socially responsible firms had inferior performance than their peers.

However, US being relatively more desirable in terms of financial performance, it might have more issues of greenwashing as well (Cicchiello et. al. 2022; Hamdi et. al. 2022). Moreover, in EU area there have been several steps towards common sustainability regulations, and one of them is 2014 EU’s Non-Financial Reporting Directive that concerns mandatory CSR (Corporate Social Responsibility) reporting which in turn relates to sustainable practices (Cicchiello et. al. 2022). While in US, however, there were no official standards and reporting requirements for SRI, and only in 2021 SEC has declared the need for improvement of quantity and quality of ESG

disclosure. Furthermore, EU may be considered the driver for SRI integration, which could imply that ESG may have even more complications outside of this economic area.

### **Main issues regarding ESG reporting**

And yet, all these mixed and at times conflicting research findings, are perhaps, subject to several rather fundamental problems. The lack of common standardized definition of what exactly comprises the sustainable financing and investing, and almost no clear taxonomy on Environmental, Social and Governance investments, such matters create discrepancies between researchers and institutional investors (Clement 2005; Gangi et. al. 2022; Martini 2021 and others). Gangi et. al. (2022) investigated 3 different established ESG data providers to assess the similarity and convergence of SR ratings listed in Refinitiv – former Thompson Reuter’s market data division, Morgan Stanley Capital International (MSCI) and Morningstar ESG database. Their sample covered February to July months from 2021 and found that they had very little correlation on how these agencies rated sustainability of the same companies. Another study by Billio et. al. (2021) compiled and examined a larger sample of socially responsible agencies. They compared 9 different SRI data providers, including MSCI and Refinitiv, and came to a similar conclusion, adding that the methodologies employed by these quite reputable organizations differ dramatically. These results might bring even more issues and potentially to eventual large negative consequences for the whole sustainable investment industry.

Windolph (2011) pointed out precise issues that SRI has been facing - these may include common standards, trustworthiness of the available data, bias, conflict of interest, transparency, and limited independence. This has a chance to result in mutual funds being involved into such negative practices as greenwashing (Antoncic 2021; Espelund and Medby 2021; Nyilasy et. al. 2014), inconsistent or false SR investing from and between firms (Atik and Kovacevic 2019; Giakoumelou et. al 2022; Janik and Płuciennik 2022;), manager apathy (Zeidan 2022), and insufficient investor integrity (Hauff and Nilsson 2022; Dikolli et. al. 2022). European Central Bank, in their report on the state of SR investment and finance, also supported claims of relatively low similarity – around 20% - between Bloomberg, Morningstar and Lipper ESG rating agencies.

Even in the earlier mentioned Nordic countries, financial and environmental sustainability may come with difficulties of what exactly sustainability is since there is a lack of precise definition about socially responsible practices (Clement 2005; Emambakhsh et. al. 2022). Although there is positive shift towards better carbon risk and sustainability disclosure in financial industries, the concerns about low transparency, regulations and standards are still lacking (Wen et. al. 2022; Natasha 2021). Thus, it may become apparent that industry-wide standards together with a number of governmental adjustment and support initiatives should be established. In short, the change should come from external forces - since the internal (investors, managers, and other stakeholders) forces may not be strong enough to regulate the whole industry of sustainability (Guido et. al. 2021; Ning et. al. 2018; Nofsinger and Varma 2022).

Even though greenwashing existed since the start of sustainability movement, this is exacerbated even further with the widespread rise of ESG with funds and companies trying to leverage the fast-expanding trend (Ning et. al. 2018). For these reasons, it should be valid to compare results of existing research that retrieve data from the same SRI evaluating agency.

### **Morningstar Database**

Morningstar Direct is an investments and market analysis platform that delivers insights and predictions on mutual fund and company returns and provides potential advice to individual and institutional investors (Bolster and Trahan 2013). Morningstar has been used by many researchers to retrieve and analyze data on various company metrics. It has numerous rating systems for firms and funds such as star rating for overall company performance, analyst ratings, and sustainability specific ESG globe rating systems.

