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MASTER'S THESIS

**THE IMPACT OF HIGHER ESG SCORES ON THE PERFORMANCE
OF FINANCIAL INSTITUTIONS IN THE EU**

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TABLE OF CONTENTS

INTRODUCTION	1
1 ENVIRONMENTAL, SOCIAL AND GOVERNANCE INVESTING	4
1.1 Climate change, social and demographic issues.....	4
1.2 Climate change impact on economy and market	6
1.3 Development of ESG Investing	8
1.4 Pillars of ESG	10
1.5 ESG scores and rating companies	11
2 STRATEGIES OF ESG INVESTING	12
2.1 Approaches to ESG investing	13
2.2 Implementation of ESG in companies	14
2.3 ESG in financial institutions	16
2.4 Corporate Social Responsibility	18
2.5 Returns of ESG investing	19
2.6 Challenges of ESG and greenwashing	20
3 ESG INITIATIVES AND LEGISLATION	22
3.1 ESG initiatives.....	23
3.2 Legislation of ESG in EU	24
4 RESEARCH DATA AND METHODOLOGY.....	26
4.1 Security data collection	27
4.2 ESG scores data and methodology	28
4.3 Formation of the portfolios	29
4.4 Research questions.....	29
4.5 Method	29
5 ANALYSIS OF THE RESULTS	33
CONCLUSION	49
REFERENCE LIST	52

LIST OF FIGURES

Figure 1: Geographical dispersion of the selected European financial institutions	26
Figure 2: Geographical dispersion of financial institutions with average ESG scores	33
Figure 3: Financial institutions with higher ESG scores	36
Figure 4: Financial institutions with lower ESG scores	37

Figure 5: Efficient frontiers with higher and lower ESG scores	48
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LIST OF TABLES

Table 1: Data of financial institutions included in the analysis, 2023	27
Table 2: Average returns and std. deviation of FI with higher ESG scores	34
Table 3: Average returns and std. deviation of FI with lower ESG scores	35
Table 4: Comparison of the portfolios with higher and lower ESG scores.....	38
Table 5: t-test for the portfolios with higher and lower ESG scores	38
Table 6: Comparison of the portfolios with higher and lower E scores.....	40
Table 7: t-test for the portfolios with higher and lower E scores	40
Table 8: Comparison of the portfolios with higher and lower S scores	41
Table 9: t-test for the portfolios with higher and lower S scores	42
Table 10: Comparison of the portfolios with higher and lower G scores	43
Table 11: t-test for the portfolios with higher and lower G scores	43
Table 12: Correlation matrix between FI with higher ESG scores	44
Table 13: Equally weighted portfolio.....	45
Table 14: Minimum variance portfolio (MVP).....	46
Table 15: Mean variance efficient portfolio (MVEP).....	47

LIST OF APPENDICES

Appendix 1: Povzetek (Summary in Slovene language)	1
Appendix 2: Data of financial institutions included in the analysis, 2023	2
Appendix 3: Financial institutions data with ESG scores, 2023	3

LIST OF ABBREVIATIONS

CSR - Corporate Social Responsibility

ESG – Environmental, Social and Governance factors

PRI – Principles of Responsible Investing

RI – Responsible Investing

SFDR - Sustainable Finance Disclosure Regulation

SI – Sustainable Investing

SRI – Socially Responsible Investing

INTRODUCTION

Climate change has become a major challenge of the present times, and extreme weather has become one of the biggest risks for our world by likelihood. The last years, from 2011 to 2023, were the warmest on record. With the rise of temperatures, the world will have to face ever more frequent and more severe droughts and heat waves, flooding, water scarcity, longer wildfires seasons, rising of the sea levels, stronger and more frequent hurricanes, declining biodiversity and species extinction, melting polar ice and catastrophic storms. These meteorological phenomena will not only affect our nature but people as well. Current changes in climate will have significant effects on our lifestyle, especially regarding food production, safety of our environment, our health, and work patterns. In addition to that, there is a greater likelihood of mass migration and unstable conditions of living, especially in countries most affected by global warming (UN, n.d.a).

In addition to climate change, the modern world is facing social and demographic shifts. The projections show that population will rise by more than 1 billion by 2030. This means there will be over eight billion people in the world by 2030. Most of the population growth is expected to come from emerging or developing countries (UN, 2015).

Another challenge the world is facing is rising inequality. According to IMF World Inequality Report from 2022, global inequality is not in good shape and does not appear to be improving any time soon. The poorest half of the world's population owns 2,900€ per adult (purchasing power parity), while on the other hand, the top 10% of the population owns about 190 times as much (IMF, 2022). Climate change, demographic shifts, inequality, privacy and data security, along with regulatory pressures, are among the risk factors in the modern world that investors need to have in mind while making investment decisions. Since some of these risks may not have been considered before while making investment decisions, investors may now look for new investment approaches. Large institutional investors can influence the way companies operate through the voting rights they have in companies. This means investors can have a big impact on companies, forcing them to reduce their negative environmental, social and governance impact and to do business without negative externalities on the environment. With that in mind, investors can mitigate their exposure to risk arising from changes in the environment and society.

One of the modern popular investment approaches is called ESG investing. ESG investing is an approach used by investors to integrate environmental, social and governance factors in their investment process (OECD, 2020b).

There are numerous ESG factors, and they are ever-changing. Briefly, these factors can be described as follows:

- Environmental factors refer to the company's effects on the environment. These factors include, but are not limited to its use of energy, waste management, development of the land, and carbon footprint.
- Social factors cover the relationships company has with its employees and all other stakeholders and the company's approach to issues such as diversity and inclusion, labor standards and human rights. Social factors also refer to the protection of data and security.
- Corporate governance factors involve but are not limited to a company's decision-making structure, board members independence, business ethics, minority shareholders treatment, executive pay, and political contributions (Abrdn, 2022).

According to a survey conducted in 2021 by Marsh, 80% of financial services sector respondents consider climate change and ESG to be an important, if not the most crucial issue for their business operations (Marsh, 2021). Additionally, financial institutions must accommodate to new laws, requirements, and customer expectations, all while retaining profitability.

With the introduction of Green Deal in 2019, the European Union set many sustainable goals, especially in areas such as renewable energy, biodiversity, and circular economy. EU is aiming to establish a common language among investors, issuers, project promoters, and policy makers with the Taxonomy of sustainable economic activities (in force since January 2022). This tool makes it easier for investors to determine whether their investments are in line with the environmental standards and are meeting the relevant policy commitments, like the Paris Agreement (UN, n.d.b).

European Union is aiming for ESG to play an essential role in the financial services industry and currently, in addition to Taxonomy, has another important regulation in force; Sustainable Finance Disclosure Regulations (SFDR). The aim of SFDR is to balance the ability of financial market participants to achieve financial growth while fighting against greenwashing (Bryter, 2022).

According to Eccles et al. (2014), companies exchange their information not only with shareholders but also with other stakeholders, especially because companies that are more sustainable attract long-term investors with a long-term orientation. Many investors and companies are aware of the power ESG investing can have but have doubts about investing in ESG due to higher risk and possible lower returns that could be the result of such investing. The purpose of researching the impact of investing in ESG on the performance of financial institutions is to prove that investing in environmental, social and governance factors does not lead to lower returns and bad financial performance of the companies.

ESG investing is more and more popular, which is due to the current environmental issues and regulatory policy. With investing in ESG factors, investors may feel good about investing in the common good, but a lot of investors are skeptical and fear they will have to

face lower returns compared to investing in non-ESG factors. The main goal of this paper is to research whether investing in ESG factors impacts the financial returns of financial institutions in the European Union and whether investing in ESG factors represents higher risk with lower returns for investors. The research questions addressed in this paper are as follows:

- RQ1: Do higher ESG scores lead to higher financial returns of the financial institutions in the EU, compared to lower ESG scores?
- RQ2: Do higher environmental scores lead to higher financial returns of the financial institutions in the EU, compared to lower environmental scores?
- RQ3: Do higher social scores lead to higher financial returns of the financial institutions in the EU, compared to lower social scores?
- RQ4: Do higher governance scores lead to higher financial returns of the financial institutions in the EU, compared to lower governance scores?

The paper compares the profitability of ESG investing by observing the financial returns of the 50 different European financial institutions that are all members of the iShares MSCI Europe Financials ETF.

The main research question is whether investing in financial institutions with higher ESG scores leads to better financial results than investing in financial institutions with lower ESG scores. The results provide information on how strong ESG and poor ESG performance influences the investor's returns. Additionally, the paper focuses on how well financial institutions with higher ESG scores perform compared to financial institutions with lower ESG scores. Since financial institutions from the iShares MSCI Europe Financials ETF are located in different countries across Europe, it is possible to compare which countries perform better in ESG investing based on the average ESG scores of the selected 50 financial institutions.

Based on the ESG scores of all 50 financial institutions, financial institutions are divided into two groups that form two separate equally weighted portfolios: one portfolio consisting of 25 financial institutions with lower ESG scores and the other consisting of 25 financial institutions with higher ESG scores. Based on 3-year monthly stock prices data from Yahoo Finance, average annual financial returns and annual standard deviations are compared for both portfolios. In order to determine the individual impact of higher environmental, social and governance scores on the financial returns of the financial institutions, six more portfolios are formed; one with higher environmental scores, one with lower environmental scores, one with higher social scores, one with lower social scores, one with higher governance scores and one with lower governance scores, each consisting of 25 financial institutions. Based on the financial institution's historical 3-year monthly stock prices data, average annual returns and standard deviations are calculated and compared for all of the formed portfolios. The differences between the mean returns of the portfolios are tested with the t-test. From the portfolios with higher and lower ESG scores, two efficient frontiers are

built, each representing the highest return for each level of risk and the lowest risk for each level of return.

The master thesis begins with a description of climate change, social and demographic issues, and their effect on companies and business in general. It describes the reasons to implement ESG investing, the history of ESG investing, the pillars of ESG, and presents the ESG scoring system, as well as providers of the ESG ratings. The following chapters present different strategies and approaches of ESG investing, the implementation of ESG in companies, especially in financial institutions, the differences between corporate social responsibility and ESG, returns of ESG investing, and challenges of ESG investing, including greenwashing. One chapter is dedicated to the presentation of ESG initiatives and legislation of ESG in the European Union. In the next chapter, the research data, methodology and the formation of the portfolios are presented. The paper is concluded with an analysis of the results and conclusions drawn from the research.

1 ENVIRONMENTAL, SOCIAL AND GOVERNANCE INVESTING

In recent years ESG investing has expanded significantly, especially due to more environmental, labor, human rights, social and governance issues awareness of individuals and their tendency to invest according to their values. Young people and women, which were previously less involved in traditional investing, have become more engaged and contributed to the rise of ESG investing. The adoption of forward-looking ESG practices that reflect social values and norms is crucial for companies to compete in their industry and contribute to the greater good (Adec Innovations, n.d.).

The growth in use of ESG investing is also a result of efforts to reach the objectives of the Paris Agreement goals. Due to its alignment with long-term and societal values, ESG investing has moved from the early stages of development to mainstream investment. Investors started to take the climate transition into account when making investment decisions, and ESG investing is now an important part of sustainable finance (OECD, 2021).

Allianz, in the research from 2018, found out that 74% of Americans who are aware what ESG means believe ESG investments represent both a strategy they can feel good about and a strategy that makes long-term financial sense. 65% of that group would like to see ESG investment options in their 401(k)s, especially millennials and Gen-Xers. The vast majority of millennials participating in the research believed that companies that support social causes are more financially successful over the long term than traditional companies (Allianz, 2019).

1.1 Climate change, social and demographic issues

The land we live on is crucial for human livelihoods and well-being, and we are currently using more than 70% of the ice-free land globally. Population growth in recent years and higher production of food, fiber, timber and energy, which takes a quarter of land use, have

resulted in higher net greenhouse gas emissions, natural ecosystems loss and loss of biodiversity. According to data available since 1961, per capita meat and vegetable oil intake has more than doubled, and the amount of food calories consumed per person has increased by approximately a third. From the pre-industrial area (1850-1900) to 2015, the temperature of the air has increased by 1,58°C, which resulted in increased frequency and severity of droughts, especially in the Mediterranean, west Asia, South America, Africa and north-eastern Asia and heavy rainfall intensified globally. As a result of global warming, many plant and animal species' ranges are changing, their seasonal activities are more frequent, and we are witnessing increasingly frequent and severe floods and droughts, heat stress, wind, sea level rise, wave movement and melting of permafrost. It is expected that with more frequent extreme weather events, the food supply will be less stable, which will cause disruptions in food chains. As CO₂ levels will increase, the nutritional quality of crops will decline. The increase in CO₂ will also result in higher food prices. The most vulnerable to all these changes are young, elderly, and poor people. Climate change affects the level of risk on two important levels. The first level of risk represents the warming of the environment, and the other level of risk represents how the production, population, technological advancement, consumption and land use will develop. Risks of water scarcity, degradation of land and food insecurity are increased by pathways with increased food and water demand, more resource-intensive production and consumption, and limited progress in agriculture yields (IPCC, n.d.a). Climate change does not affect only the environment we live in. According to the research, a 945 PPM CO₂ concentration in the atmosphere causes a drop in human cognitive ability by about 15% (CFA Institute, 2020).

The emissions that are responsible for climate change originate from all over the world and have an impact on the entire planet. Some countries are bigger polluters than others and 10 countries with the largest emissions contribute around 60% of all emissions (China, US, India, Indonesia, Russia, Brazil, Japan, Iran, Canada, and Saudi Arabia), while 100 countries with the lowest emissions contribute less than 3% of emissions (Climatewatch, n.d.). Many solutions for climate change can improve our lives, protect the environment and also represent economic benefits. The most important measures to combat climate change are reducing emissions, preparing for the effects of climate change, and funding required adjustments. These actions will require significant financial investments also by government and businesses, but if we don't act soon enough, climate inaction will be vastly more expensive (UN, n.d.a).

Social and demographic shifts represent another challenge in the modern world. All over the world, life expectancy is increasing, and birth rates are falling. According to projections, there will be only two people of working age for every elderly person in Europe by 2025. The issue of aging populations could be solved by more women joining the workforce, especially in developing countries. A more diverse workforce would be better for business as well (UN, 2015).

Companies with more women in leadership positions have 15% higher profits than those with fewer women in leadership positions, according to the Peterson Institute for International Economics (Peterson Institute for international economics, 2016). A board with high gender diversity is also expected to have less conflicts than a board with lower gender diversity (Nielsen & Huse, 2010). Nevertheless, the pay gap still exists. This is mostly the consequence of women deciding on lower-paying occupations or industry sectors and due to a slower climb on the career ladder compared to men (Peterson Institute for international economics, 2016). According to a European Commission report from 2016, only 22.7% of the EU's largest public listed companies have women on management boards, which can result in talent waste and in a loss of potential economic growth (European Commission, 2016). IMF research shows that greater participation of women in managerial positions improves corporate profitability, leads to greater business investment and productivity, and limits the slowdown in potential growth (Christiansen, Huidan, Pereira, Topalova & Turk, 2016).

1.2 Climate change impact on economy and market

Climate change will have a major impact on the financial market. For efficient allocation of capital to regions of the world where the impacts of climate change are increasing, investment professionals must incorporate climate change into their analyses. Corporations may reach net zero by reducing the emissions of the businesses and households they finance, insure or invest in, also known as “financed emissions”. This could be done by divesting exposures to companies with high emissions and instead investing in companies with lower emissions, which could cause financed emissions to fall sharply. It is easier for individual investors to divest; however, this is not the case for the financial system as a whole. The financial sector should help companies with high emissions reduce their emissions and help them build greater resilience to physical risk. To avoid negative outcomes of such transition, financial companies need to manage possible risks and look ahead over much longer time horizons than they are used to (Bank of England, 2021).

Risks related to climate change may be divided into transition risks and physical risks. Transition risks present financial hazards to lenders and investors and could impact household wealth and corporate profitability. Such risks will have macroeconomic implications through investment, relative price channels and productivity (NGFS, 2020). Physical risks could have an impact on the economy in two ways:

- Acute impacts of extreme weather events may cause property damage and economic disruption. In the past, these effects were thought to be temporary, but if global warming continues, this will no longer be the case. These changes can raise insurers' underwriting risks and lower the value of assets.
- Chronic impacts, especially those caused by rising temperatures, precipitation and rising sea levels, could affect capital, labor and agriculture productivity. Companies,

governments and households will all need to make large investments to adapt and response to these changes (NGFS, 2020).

The economy will be impacted by climate risk in many ways. Severe weather may cause business disruptions and property damage, weather disruptions and health impacts could lead to household income loss, changes in demand and costs, and labor market frictions. Low-carbon policies may lead to some restrictions and higher costs may affect valuations. On a macro level, climate risk will affect the economy through depreciation of capital, price volatility caused by structural changes and supply shocks, changes in productivity caused by extreme heat, increased risk aversion and diverted investment in mitigation and adaptation. Changed consumption patterns, conflicts and migration may lead to socioeconomic changes, changes in international trade, national income, exchange rates and fiscal space. These changes in the economy will lead to several financial risks. Collateral depreciation and defaults of businesses will cause credit risk, repricing of equities, commodities and fixed income will cause market risk, higher insured losses and insurance gaps will cause underwriting risk, higher demand for liquidity will cause liquidity risk and operational risk will be affected by supply chain disruptions and forced facility disclosure (NGFS, 2020).

Besides physical and transition risk, there is another type of climate-related risk, called liability risk. Liability risk is linked to policy and regulatory changes, which are formed as a result of climate change. As an example, there could be introduced new carbon fees to cut emissions, based on the Paris Agreement (Deloitte, n.d.).

In the research from 2021, Christian Aid organization found that ten of the most financially devastating weather events in 2021 each costed over \$1.5 billion in damages. The victims of the most destructive events in recent years are mostly poorer countries and areas that contribute very little to global warming (Christian Aid, 2021).

S&P Global Market Intelligence in the research states that higher pressure from shareholders and activists has led to a decline in investment in high-carbon industries. 80% of the largest companies already report exposure to market transition and physical risks related to climate change (S&P, 2019).

According to United Nations Adaptation Gap report from 2022, inflation-adjusted estimates of yearly adaptation costs/needs are predicted to be between \$160–340 billion by 2030 and \$315–565 billion by 2050. This amount aligns with recent studies that estimate financial needs to be \$71 billion annually between now and 2030, based on the nationally determined contributions and national adaptation plans of 76 developing countries. Based on this analysis, currently projected adaptation costs/needs are between 5-10 times greater than available international adaptation financing, and the adaptation finance gap is only growing (UNEP, 2022).

Climate change already has an impact on our economy and financial markets, which is expected to intensify in the coming years and depend on how the world will respond to

climate change in the following years. That is the reason why financial professionals and regulators need to develop and include new climate change metrics in their financial models. One of the tools to decarbonize economies is the European Commission's Taxonomy for sustainable financial activities which intends to apply an environmental, social and governance (ESG) of sustainability framework to the operations of the investment industry (European Commission, n.d.b). All industries will experience some kind of transition due to decarbonization in the future. The pace of these transitions will depend on government actions, consumer preferences and companies and investors engagement on these issues. Analysts that cover these sectors and portfolio managers who thoroughly understand the mechanics of these transitions would be in a better position to make wise decisions about these sectors than their rivals with less information. Transitions due to a less carbon-intensive world will not only cause a threat to investors, but also present new opportunities due to a higher demand for less carbon and more "green" solutions in every global industry (CFA Institute, 2020). To support investors in their decisions in finding sustainable companies to invest in, many strategies were developed throughout history, such as Socially responsible investing (SRI), Responsible Investing (RI), Sustainable Investing (SI) and ESG Investing. Due to factors that ESG incorporates, this is the most frequently used investing method nowadays. In addition to the financial performance of businesses, it also affects society and the environment. Due to the cumulative environmental, geopolitical, economic and societal effects, the importance of ESG has peaked.

1.3 Development of ESG Investing

ESG investing does not represent a new investment approach addressing environmental, social and governance issues. In 1928 the first Socially Responsible Investing (SRI) fund was launched, focusing on social issue-based exclusionary screens, addressing issues related to society, tobacco, alcohol and gambling. Later, many other value-based funds were introduced due to high demand for SRI products. As a result of the Great Depression and several corporate scandals and controversies, the focus on governance issues increased and attention to social matters decreased, a trend known as Responsible investing (RI). In the 1990s there was introduced the ecological word "sustainability" and the awareness about climate change increased. This was the beginning of Sustainable Investing (SI). The 2000 UK Pensions Act amended the way ESG issues are considered in the investment process (SSGA, 2018). If we observe the development of SRI in recent years, we can see that it has grown significantly, greatly increased in complexity and has become part of common investment practice. Initially, SRI as an investment method was an activity carried out by a small number of experts, such as mutual funds, but later it was adopted by an increasing amount of large investment institutions, such as pension funds and insurance companies. Since the institutional investors, the main owner group of listed companies in many developed economies, raised awareness of the SRI issues, the problem can no longer be ignored by the corporate executives (Sparkes & Cowton, 2004).

There are many incidents related to environmental, social and governance factors known in modern history. In 2010 there was an explosion aboard the Deepwater Horizon drilling rig, which resulted in the greatest oil spill in petroleum history and is known as one of the largest environmental disasters in history. The company had to cover more than \$65 billion only for cleanup costs, charges, and penalties (Reuters, 2018). Another environmental scandal happened in 2015 in Volkswagen. Volkswagen was found to intentionally hide the emissions of their diesel engine vehicles (BBC, 2015). Incidents related to privacy and data security occurred in Facebook (today Meta) (Business Insider, 2019). Companies lost a large portion of their value after the incidents and with that, among other stakeholders, shareholders were affected as well.

A global community of institutional investors created the Principles for Responsible Investments to represent the growing importance of environmental, social and corporate governance issues to investment activities. The Principles of Responsible Investment initiative was initiated by the United Nations Secretary-General and was introduced by the UN in 2006. This initiative encourages the integration of ESG principles and requires the inclusion of ESG issues into the investment process. (UNPRI, n.d.a). As of September 2022, more than 5,100 investors worldwide signed the Principles for Responsible Investment (UNPRI, 2022).

All the signatories of PRI must commit to the six principles, and with that, actively integrating ESG issues into ownership policies and practices, requiring invested entities to disclose adequate information on ESG issues, promoting the principles within the investment industry, working collaboratively to improve implementation of the principles and lastly, reporting on progress towards implementation of the principles (UNPRI, n.d.b).

In 1999, the companies RobecoSAM (Sustainable asset management) and S&P Dow Jones Indices created the first global index that monitored the sustainable activities of listed companies. S&P Dow Jones Indices formed The S&P 500 ESG Index (U.S. Large cap market that follows ESG values). The aim of this index was to prove a similar risk and return profile to its benchmark index S&P 500, and to exclude companies that did not manage their business in accordance with ESG principles. Comparing the S&P 500 ESG Index and its benchmark S&P 500 Index performance in the five years period (Sept. 30, 2014-Sept. 30, 2019), we can conclude that both indexes posted nearly identical returns and investing in ESG did not lead to lower returns compared to non ESG investing (S&P, 2019).

In 2020, ESG assets topped \$35 trillion in value, up from \$30.6 trillion in 2018 and \$22.8 trillion in 2016, according to Bloomberg. In line with Bloomberg Intelligence's base-case scenario, the Global Sustainable Investment Association predicts that ESG assets will account for one-third of all assets managed globally. If growth of 15%, which represents one-third of the rate of the previous five years, is assumed, ESG assets could reach \$50 trillion by 2025 (Bloomberg, 2022).

In 2020 the Covid-19 pandemic led to market disruption and affected investors, many of which turned to ESG funds to increase resiliency. Globally, there was a \$45.6 billion inflow into ESG funds in the first three months of 2020 (Adec Innovations, n.d.). In 2019 there were \$30.7 trillion in sustainable investment funds globally, and the number is expected to increase to \$50 trillion over the next 20 years (CNBC, 2019). Investors are increasingly looking to support organizations that promote sustainability and follow new climate change regulations. ESG funds are recognized as resilient to traditional market disruptions and experience steadily increasing investment returns, resulting in ESG issues receiving more attention in the business world (Umar, Kenourgios & Papathanasiou, 2020).

In the research performed by Morningstar, most strategies outperformed non-ESG funds over the course of one, three, five and ten years when examining the long-term performance of a sample of 745 sustainable funds based in Europe. According to Morningstar, commingled equity funds that invest sustainably outperformed traditional funds by 80%. Compared to 46% of traditional funds, 77% of ESG funds from 10 years ago have survived. According to the study, sustainable funds also outperformed traditional funds during the first market quarter's market sell-off caused by the coronavirus, generating average excess returns of up to 1.83 percent (Financial Times, 2020).

Millennials will come to control more wealth in the next decades, and with that, have more money to invest. Studies show that millennials want more from their investments. According to Fidelity Charitable, millennials are more active investors than older generations and over 60% of millennial investors share the belief that impact investing may have greater influence on lasting change than traditional forms of philanthropy (Fidelity Charitable, n.d.). A study by The Harris Poll showed that 76% of millennials think climate change is a severe threat to society and they want to contribute to funding sustainable solutions with their investment activities (CNBC, 2021).

1.4 Pillars of ESG

There are three criteria in ESG:

- The E in ESG stands for environmental criteria. This covers an organization's management of energy consumption, waste, resources, and impact on living beings. It also includes considerations of carbon emissions and climate change. It is important to note that every organization uses energy and resources, and the environment affects all of them.
- The S in ESG stands for social criteria. It refers to an organization's relationships with people and institutions in the communities where it conducts business. Social criteria include aspects such as labor relations and promote diversity and inclusion.
- The G in ESG stands for governance criteria. It focuses on the internal system of practices, controls, and procedures that an organization adopts to govern itself and make decisions that comply with the law and meet the expectations of external stakeholders.

It is essential for every organization, as a legal entity, to have proper governance (McKinsey, 2019).

To be more specific, the ESG factors include:

1. Environmental factors
 - Climate change
 - Greenhouse gas (GHG) emissions
 - Resource depletion
 - Waste and pollution
 - Water and energy efficiency
 - Deforestation
 - Biodiversity
2. Social factors
 - Human rights
 - Equal opportunities
 - Child labor and modern slavery
 - Working conditions
 - Employee diversity
 - Health and safety
 - Community engagement
 - Philanthropy
3. Governance factors
 - Bribery and corruption
 - Executive pay
 - Board diversity and structure
 - Political lobbying and donations
 - Tax strategy
 - Business ethics
 - Compliance

All ESG issues are not equally weighted when it comes to investing and factors may overlap. The weights depend on values and motivation of investor, environmental, social, and economic circumstances at the time and industry, geography, and specific circumstances of the company (Adec Innovations, n.d.).

1.5 ESG scores and rating companies

The term “ESG score” refers to a measurement or evaluation of the environmental, social, and governance (ESG) performance of a certain company, fund or security. Different rating platforms that provide ESG scores may use different evaluation criteria and standards. ESG

scores are calculated by analyzing company disclosures, management interviews and public available data about the organization (CFI, 2022).

ESG rating methodologies can either be industry-specific or industry-agnostic. Issues that have been determined to be relevant to the industry as a whole are scored using an industry-specific scoring methodology. Industry-agnostic ESG scores include factors that are meaningful across industries, such as DEI (diversity, equity and inclusion) and human rights (CFI, 2022).

The performance of a company is then evaluated against each ESG criteria, with each criterion assigned a weight. The final ESG score represents the sum of the products of the criteria scores and weights (CFI, 2022).

Public companies are required to disclose their ESG data along with their quarterly and annual reports. These companies may choose relevant reporting frameworks in order to report relevant data, such as Global Reporting Initiative (GRI), the Principles for Responsible Investment (PRI) and Sustainability Accounting Standards Board (SASB). If companies provide ESG information without using a proper framework, it is often labeled as greenwashing (CFI, 2022).

The ESG scoring systems can be performed by external or internal stakeholders of the organization. The providers of ESG scores can be investment or financial firms, consulting companies, standard-setting bodies, NGOs, or government agencies (CFI, 2022).

Rating platforms are considered as external stakeholders. They are reviewing public available information about the organization and form primary research about the organization's sustainability efforts. The most visible and important among external stakeholders are, for example, ISS – Institutional Shareholder Services, CDP – Carbon Disclosure Project and financial services that present ESG scores to the public, such as MSCI, Sustainalytics and S&P, Bloomberg, Thomson Reuters, RobecoSAM, Fitch and Moody's. Additionally, there are also many ESG index providers on the market, such as FTSE Russell, Bloomberg, Vigeo Eiris, etc. (OECD, 2020a).

Internal ESG scores are formed inside the organization by internal stakeholders. Internal stakeholders perform in-house calculations and analysis to report on their own performance. This allows organizations to perform more in-depth analysis and compare performance across different business units, markets, different stakeholders, and over different periods (CFI, 2022).

2 STRATEGIES OF ESG INVESTING

There are different motivations for investors to implement ESG in their investment strategies. According to the MSCI study, there are three key motivations for ESG investing:

integration, incorporation of personal values and making a positive impact. These three motivators are not mutually exclusive and may complement each other (MSCI, 2021).

Investors that are motivated by ESG integration believe that investing in companies with the best environmental, social and governance practices in the industry could lead to improvement of their portfolio's long-term results. Such companies are recognized as "ESG leaders," while "ESG laggards" are companies that do not pay much attention to ESG practices. For example, a company that is recognized as an ESG leader promotes diversity and inclusion in the workplace, while a company recognized as an ESG laggard may have a history of worker strikes (Visual Capitalist, 2021).

Some investors opt for ESG investing to match their financial choices with their personal values. It is done by using negative screening, which identifies and excludes companies that are exposed to specific ESG issues, such as weapons, tobacco and fossil fuels and companies that do not comply with the UN Global Compact - a corporate sustainability initiative focusing on issues like human rights and corruption.

Other investors are motivated by making a positive impact through their investments. This kind of investment is also known as impact investing and enables investors to link their financial gains to environmental or social progress. These investors may invest in companies that show a commitment to gender diversity or companies with environmental projects that lead to positive changes on the environment (Visual Capitalist, 2021).

In the research from 2019, Global Reporting Initiative found that 93% of the world's biggest companies in terms of revenue already disclose information on their ESG performance. Since potential shareholders are becoming more and more interested in ESG performance, companies need to disclose their ESG activity to win the potential investments (Institutional Shareholder Services, 2019).

2.1 Approaches to ESG investing

When it comes to ESG investing, there are several approaches investors can follow and there is no single approach to fit all investor's preferences. However, the most common and popular ESG approaches are screening, best-in-class selection, thematic investing, active ownership, socially responsible investing or SRI, faith-based investing, and mission-related investing (MSCI, n.d.).

Screening is one of the most popular approaches that is used by investors when implementing ESG in their investments. Investors decide whether companies, industries or activities do or do not fit in a particular portfolio using a screening approach. The criteria for the inclusion of certain companies, industries or activities in the portfolio may include different preferences of the investor, such as his values or ethics. Using this approach, the investor may decide to exclude companies that are responsible for high amounts of emissions or companies that do not align with the investor's values and ethics from the portfolio. Such

a practice is known as negative screening. On the other hand, an investor may decide to invest in companies that are responsible for the least amount of emissions. This approach is known as positive screening (UNPRI, 2020).

Investing in industries, companies or activities that have better ESG performance in comparison to their industry competitors is known as the best-in-class approach. With this approach, investors may not necessarily exclude controversial sectors or industries from their portfolio but rather focus on best-performing organizations in meeting ESG criteria in the specific sector (Global Sustainable Investment Alliance, 2018).

Thematic investing is an approach with which investors choose their investments based on their opinion of how certain industries and geographic areas where risk is expected to be concentrated will be affected by various structural trends (McKinsey, 2014).

With active ownership approach investors start a dialogue and discuss ESG concerns with organizations they invest in. Through their position and ownership rights, they aim to influence the behavior of such organizations. This approach is perceived as highly effective in reducing risks, maximizing returns, and improving society and the environment (UNPRI, 2018).

Socially responsible investing or SRI is an investment strategy that takes into account not only the financial returns but also the environmental, ethical, and social impacts of the investment (CFI, 2023).

When investors align their investments with faith-based values, they are using an approach called faith-based investing. With this investment approach, investors avoid investing in companies whose business activities are against the teachings of their faith. The approach also focuses on creating measurable social or environmental impacts (MSCI, 2018).

With mission-related investing, investors want to align their investments with the organization's values or philanthropic goals. Investments that are mission-related often strive to create measurable social or environmental benefits (MSCI, 2018).

2.2 Implementation of ESG in companies

According to McKinsey, a number of researches find that companies that prioritize environmental, social and governance issues do not hinder their value creation. Instead, they tend to have higher equity returns. Research shows that better ESG performance is associated with a reduction in downside risk, reflected in lower loan and credit default swap spreads and higher credit ratings. Investors should consider the five ways ESG links to cash flow: promoting top-line growth, cutting costs, minimizing regulatory and legal interventions, boosting employee productivity, and optimizing investment and capital expenditures (McKinsey, 2019).

Organizations can benefit from ESG in many ways, such as attracting new businesses and customers due to products that are more sustainable, stronger community and government relations leading to better resource access, reduced energy consumption and water intake, greater strategic freedom due to deregulation, earning subsidies and government support, improved employee motivation, better talent attraction due to social credibility, enhancing investment returns through long-term capital allocation, and avoidance of investments that may be problematic due to long-term environmental issues (McKinsey, 2019).

On the contrary, organizations that do not comply with ESG practices may experience some negative side effects, such as losing customers due to poor sustainability and poor human rights practices, losing access to some important resources due to negative relations with the community and labor, producing excessive and unnecessary waste leading to increased disposal expenses, suffer restrictions on advertising, lose money due to fines, penalties and enforcement actions, lose some talented workers due to weak purpose of the organization, and fall behind competitors that use more sustainable practices (McKinsey, 2019).

Although all of the ESG metrics are equally important, not all the metrics are equally important and solvable for all companies. When implementing the ESG strategy, companies need to look toward the future. It is important that companies follow ESG initiatives that are connected to the core of their business activities. According to the McKinsey report, there are three main levels of ESG ambition used by large companies today. The first is “Minimum practice”, in which companies react to trends that are affecting industry and business, address external vulnerabilities, donate resources in the form of financial in-kind and volunteering, meet and report baseline standards and pledge to minimal levels of commitment. The second is called “Common practice”, in which companies aim to make substantive efforts that are mostly outside the core business. With “Common practice” companies track major trends and have contingency plans in place. Companies use their strengths to deliver increased value across specific ESG goals and comply with voluntary standards. In “Minimum practice,” inclusive HR practices, strategic philanthropic programs, and engagement with stakeholders are also important. The last practice is called “Next level practice.” This practice includes full integration of ESG in the strategy and operation of the company, using innovation to increase social impact, making ESG a core part of the overall strategy, and linking leadership areas with purpose. ESG should also be incorporated into capital and resource allocation, employee incentives and evaluation, and sustainability outcomes. The company should ensure that ESG disclosures cover all operations (McKinsey, 2022).

According to McKinsey, there are four dimensions of the ESG process: mapping, defining, embedding and engaging. In the first dimension, called mapping, the company considers what stakeholders have at stake, who are the main stakeholders and what they value, identifies the company’s superpowers and vulnerabilities that differentiate the company from its peers and benchmarks regularly and judiciously (McKinsey, 2022).

In the defining dimension, the company considers high and long jumps, thinks systematically about ESG trade-offs, measures and assesses them. When considering the high jumps, the company decides on the levels it must reach to meet its ESG bar. To excel in ESG, a company needs to surpass regulatory bar like disclosure standards, follow environmental laws, pay taxes and provide fair wages. When a company considers the long jumps, instead of trying to focus on every aspect, it should prioritize one or two areas where it can set an example and influence others in the industry. This step is also connected to finding the superpowers of the company. When thinking systematically about the trade-offs, the company must decide whether investing a marginal currency in one constituency could mean increasing the prices for another constituency, for example, the rise of employees' salaries could lead to higher prices for customers. Companies must also consider time management trade-offs, in which increasing time spent on ESG initiatives, such as reducing waste, may lead to the detraction of time that could be spent on other important initiatives, such as community education (McKinsey, 2022).

In the third dimension, called embedding, the company syncs ESG with operations, follows through on initiatives to ensure impact and discerns what the number do and do not say about ESG. When syncing ESG with operations, the company must first find and specify its purpose and then create the ESG initiatives according to its purpose. When the ESG initiatives are specified, the company must follow the initiatives to ensure the impact. When the initiative is aligned with the company's strategy, it is easier for all the stakeholders within and beyond the company to follow the specified initiatives. Following of the initiatives can be achieved either by monetary incentives, such as compensation packages and also by "nudging" employees to reduce waste, recycle and reduce their carbon footprint. In the third-dimension, companies also decide which external rating-providing agencies they will track most closely in order not to confuse high scores with actually achieving a specific goal (McKinsey, 2022).

In the last dimension, called engaging, the company uses ESG engagement to sharpen its strategy, show investors the business proposition and make cadence core to the dialogue. Stakeholders and investors are important when engaging the ESG in the company's strategy. Investors are becoming increasingly demanding for detailed disclosures of the companies. To show the business proposition to investors, companies must disclose more information on whether their strategic plan is enhanced by ESG initiatives. The last dimension also covers the level of engagement and the detailed information provided to shareholders during interactions. Companies must not only disclose the information to stakeholders but also consider the ways in which the information is disclosed in order to show commitment (McKinsey, 2022).