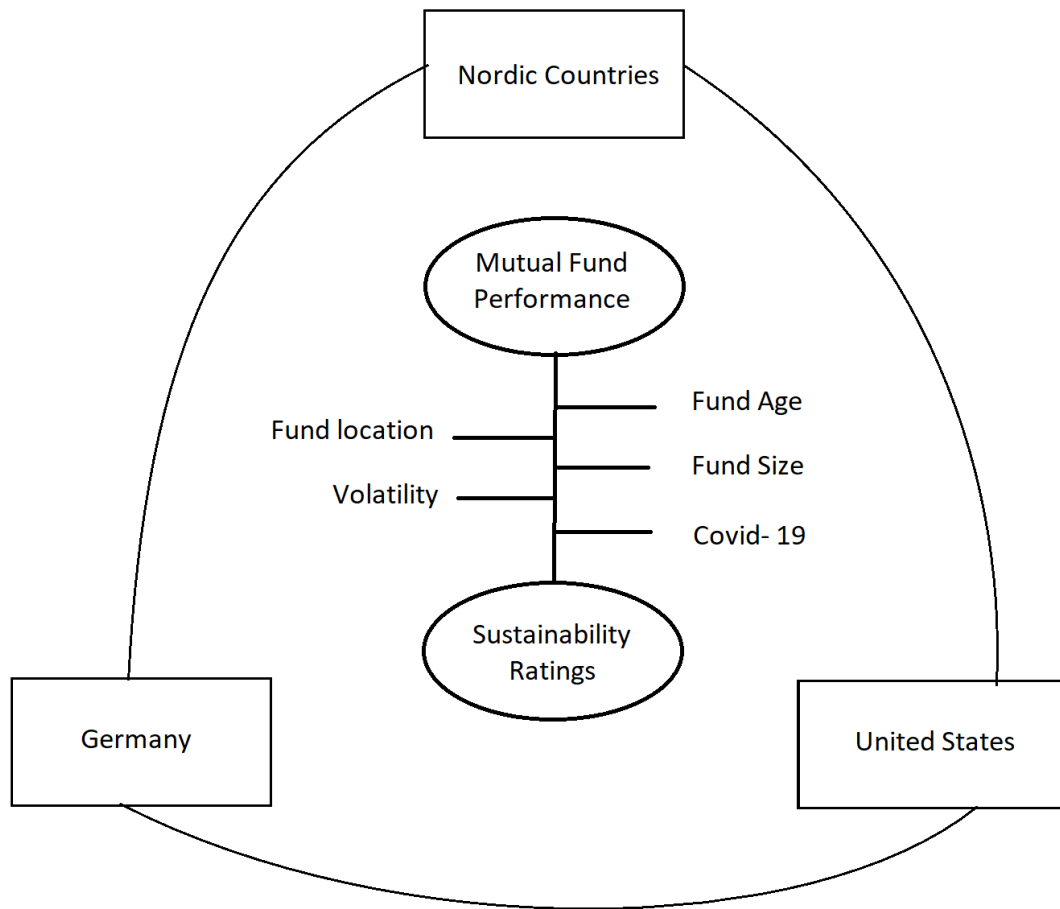
Ammann et. al. (2019) observed whether higher sustainability ratings generate higher returns, and by using Morningstar to obtain SR and return data on more than 1000 funds on US equity mutual funds covering period from 2015 to 2017 and find that equity funds with better sustainability ranking appear to achieve better returns. Guido et. al. (2021) add to this from EU perspective, with nearly 650 funds that also show that

high ESG rated mutual funds perform better (see also by Ibikunle and Steffen (2017)). In support for Ammann et. al. (2019) and Guido et. al. (2021), Sládková et. al. (2022) with combination of yourSRI and Morningstar databases collected data on nearly 11500 funds throughout 31 EU countries which included 957 SRI funds, with results also were that ESG funds showed better performance in addition to higher ESG ratings. Different empirical research on US based self- labelled funds from Raghunandan and Rajgopal (2022), however, contradicts with the previous articles. By using Morningstar database, they claim that for a set of 235 self-proclaimed (funds that have “ESG” and “SRI” etc. in their names) and non- ESG funds under the same management, the ESG funds, though hold a portfolio with higher ESG rating, happen to underperform their conventional peers and charge higher fees while also picking companies with sometimes poorer individual E, S, and G scores from worse employee treatment and environmental concerns relative to non-ESG funds. The results, of course may be driven by the fact that these ESG funds are not reputable, thus affecting comparison. They also support past research on claims that US has issue of greenwashing.

## **Summary**

It may be apparent that the sustainability in finance and investment industries might become a feasible financial alternative and a large industry, considering the growing attention it is being given and the scale that it has been reaching even over the last decade. It is also obvious that more regulations are desperately needed. Although a number of previously conducted studies come into various disagreements, a large portion supports the theory that ESG may assure investors a better risk management and ensure good returns. Especially in times of high volatility and risk, sustainable investments can hedge against loss, which increased demand even further (Giakoumelou et. al. 2022). The Nature of ESG investments should be researched further. With better standardization efforts from governments and global communities it should be considerably easier to compare and draw meaningful conclusions from future ESG analyses.

Thus, just like articles mentioned in the last section, this thesis will retrieve data for ESG funds from Morningstar Direct Database; covering regular market period and the COVID 19 pandemic to verify the behavior of ESG funds.



*1.A conceptual framework of the thesis topic*

### **3. Data and Methodology**

The data for this thesis was collected from Morningstar Direct Database. Numerous past research has used Morningstar for various market trends analyses, and assessment of Morningstar's own fund and company and sustainability scores. The database application provides plethora of its own resources for gathering insights and market research applications, but in this quantitative data analysis some of the main calculations were done manually in Excel application.

The data retrieved for this research comprises general fund properties such as average size, age, location, investment type other characteristics., as well as each fund returns over the years. The data spans the beginning of 2016 till end of 2022. This is intended to compare the two types of market conditions – normal and crisis times, with

a closer look at the impact of COVID-19 pandemic and its sub- periods. As Jawadi et. al. (2022) identified in their article, the pandemic had “time- varying effects” on the stock market with periods before, during, and after the COVID- caused market crash. In this thesis the sub-periods divide the initial year of pandemic into 3 timelines as well– Pre market crash – December 2019 to February 2020, during the first wave of COVID- 19- February to June 2020 (including the recovery period), and post pandemic time that covers the half-year period from June through December of 2020.

Several criteria were applied for the selection of funds. First, specifically equity, open end and exchange traded funds were selected. To narrow down on sustainability - “Sustainable overall” criteria was applied, this means that the funds have environmental and social sustainability focus – which may specifically indicate that such funds do not select unsustainable or sinful stocks. Further, the funds were chosen to be domiciled in the 3 regions’ countries, namely – US, Germany, and Nordic – Sweden, Norway, Denmark, and Finland. The funds operate in their national currencies. Data covers only surviving, currently existing mutual funds, the selection also considers only oldest share class of the funds that are open to investors.

Next, specifically on sustainability, the ratings could not be automatically imported, so funds’ sustainability scores were recorded manually – the globe rating that was also used past research for analysis of various funds since its release in 2015 and 2016 (Ammann et. al. 2019; Ferriani and Natoli 2021). As for returns, they were retrieved on daily frequency from 2016 to 2022. The data on returns was further used to calculate standard deviation and Sharpe ratio to measure fund portfolio risks (Sharpe 1966). To calculate the latter, each country’s treasury bond rates were selected as risk free (RF) rates. Overall, the final sample resulted in 88 US, 10 Nordic, and 6 German mutual funds. Due to some time constraints, only 10 largest funds out of sample of 88 resulted funds were taken for US region, while all found funds were analysed for other countries. In the end, total of 26 (10 US, 10 Nordic and 6 German) funds were included in the final sample.

For returns and risk measurements, all calculations were done in Excel spreadsheets. Average returns and Sharpe ratios were annualized (Billio et al. 2021; Lean and Pizzutilo 2021), more specifically  $((R/100+1)^{252})-1$  was applied for

annualized returns, and  $(R - RF) / \text{std.dev}(R) * \sqrt{252}$  for Sharpe ratio, where R is daily returns in percentage, RF is country specific risk free rate, and 252 accounts for number of market days in a year. For the sub periods however – which cover months rather than years, only the open market days were included for “annualization” – instead of 252 - 90, 120 and 180 days were inputted for the three time periods.

During the sorting and calculations, some funds appeared to be too young, so only their full- year operations were accounted for, and funds that were created during 2020, only periods where operations sufficiently covered one or more periods of COVID impact were considered. Due to such inconsistency of the data, substantial amount of data was lost for Nordic and German mutual funds, thus, potentially having more skewed results.

The final data is depicted in 2 tables below, where first table shows the general fund characteristics over years between 2016 and 2022, while Table 2 takes closer look at sub-periods of 2020.