2.3 ESG in financial institutions

ESG risks and opportunities are becoming more and more important in the financial sector. When considering the implementation of ESG, Financial institutions need to focus on two

important areas. They need to focus on incorporating ESG within their own organization and also focus to incorporate ESG in their core business, such as lending, investing and fund management activities (KPMG, 2021). Since the ESG disclosures are not standardized and regulated, they can be open to interpretation. Major banks currently use ESG metrics in their reports, while smaller institutions lack the skills and resources for making such disclosures.

In 2021, Infosys performed an analysis among 455 investment and fund managers around all over the world and analyzed how they use ESG ratings and data in decision-making. They found that investment firms that used internal and external ESG ratings performed the best and earned 6.90% higher returns than the S&P 500 fund. Since ESG ratings differ between different agencies and because the rating is complex, firms use data from multiple sources. According to Infosys analysis, the optimal number of data sources used on average is three. Interestingly, the research found that one of the less-used ratings delivered the best investment performance, from which we can conclude that the most popular ratings do not necessarily mean the best investment performance (Infosys, n.d.).

To adapt to the new environmental and social changes, the banking sector needs to address ESG-related risks and opportunities. The risk models currently used by banks for activities, such as underwriting, valuation, asset-liability management, liquidity forecasting, etc., are not sufficient to handle stress activities that will happen in the future. In 2022, The European Banking Authorities released mandatory standards on Pillar 3 Disclosures on ESG risks. Starting with the release of the bank's financial statements in 2023, the technical standards ensure stakeholders to have access to all the information about the institution's ESG exposures, risks and strategies, which leads to better decision-making and encourages market accountability. The technical standards focus on disclosing comparable information and key performance indicators, as well as green asset ratio (GAR) and banking book taxonomy alignment ratio (BTAR). These measurements show how institutions incorporate sustainability considerations into their risk management, strategy, and business practices in order to follow the Paris Agreement goals. The technical standards were developed based on the existing initiatives like the Task Force on Climate-related Financial Disclosures (TCFD) of the Financial Stability Board (FSB) and were supplemented with instructions in order to make sure that the institutions' disclosures are consistent, comparable, and meaningful (EBA, 2022).

The insurance industry, as a risk manager, plays an important role on the path to sustainability as well. With the guide of Implementing the Principles for Sustainable Insurance, the UN guides the insurance industry on how to handle ESG risks when evaluating and underwriting non-life insurance, also known as property and casualty insurance. This guide provides useful tips for insurance companies on how to assess ESG risks in non-life business deals. It also aims to provide support to clients, intermediaries, and other stakeholders in gathering ESG-related information during transactions. The guide also addresses growing concerns from stakeholders, such as NGOs, investors and governments, about ESG risks and explains the unique aspects of the insurance industry. Finally, the guide

demonstrates how the insurance industry is essential to both the global economy and society. It also highlights how the industry can contribute to future sustainable development (UNEP, n.d.).

One of the important challenges for financial institutions nowadays is the inclusion of climate-related risks in their stress testing. In the climate change stress testing scenarios, financial institutions need to focus both on transition and physical risks and consider how these risks impact the financial institution's business. The climate-related stress testing results are important for financial institutions to develop effective measures that can help them respond better to climate-related risk threats. With that, financial institutions can make better estimates of their financial resources that must be retained in order to cover potential stress scenarios losses. When designing climate-related stress testing scenarios, financial institutions will face many challenges compared to traditional stress testing approaches. The traditional approach uses historical data to predict the risks to which financial institutions are the most exposed to. On the other hand, in the climate-related stress test approach, financial institutions will need to use hypothetical data inputs to consider extreme events during the tests. Financial institutions will need to pay attention to sectors that are exposed to sudden physical or transitional risks due to climate change, review how their portfolio is organized, and group together exposures that are vulnerable to similar climate-related factors. The time horizon will also expand in climate-related stress testing, compared to the traditional approach, which highlights the importance of having the ability to conduct stress tests over longer periods (Deloitte, n.d.).

2.4 Corporate Social Responsibility

In 2021, Harvard Law School published an analysis of 200 sustainability reports that were published by companies in the S&P 500 index. They found that the terms CSR (corporate social responsibility) and ESG (environmental, social, governance) were used with almost equal frequency in the titles (Harvard Law School Forum on Corporate Governance, 2021).

Both terms that are nowadays frequently used by companies to assess sustainability have the same origins but have different meanings. Corporate social responsibility refers to companies' voluntary activities through which they want to give back to communities and make a positive impact on the environment. The company's CSR activities mainly cover four areas, such as environment, ethics, philanthropy, and economy. For example, companies can contribute to these areas by reducing pollution, switching to renewable energy sources, treating everyone fairly, donating to charities and non-profit organizations, and contributing to community programs. With such activities, companies do not only try to make an impact on external stakeholders, but also want to motivate employees who can align with company values. These activities also contribute to a more positive corporate reputation of the company (Novisto, 2022).

With ESG reporting, companies, on the other hand, try to satisfy the information requirements of investors in order to prove that they are worth investing in. The main distinction between ESG and CSR is that there are some examples of mandatory ESG reporting, especially in the UK, US and EU, and this reporting is becoming more regulated and standardized, while CSR reporting is usually completely voluntary and is formed independently by the company. ESG reporting uses more quantitative measures of sustainability, such as ESG scores and ratings, and is used to improve the valuation of the business. On the other hand, CSR is harder to compare between different sectors since there are not much comparable metrics available. CSR reports focus more on the company's value, whereas ESG reports are based on the company's business model and its operations (Alva Group, 2020).

2.5 Returns of ESG investing

There is a common skepticism present among investors that including ESG factors in their investment process could lead to lower returns and would hurt the performance of their investment portfolio. A number of researches indicate that companies with strong ESG practices tend to experience lower costs of capital, decreased volatility, and fewer incidents of bribery, corruption, and fraud over a specific timeframe. Contrary, companies that do not prioritize ESG practices face more challenges, including higher costs of capital, increased volatility, and various disputes like spills, labor strikes, fraud, and irregularities in accounting and management. In MSCI's research, titled "Foundation of ESG Investing Part 1: How ESG Affects Equity Valuation, Risk and Performance", researchers seek to understand the financial impact of ESG characteristics. The research showed that ESG factors were found to affect the valuation and performance of several companies that were observed. There were three main findings in the research. The first one is related to higher profitability. Companies with high ESG ratings were found to outperform those with low ESG ratings. These companies were found to be more competitive and generate higher returns, resulting in increased profitability and dividend payments. The second finding is related to lower tail risk. Companies that scored high on ESG ratings experienced fewer incidents of idiosyncratic risk, such as major drawdowns, when compared to companies with lower ESG scores that experienced such incidents. The last finding shows that companies with high ESG ratings typically have lower exposure to systematic risk, which is evidenced by less volatile earnings and systemic volatility. On the other hand, companies with low ESG scores experience lower betas and lower costs of capital (MSCI, 2018).

Kenan Institute of Private Enterprise is less optimistic in one of its studies. According to Kenan Institute of Private Enterprise, investors can expect that the returns related to ESG factors may vary depending on market conditions and could either be higher or lower. They found that the reason for higher stock returns in the short run could be due to an increase in the number of investors that care about ESG factors, which lead to willingness to pay premium for these companies. Because investors may prefer green energy over the financial performance of the company, this premium could also be called "greenium". In the long run,

when investors' preferences settle, companies with high ESG ratings may experience decreased returns due to a new equilibrium. However, Kenan Institute of Private Enterprise sees many positive impacts of ESG, such as higher profits due to operations efficiency and energy savings. Additionally, companies can improve their brand image and achieve customer loyalty, improve employee satisfaction, reduce costs of capital and mitigate risks (Kenan Institute of Private Enterprise, 2022).

The results of the research from 2015, based on more than 2,000 empirical studies, have shown that investing in ESG may be a good decision for a company. Roughly 90% of studies have found a positive correlation between ESG criteria and the financial performance of corporations (Friede, Busch, Bassen, 2015).

The researchers from NYU Stern analyzed more than 1,000 research papers from 2015 to 2020 and explored the linkage between ESG and financial performance. After examining 1,000 plus individual studies, they established six conclusions about the connection between ESG and financial performance. They concluded that the benefits of ESG investment become more noticeable over a longer period of time, that choosing ESG integration as an investment strategy outperforms the negative screening approach, that ESG investing provides protection against economic or social crises, that sustainability initiatives in corporations lead to better financial performance due to improved risk management and innovation, that financial performance can be enhanced by managing for a low carbon future, and that ESG disclosure alone does not lead to improved financial performance (NYU Stern, 2021).

2.6 Challenges of ESG and greenwashing

Companies that want to implement ESG can face numerous challenges, such as a lack of data and transparency on environmental, social and governance issues, what makes it difficult to establish clear ESG goals. Due to high up-front investment, the implementation of ESG can be costly for some businesses, especially those with limited resources. When companies decide to align their business practices with ESG, they can even lose some customers and employees who disagree with such business practices.

Companies are experiencing great pressure to comply with the new ESG requirements. The decision-makers believe that the greatest risk of not complying with the new ESG regulations are financial consequences due to regulation and reduced investment opportunities, decreased sales revenues, damage to reputation, decrease in consumer trust, and difficulties hiring new employees. As the biggest challenges for the organizations regarding ESG reporting, decision-makers see calculating greenhouse gas protocols, obtaining accurate carbon accounting data, communicating corporate value to investors and stakeholders, and dealing with unclear regulations and framework standardization. In the same study, performed by Workiva they found out that two-thirds of decision makers admit feeling underprepared to achieve their ESG goals, as well as comply with government and

regulatory reporting requirements. They found out that in the near future, 43% of the organization's ESG budget is planned to be invested in environmental factors (reducing carbon, greenhouse gas and travel emissions, achieving net zero emissions and preserving natural resources), and only 29% will be invested in social and 28% to governance factors, which means decision makers put a lot of focus on environmental factors and not as much on social and governance factors (Workiva, n.d.).

According to the Harvard Business Review, it is estimated that, on average, society will require an investment of \$3.5 trillion each year in the following 30 years to combat climate change. This amount of money, unfortunately, is not the same as current investments in assets managed in accordance with ESG investment principles. This money is currently dedicated to the returns of the shareholders and not to saving our planet or making a positive planetary impact. One of the biggest problems of ESG investing are unregulated and not standardized ESG ratings among rating providers. This can even lead to fossil fuel companies or other companies with activities that harm the environment having higher ESG ratings than companies with activities that benefit the environment, such as electric vehicle companies. The ESG data of rating providers are usually incomplete, mostly unaudited, and often dated. A recent study shows that over 70% of the executives from various industries globally expressed a lack of confidence in their non-financial reporting. One of the problems with ESG investing is also that ESG funds invest in securities trading in second markets, which makes measurement of the impact of ESG investing unfeasible. ESG funds are also often considered as more costly than traditional funds and typically charge 40% higher fees than traditional funds. These higher fees are usually unjustified since ESG funds are often very similar to vanilla funds. An example of this is the largest and oldest ESG fund of Vanguard (ESG U.S. Stock ETF), which was found to have a 0.9974 correlation with the S&P 500 (Harvard Business Review, 2022).

ESG investing is usually more about evaluating the potential impact of climate change on a company's profits and measuring risks to corporate cash flows, which is why it is not a suitable method for fighting climate change and a way to advance planetary sustainability (Harvard Business Review, 2022).

Although sustainable investing has great potential, people have lost confidence in the market due to "greenwashing" and unreliable ESG data. In 2021, The Economist observed the world's 20 largest ESG funds and discovered that, on average, each of the funds invests in 17 companies that produce fossil fuels. Six of them invest in ExxonMobil, which is the biggest oil producer from America, two of them invest in Aramco, which is the biggest oil producer in the whole world, one of the funds holds a Chinese coal-mining company, and some funds also invest in gambling, alcohol, and tobacco (The Economist, 2021).

In 2021, the Greenpeace study found that funds in Luxembourg and Switzerland that were sustainability-focused redirected only slightly more capital toward sustainable activities compared to traditional funds (Greenpeace, 2021). In 2022, a study from Reclaim Finance

found that 30 leading asset managers still hold a combined \$550 billion in coal, gas, and oil companies (Reclaim Finance, 2022).

A 2018 report from Allianz showed that the lack of universal ESG standards leads to poorer definitions and evaluations of the best ESG companies. 6 in 10 participants even believe that no company can be perfect on every issue, which makes it difficult to consider any company to be worth of investing in it. 59% of participants even share the opinion that ESG investing is not a real strategy but rather just a marketing and PR strategy (Allianz, 2019).

Even Wall Street's regulator, The Securities and Exchange Commission, is worried that ESG funds are misleading investors. The problem of what is considered as "green" and what is not is also present in Europe. With the introduction of Taxonomy, which helps investors distinguish between environmentally friendly and non-environmentally friendly activities, countries started lobbying with the European Commission to label particular sources of energy as green. Since some of the countries are considering the use of natural gas as a substitute for coal, they want it to be labeled as green. Some of the solutions for above mentioned ESG issues would be tighter regulatory oversight of ESG, more standardized rules around ESG investing, better supervision of disclosed data and rewarding the companies for reducing their carbon footprint through higher asset prices and lower cost of capital (The Economist, 2021).

In the research from 2022, the researchers from the Swiss Finance Institute analyzed how responsible investment principles align with the outcomes of ESG portfolios. To determine which responsible investors truly invest responsibly, they analyzed the ESG incorporation actions they reported and compared them to the portfolio's ESG scores. They found out that those who signed the PRI and reported partially incorporating ESG into their active equity holdings tend to have better portfolio ESG scores compared to those who have not signed the PRI. However, it only applied to institutions located outside the United States. For the counties located in the US, they found a disconnection between what institutional investors claimed to do regarding the ESG and what they actually did. US PRI signatories who did not incorporate ESG had, on average, worse scores compared to investors who did not sign the PRI. This indicates the possibility of greenwashing. The researchers claim that this could be due to greater commercial incentives for signing PRI in the US compared to other countries. Additionally, regulatory uncertainty regarding the compliance of ESG investing with fiduciary duties, as well as the less mature ESG market and lower pressure for ESG implementation, may also have an impact (Gibson, Glossner, Krueger, Matos & Steffen, 2021).

3 ESG INITIATIVES AND LEGISLATION

In 1994, The United Nations Framework Convention on Climate Change (UNFCCC) was established to prevent any harmful human actions in the climate system. The aim of the

UNFCCC was to commit member states to promote human security, even in the face of scientific uncertainties (UNFCCC, n.d.).

In 2015, the first universal, legally binding global climate change agreement, also known as The Paris Agreement, was adopted at the Paris climate conference (COP21). It was set to provide a global framework to prevent climate change. In order to reduce the risks and impacts of climate change, the agreement proposes to limit global warming to below 2°C and limit temperature rise to 1.5°C. To support the goals of the agreement, all countries must submit Nationally Determined Contributions, or NDCs, that represent their national climate action plans once every five years (European Commission, n.d.c).

In 2020, The European Green Deal was approved, with the main goal to make Europe the world's first climate neutral continent. With the approval of the Green Deal and its policy initiatives, the EU is on track to achieve its climate targets by the year 2030 while also ensuring fairness, cost-effectiveness and competitiveness. The EU member states have pledged to transform the EU into a climate-neutral continent by 2050, with a reduction of emissions by a minimum of 55% by 2030, relative to their 1990 levels. Some of the most important areas, which Green Deal focuses on in order to improve the well-being and health of the EU citizens and future generations, are fresh air, clean water, healthy soil and biodiversity, renovating buildings in order to be more energy efficient, promoting healthy and affordable food, developing public transport, promoting cleaner energy and innovative clean technologies, longer-lasting products, providing training for future-proof jobs and skills, required for the transition and globally competitive and resilient industry. In the Next Generation EU (NGEU), the European Union recovery plan, 37% of the €672.5 billion Recovery and Resilience Facility is allocated towards achieving climate-related goals (European Commission, n.d.a).

3.1 ESG initiatives

As an answer to the current environmental situation, many markets want to promote long-term sustainability, and with that, do not harm their economic growth. This leads markets to explore their own sustainable initiatives. One of the examples is the Financial Stability Board (FSB), that established its own Task Force on Climate-Related Financial Disclosures (TCFD) in order to refine and expand reporting of financial information related to climate. The TCFD was released in 2017 with the aim of helping companies in offering more accurate information to enable better investment decision-making. The recommendations for disclosure are organized around five main areas: governance, strategy, risk management, metrics and targets (TCFD, n.d.).

Many institutional investors, government regulators and development organizations adopted the Global Reporting Initiative (GRI), which is a global standard for sustainability reporting. This framework is established to assess business performance and provide a standardized approach for sustainability reporting. It was developed due to the necessity for a universally

recognized set of standards. This would enable stakeholders to compare information related to the environment between different companies and countries to achieve sustainability goals (ESG The Report, n.d.).

Many organizations align to frameworks, such as SASB and CDP, which provide disclosure systems for investors and companies and help them to control their impacts on the environment. CDP manages the global environmental disclosure system and supports different stakeholders in measuring and managing their risks and opportunities regarding climate change, water security and deforestation (CDP, n.d.). SASB is another non-profit organization established to assist businesses and investors in creating a shared understanding of the financial effects of sustainability. SASB Standards help companies provide financially significant sustainability information to their investors. The SASB standards are industry-based and are available for 77 different industries. These standards identify the most relevant environmental, social and governance issues for each industry (SASB, n.d.).

3.2 Legislation of ESG in EU

In 2018, the European Commission published its Action plan on sustainable finance, with the aim of creating a plan to achieve sustainable finance in the following categories: reorienting capital flows toward a more sustainable economy, integrating sustainability into risk management, and fostering transparency and long-termism. As part of this action plan, the EU implemented three major regulations: Taxonomy Regulation (EU 2020/852), Sustainable Finance Disclosure Regulation (EU 2019/2088), and Climate Benchmarks Regulation (EU 2019/2089) (Euronext, 2022).

In order for the EU to meet its climate and energy goals for 2030 and fulfill the goals of the European Green Deal, the EU must prioritize investing in sustainable projects and activities. In order to achieve it, the Action plan on financing sustainable growth proposed the establishment of a shared classification system for economic activities, known as EU Taxonomy. It establishes the environmental goals that economic activity must follow in order to be classified as environmentally sustainable, such as climate change mitigation, climate change adaptation, the sustainable use and protection of water and marine resources, transitioning to a circular economy, prevention and control of pollution and the protection and restoration of biodiversity and ecosystems. This common classification system will help companies, investors and policymakers to figure out which economic activities are environmentally sustainable. Because of that, stakeholders could be more protected from greenwashing. It will also lead to the mitigation of market fragmentation and shifting investments to areas that require them the most. European Commission is currently also working on creating a social taxonomy, which will extend the current taxonomy to include social objectives and ensuring compliance with minimum social standards (European Commission, n.d.d).