	US (for Top 10 funds)	Nordic	Germany	Top Half	Bottom half
No. of funds	10	10	6		
Size (in millions of USD):	9054.05	677.18	1038.17		
Age in years:	25	11	26	32.3	8
Average latest sustainability level:	4.35	2.4	3.5	3.31	3.35
-----					
Non - Crisis years (2016- 2019)					
Daily (alz. %) average returns (n/c):	15.93	8.98	4.25		
Standard Deviation (n/c):	0.786	0.820	0.996		
Sharpe ratio (n/c):	1.393	0.672	0.330		
-----					
Pandemic and post- pandemic years (2020 - 2022)					
Daily (alz. %) average returns (c):	11.03	8.37	-0.95		
Standard Deviation (c):	1.541	1.224	1.443		
Sharpe ratio (c):	0.569	0.798	0.355		

*Table 1 shows the general information and characteristics of the funds from US, Nordics and Germany, the fund Size, Age, and Sustainability scores are all calculated*



averages. The period covers 2016 to 2022 to include the impact of COVID- 19. n/c refers to non- crisis and (c) refers to post covid- crisis years and alz. % refers to annualized returns in percentage. Top half and bottom half refer to larger and smaller sized funds of the whole sample.

Standard Deviation	US (for 10 funds)	Nordic	Germany
Pre covid months:	0.631	0.744	0.933
During covid crash:	3.351	2.238	3.231
Post covid months:	1.195	0.964	1.381
Returns (alz. %)	US (for 10 funds)	Nordic	Germany
Pre covid months:	14.07	17.02	6.57
During covid crash:	-1.97	-6.55	-11.09
Post covid months:	35.02	27.94	25.36
Sharpe ratio	US (for 10 funds)	Nordic	Germany
Pre covid months:	0.467	0.463	0.155
During covid crash:	-0.009	-0.048	-0.049
Post covid months:	0.181	0.180	0.115

Table 2 displays the performance metrics during 3 periods - 3 months before the market crash (from December 2019 to 20 February 2020), 4 months during the initial wave and of 6 months from July to December.

## 4. Findings and Analysis

One of the first things that can be noticed is that US funds have the higher average sustainability score. Possibly even more surprising, Nordic funds are least sustainable with only 2.4 globes on average, yet when looking at all funds at once, their size does not play a key role in their sustainability levels. More importantly, the fact that there are 88 funds found from US, compared to 10 and 6 from Nordics and Germany, implies that there are much more funds in US with such. As for size itself, it may be apparent that US funds would be larger on average, since they were selected as top 10 of 88 funds. Thus, since it was easier to put into a formula, though was not indicated in the tables, the average fund size in USD for 88 US funds was around 1.3 billion dollars instead of 9 billion, which is still the largest among the 3 regions, with German funds being second and Nordic funds being third by size, appearing to be nearly half of full US' fund sample. In terms of age, on the other hand, Nordic funds are the youngest, and funds in Germany or US are relatively close by age. Yet, average age of all 88 US funds results in 8.5 years, that turns US funds to be the youngest in such case. In contrast, from general perspective, top half of funds are on average much older than smaller mutual funds (Graham et. al. 2019).

When it comes to performance and volatility, US funds are more attractive during normal market conditions, by having highest return while experiencing lower volatility in terms of standard deviation. This potentially might be because of sustainability, though Nordic funds perform considerably higher returns than German funds in almost all periods. During crisis and post crisis years, however, US funds experienced higher volatility, though still maintaining better returns than funds in Nordic regions. Nordic countries, on the other hand, had lower standard deviation and higher Sharpe ratio than US and German funds, posing better resilience.

During the sub- periods, German mutual funds had higher volatility both before and after the first hit of the pandemic, with US funds undergoing slightly higher uncertainty in the first lockdown period than Nordics. When the pandemic initially hit, the stock market and most participants lost on returns, though from these findings US funds devalued the least, followed by Nordic and then German funds, which suffered biggest losses.

As for Sharpe ratio US and Nordic regions had the closest performance before and after the market crash, while being closer to German funds' during the few months of the initial wave of uncertainty. Thus, US showed best resilience compared to other regions, with Nordic funds being not substantially different in performance during volatile market conditions. After the first wave, all country funds recovered some amount of lost returns.