Another important European regulation is The Sustainable Finance Disclosure Regulation (SFDR). SFDR was introduced in 2021 with the aim of improving transparency for sustainable products in the market, to prevent greenwashing and to improve transparency regarding sustainability claims that are made by financial market participants. This regulation enforces extensive sustainability disclosure rules covering various environmental, social and governance metrics for both entities and products (Eurosif, 2021). This regulation primarily applies to financial institutions, such as banks, insurance companies, asset managers and investment firms, that operate in the EU, but non-EU entities may also be impacted by SFDR indirectly through their EU subsidiaries and market pressure (PWC, n.d.).

The third regulation of the Action plan on sustainable finance is Climate Benchmarks Regulation. The aim of this regulation was to improve the transparency and comparability of benchmark methodologies regarding ESG metrics and to give investors a clear understanding of the environmental sustainability of their investments (Euronext, 2022). A climate benchmark is an investment benchmark that includes particular goals related to reductions of greenhouse gas emissions (GHG) and transitioning towards a low-carbon economy with the selection and weighting of underlying components. Under this regulation, there are two new important benchmarks, EU Climate Transition Benchmark (EU CTB) and EU Paris-Aligned Benchmark (EU PAB). Both benchmarks focus on decarbonization but have different thresholds for the limitation of increase in the global average temperatures (SSGA, 2020).

Another important ESG-related legislation in the EU that was close to finalization in 2022, is Corporate Sustainability Reporting Directive (CSRD). This directive brings changes to the existing reporting requirements of the Non-Financial Reporting Directive (NFRD). This directive mandates external auditing of ESG reports and implements more detailed reporting requirements to ensure compliance with ESG standards for all large companies and SMEs that are listed on regulated markets (Euronext, 2022).

The EU Green Bonds Regulation (EUGBR) is a legislation that aims to increase investors' confidence in identifying high-quality green bonds. In 2022, the legislation was being discussed among the Commission, Council and European Parliament and was in its final stages. The goal of EUGBR is to establish EU standards for the utilization of green bonds by companies and public authorities to obtain funding from capital markets. EUGBR proposed a clearer definition of green economic activities according to the Taxonomy Regulation and minimized any possible reputational risks for issuers. Additionally, they aim to standardize the practice of external review and strengthen confidence in external review through the introduction of a voluntary registration and supervision regime (Euronext, 2022).

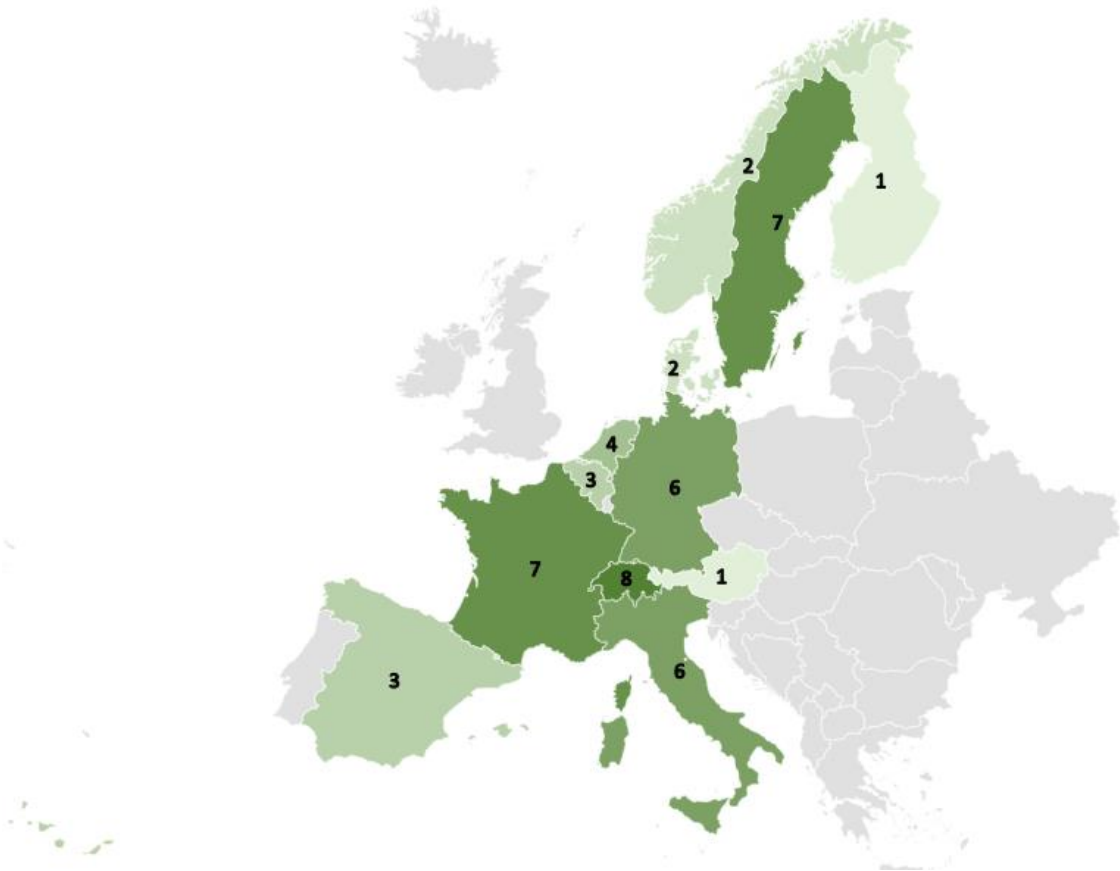
Another legislation that will mostly impact large EU companies or non-EU companies operating in the EU is called Corporate Sustainability Due Diligence Directive (CSDDD).

This directive suggests a framework to encourage companies operating in the single market to respect human rights and the environment through the establishment of a corporate due diligence duty for companies, which includes identifying and addressing any negative environmental, social, and governance impacts in their operations and value chains. CSDDD also introduces responsibilities for directors of EU companies to incorporate the due diligence process in the corporate strategy (Euronext, 2022).

4 RESEARCH DATA AND METHODOLOGY

The analysis of ESG scores and their impact on the financial returns performance of financial institutions is performed based on the comparison of financial returns of different portfolios, which are formed based on the ESG scores of the selected financial institutions. The analysis is performed on 50 different European financial institutions from the iShares MSCI Europe Financials ETF fund. The reason for choosing European companies for the analysis is a low amount of previously performed studies on ESG scores and their impact on the performance of financial returns in the European market, compared to the US market, and the higher availability of data for the research.

Figure 1: Geographical dispersion of the selected European financial institutions



Source: Own work.

Financial institutions are usually excluded from the research of ESG since they have different regulatory requirements compared to non-financial institutions and have different operational processes, which is another reason for including European financial institutions in the research. In the research, I included financial institutions from various European countries, as shown in Figure 1. Although Norway is not a member of the EU, it has been added to the analysis because it applies the same regulations as other EU countries and is committed to implementing all relevant EU financial services legislation through the EEA agreement (Thomson Reuters Practical Law, 2023). Switzerland is not a member of the EU either but is part of the single market, and access to the EU financial market represents a big importance for Swiss financial service providers (The portal of the Swiss Government, 2023).

4.1 Security data collection

The financial institutions' data for the research are selected from the iShares MSCI Europe Financials ETF and are presented in Table 1.

Table 1: Data of financial institutions included in the analysis, 2023

Ticker	Name	Price	Location	Exchange
BNP	BNP PARIBAS SA	69.01	France	Nyse Euronext - Euronext Paris
ISP	INTESA SANPAOLO	2.68	Italy	Borsa Italiana
IG	ASSICURAZIONI GENERALI	19.86	Italy	Borsa Italiana
ALV	ALLIANZ	241.36	Germany	Xetra
ZURN	ZURICH INSURANCE GROUP AG	493.30	Switzerland	SIX Swiss Exchange
LUBSG	UBS GROUP AG	21.42	Switzerland	SIX Swiss Exchange
SAN	BANCO SANTANDER SA	3.55	Spain	Bolsa De Madrid
CABK	CAIXABANK SA	4.45	Spain	Bolsa De Madrid
MUV2	MUENCHENER RUECKVERSICHERUNGS-GESE	356.80	Germany	Xetra
GLE	SOCIETE GENERALE SA	29.90	France	Nyse Euronext - Euronext Paris
AGN	AEGON NV	5.48	Netherlands	Euronext Amsterdam
SREN	SWISS RE AG	103.23	Switzerland	SIX Swiss Exchange
CSGN	CREDIT SUISSE GROUP AG	3.51	Switzerland	SIX Swiss Exchange
FBK	FINCOBANK BANCA FINECO	17.96	Italy	Borsa Italiana
DBK	DEUTSCHE BANK AG	13.38	Germany	Xetra
NN	NN GROUP NV	43.65	Netherlands	Euronext Amsterdam
CS	AXA SA	31.25	France	Nyse Euronext - Euronext Paris
SEB A	SKANDINAVISKA ENSKILDA BANKEN	11.76	Sweden	Nasdaq Omx Nordic
CBK	COMMERZBANK AG	11.51	Germany	Xetra
UICG	UNICREDIT	19.75	Italy	Borsa Italiana
NDA SE	NORDEA BANK	11.85	Sweden	Nasdaq Omx Nordic
SWED A	SWEDBANK	19.88	Sweden	Nasdaq Omx Nordic
INGA	ING GROEP NV	14.63	Netherlands	Euronext Amsterdam
DANSKE	DANSKE BANK	21.11	Denmark	Omx Nordic Exchange Copenhagen A/S
EBS	ERSTE GROUP BANK AG	37.62	Austria	Wiener Boerse Ag
PST	POSTE ITALIANE	10.72	Italy	Borsa Italiana
DB1	DEUTSCHE BOERSE AG	181.68	Germany	Xetra
HNR1	HANNOVER RUECK	193.15	Germany	Xetra
BBVA	BANCO BILBAO VIZCAYA ARGENTARIA SA	7.39	Spain	Bolsa De Madrid
SLHN	SWISS LIFE HOLDING AG	592.18	Switzerland	SIX Swiss Exchange
BAER	JULIUS BAER GRUPPE AG	65.32	Switzerland	SIX Swiss Exchange
ENX	EURONEXT NV	81.32	France	Nyse Euronext - Euronext Paris
SHB A	SVENSKA HANDELSBANKEN-A SHS	10.54	Sweden	Nasdaq Omx Nordic
ABN	ABN AMRO BANK NV	16.45	Netherlands	Euronext Amsterdam
DNB	DNB BANK	18.82	Norway	Oslo Bors Asa
TRYG	TRYG	23.29	Denmark	Omx Nordic Exchange Copenhagen A/S
MB	MEDIOBANCA BANCA DI CREDITO FINANZ	10.89	Italy	Borsa Italiana
AGS	AGEAS SA	48.74	Belgium	Nyse Euronext - Euronext Brussels
GJF	GJENSIDIGE FORSIKRING	18.12	Norway	Oslo Bors Asa
KBC	KBC GROEP	74.16	Belgium	Nyse Euronext - Euronext Brussels
ACA	CREDIT AGRICOLE SA	12.09	France	Nyse Euronext - Euronext Paris
AMUN	AMUNDI SA	66.57	France	Nyse Euronext - Euronext Paris
RF	EURAZEO	70.72	France	Nyse Euronext - Euronext Paris
EQT	EQT	22.18	Sweden	Nasdaq Omx Nordic
KINV B	KINNEVIK CLASS B	15.70	Sweden	Nasdaq Omx Nordic
PGHN	PARTNERS GROUP HOLDING AG	941.10	Switzerland	SIX Swiss Exchange
SAMPO	SAMPO	53.03	Finland	Nasdaq Omx Helsinki Ltd.
BALN	BALOISE HOLDING AG	163.85	Switzerland	SIX Swiss Exchange
INDU C	INDUSTRIVARDEN SERIES	26.82	Sweden	Nasdaq Omx Nordic
SOF	SOFINA SA	242.02	Belgium	Nyse Euronext - Euronext Brussels

Source: Refinitiv (n.d.).

This fund aims to track the equity market performance of the financial sector of developed market countries in Europe. Overall, this fund has a very good ESG score, AAA, but there are some differences in ESG scores between companies in the fund present. The majority of the fund consists of banks (48,91%), but there are also 29,68% of insurance companies and 20,77% of diversified financials, only a small percentage represents cash and derivatives (0,64%). The fund consists of 89 assets from all over Europe, 24,89% of assets are from the United Kingdom, 14,21% from Switzerland, 13,04% from Germany, 10,72% from France, 9,08% from Sweden, 7,31% from Italy, 7,17% from Spain. There are also smaller percentages of assets from the Netherlands, Belgium, Finland, Denmark, and Norway. In order to perform the analysis and calculate the financial returns for all 50 financial institutions, 3-year monthly stock prices data are collected (from 3.2.2020 to 3.2.2023) for all of the selected financial institutions from Yahoo Finance.

4.2 ESG scores data and methodology

The ESG scores data for the selected 50 financial institutions are collected from the Refinitiv database. Refinitiv is a London Stock Exchange business and is among the world's largest providers of financial markets data. Refinitiv also provides a large database of ESG scores. They provide ESG scores on a scale of 0 to 100. The scores in the first quartile (0-25) indicate poor ESG performance and a lack of transparency in public reporting of ESG data. The scores falling in the second quartile (25-50) indicate satisfactory ESG performance and moderate transparency when it comes to publicly reporting ESG data. The scores in the third quartile (50-75) indicate good ESG performance and above-average transparency in reporting ESG data publicly. Finally, scores in the fourth quartile (75-100) indicate excellent ESG performance and a high level of transparency in public reporting of ESG data. The ESG scores from Refinitiv evaluate a company's ESG commitment and performance in ten key areas, such as emissions, environmental products innovation, human rights, shareholders, etc. The scores rely on public data sources, such as annual reports, company and NGOs websites, stock exchange filings, CSR reports and news sources, and are updated every week. The scores for different categories are combined into three pillar scores – environmental, social and governance, and the final ESG score is calculated by adding up the weights for each category, which may differ depending on the industry for environmental and social categories, but governance weight remains constant across all of the sectors (Refinitiv, n.d.).

The environmental scores are calculated based on data of resource use (water, energy, sustainable packaging, and environmental supply chain), emission (emissions, waste, biodiversity, environmental management systems) and innovation (product innovation, green revenues, research and development and capital expenditures). The social scores are calculated based on data of the workforce (diversity and inclusion, career development and training, working conditions, health, and safety), human rights, community and product responsibility (responsible marketing, product quality and data privacy). And the governance scores are calculated based on data of management (structure and payment), shareholders

(shareholder rights and compensation) and CSR strategy (CSR strategy and ESG reporting and transparency) (Refinitiv, n.d.).

4.3 Formation of the portfolios

Eight different portfolios are formed for the purpose of this research from the selected 50 financial institutions based on their ESG scores from the Refinitiv database:

- portfolio with higher ESG scores,
- portfolio with lower ESG scores,
- portfolio with higher E (environmental) scores,
- portfolio with lower E (environmental) scores,
- portfolio with higher S (social) scores,
- portfolio with lower S (social) scores,
- portfolio with higher G (governance) scores and
- portfolio with lower G (governance) scores.

4.4 Research questions

The main goal of the research is to find out whether investing in ESG factors impacts the financial returns of financial institutions in the European Union and whether investing in ESG factors means higher risk and lower returns for investors. Four research questions are resolved during the analysis to analyze the impact of the ESG scores.

- RQ1: Do higher ESG scores lead to higher financial returns of the financial institutions in the EU, compared to lower ESG scores?
- RQ2: Do higher environmental scores lead to higher financial returns of the financial institutions in the EU, compared to lower environmental scores?
- RQ3: Do higher social scores lead to higher financial returns of the financial institutions in the EU, compared to lower social scores?
- RQ4: Do higher governance scores lead to higher financial returns of the financial institutions in the EU, compared to lower governance scores?

4.5 Method

The Modern Portfolio Theory (MPT) helps us select investments and build a portfolio of investments through diversification that maximizes the amount of expected return for the acceptable level of risk. The modern portfolio theory was developed in the 1950s by an economist, Nobel Laureate Harry Markowitz. According to his theory, the risk of a diversified portfolio will be lower than the risk of each individual stock separately (Markowitz, 1952). According to Modern Portfolio Theory, to evaluate the value of a security for an investor, it is best to consider its mean, standard deviation, and correlation with other securities in the portfolio (Francis & Kim, 2013).

For the purpose of the research, a simple return comparison is used to compare the returns of formed portfolios. Since the returns themselves do not account for the risk taken, the Sharpe's ratio is calculated to measure the risk-return tradeoff of each portfolio. Based on the collected historical prices for each security in the portfolio, the rate of return of each security is calculated.

Based on the historical data of each security's return, a portfolio's expected return is calculated by multiplying each asset's weight by its expected return (1). Firstly, all formed portfolios have equal weights.

$$R_p = \sum (W_i \times R_i) \quad (1)$$

To calculate the deviation of investment returns from the mean of the probability distribution of investments and to determine the portfolio's risk, the standard deviation of each portfolio is calculated according to equation (2).

$$\sigma_p = \sqrt{(w_1^2 \times \sigma_1^2 + w_2^2 \times \sigma_2^2 + 2 \times w_1 \times w_2 \times \sigma_1 \times \sigma_2 \times \rho_{1,2})} \quad (2)$$

By creating a portfolio with multiple stocks, we can mitigate some of the risks through diversification since stock prices do not move in the same direction. But the amount of the risk mitigated depends on the extent to which the stocks are exposed to common risks. To measure the degree to which the stocks face common risks, we need to know the covariance and correlation. Correlation helps quantify the strength of the relationship between stock returns and is calculated according to equation (3).

$$Corr (R_1, R_2) = \frac{Cov(R_1, R_2)}{\sigma (R_1) \times \sigma (R_2)} \quad (3)$$

With covariance, we calculate the expected product of the deviations of the two returns from their means according to equation (4).

$$Cov (R_1, R_2) = E [(R_1 - E [R_1])(R_2 - E [R_2])] \quad (4)$$

From the correlation, we can also calculate the variance of two or more assets according to equation (5) (Berk & DeMarzo, 2016).

$$Var (R_p) = x_1^2 \times \sigma (R_1)^2 + x_2^2 \times \sigma (R_2)^2 + 2 \times x_1 x_2 \times Corr (R_1, R_2) \times \sigma (R_1) \times \sigma (R_2) \quad (5)$$

In order to find the best level of diversification and the lowest possible risk for every level of return and the highest return for every level of risk, the set of optimal portfolios, also known as the efficient frontier, is formed. With the efficient frontier, we rate portfolios on a scale of return which is put on the y-axis, versus standard deviation, or risk, which is put on the x-axis. With the efficient frontier, we can graphically present the portfolio that maximizes returns for the risk assumed. The curvature of the curve reveals how

diversification can improve the risk/reward profile of our portfolio. In the graphical presentation of the efficient frontier, there are no assets on the northwest of the frontier, and that is where the name frontier comes from. It represents the feasible combination of risk and return (YALE School of Management, n.d.). The portfolio that lies on the efficient frontier and represents the minimal risk is called “the minimum variance portfolio” or MVP, and the portfolio that lies on the efficient frontier and represents the maximum expected return is called “mean-variance efficient portfolio” or MVEP. Both portfolios in the research are calculated with the Solver function in Excel, which helps to determine the weights of each asset in the portfolio.

With the incorporation of returns of riskless assets, usually represented by T-Bills, we can change the efficient frontier. The riskless assets have no correlation to other securities, which means they do not provide any diversification. However, the incorporation of riskless assets in the portfolio provides an opportunity for having a low-risk portfolio. We can graphically present this with the Capital Allocation Line (CAL), which represents portfolios with optimal combination of risk and return (YALE School of Management, n.d.).

The slope of the CAL represents the trade-off between the risk and the return of our portfolio. The higher the slope, the higher the expected return an investor can expect for the higher taken risk, which is calculated with the Sharpe ratio, according to equation (6).

$$\text{Sharpe Ratio} = \frac{(R_p - R_{rf})}{\sigma_p} \quad (6)$$

Though the MPT ignores many information about the companies, like its earnings, dividend policy, capital structure, market share, competitors, strategy and quality of management, the model can be very useful for the formation of the optimal portfolio that will represent the lowest possible risk for each level of return and highest return for each level of risk for the investors, that want to invest in securities with higher ESG scores.

To check for evidence of differences in the mean returns between the portfolio with higher ESG (E, S or G) scores and the portfolio with lower ESG (E, S or G) scores, I conducted unequal variances t-test of two independent samples, also known as the Welch's t-test. The t-test of two independent samples is used to identify the difference between the mean values in two different groups. To perform a test, we have to check for the following test requirements: samples are independent, with no overlap between the members of each group, random samples are from two defined populations and the test variable is normally distributed in the population.

We assume the expected values of the respective populations of the two groups differ by Δ concerning a metric variable. The value for the difference, most frequently used, is $\Delta = 0$, which means there is no difference between the mean values μ_1 and μ_2 of the two populations. μ_1 and μ_2 represent the population means estimated in independent samples of size n_1 and n_2 with arithmetic sample means \bar{x}_1 and \bar{x}_2 . s_1 and s_2 represent the standard

deviation of the two groups, 1 and 2, respectively. We have two samples, one with size n_1 and another one with size n_2 . For each sample, we then determine their mean values and standard deviations (Cleff, 2019). The t-value (test statistic) is calculated according to equation (7).

$$t = \frac{(\bar{x}_1 - \bar{x}_2)}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \quad (7)$$

The degrees of freedom are estimated according to equation (8).

$$df = \frac{\left(\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}\right)^2}{\frac{\left(\frac{s_1^2}{n_1}\right)^2}{n_1 - 1} + \frac{\left(\frac{s_2^2}{n_2}\right)^2}{n_2 - 1}} \quad (8)$$

And the critical t-value for a two-tailed t-test is defined according to equation (9).

$$t_{1 - \left(\frac{\alpha}{2}\right); n_1 + n_2 - 2}^{critical} \quad (9)$$

When using the t-test method, we use sample data to determine whether a null hypothesis is true or false. The determination of accepting or rejecting the null hypothesis (H_0) is based on the test statistic value derived from the available data. The $100(1 - \alpha)$ % confidence interval is known as the region of acceptance of the null hypothesis, and the region of rejection of the null hypothesis is the region outside the confidence interval. The critical values represent the confidence limits or the endpoints of the confidence interval (Gujarati & Porter, 2009). The significance level α or maximum permissible probability that we can reject an H_0 in the research is set at 5% ($\alpha = 0.05$).

The null hypothesis of a two-tailed test in the research is that there is no difference between the mean returns of the portfolio with higher ESG (E, S or G) scores and the portfolio with lower ESG (E, S or G) scores.

$$H_0: \mu_1 = \mu_2$$

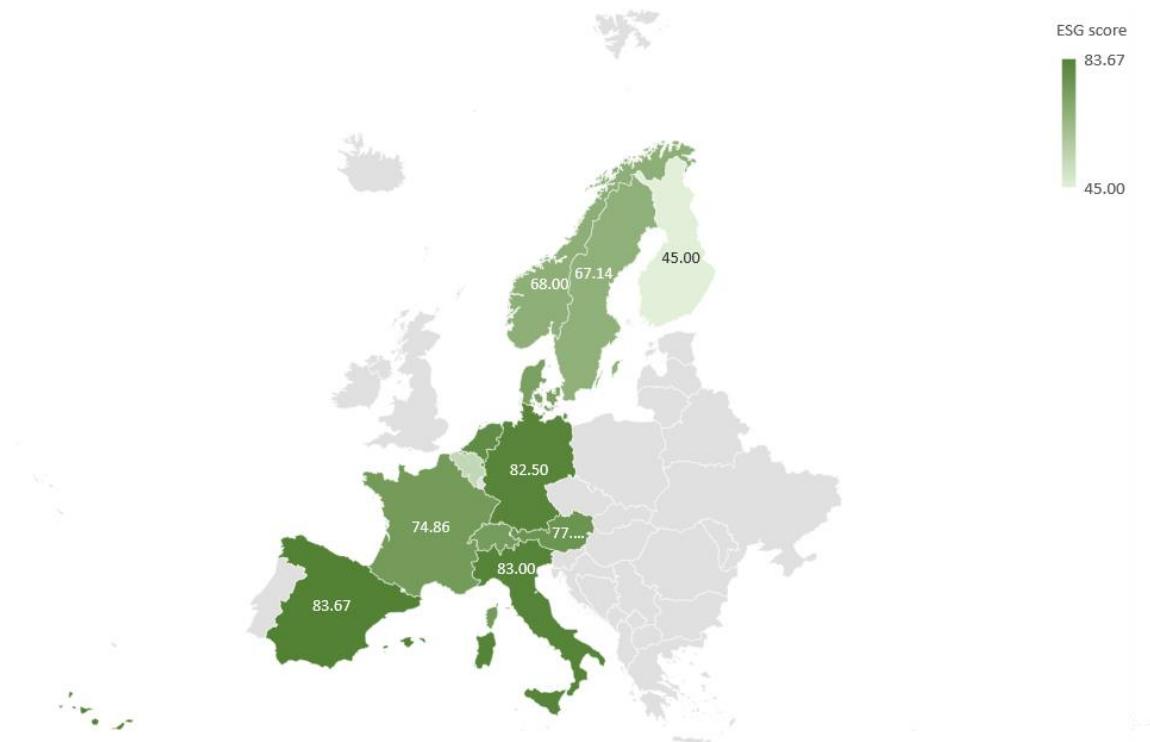
The alternative hypothesis is that there is a difference between the mean returns of the portfolio with higher ESG (E, S or G) scores and the portfolio with lower ESG (E, S or G) scores.

$$H_a: \mu_1 \neq \mu_2$$

5 ANALYSIS OF THE RESULTS

The average ESG score of the selected 50 financial institutions is 74.26, which is in the third quartile, according to the Refinitiv scoring system. It means that, on average, financial institutions in the EU, have good ESG performance and above average level of transparency in public reporting of ESG data. Based on the ESG data for financial institutions from each country, financial institutions from Spain, on average, have the highest ESG scores, and financial institutions from Finland, on average, have the lowest ESG scores. In Figure 2, there are presented average ESG scores of the European financial institutions.

Figure 2: Geographical dispersion of financial institutions with average ESG scores



Source: Own work.

The first formed, equally weighted portfolio in the research consists of 25 stocks of financial institutions with higher ESG scores: BNP Paribas SA, Intesa Sanpaolo, Assicurazioni Generali, Allianz, Zurich Insurance Group AG, UBS Group AG, Banco Santander SA, Caixabank SA, Muenchener Rueckversicherungs-Gese, Societe Generale SA, Aegon NV, Swiss RE AG, Credit Suisse Group AG, Fincobank Banca Fineco, Deutsche Bank AG, NN Group NV, AXA SA, Skandinaviska Enskilda Banken, Commerzbank AG, Unicredit, Nordea Bank, Swedbank, ING Groep NV, Danske Bank and Erste Group Bank AG. In Table 2, there are presented monthly and annual average returns and standard deviations of financial institutions with higher ESG scores.

The ESG scores of the financial institutions with higher ESG scores vary from 77 to 95 and are all in the fourth quartile of the Refinitiv scoring system. This means all financial

institutions have outstanding ESG performance and are highly transparent in public reporting of ESG data.

The average annual return of the portfolio, based on 3-year monthly returns, is 24.90%, and the standard deviation is 23.36%. The Sharpe ratio, calculated with a 4.64% risk-free rate, is 0.87.

Table 2: Average returns and std. deviation of FI with higher ESG scores

Ticker	Average return (M)	Std. Dev. (M)	Average return (A)	Std. Dev. (A)
BNP	2.90%	10.39%	34.74%	36.01%
ISP	2.17%	10.00%	25.99%	34.64%
G	1.65%	7.35%	19.76%	25.47%
ALV	1.39%	8.04%	16.64%	27.84%
ZURN	1.14%	6.47%	13.73%	22.41%
UBSG	2.78%	7.29%	33.31%	25.24%
SAN	1.42%	11.25%	17.06%	38.97%
CABK	2.56%	8.81%	30.68%	30.51%
MUV	1.93%	7.33%	23.11%	25.39%
GLE	2.43%	12.38%	29.21%	42.89%
AGN	2.67%	9.41%	32.04%	32.61%
SREN	1.25%	7.57%	14.97%	26.23%
CSGN	-2.18%	12.16%	-26.21%	42.11%
FBK	2.25%	7.47%	27.03%	25.86%
DBK	1.89%	10.18%	22.66%	35.27%
NN	1.86%	6.05%	22.33%	20.96%
CS	2.36%	9.48%	28.38%	32.85%
SEB A	2.34%	7.65%	28.13%	26.51%
CBK	3.28%	10.38%	39.38%	35.97%
UCG	3.04%	13.10%	36.43%	45.39%
NDA SE	2.29%	5.96%	27.53%	20.64%
SWED A	2.22%	7.39%	26.69%	25.62%
INGA	3.77%	11.43%	45.25%	39.60%
DANSKE	2.07%	8.12%	24.84%	28.13%
EBS	2.40%	10.31%	28.75%	35.71%

Source: Own work.

To compare the portfolio with higher ESG scores, another equally weighted portfolio is formed consisting of 25 stocks of financial institutions with lower ESG scores: Poste Italiane, Deutsche Boerse AG, Hannover Rueck, Banco Bilbao Vizcaya Argentaria SA, Swiss Life Holding AG, Julius Baer Gruppe AG, Euronext NV, Svenska Handelsbanken-A SHS, ABN Amro Bank NV, DNB BANK, TRYG, Mediobanca Banca Di Credito Finanz, Ageas SA, Gjensidige Forsikring, KBC Groep, Credit Agricole SA, Amundi SA, Eurazeo, EQT, Kinnevik Class B, Partners Group Holding AG, Sampo, Baloise Holding AG, Industrivarden Series and Sofina SA. In Table 3, there are presented monthly and annual average returns and standard deviations of financial institutions with lower ESG scores.

The ESG scores of these financial institutions with lower ESG scores vary from 28 to 77. They are spread from the second to fourth quartile of the Refinitiv scoring system, which means some of the institutions have outstanding ESG performance, with a high level of transparency in public reporting of ESG data, while others have a satisfactory ESG performance with a moderate level of transparency in public reporting of ESG data.

The average annual return of the portfolio, based on 3-year monthly returns, is 18.04%, and the standard deviation is 17.70%. The Sharpe ratio, calculated with a 4.64% risk-free rate, is 0.76.

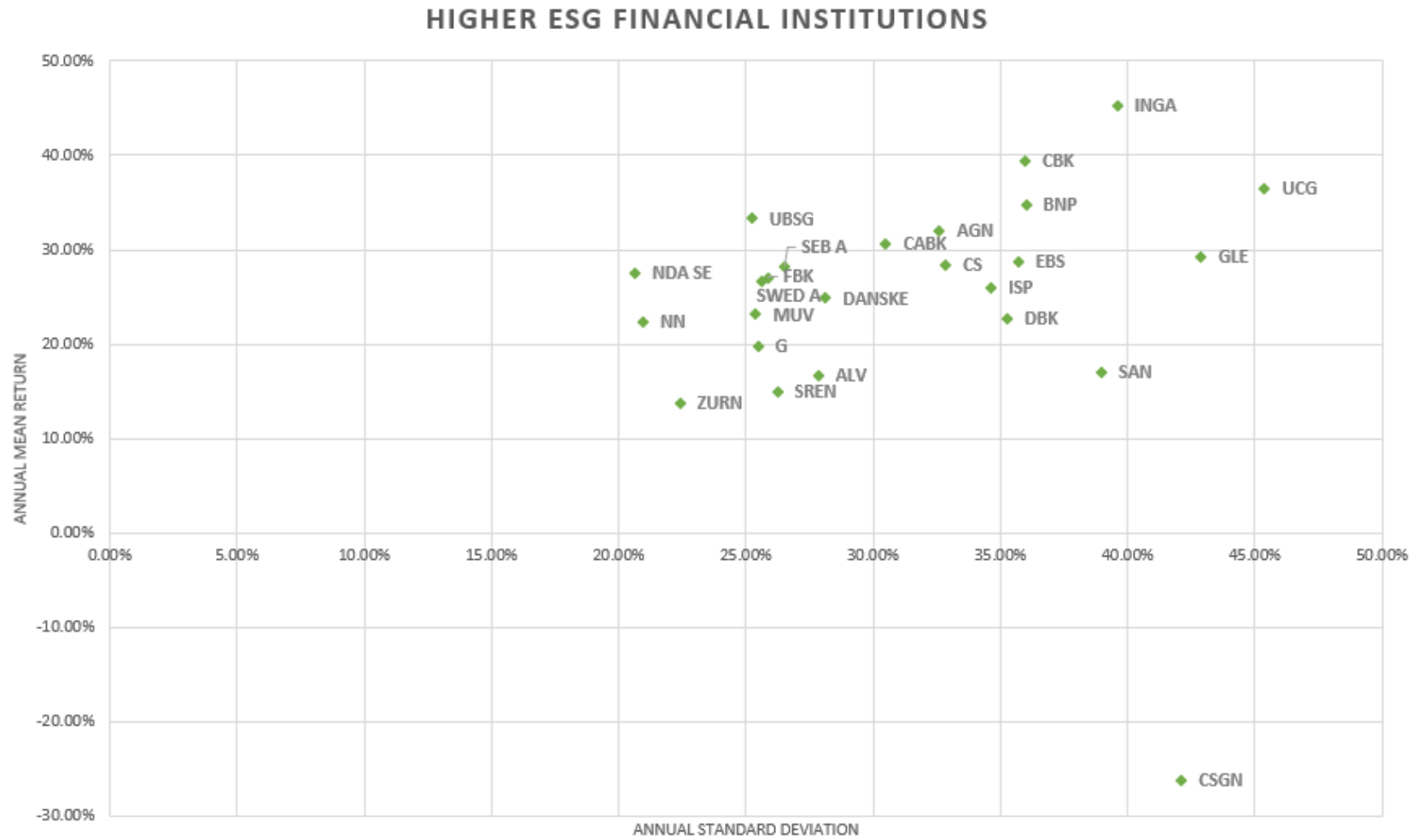
Table 3: Average returns and std. deviation of FI with lower ESG scores

Ticker	Average return (M)	Std. Dev. (M)	Average return (A)	Std. Dev. (A)
PST	1.21%	7.35%	14.51%	25.46%
DB1	0.97%	6.26%	11.68%	21.69%
HNR1	1.02%	6.07%	12.19%	21.01%
BBVA	2.85%	12.07%	34.20%	41.83%
SLHN	1.80%	8.10%	21.61%	28.08%
BAER	2.20%	8.42%	26.42%	29.17%
ENX	0.51%	6.73%	6.12%	23.30%
SHB-A	1.30%	7.22%	15.58%	25.02%
ABN	2.56%	9.11%	30.69%	31.57%
DNB	1.99%	6.62%	23.87%	22.92%
TRYG	0.08%	5.82%	0.98%	20.16%
MB	2.31%	7.17%	27.76%	24.84%
AGS	1.11%	7.57%	13.28%	26.24%
GJF	0.52%	3.56%	6.21%	12.32%
KBC	1.89%	8.93%	22.64%	30.93%
ACA	1.89%	9.55%	22.68%	33.09%
AMUN	0.92%	7.84%	11.08%	27.16%
RF	1.54%	9.21%	18.44%	31.90%
EQT	4.17%	18.86%	50.09%	65.34%
KINV	0.40%	13.10%	4.77%	45.37%
PGHN	1.19%	9.18%	14.29%	31.79%
SAMPO	2.29%	5.46%	27.42%	18.92%
BALN	0.82%	6.34%	9.87%	21.95%
INDU-C	1.29%	6.79%	15.49%	23.52%
SOF	0.75%	10.37%	9.05%	35.93%

Source: Own work.

As of comparison of returns of the portfolio with higher ESG scores and portfolio with lower ESG scores, there are presented scatter plots with annual standard deviation on the x-axis and annual mean return on the y-axis in Figure 3 for financial institutions with higher ESG scores and in Figure 4 for financial institutions with lower ESG scores. Based on the calculations, there is only one financial institution with higher risk and negative return at the same time, and that is Credit Suisse Group AG.