These findings on United States' relative outperformance go in line with research by Auer and Schuhmaher (2016) and Abedifar et. al. (2022), however some other sources on comparison of EU and US sustainability markets by Soler-Domínguez et. al. (2021) or Lean et. al. (2015) which again promote evidence that there can be substantial lack of common standards for sustainability.

## **5. Conclusion and further research**

German funds had the least favourable performance from among three regions during the selected period, and their funds showed mostly low resilience against crisis such as COVID-19 pandemic. Nordic funds, while appearing to be least sustainable according to Morningstar sustainability globe scores, showed moderate performance during the period of analysis, which may come against claims that better social and environmental responsibility may attract more investments. For the time-varying effect of Covid-19 pandemic (Jawadi et. al. 2022), US presented relatively good returns and better reliability in terms of volatility as well as highest sustainability scores compared to other regions.

This thesis and the research topic have meaningful implications in international business area, since the nature and research of finance allow people to establish stronger businesses as well as wealth more effectively by directing monetary value to where it is most efficient. The results of this research can be useful to some investors who want to acquire international, sustainability related investments. Since this thesis has explored mutual fund sustainability and fund profitability from three different – US, Germany, and Nordic regions, the research gives general overview of these types of funds and even some opportunity for potential investment diversification. Even though all fund properties were retrieved from the same database, an issue of global

sustainability standardisation is very much relevant today, which calls for legal and policy related actions,

As a next step for future research of sustainable funds in different nations and market environments, it would be good to investigate all 88 funds of US that were identified from the final search, which can have substantial impact on average performance, since the ones selected here were 10 of the biggest mutual funds in the whole sample. Also, along with larger sample size, it would be better to explore more countries in the EU and perhaps other regions and countries (i.e. Asian countries) could be compared as well. Management fees, investment styles and management types, passive or active approaches could give more insight into investor and management perception of sustainability. There is still a lot of space for research and improvement, since sustainability is rather recent and still a growing trend which has a lot of potential to improve financial, social, and business practices.

## **6. Reference List:**

Abedifar, P., Bouslah K., Neumann C., Tarazi A. (2022) 'Resilience of Environmental and Social Stocks under Stress: Lessons from the COVID-19 Pandemic' Financial Markets. Institutions and Instruments Retrieved from: EBSCO database [Accessed on 25 January 2023]

Albuquerque, R., Koskinen, Y., Yang, S., & Zhang, C. (2020). *Resiliency of environmental and social stocks: an analysis of the exogenous COVID-19 market crash* Available from: <https://academic.oup.com/rcfs/article/9/3/593/5868419> [Accessed on 2 February 2023]

Ammann, M., Bauer, C., Fischer, S., Müller, P. (2019) 'The impact of the Morningstar Sustainability Rating on mutual fund flows' European Financial Management Retrieved from: EBSCO database [Accessed 6 February 2023]

Antoncic, M. (2021) 'Is ESG investing contributing to transitioning to a sustainable economy or to the greatest misallocations of capital and a missed opportunity?' Journal of Risk Management in Financial Institutions Retrieved from: EBSCO database [Accessed on 25 January 2023]

Atik, A., Kovacevic, I. (2019) 'Comparison of the Companies on the BIST Sustainability Index with Other Listed Companies in the Context of Earnings Manipulation'

Istanbul business research Retrieved from: EBSCO database [Accessed on 4 February 2023]

Auer, B. R., Schuhmacher, F. (2016) 'Do socially (ir)responsible investments pay? New evidence from international ESG data' The Quarterly Review of Economics and Finance Retrieved from: EBSCO database [Accessed on 9 February 2023]

Billio M., Costola, M. Hristova I., Latino, C., Pelizzon, L. (2020)'Inside the ESG ratings: (Dis)agreement and performance' Corporate Social Responsibility & Environmental Management' 28 (5) Retrieved from: EBSCO database [Accessed on 7 January 2023]

Bolster, P. J., Trahan, E. A. (2013) 'Investing in Morningstar Five-Star Stock Upgrades: Price and Style Effects' Journal of Accounting and Finance. Retrieved from: EBSCO database [Accessed on 7 January 2023]

Christos, K., Stephanos, P. (2016) 'Environmentally Responsible and Conventional Market Indices' Reaction to Natural and Anthropogenic Adversity: A Comparative Analysis' Journal of Business Ethics Retrieved from: JSTOR database [Accessed on 11 February 2023]