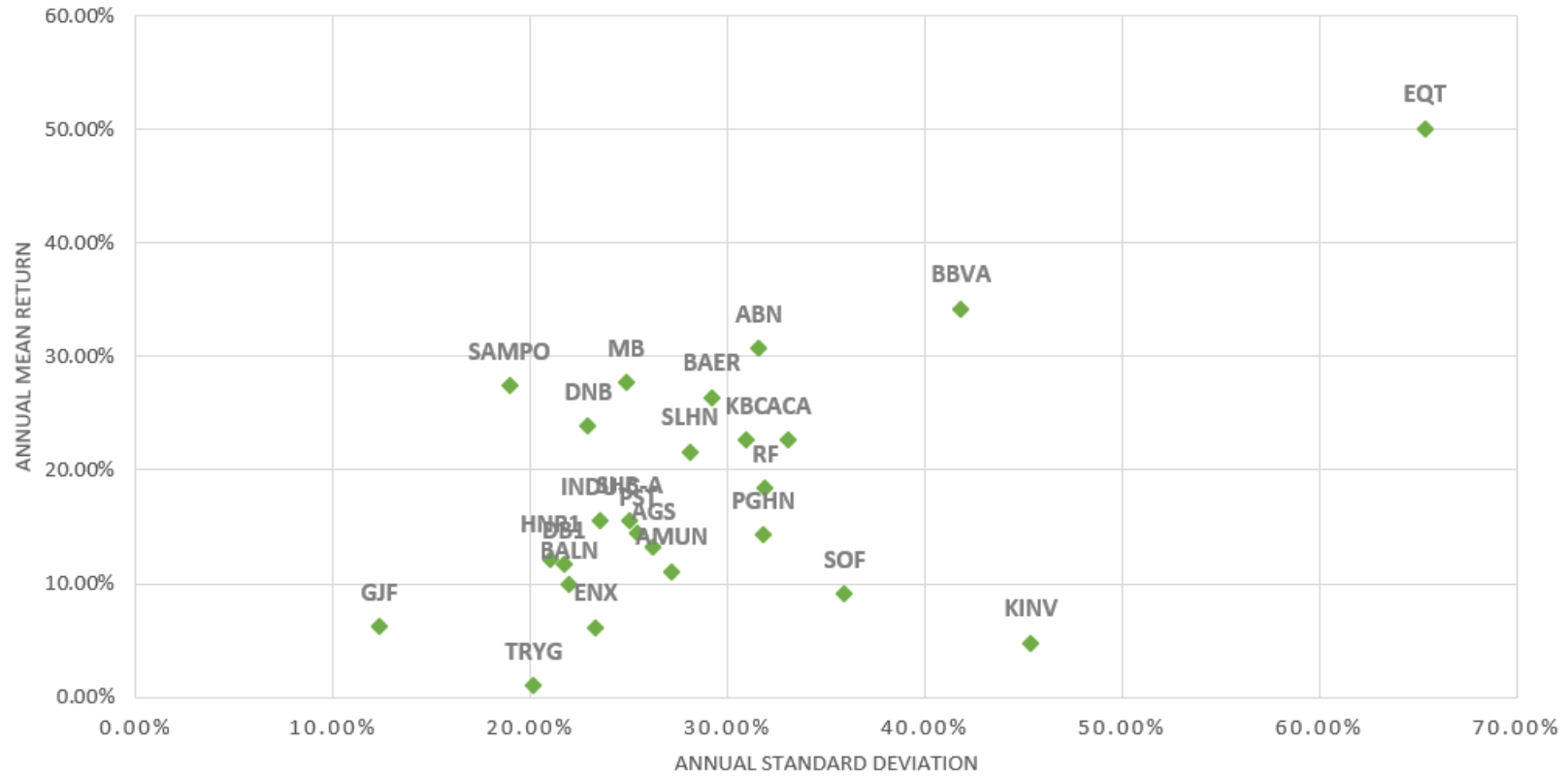
Figure 3: Financial institutions with higher ESG scores



Source: Own work.

Figure 4: Financial institutions with lower ESG scores

LOWER ESG FINANCIAL INSTITUTIONS



Source: Own work.

Based on the results, we can conclude that ESG scores do have an impact on the financial returns of financial institutions in the EU. The average annual financial return of the financial institutions with higher ESG scores is 6.86 percentage points higher compared to the financial return of the financial institutions with lower ESG scores. On the other hand, there is a 5.67 percentage points lower standard deviation in the portfolio with lower ESG scores compared to the portfolio with higher ESG scores. The Sharpe ratio is higher in the portfolio with higher ESG scores (0.87) compared to the Sharpe ratio in the portfolio with lower ESG scores (0.76), which leads to the conclusion that the financial returns of financial institutions with higher ESG scores offer good excess returns, relative to its volatility and investors do not have to fear for lower returns when deciding for investments in companies with better ESG performance. The comparison of both portfolios is shown in Table 4.

Table 4: Comparison of the portfolios with higher and lower ESG scores

HIGHER ESG SCORES		LOWER ESG SCORES	
Average return (M)	Std. Dev. (M)	Average return (M)	Std. Dev. (M)
2.07%	6.74%	1.50%	5.11%
Average return (A)	Std. Dev. (A)	Average return (A)	Std. Dev. (A)
24.90%	23.36%	18.04%	17.70%

Source: Own work.

However, according to t-test, performed in Excel and presented in Table 5, t-value lies outside the critical region, which means we cannot reject the null hypothesis ($H_0: \mu_1 = \mu_2$; there is no difference between the mean returns of the portfolio with higher ESG scores and portfolio with lower ESG scores, $H_a: \mu_1 \neq \mu_2$; there is a difference between the mean returns of the portfolio with higher ESG scores and portfolio with lower ESG scores). This means there is no sufficient evidence of differences in the mean returns between the portfolio with higher ESG scores and the portfolio with lower ESG scores at the 5% significance level.

Table 5: t-test for the portfolios with higher and lower ESG scores

t-Test: Two-Sample Assuming Unequal Variances

	EQUALLY WEIGHTED PORTFOLIO - HIGH ESG	EQUALLY WEIGHTED PORTFOLIO - LOW ESG
Mean	0.020749589	0.015030977
Variance	0.004548889	0.00260968
Observations	36	36
Hypothesized Mean Difference	0	
df	65	
t Stat	0.405535382	
P(T<=t) one-tail	0.343207905	
t Critical one-tail	1.668635976	
P(T<=t) two-tail	0.68641581	
t Critical two-tail	1.997137908	

Source: Own work.

The following portfolios are formed according to environmental, social and governance scores separately in order to figure out whether any of the factor's score has a significantly higher impact on the financial returns of the financial institutions and whether any pillar of the ESG influences the overall ESG score of the financial institution.

Firstly, two portfolios are formed to compare higher and lower environmental scores. The first equally weighted portfolio consists of stocks of financial institutions with higher environmental scores: Intesa Sanpaolo, UBS Group AG, Deutsche Bank AG, Swiss Life Holding AG, Assicurazioni Generali, Societe Generale SA, BNP Paribas SA, Allianz, Banco Bilbao Vizcaya Argentaria SA, Credit Agricole SA, Muenchener Rueckversicherungs-Gese, Svenska Handelsbanken-A SHS, Commerzbank AG, ABN Amro Bank NV, KBC Groep, Amundi SA, Skandinaviska Enskilda Banken, Zurich Insurance Group AG, DNB Bank, Banco Santander SA, Unicredit, Danske Bank, Credit Suisse Group AG, Swedbank and ING Groep NV.

The average annual return of the portfolio with higher environmental scores, based on 3-year monthly returns, is 23.72%, and the standard deviation is 23.72%. The Sharpe ratio, calculated with a 4.64% risk-free rate, is 0.80.

To figure out whether higher environmental scores do have an impact on higher financial returns of financial institutions in the EU, equally weighted portfolio is formed with 25 stocks of financial institutions with lower ESG scores: Caixabank SA, Nordea Bank, Aegon NV, NN Group NV, Ageas SA, Hannover Rueck, Poste Italiane, Julius Baer Gruppe AG, Erste Group Bank AG, Finecobank Banca Fineco, Tryg, Swiss RE AG, Deutsche Boerse AG, Gjensidige Forsikring, EQT, Euronext NV, AXA SA, Sampo, Mediobanca Banca Di Credito Finanz, Eurazeo, Baloise Holding AG, Kinnevik Class B, Industrivarden Series and Sofina SA.

The average annual return of the portfolio with lower environmental scores, based on 3-year monthly returns, is 19.21%, and the standard deviation is 17.22%. The Sharpe ratio, calculated with a 4.64% risk-free rate, is 0.85.

According to the results, portfolios with higher environmental scores have higher average annual returns by 4.51 percentage points and 6.50 percentage points higher standard deviation. The Sharpe ratio of the portfolio with higher environmental scores is lower (0.80) compared to the portfolio with lower environmental score (0.85), which is also the difference between portfolios with higher ESG scores and lower ESG scores, where the Sharpe ratio is higher for the portfolio with higher ESG scores. The comparison of both portfolios is shown in Table 6.

Table 6: Comparison of the portfolios with higher and lower E scores

HIGHER E SCORES		LOWER E SCORES	
Average return (M)	Std. Dev. (M)	Average return (M)	Std. Dev. (M)
1.98%	6.85%	1.60%	4.97%
Average return (A)	Std. Dev. (A)	Average return (A)	Std. Dev. (A)
23.72%	23.72%	19.21%	17.22%

Source: Own work.

According to the t-test, performed in Excel and presented in Table 7, the t-value lies outside the critical region, which means we cannot reject the null hypothesis ($H_0: \mu_1 = \mu_2$; there is no difference between the mean returns of the portfolio with higher E scores and portfolio with lower E scores, $H_a: \mu_1 \neq \mu_2$; there is a difference between the mean returns of the portfolio with higher E scores and portfolio with lower E scores). This means there is no sufficient evidence of differences in the mean returns between the portfolio with higher E scores and the portfolio with lower E scores at the 5% significance level.

Table 7: t-test for the portfolios with higher and lower E scores

t-Test: Two-Sample Assuming Unequal Variances

	EQUALLY WEIGHTED PORTFOLIO - HIGH E	EQUALLY WEIGHTED PORTFOLIO - LOW E
Mean	0.019768581	0.01600975
Variance	0.004688849	0.00247222
Observations	36	36
Hypothesized Mean Difference	0	
df	64	
t Stat	0.266510968	
P(T<=t) one-tail	0.395351258	
t Critical one-tail	1.669013025	
P(T<=t) two-tail	0.790702517	
t Critical two-tail	1.997729654	

Source: Own work.

The following two portfolios are formed to compare whether higher social scores have an impact on higher financial returns of financial institutions in the EU. The first equally weighted portfolio is formed with stocks of the following financial institutions: BNP Paribas SA, Intesa Sanpaolo, Zurich Insurance Group AG, Allianz, Assicurazioni Generali, Caixabank SA, Banco Santander SA, Aegon NV, Deutsche Bank AG, UBS Group AG, Societe Generale SA, Credit Suisse Group AG, Fincobank Banca Fineco, Poste Italiane, Banco Bilbao Vizcaya Argentaria SA, Muenchener Rueckversicherungs-Gese, Swiss RE AG, Swedbank, AXA SA, KBC Groep, DNB Bank, Amundi SA, Kinnevik Class B, Skandinaviska Enskilda Banken and Erste Group Bank AG.

The average annual return of the portfolio with higher social scores, based on 3-year monthly returns, is 21.51%, and the standard deviation is 22.70%. The Sharpe ratio, calculated with a 4.64% risk-free rate, is 0.74.

To compare the financial returns with lower social scores, the equally weighted portfolio with the following 25 stocks of financial institutions is formed: Eurazeo, NN Group NV, Svenska Handelsbanken-A SHS, Swiss Life Holding AG, Unicredit, Nordea Bank, Hannover Rueck, Credit Agricole SA, Commerzbank AG, Mediobanca Banca Di Credito Finanz, Julius Baer Gruppe AG, ING Groep NV, EQT, Danske Bank, Deutsche Boerse AG, ABN Amro Bank NV, Partners Group Holding AG, Euronext NV, Gjensidige Forsikring, TRYG, Sofina SA, Industrivarden Series, Ageas SA, Sampo and Baloise Holding AG.

The average annual return of the portfolio with higher social scores, based on 3-year monthly returns, is 21.42%, and the standard deviation is 17.80%. The Sharpe ratio, calculated with a 4.64% risk-free rate, is 0.94.

Based on the results of two portfolios, one with higher social scores and the other with lower social scores, we can notice that portfolio with higher social scores has higher average annual return by 0.09 percentage points and by 4.90 percentage points higher standard deviation. The Sharpe ratio of the portfolio with higher social scores is lower (0.74) compared to the portfolio with lower social score (0.94). The comparison of both portfolios is shown in Table 8.

Table 8: Comparison of the portfolios with higher and lower S scores

HIGHER S SCORES		LOWER S SCORES	
Average return (M)	Std. Dev. (M)	Average return (M)	Std. Dev. (M)
1.79%	6.55%	1.79%	5.14%
Average return (A)	Std. Dev. (A)	Average return (A)	Std. Dev. (A)
21.51%	22.70%	21.42%	17.80%

Source: Own work.

According to the t-test, performed in Excel and presented in Table 9, the t-value lies outside the critical region, which means we cannot reject the null hypothesis ($H_0: \mu_1 = \mu_2$; there is no difference between the mean returns of the portfolio with higher S scores and portfolio with lower S scores, $H_a: \mu_1 \neq \mu_2$; there is a difference between the mean returns of the portfolio with higher S scores and portfolio with lower S scores). This means there is no sufficient evidence of differences in the mean returns between the portfolio with higher S scores and the portfolio with lower S scores at the 5% significance level.

Table 9: *t*-test for the portfolios with higher and lower *S* scores

t-Test: Two-Sample Assuming Unequal Variances

	EQUALLY WEIGHTED PORTFOLIO - HIGH <i>S</i>	EQUALLY WEIGHTED PORTFOLIO - LOW <i>S</i>
Mean	0.01792505	0.01785328
Variance	0.004293198	0.00263889
Observations	36	36
Hypothesized Mean Difference	0	
df	66	
t Stat	0.005172046	
P(T<=t) one-tail	0.497944462	
t Critical one-tail	1.668270514	
P(T<=t) two-tail	0.995888924	
t Critical two-tail	1.996564419	

Source: Own work.

The last two portfolios are formed to compare whether governance scores impact the financial returns of the financial institutions in the EU. The first equally weighted portfolio is formed with the following 25 stocks of financial institutions: Assicurazioni Generali, BNP Paribas SA, Allianz, Ageas SA, Intesa Sanpaolo, Swiss RE AG, AXA SA, UBS Group AG, Banco Santander SA, Euronext NV, Finecobank Banca Fineco, NN Group NV, ING Groep NV, Danske Bank, Commerzbank AG, Deutsche Boerse AG, Caixabank SA, Muenchener Rueckversicherungs-Gese, Aegon NV, Credit Suisse Group AG, Zurich Insurance Group AG, Unicredit, Societe Generale SA, Nordea Bank and Skandinaviska Enskilda Banken.

The average annual return of the portfolio with higher governance scores, based on 3-year monthly returns, is 23.02%, and the standard deviation is 21.83%. The Sharpe ratio, calculated with a 4.64% risk-free rate, is 0.84.

To compare the financial returns of the portfolio with higher governance scores, there is formed an equally weighted portfolio with lower governance scores, consisting of the following 25 stocks of financial institutions: Julius Baer Gruppe AG, Kinnevik Class B, Erste Group Bank AG, Hannover Rueck, TRYG, Deutsche Bank AG, ABN Amro Bank NV, Mediobanca Banca Di Credito Finanz, Swedbank, Gjensidige Forsikring, Swiss Life Holding AG, Poste Italiane, Svenska Handelsbanken-A SHS, EQT, Eurazeo, Baloise Holding AG, Banco Bilbao Vizcaya Argentaria SA, Industrivarden Series, DNB Bank, Sampo, Amundi SA, Partners Group Holding AG, Credit Agricole SA, KBC Groep and Sofina SA.

The average annual return of the portfolio with lower governance scores, based on 3-year monthly returns, is 19.92%, and the standard deviation is 18.99%. The Sharpe ratio, calculated with a 4.64% risk-free rate, is 0.80.

Based on the results of both portfolios, with higher and lower governance scores, the portfolio with higher governance scores has a higher average annual financial return by 3.10

percentage points. Standard deviation is lower in the portfolio with lower governance scores by 2.85 percentage points. A portfolio with lower governance scores also has a lower Sharpe ratio (0.80) compared to the Sharpe ratio of the portfolio with higher governance scores. Based on the results, we can conclude that higher governance scores do have a small impact on the financial returns of financial institutions in the EU. The comparison of both portfolios is shown in Table 10.

Table 10: Comparison of the portfolios with higher and lower G scores

HIGHER G SCORES		LOWER G SCORES	
Average return (M)	Std. Dev. (M)	Average return (M)	Std. Dev. (M)
1.92%	6.30%	1.66%	5.48%
Average return (A)	Std. Dev. (A)	Average return (A)	Std. Dev. (A)
23.02%	21.83%	19.92%	18.99%

Source: Own work.

However, according to the t-test, performed in Excel and presented in Table 11, the t-value lies outside the critical region, which means we cannot reject the null hypothesis ($H_0: \mu_1 = \mu_2$; there is no difference between the mean returns of the portfolio with higher G scores and portfolio with lower G scores, $H_a: \mu_1 \neq \mu_2$; there is a difference between the mean returns of the portfolio with higher G scores and portfolio with lower G scores). This means there is no sufficient evidence of differences in the mean returns between the portfolio with higher G scores and the portfolio with lower G scores at the 5% significance level.

Table 11: t-test for the portfolios with higher and lower G scores

t-Test: Two-Sample Assuming Unequal Variances

	EQUALLY WEIGHTED PORTFOLIO - HIGH G	EQUALLY WEIGHTED PORTFOLIO - LOW G
Mean	0.019180333	0.016597997
Variance	0.003971302	0.003003619
Observations	36	36
Hypothesized Mean Difference	0	
df	69	
t Stat	0.18552156	
P(T<=t) one-tail	0.426682128	
t Critical one-tail	1.667238549	
P(T<=t) two-tail	0.853364257	
t Critical two-tail	1.994945415	

Source: Own work.

To find the best level of diversification for investors and to find the lowest possible risk for every level of return and the highest return for every level of risk, the efficient frontier of the financial institutions with higher ESG scores is constructed and compared with efficient frontier of the financial institutions with lower ESG scores.