Clement, K. (2005) 'Environment and Sustainable development in the EU Structural funds: a Review of Nordic Performance' The Journal of European Environmental Policy Retrieved from: EBSCO database [Accessed on 5 February 2023]

Climent, F., Soriano, P. (2011) 'Green and Good? The Investment Performance of US Environmental Mutual Funds' Journal of Business Ethics 103(2) Retrieved from: JSTOR database [Accessed on 27 January 2023]

Demers E. Hendrikse J. Joos P. Lev B. (2021) ESG did not immunize stocks during the COVID-19 crisis, but investments in intangible assets did Available from:

<https://onlinelibrary.wiley.com/doi/full/10.1111/jbfa.12523> [Accessed on 5 February 2023]

Dikolli S. S., Frank M. M., Guo Z. M., Lynch L. J. (2022) 'Walk the talk: ESG mutual fund voting on shareholder proposals' *Review of Accounting Studies*. Retrieved from: EBSCO database [Accessed on 29 January 2023]

Natasha T. (2021) 'US lags behind Europe in sustainable finance regulation' *International Financial Law Review*. Retrieved from: EBSCO database [Accessed on 27 March 2023]

Dreyer J. K., Sharma V, Smith W. (2023) 'Warm-glow investment and the underperformance of green stocks' *International Review of Economics & Finance*. Retrieved from: EBSCO database [Accessed on 28 January 2023]

Eliwa Y. Aboud A. Saleh A. (2021) 'ESG practices and the cost of debt: Evidence from EU countries' *Critical Perspectives on Accounting* Retrieved from: EBSCO database [Accessed on 20 February 2023]

Emambakhsh, T., Giuzio, M., Luca Mingarelli, Salakhova, D. Spaggiari, M. Climate-related risks to financial stability Available from:

[https://www.ecb.europa.eu/pub/financial-stability/fsr/special/html/ecb.fsrart202205\\_01~9d4ae00a92.en.html](https://www.ecb.europa.eu/pub/financial-stability/fsr/special/html/ecb.fsrart202205_01~9d4ae00a92.en.html) [Accessed on 7 January 2023]

Espelund, F. M., Medby, E. S. (2021) *The Performance of Nordic ESG Mutual Funds* Available from: <https://biopen.bi.no/bitstream/handle/11250/2825320/2941551.pdf?sequence=1> [Accessed on 7 January 2023]

European Commission (2021) *Overview of sustainable finance* Available from: [https://finance.ec.europa.eu/sustainable-finance/overview-sustainable-finance\\_en](https://finance.ec.europa.eu/sustainable-finance/overview-sustainable-finance_en) [Accessed on 25 January 2023]

Fang, F., Parida S. (2022) 'Sustainable mutual fund performance and flow in the recent years through the COVID-19 pandemic' *International Review of Financial Analysis* 84. Retrieved from: EBSCO database [Accessed on 7 January 2023]

Ferriani F., Natoli F. (2021) 'ESG risks in times of Covid-19' *Applied Economics Letters*. Retrieved from: EBSCO database [Accessed on 28 January 2023]

Foo, J., Witkowska, D. (2015) 'MUTUAL FUNDS EFFICIENCY COMPARISON BETWEEN U.S. AND EUROPE' *International Journal of Business, Accounting, and Finance* 9 (1) Retrieved from: EBSCO database [Accessed on 7 January 2023]

Fowler S. J. Hope C. (2007) 'A Critical Review of Sustainable Business Indices and Their Impact' *Journal of Business Ethics* 76 (3) Retrieved from: JSTOR database [Accessed on 27 January 2023]

Gangi, F., Varrone, N., Daniele, L. M., Coscia, M. (2022) 'Mainstreaming socially responsible investment: Do environmental, social and governance ratings of investment funds converge?' *Journal of Cleaner Production*. Retrieved from: EBSCO database [Accessed on 7 January 2023]

Giakoumelou A., Salvi A., Bertinetti G. S., Micheli A. P. (2022) '2008's mistrust vs 2020's panic: can ESG hold your institutional investors?' Retrieved from: EBSCO database [Accessed on 28 January 2023]