Table 12: Correlation matrix between FI with higher ESG scores

	BNP	ISP	G	ALV	ZURN	UBSG	SAN	CABK	MUV	GLE	AGN	SREN	CSGN	FBK	DBK	NN	CS	SEB A	CBK	UCG	NDA SE	SWED A	INGA	DANSKE	EBS
BNP	1.00	0.91	0.70	0.79	0.69	0.74	0.78	0.65	0.82	0.90	0.71	0.82	0.52	0.52	0.75	0.55	0.85	0.40	0.61	0.76	0.44	0.28	0.85	0.60	0.77
ISP	0.91	1.00	0.64	0.79	0.71	0.66	0.74	0.76	0.80	0.85	0.70	0.82	0.46	0.49	0.66	0.54	0.82	0.27	0.65	0.77	0.44	0.29	0.81	0.60	0.66
G	0.70	0.64	1.00	0.81	0.60	0.69	0.62	0.51	0.63	0.65	0.57	0.67	0.26	0.41	0.55	0.43	0.82	0.26	0.27	0.40	0.35	0.11	0.56	0.45	0.72
ALV	0.79	0.79	0.81	1.00	0.61	0.64	0.58	0.56	0.71	0.73	0.60	0.70	0.34	0.49	0.54	0.58	0.89	0.42	0.36	0.44	0.38	0.32	0.61	0.63	0.72
ZURN	0.69	0.71	0.60	0.61	1.00	0.58	0.60	0.62	0.67	0.65	0.69	0.83	0.31	0.05	0.42	0.44	0.71	-0.01	0.39	0.53	0.09	0.04	0.57	0.40	0.40
UBSG	0.74	0.66	0.69	0.64	0.58	1.00	0.68	0.46	0.65	0.70	0.67	0.70	0.55	0.51	0.73	0.39	0.62	0.36	0.62	0.60	0.36	0.24	0.61	0.60	0.66
SAN	0.78	0.74	0.62	0.58	0.60	0.68	1.00	0.64	0.61	0.76	0.59	0.71	0.40	0.37	0.74	0.24	0.58	0.08	0.62	0.65	0.15	-0.02	0.69	0.41	0.63
CABK	0.65	0.76	0.51	0.56	0.62	0.46	0.64	1.00	0.59	0.57	0.57	0.66	0.25	0.22	0.42	0.36	0.63	0.07	0.56	0.58	0.17	-0.04	0.61	0.35	0.44
MUV	0.82	0.80	0.63	0.71	0.67	0.65	0.61	0.59	1.00	0.70	0.54	0.82	0.25	0.51	0.56	0.45	0.74	0.27	0.49	0.66	0.27	0.19	0.72	0.50	0.63
GLE	0.90	0.85	0.65	0.73	0.65	0.70	0.76	0.57	0.70	1.00	0.74	0.79	0.53	0.40	0.70	0.51	0.81	0.25	0.56	0.68	0.40	0.17	0.74	0.49	0.70
AGN	0.71	0.70	0.57	0.60	0.69	0.67	0.59	0.57	0.54	0.74	1.00	0.61	0.57	0.30	0.62	0.61	0.72	0.30	0.41	0.55	0.37	0.25	0.54	0.60	0.60
SREN	0.82	0.82	0.67	0.70	0.83	0.70	0.71	0.66	0.82	0.79	0.61	1.00	0.30	0.23	0.53	0.36	0.73	0.09	0.57	0.66	0.18	0.16	0.69	0.44	0.62
CSGN	0.52	0.46	0.26	0.34	0.31	0.55	0.40	0.25	0.25	0.53	0.57	0.30	1.00	0.29	0.47	0.45	0.44	0.29	0.48	0.43	0.27	0.24	0.36	0.41	0.34
FBK	0.52	0.49	0.41	0.49	0.05	0.51	0.37	0.22	0.51	0.40	0.30	0.23	0.29	1.00	0.47	0.34	0.41	0.53	0.38	0.35	0.43	0.36	0.49	0.45	0.48
DBK	0.75	0.66	0.55	0.54	0.42	0.73	0.74	0.42	0.56	0.70	0.62	0.53	0.47	0.47	1.00	0.38	0.55	0.31	0.60	0.64	0.46	0.15	0.65	0.66	0.67
NN	0.55	0.54	0.43	0.58	0.44	0.39	0.24	0.36	0.45	0.51	0.61	0.36	0.45	0.34	0.38	1.00	0.62	0.41	0.16	0.40	0.42	0.33	0.50	0.46	0.54
CS	0.85	0.82	0.82	0.89	0.71	0.62	0.58	0.63	0.74	0.81	0.72	0.73	0.44	0.41	0.55	0.62	1.00	0.36	0.34	0.51	0.37	0.21	0.68	0.50	0.70
SEB A	0.40	0.27	0.26	0.42	-0.01	0.36	0.08	0.07	0.27	0.25	0.30	0.09	0.29	0.53	0.31	0.41	0.36	1.00	0.17	0.29	0.71	0.73	0.37	0.61	0.50
CBK	0.61	0.65	0.27	0.36	0.39	0.62	0.62	0.56	0.49	0.56	0.41	0.57	0.48	0.38	0.60	0.16	0.34	0.17	1.00	0.74	0.21	0.29	0.56	0.51	0.49
UCG	0.76	0.77	0.40	0.44	0.53	0.60	0.65	0.58	0.66	0.68	0.55	0.66	0.43	0.35	0.64	0.40	0.51	0.29	0.74	1.00	0.50	0.37	0.74	0.49	0.68
NDA SE	0.44	0.44	0.35	0.38	0.09	0.36	0.15	0.17	0.27	0.40	0.37	0.18	0.27	0.43	0.46	0.42	0.37	0.71	0.21	0.50	1.00	0.63	0.47	0.58	0.54
SWED A	0.28	0.29	0.11	0.32	0.04	0.24	-0.02	-0.04	0.19	0.17	0.25	0.16	0.24	0.36	0.15	0.33	0.21	0.73	0.29	0.37	0.63	1.00	0.29	0.59	0.42
INGA	0.85	0.81	0.56	0.61	0.57	0.61	0.69	0.61	0.72	0.74	0.54	0.69	0.36	0.49	0.65	0.50	0.68	0.37	0.56	0.74	0.47	0.29	1.00	0.53	0.71
DANSKE	0.60	0.60	0.45	0.63	0.40	0.60	0.41	0.35	0.50	0.49	0.60	0.44	0.41	0.45	0.66	0.46	0.50	0.61	0.51	0.49	0.58	0.59	0.53	1.00	0.58
EBS	0.77	0.66	0.72	0.72	0.40	0.66	0.63	0.44	0.63	0.70	0.60	0.62	0.34	0.48	0.67	0.54	0.70	0.50	0.49	0.68	0.54	0.42	0.71	0.58	1.00

Source: Own work.

The correlation matrix helps us to define the strength and direction of the relationship between the returns of individual financial institutions with higher ESG scores. Given the correlation results presented in Table 12, we can see a strong correlation between returns of financial institutions BNP Paribas and Intesa Sanpaolo (91%), BNP Paribas and Societe Generale (90%), BNP Paribas and Swiss RE (82%), BNP Paribas and AXA (85%), BNP Paribas and ING Groep (85%), Intesa Sanpaolo and Muenchener Rueckversicherungs-Gese (80%), Intesa Sanpaolo and Societe Generale (85%), Intesa Sanpaolo and AXA (82%), Intesa Sanpaolo and ING Groep (81%), Assicurazioni Generali and Allianz (81%), Assicurazioni Generali and AXA (82%), Allianz and AXA (89%), Zurich Insurance Group and Swiss RE (83%), AXA and Societe Generale (81%).

On the other hand, the weakest or negative correlation can be found between Skandinaviska Enskilda Banken and Zurich Insurance Group (-0.51%), Swedbank and Banco Santander (-2.24%), Swedbank and Caixabank (-4.23%).

To construct an efficient frontier, the base for calculating the minimum variance portfolio (MVP) and mean-variance efficient portfolio (MVEP) is the portfolio with equal weights, 4% in each security of financial institution with higher ESG scores, as presented in Table 13.

Table 13: Equally weighted portfolio

PORTFOLIO WITH EQUAL WEIGHTS		
Security	Weight	Return
BNP	4%	34.74%
ISP	4%	25.99%
G	4%	19.76%
ALV	4%	16.64%
ZURN	4%	13.73%
UBSG	4%	33.31%
SAN	4%	17.06%
CABK	4%	30.68%
MUV	4%	23.11%
GLE	4%	29.21%
AGN	4%	32.04%
SREN	4%	14.97%
CSGN	4%	-26.21%
FBK	4%	27.03%
DBK	4%	22.66%
NN	4%	22.33%
CS	4%	28.38%
SEB A	4%	28.13%
CBK	4%	39.38%
UCG	4%	36.43%
NDA SE	4%	27.53%
SWED A	4%	26.69%
INGA	4%	45.25%
DANSKE	4%	24.84%
EBS	4%	28.75%

Source: Own work.

The MVP and MVEP are constructed with the Excel Solver function. For the minimum variance portfolio, we want to minimize risk, with constraints that the sum of the weights

must be equal to 1 or 100%, and no short selling is allowed, meaning there should be no negative weights.

As calculated and presented in Table 14, the MVP for financial institutions with higher ESG scores can be achieved by placing 35.62% of weights in Zurich Insurance Group, 15.62% in Finecobank Banca Fineco, 11.75% in NN Group, 27.21% in Nordea Bank and 9.80% in Swedbank. The portfolio risk, in this case, is 2.15%.

With minimization of risk through the MVP, the investors can achieve a 21.84% return, the standard deviation, in this case, is 14.66%, and the Sharpe ratio is 1.17.

If we compare the results of MVP and the equally weighted portfolio, we can see that the average return of MVP is 3.05 percentage points lower than the average return of the equally weighted portfolio. We must also consider the fact that the standard deviation is lower by 8.37 percentage points, and the variance of the MVP is lower by 3.16 percentage points. Therefore, the Sharpe ratio in MVP is a little higher than in the equally weighted portfolio.

Table 14: Minimum variance portfolio (MVP)

Minimum variance portfolio (MVP)		
Security	Weight	Return
BNP	0.00%	34.74%
ISP	0.00%	25.99%
G	0.00%	19.76%
ALV	0.00%	16.64%
ZURN	35.62%	13.73%
UBSG	0.00%	33.31%
SAN	0.00%	17.06%
CABK	0.00%	30.68%
MUV	0.00%	23.11%
GLE	0.00%	29.21%
AGN	0.00%	32.04%
SREN	0.00%	14.97%
CSGN	0.00%	-26.21%
FBK	15.62%	27.03%
DBK	0.00%	22.66%
NN	11.75%	22.33%
CS	0.00%	28.38%
SEB A	0.00%	28.13%
CBK	0.00%	39.38%
UCG	0.00%	36.43%
NDA SE	27.21%	27.53%
SWED A	9.80%	26.69%
INGA	0.00%	45.25%
DANSKE	0.00%	24.84%
EBS	0.00%	28.75%

Source: Own work.

When constructing MVEP, we aim to maximize the Sharpe ratio, which is once again solved with constraints that the sum of the weights must be equal to 1 or 100% and no short selling is allowed, or there should be no negative weights.

The MVEP for financial institutions with higher ESG scores, presented in Table 15, can be achieved by placing 21.60% of the weights in UBS Group, 13.82% in Caixabank, 3.12% in

Finacobank Banca Fineco, 8.13% in NN Group, 7.97% in Commerzbank, 33,35% in Nordea Bank and 11.93% in Swedbank. The Sharpe ratio, in this case, is 1.47.

Through maximization of the Sharpe ratio through the MVEP, the investors can achieve a 29.62% return, the standard deviation, in this case, is 16.99%, and the variance is 2.89%.

Compared to the equally weighted portfolio, the MVEP return is 4.72 percentage points higher, while the standard deviation is 6.05 percentage points lower, and the variance is 2.42 percentage points lower. We can conclude that MVEP is the optimal portfolio for investors who want to achieve diversification of their portfolio of financial institutions with higher ESG scores.

Table 15: Mean variance efficient portfolio (MVEP)

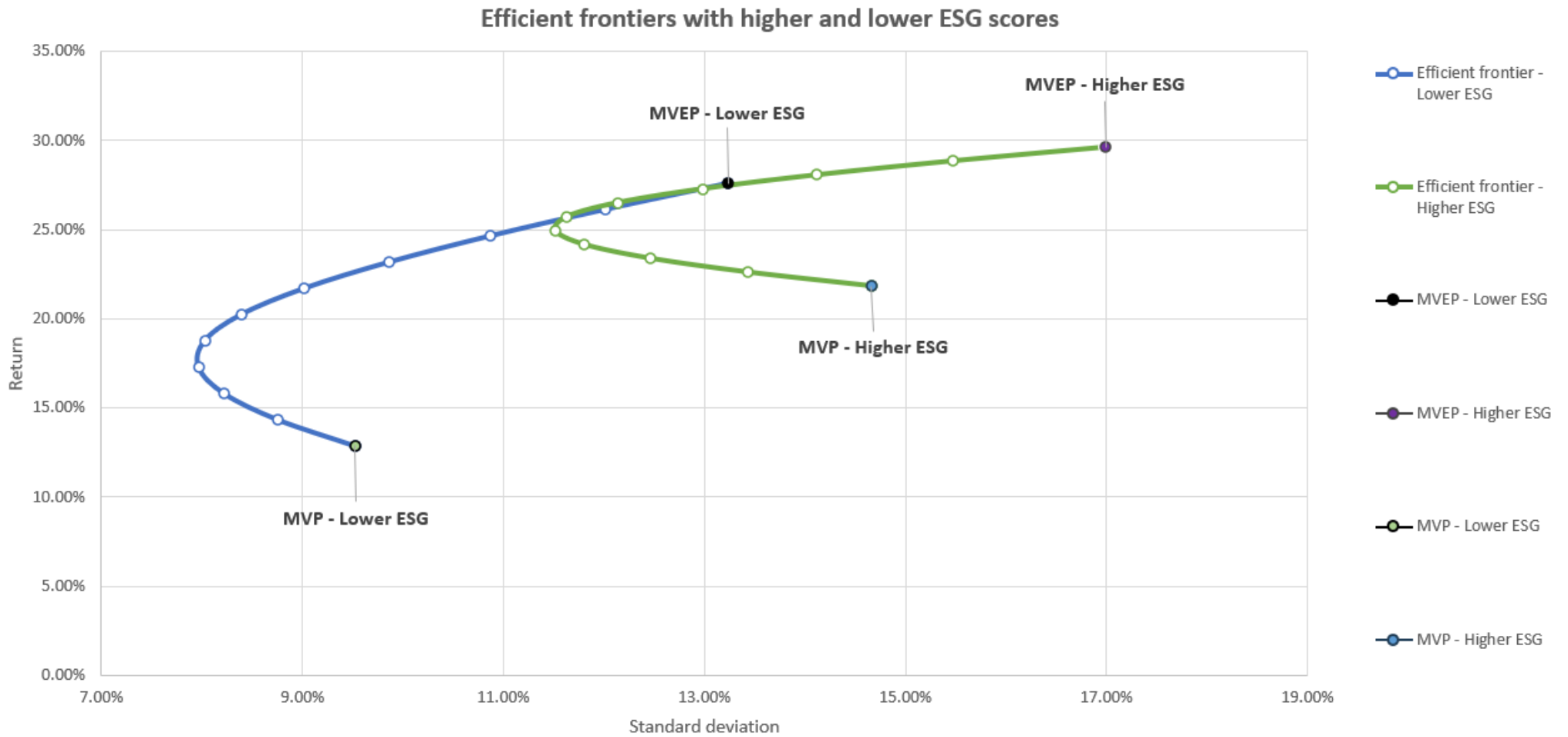
Mean variance efficient portfolio (MVEP)		
Security	Weight	Return
BNP	0.00%	34.74%
ISP	0.00%	25.99%
G	0.00%	19.76%
ALV	0.00%	16.64%
ZURN	0.00%	13.73%
UBSG	21.60%	33.31%
SAN	0.00%	17.06%
CABK	13.82%	30.68%
MUV	0.00%	23.11%
GLE	0.00%	29.21%
AGN	0.00%	32.04%
SREN	0.00%	14.97%
CSGN	0.00%	-26.21%
FBK	3.21%	27.03%
DBK	0.00%	22.66%
NN	8.13%	22.33%
CS	0.00%	28.38%
SEB A	0.00%	28.13%
CBK	7.97%	39.38%
UCG	0.00%	36.43%
NDA SE	33.35%	27.53%
SWED A	11.93%	26.69%
INGA	0.00%	45.25%
DANSKE	0.00%	24.84%
EBS	0.00%	28.75%

Source: Own work.

To compare the efficient frontier of the financial institutions with higher ESG scores, efficient frontier of the financial institutions with lower ESG scores is built using the same method.

For the graphical presentation of the efficient frontiers, I allocated random weights to MVP and MVEP. After the allocation of random weights, I calculated the average returns and standard deviations, and based on that, formed the efficient frontiers of the financial institutions with higher and lower ESG scores, which are presented in Figure 5.

Figure 5: Efficient frontiers with higher and lower ESG scores



Source: Own work.

From the graphical presentation of the efficient frontiers, we can see that investors can achieve the highest return by investing in the MVEP portfolio, consisting of financial institutions with higher ESG scores. MVEP, in this case, represents the optimal combination of financial institutions' securities with higher ESG scores which offers the highest expected return for a specific level of risk. We can conclude that such diversification of securities with higher ESG scores improves the portfolio's risk/reward profile. But it also shows that higher return comes with higher level of risk. In the MVEP portfolio of financial institutions with higher ESG scores, the Sharpe ratio is 1.47. Contrary, the MVEP portfolio of financial institutions with lower ESG scores has higher Sharpe ratio (1.73). In this case, the investors can expect 27.60% portfolio return and 13.24% standard deviation.

CONCLUSION

The purpose of this research was to prove that investing in financial institutions in the European Union, which are focusing on environmental, social and governance issues and have excellent ESG performance and a high level of transparency in public reporting of ESG data and consequently have higher ESG scores, does not lead to lower but rather higher returns. More specifically, I examined at how strong ESG and poor ESG performance influence the investor's returns. In the research, I also analyzed whether higher E, S and G scores separately lead to higher financial returns of the financial institutions in the EU, compared to those with lower E, S and G scores. The research was performed on 50 European financial institutions.

To compare the financial returns of the financial institutions based on their ESG scores, two portfolios were first formed, one with higher and one with lower ESG scores. The same method was used for the comparison of financial returns of financial institutions based on their E, S and G scores separately. Based on the results from financial institutions with higher ESG scores, we can conclude that investors who want to invest in such companies can expect good excess returns relative to their volatility, and investors do not have to fear for lower returns when deciding on investments in companies with better ESG performance. The average annual financial return of the financial institutions with higher ESG scores is 6.86 percentage points higher compared to the financial return of the financial institutions with lower ESG scores. When investing in financial institutions with higher ESG scores, investors can also expect lower risk and better risk-return tradeoff. However, the t-test indicates that the differences between mean portfolio returns between portfolio with higher ESG scores and portfolio with lower ESG scores are not found to be statistically significant at the 5% confidence level.

If we observe the financial returns of the financial institutions with higher environmental scores and compare them to those with lower environmental scores, we can conclude that investors who want to invest in financial institutions only based on their high environmental scores can expect higher average annual returns as well. The financial return of financial institutions with higher E scores is 4.51 percentage points higher that of those with lower E

scores. The risk, in this case, is higher by 6.50 percentage points; consequently, investors will have a worse risk-return tradeoff. However, the t-test indicates that the differences between mean portfolio returns between portfolio with higher E scores and portfolio with lower E scores are not found to be statistically significant at the 5% confidence level.

Investors who want to focus on higher social scores of financial institutions can expect slightly higher financial returns as when investing in those with lower social scores. In the research, portfolio with higher social scores has by 0.09 higher annual financial returns and by 4.90 higher standard deviation. The t-test indicates that the differences between mean portfolio returns between portfolio with higher S scores and portfolio with lower S scores are not found to be statistically significant at the 5% confidence level.