Graham J. E. Lassala C. Ribeiro N. B. (2020) 'Influences on mutual fund performance: comparing US and Europe using qualitative comparative analysis' *Economic Research-Ekonomska Istrazicovidvanja* Retrieved from: EBSCO database [Accessed on 7 January 2023]

Grewal J. Hauptmann C., Serafeim G. (2020) 'Material Sustainability Information and Stock Price Informativeness' *Journal of Business Ethics* Retrieved from: EBSCO database [Accessed on 1 February 2023]

GSIR (2020) Available from: <http://www.gsi-alliance.org/wp-content/uploads/2021/08/GSIR-20201.pdf> [Accessed on 6 February 2023]

Guido, A., Ignazio, B., Pierpaolo, F. (2021) 'The level of sustainability and mutual fund performance in Europe: An empirical analysis using ESG ratings' Wiley Online Library. Retrieved from: EBSCO database [Accessed on 2 December 2022]

Halbritter, G., & Dorfleitner, G. (2015). 'The wages of social responsibility— where are they? A critical review of ESG investing' Review of Financial Economics Retrieved from: EBSCO database [Accessed on 7 January 2023]

Hamdi K., Guenich H., Saada M. B. (2022) 'Does corporate financial performance promote ESG: Evidence from US firms' Cogent Business & Management Retrieved from: EBSCO database [Accessed on 20 February 2023]

Hauff J. C., Nilsson, J. (2022) Is ESG mutual fund quality in the eye of the beholder? An experimental study of investor responses to ESG fund strategies Available from: <https://onlinelibrary.wiley.com/doi/full/10.1002/bse.3181> [Accessed on 7 January 2023]

Helliar, C., Petracci, B., Tantisantiwong, N. (2022) 'Comparing SRI funds to conventional funds using a PCA methodology' Journal of Asset Management. Retrieved from: EBSCO database [Accessed on 7 January 2023]

Ibikunle G., Steffen, T. (2017) 'European Green Mutual Fund Performance: A Comparative Analysis with their Conventional and Black Peers' ProQuest; Retrieved from: EBSCO database [Accessed on 7 January 2023]

Janik, B. & Płuciennik, P. (2022) 'Volatility and tail dependence between sustainable stock indices during the COVID-19 pandemic Economics and Law. Retrieved from: EBSCO database [Accessed on 28 January 2023]

Jawadi, F., Jawadi, N., Cheffou, A.I. (2022) 'The COVID-19 pandemic and ethical stock markets: further evidence of moral shock' Applied Economics. Retrieved from: EBSCO database [Accessed on 28 January 2023]

Joliet, R. , Titova, Y. (2018) 'Equity SRI funds vacillate between ethics and money: An analysis of the funds' stock holding decisions' Journal of Banking & Finance; Retrieved from: EBSCO database [Accessed on 2 December 2022]



Lean. H. H., Pizzutilo, F. (2021) 'Performances and risk of socially responsible investments across regions during crisis' Wiley Online Library. Retrieved from: EBSCO database [Accessed on 2 December 2022]

Lean H. H., Ang W. R., Smyth R. (2015) 'Performance and performance persistence of socially responsible investment funds in Europe and North America' North American Journal of Economics & Finance. Retrieved from: EBSCO database [Accessed on 27 March 2023]

Lo A. W. (2003) *The Statistics of Sharpe Ratios*. Available from: [https://www.researchgate.net/publication/228139699\\_The\\_Statistics\\_of\\_Sharpe\\_Ratios](https://www.researchgate.net/publication/228139699_The_Statistics_of_Sharpe_Ratios) [Accessed on 25 March 2023]

Maignan I. (2001) 'Consumers' Perceptions of Corporate Social Responsibilities: A Cross-Cultural Comparison' Journal of Business Ethics Retrieved from: EBSCO database [Accessed on 20 February 2023]

Mao, C., Safa, J. (2022) ESG and Risk-Adjusted Performance: A study on equity funds under Swedish management during the COVID-19 pandemic Available from: <https://www.diva-portal.org/smash/get/diva2:1682372/FULLTEXT01.pdf> [Accessed on 7 January 2023]

Muñoz F. Vargas, M., Marco, I. (2014) 'Environmental Mutual Funds: Financial Performance and Managerial Abilities' Journal of Business Ethics. Retrieved from: EBSCO database [Accessed on 7 January 2023]

Ning, G., Godfrey C., Ser-Huang P. (2018) 'What is in the ESG label? A Study of Self-labeled US Equity Mutual Funds.?' Annual International Conference on Accounting & Finance. Retrieved from: EBSCO database [Accessed on 13 February 2023]

Nofsinger, J. Varma A. (2014) 'Socially responsible funds and market crisis' Journal of Banking & Finance, 48 (C) 180-193. Retrieved from: EBSCO database [Accessed on 2 February 2023]

Nofsinger, J. Varma A. (2022) 'Keeping Promises? Mutual Funds' Investment Objectives and Impact of Carbon Risk Disclosures' *Journal of Business Ethics*. Retrieved from: EBSCO database [Accessed on 9 February 2023]

Nyilasy, G., Gangadharbatla, H., & Paladino, A. (2014) 'Perceived greenwashing: The interactive effects of green advertising and corporate environmental performance on consumer reactions' *Journal of Business Ethics* 125(4), 693–707 Retrieved from: EBSCO database [Accessed on 9 February 2023]

Raghunandan, A., Rajgopal, S. (2022) 'Do ESG funds make stakeholder-friendly investments?' *Review of Accounting Studies*. Retrieved from: EBSCO database [Accessed on 13 February 2023]

Rajesh, R., Rajeev, A., Rajendran, C. (2022) 'Corporate social performances of firms in select developed economies: A comparative study' *Socio-Economic Planning Sciences*. Retrieved from: EBSCO database [Accessed on 9 February 2023]

Renneboog L., Ter H. J., Zhang C. (2008) 'Socially responsible investments: Institutional aspects, performance, and investor behavior' *Journal of Banking & Finance* Retrieved from: EBSCO database [Accessed on 20 February 2023]

Saarteinen, S. (2019) Does the incorporation of ESG criteria lead to superior financial performance? Available from: [https://osuva.uwasa.fi/bitstream/handle/10024/9520/osuva\\_8549.pdf?sequence=1&isAllowed=y](https://osuva.uwasa.fi/bitstream/handle/10024/9520/osuva_8549.pdf?sequence=1&isAllowed=y) [Accessed on 7 January 2023]

Sandberg, J., Juravle, C., Hedesström, T., Hamilton I. (2009) 'The Heterogeneity of Socially Responsible Investment' *Journal of Business Ethics*. Retrieved from: EBSCO database [Accessed on 7 January 2023]

Sharpe, W. F. (1966) 'MUTUAL FUND PERFORMANCE' *Journal of Business* Retrieved from: EBSCO database [Accessed on 16 March 2023]

Sládková, J., Kolomazníková, D., Formánková, S., Trenz, O., Kolomazník, J., Faldík, O. (2022) 'Sustainable and responsible investment funds in Europe' *Measuring*

Business Excellence. Retrieved from: EBSCO database [Accessed on 7 January 2023]

Soler-Domínguez A., Matallín-Sáez J.C. , de Mingo-López D. V., Tortosa-Ausina, E. (2021) 'Looking for sustainable development: Socially responsible mutual funds and the low-carbon economy' *Business Strategy & the Environment*. Retrieved from: EBSCO database [Accessed on 4 February 2023]

Verheyden, T., Eccles, R. G., Feiner, A. (2016) 'ESG for All? The Impact of ESG Screening on Return, Risk, and Diversification' *Journal of Applied Corporate Finance*. Retrieved from: EBSCO database [Accessed on 7 January 2023]

Vidal-García J., Vidal M. (2022) *Efficiency and Investment Style of European Mutual Funds*. Available from:  
[https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=4014815](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4014815) [Accessed on 2 December 2022]

Wen, H., Ho, K. C, Gao J., Yu, L. (2022) 'The fundamental effects of ESG disclosure quality in boosting the growth of ESG investing' *Journal of International Financial Markets, Institutions and Money*. Retrieved from: EBSCO database [Accessed on 26 January 2023]

Windolph, S. E. (2011). Assessing corporate sustainability through ratings: Challenges and their causes. Available from:  
<https://scholarworks.rit.edu/cgi/viewcontent.cgi?article=1004&context=jes> [Accessed on 14 February 2023]

Zeidan R. (2022) 'Why don't asset managers accelerate ESG investing? A sentiment analysis based on 13,000 messages from finance professionals' *Business Strategy & the Environment*. Retrieved from: EBSCO database [Accessed on 7 January 2023]