When considering investing in financial institutions with higher governance scores, investors can expect higher financial returns compared to those with lower governance scores. Financial returns are 3.10 percentage points higher than those of lower governance scores. The risk is lower by 2.85 percentage points. However, the t-test indicates that the differences between mean portfolio returns between portfolio with higher G scores and portfolio with lower G scores are not found to be statistically significant at the 5% confidence level.

Based on the results, we can conclude that the optimal strategy for investors who want to consider ESG investing is to invest in companies with higher ESG scores. All E, S and G factors are equally important, and one of the factors does not represent higher importance than the other. That is why investors must consider all of them together while making investment decisions and not focus on each of them separately.

Since investing in financial institutions with higher ESG scores presents the best investment strategy for investors, the efficient frontier in the research was constructed based on the Modern Portfolio Theory, in order to find the optimal portfolio through diversification. The minimum variance portfolio (MVP) for financial institutions with higher ESG scores can be achieved by placing 35.62% of weights in Zurich Insurance Group, 15.62% in Finacobank Banca Fineco, 11.75% in NN Group, 27.21% in Nordea Bank and 9.80% in Swedbank. With the minimization of risk through the MVP, the investors can achieve a 21.84% return. If we compare the results of MVP and the equally weighted portfolio, we can see that the average return of MVP is 3.05 percentage points lower than in the equally weighted portfolio.

According to the calculations, the mean-variance efficient portfolio (MVEP) for financial institutions with higher ESG scores can be achieved by placing 21.60% of the weights in UBS Group, 13.82% in Caixabank, 3.12% in Finacobank Banca Fineco, 8.13% in NN Group, 7.97% in Commerzbank, 33.35% in Nordea Bank and 11.93% in Swedbank. Through the maximization of the Sharpe ratio through the MVEP, the investors can achieve a 29.62% return. Compared to the equally weighted portfolio, the MVEP return is 4.72 percentage points higher, on the other hand, the standard deviation is lower by 6.05

percentage points, and the variance is lower by 2.42 percentage points. When we compare these results to the MVEP of financial institutions with lower ESG scores, we can notice that Sharpe ratio is higher in the MVEP of financial institutions with lower ESG scores (1.73). In this case, investors can expect lower return (27.60%), but also lower standard deviation (13.24%).

A portfolio's future performance can be predicted using a variety of metrics, including expected return on investment and standard deviation of an investment. Although these metrics are typically straightforward, investors should consider other measures as well. Financial returns in the model are calculated based on historical prices and returns, which could not be a reliable predictor of a financial institution's future performance. Historical prices currently do not include climate change impact yet, which is expected to change in the future if the extreme weather conditions are intensified.

The problem with the ESG scoring system are unregulated and non-standardized ESG ratings among rating providers. The ESG data of rating providers are usually incomplete, mostly unaudited, and often dated. This can lead to the same companies having completely different ESG scores among different rating providers.

With this in mind, investors should not only pay attention to the higher ESG scores of the companies but also focus on other factors when considering ESG investing as their investment strategy. Especially since ESG disclosures alone do not necessarily mean good financial performance.

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APPENDICES

Appendix 1: Povzetek (Summary in Slovene language)

Zaradi vedno večje ozaveščenosti o vplivih in posledicah podnebnih sprememb, je v zadnjem obdobju med investitorji vse bolj priljubljeno družbeno odgovorno investiranje. S to obliko investiranja imajo investitorji večji vpliv na podjetja, ki jih lahko s svojimi investicijami spodbudijo v bolj odgovorno delovanje do okolja in ljudi ter do okolice znižajo svoje negativne vplive. ESG investiranje je strategija, pri kateri investitorji pri svojem investicijskem procesu upoštevajo okoljske, družbene in upravljaljske vidike družbe, v katero investirajo. Temu primerno se morajo odzvati tudi podjetja, ki morajo ustrezno razkriti informacije, vezane na ESG faktorje. V zadnjem času je EU s svojo zakonodajo podjetja, predvsem pa tudi finančne institucije spodbudila, da razkrijejo vedno več in vedno bolj podrobne podatke o svojem trajnostnem delovanju. Ena od uredb, ki je bila sprejeta na ravni EU je, na primer, SFDR oziroma Uredba o razkritjih, katere cilj je boj proti zelenemu zavajanju, ob prizadevanju za finančno rast udeležencev na finančnem trgu. Da bi podjetja postala bolj trajnostna, morajo spremeniti nekatere svoje procese poslovanja ter načine delovanja, kar pri investitorjih vzbuja dvom o donosnosti potencialnih investicij v ta podjetja. Namen magistrske naloge je bil raziskati, ali višje ESG ocene v finančnih institucijah v Evropski uniji vodijo do višjih donosnosti investicij, ali se morajo investitorji v primeru strategije ESG investiranja odreči pozitivnemu donosu.

Raziskava je izvedena na podlagi ESG ocen 50 finančnih institucij, ki delujejo v Evropi. Na podlagi ESG ocen so finančne institucije razdeljene na tiste z visokimi in tiste z nizkimi ocenami ESG ter na tiste z visokimi in nizkimi ocenami E, S in G faktorjev posamično. Raziskava temelji na primerjavi finančnih donosov oblikovanih portfeljev, poleg tega pa je oblikovana tudi meja učinkovitosti, s katero je mogoče ugotoviti optimalen portfelj finančnih institucij z visokimi ESG ocenami.

Iz raziskave sledi, da imajo finančne institucije z višjimi ocenami ESG za 6,86 odstotnih točk višje donose od tistih z nižjimi ocenami ESG. Investitorji, ki se odločijo vlagati v podjetja na podlagi višjih okoljskih ocen, lahko pričakujejo za 4,51 odstotnih točk višje donose, v primerjavi s podjetji z nižjimi okoljskimi ocenami. V kolikor se investitorji odločijo za investicije na podlagi višjih družbenih ocen podjetij, lahko na podlagi raziskave pričakujejo enake donose, kot če bi zasledovali strategijo vlaganja v podjetja z visokimi ESG ocenami. Tisti investitorji, ki zasledujejo strategijo vlaganja v podjetja zgolj na podlagi višjih upravljaljskih ocen, pa lahko pričakujejo za 3,10 odstotnih točk višje donose, kot če bi vlagali v podjetja z nižjimi upravljaljskimi ocenami.

Iz rezultatov raziskave sledi, da so pri ESG investiranju vsi faktorji enakovredni in pomembni. Noben izmed ESG faktorjev, pri opazovanju finančnih donosov ne prevladuje, zato je pomembno, da investitorji pri svojih odločitvah gledajo na ESG oceno kot celoto. Prav tako je to pomembno za podjetja, ki morajo s svojimi praksami naslavljati vse tri ESG stebre, da bi prepričala potencialne investitorje in pri tem ne bi povzročila znižanja donosnosti svojih delnic.

Appendix 2: Data of financial institutions included in the analysis, 2023

Ticker	Name	Sector	Asset Class	Market Value	Notional Value	Shares	Price	Location	Exchange	Currency
BNP	BNP PARIBAS SA	Financials	Equity	65,063,760.96	65,063,760.96	942,776.00	69.01	France	Nyse Euronext - Euronext Paris	USD
ISP	INTESA SANPAOLO	Financials	Equity	37,983,991.46	37,983,991.46	14,178,189.00	2.68	Italy	Borsa Italiana	USD
G	ASSICURAZIONI GENERALI	Financials	Equity	18,747,076.18	18,747,076.18	943,926.00	19.86	Italy	Borsa Italiana	USD
ALV	ALLIANZ	Financials	Equity	83,667,781.06	83,667,781.06	346,644.00	241.36	Germany	Xetra	USD
ZURN	ZURICH INSURANCE GROUP AG	Financials	Equity	62,986,090.24	62,986,090.24	127,683.00	493.30	Switzerland	SIX Swiss Exchange	USD
UBSG	UBS GROUP AG	Financials	Equity	60,874,100.21	60,874,100.21	2,841,672.00	21.42	Switzerland	SIX Swiss Exchange	USD
SAN	BANCO SANTANDER SA	Financials	Equity	50,566,938.70	50,566,938.70	14,252,843.00	3.55	Spain	Bolsa De Madrid	USD
CABK	CAIXABANK SA	Financials	Equity	16,731,453.25	16,731,453.25	3,757,601.00	4.45	Spain	Bolsa De Madrid	USD
MUV2	MUENCHENER RUECKVERSICHERUNGS-GESE	Financials	Equity	42,419,524.18	42,419,524.18	118,887.00	356.80	Germany	Xetra	USD
GLE	SOCIETE GENERALE SA	Financials	Equity	20,485,750.11	20,485,750.11	685,197.00	29.90	France	Nyse Euronext - Euronext Paris	USD
AGN	AEGON NV	Financials	Equity	8,280,360.21	8,280,360.21	1,510,300.00	5.48	Netherlands	Euronext Amsterdam	USD
SREN	SWISS RE AG	Financials	Equity	26,424,128.89	26,424,128.89	255,968.00	103.23	Switzerland	SIX Swiss Exchange	USD
CSGN	CREDIT SUISSE GROUP AG	Financials	Equity	10,762,089.98	10,762,089.98	3,067,095.00	3.51	Switzerland	SIX Swiss Exchange	USD
FBK	FINECOBANK BANCA FINECO	Financials	Equity	9,267,677.65	9,267,677.65	516,006.00	17.96	Italy	Borsa Italiana	USD
DBK	DEUTSCHE BANK AG	Financials	Equity	23,466,373.94	23,466,373.94	1,753,992.00	13.38	Germany	Xetra	USD
NN	NN GROUP NV	Financials	Equity	10,299,980.92	10,299,980.92	235,950.00	43.65	Netherlands	Euronext Amsterdam	USD
CS	AXA SA	Financials	Equity	49,564,620.24	49,564,620.24	1,586,250.00	31.25	France	Nyse Euronext - Euronext Paris	USD
SEB A	SKANDINAVISKA ENSKILDA BANKEN	Financials	Equity	16,123,631.97	16,123,631.97	1,371,384.00	11.76	Sweden	Nasdaq Omx Nordic	USD
CBK	COMMERZBANK AG	Financials	Equity	10,353,540.38	10,353,540.38	899,854.00	11.51	Germany	Xetra	USD
UCG	UNICREDIT	Financials	Equity	32,193,423.15	32,193,423.15	1,630,371.00	19.75	Italy	Borsa Italiana	USD
NDA SE	NORDEA BANK	Financials	Equity	33,797,628.51	33,797,628.51	2,853,205.00	11.85	Sweden	Nasdaq Omx Nordic	USD
SWED A	SWEDBANK	Financials	Equity	15,273,042.36	15,273,042.36	768,383.00	19.88	Sweden	Nasdaq Omx Nordic	USD
INGA	ING GROEP NV	Financials	Equity	46,768,395.74	46,768,395.74	3,197,127.00	14.63	Netherlands	Euronext Amsterdam	USD
DANSKE	DANSKE BANK	Financials	Equity	12,376,748.39	12,376,748.39	586,342.00	21.11	Denmark	Omx Nordic Exchange Copenhagen A/S	USD
EBS	ERSTE GROUP BANK AG	Financials	Equity	10,936,069.66	10,936,069.66	290,663.00	37.62	Austria	Wiener Boerse Ag	USD
PST	POSTE ITALIANE	Financials	Equity	4,731,072.73	4,731,072.73	441,309.00	10.72	Italy	Borsa Italiana	USD
DB1	DEUTSCHE BOERSE AG	Financials	Equity	29,296,126.70	29,296,126.70	161,252.00	181.68	Germany	Xetra	USD
HNR1	HANNOVER RUECK	Financials	Equity	9,893,168.53	9,893,168.53	51,221.00	193.15	Germany	Xetra	USD
BBVA	BANCO BILBAO VIZCAYA ARGENTARIA SA	Financials	Equity	38,055,096.65	38,055,096.65	5,149,136.00	7.39	Spain	Bolsa De Madrid	USD
SLHN	SWISS LIFE HOLDING AG	Financials	Equity	15,489,636.10	15,489,636.10	26,157.00	592.18	Switzerland	SIX Swiss Exchange	USD
BAER	JULIUS BAER GRUPPE AG	Financials	Equity	11,842,490.70	11,842,490.70	181,296.00	65.32	Switzerland	SIX Swiss Exchange	USD
ENX	EURONEXT NV	Financials	Equity	5,945,901.99	5,945,901.99	73,116.00	81.32	France	Nyse Euronext - Euronext Paris	USD
SHB A	SVENSKA HANDELSBANKEN-A SHS	Financials	Equity	13,042,437.74	13,042,437.74	1,237,624.00	10.54	Sweden	Nasdaq Omx Nordic	USD
ABN	ABN AMRO BANK NV	Financials	Equity	5,665,338.79	5,665,338.79	344,444.00	16.45	Netherlands	Euronext Amsterdam	USD
DNB	DNB BANK	Financials	Equity	14,854,455.26	14,854,455.26	789,437.00	18.82	Norway	Oslo Bors Asa	USD
TRYG	TRYG	Financials	Equity	7,137,427.69	7,137,427.69	306,482.00	23.29	Denmark	Omx Nordic Exchange Copenhagen A/S	USD
MB	MEDIOBANCA BANCA DI CREDITO FINANZ	Financials	Equity	5,566,920.47	5,566,920.47	511,255.00	10.89	Italy	Borsa Italiana	USD
AGS	AGEAS SA	Financials	Equity	6,685,542.49	6,685,542.49	137,160.00	48.74	Belgium	Nyse Euronext - Euronext Brussels	USD
GJF	GJENSIDIGE FORSIKRING	Financials	Equity	3,049,147.80	3,049,147.80	168,272.00	18.12	Norway	Oslo Bors Asa	USD
KBC	KBC GROEP	Financials	Equity	15,741,154.89	15,741,154.89	212,268.00	74.16	Belgium	Nyse Euronext - Euronext Brussels	USD
ACA	CREDIT AGRICOLE SA	Financials	Equity	12,399,056.21	12,399,056.21	1,025,184.00	12.09	France	Nyse Euronext - Euronext Paris	USD
AMUN	AMUNDI SA	Financials	Equity	3,424,449.21	3,424,449.21	51,444.00	66.57	France	Nyse Euronext - Euronext Paris	USD
RF	EURAZEO	Financials	Equity	2,600,819.25	2,600,819.25	36,778.00	70.72	France	Nyse Euronext - Euronext Paris	USD
EQT	EQT	Financials	Equity	5,646,641.70	5,646,641.70	254,579.00	22.18	Sweden	Nasdaq Omx Nordic	USD
KINV B	KINNEVIK CLASS B	Financials	Equity	3,199,609.78	3,199,609.78	203,835.00	15.70	Sweden	Nasdaq Omx Nordic	USD
PGHN	PARTNERS GROUP HOLDING AG	Financials	Equity	18,118,042.99	18,118,042.99	19,252.00	941.10	Switzerland	SIX Swiss Exchange	USD
SAMPO	SAMPO	Financials	Equity	21,589,938.36	21,589,938.36	407,090.00	53.03	Finland	Nasdaq Omx Helsinki Ltd.	USD
BALN	BALOISE HOLDING AG	Financials	Equity	6,331,333.66	6,331,333.66	38,641.00	163.85	Switzerland	SIX Swiss Exchange	USD
INDU C	INDUSTRIVARDEN SERIES	Financials	Equity	3,485,008.28	3,485,008.28	129,960.00	26.82	Sweden	Nasdaq Omx Nordic	USD
SOF	SOFINA SA	Financials	Equity	3,144,087.54	3,144,087.54	12,991.00	242.02	Belgium	Nyse Euronext - Euronext Brussels	USD

Source: Refinitiv (n.d.).

Appendix 3: Financial institutions data with ESG scores, 2023

Ticker	Name	ESG score	Environment Pillar Score	Social Pillar Score	Governance Pillar Score
BNP	BNP PARIBAS SA	95	95	96	94
ISP	INTESA SANPAOLO	94	97	94	92
G	ASSICURAZIONI GENERALI	93	96	89	97
ALV	ALLIANZ	92	95	90	94
ZURN	ZURICH INSURANCE GROUP AG	89	91	91	86
UBSG	UBS GROUP AG	89	97	85	91
SAN	BANCO SANTANDER SA	89	90	87	91
CABK	CAIXABANK SA	88	85	89	87
MUV2	MUENCHENER RUECKVERSICHERUNGS-GESE	86	94	82	87
GLE	SOCIETE GENERALE SA	86	96	84	84
AGN	AEGON NV	86	83	86	87
SREN	SWISS RE AG	85	71	82	92
CSGN	CREDIT SUISSE GROUP AG	85	86	84	87
FBK	FINECOBANK BANCA FINECO	85	78	84	89
DBK	DEUTSCHE BANK AG	84	97	86	76
NN	NN GROUP NV	82	83	76	89
CS	AXA SA	81	53	80	92
SEB A	SKANDINAVISKA ENSKILDA BANKEN	81	92	77	81
CBK	COMMERZBANK AG	81	93	72	88
UCG	UNICREDIT	80	90	74	85
NDA SE	NORDEA BANK	79	84	74	83
SWED A	SWEDBANK	79	86	81	73
INGA	ING GROEP NV	78	86	68	89
DANSKE	DANSKE BANK	77	87	65	89
EBS	ERSTE GROUP BANK AG	77	79	77	77
PST	POSTE ITALIANE	77	81	84	61
DB1	DEUTSCHE BOERSE AG	76	66	65	88
HNR1	HANNOVER RUECK	76	82	74	77
BBVA	BANCO BILBAO VIZCAYA ARGENTARIA SA	74	95	84	52
SLHN	SWISS LIFE HOLDING AG	74	97	75	65
BAER	JULIUS BAER GRUPPE AG	74	80	69	79
ENX	EURONEXT NV	74	54	63	90
SHB A	SVENSKA HANDELSBANKEN-A SHS	73	94	76	60
ABN	ABN AMRO BANK NV	73	93	65	75
DNB	DNB BANK	69	91	79	46
TRYG	TRYG	69	72	61	77
MB	MEDIOBANCA BANCA DI CREDITO FINANZ	69	47	72	74
AGS	AGEAS SA	68	83	43	93
GJF	GJENSIDIGE FORSIKRING	67	65	63	73
KBC	KBC GROEP	64	93	80	30
ACA	CREDIT AGRICOLE SA	63	95	74	34
AMUN	AMUNDI SA	63	93	78	42
RF	EURAZEO	62	42	77	55
EQT	EQT	61	60	67	56
KINV B	KINNEVIK CLASS B	60	31	78	78
PGHN	PARTNERS GROUP HOLDING AG	55	81	64	40
SAMPO	SAMPO	45	50	42	46
BALN	BALOISE HOLDING AG	41	35	33	53
INDU C	INDUSTRIVARDEN SERIES	37	20	46	48
SOF	SOFINA SA	28	16	48	28

Source: Refinitiv (n.d.).