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ESG Pillars and Bank Performance: Evidence from European Banks with a Focus on Nordea

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ABSTRACT:

Environmental, Social, and Governance are a crucial part of companies and are used to assess, a company's sustainability, risk management, and long-term value. The legal obligation to report on ESG is constantly increasing due to transparency. This study examines the relationship between ESG integration and banks' financial performance, with a particular focus on European Banks and Nordea as a benchmark. The goal of this study is to determine which ESG factors have the biggest effects on financial performance and to examine if ESG pillars affect profitability, stock volatility, and cost of capital.

The empirical analysis is based on panel data covering European banks from 1999 to 2024. The dataset includes financial variables such as Return on Equity (ROE), Return on Asset (ROA), stock price volatility, ESG scores and individual pillars, Environmental (E), Social (S) and Governance (G) Pillars. The study uses panel regression methods, including Fixed Effects and Random Effects models, and the Hausman test is used to determine the most appropriate model specification.

The results show that there is no consistent positive correlation between profitability and the Overall ESG score. The disaggregated study, on the other hand reveals that financial performance is positively and statistically significantly correlated with each of the ESG pillars, particularly Social (S) and Governance (G) pillars. Although the Environmental (E) pillar is not as strong, it has a favorable impact. These results suggest that significant variations between ESG pillars may be hidden by the overall ESG score.

The findings also suggest that the influence of ESG factors on stock price volatility and cost of capital is more restricted and inconsistent. This suggests that although ESG integration may have an impact on some areas of financial performance, not all financial measures are affected in the same way. The results also indicate that while ESG-related investments have short-term costs, their long-term advantages may become clear.

Overall, the study contributes to the existing literature by proving how ESG integration affects banks' financial performance in a variety of ways. The findings highlight the importance of examining ESG pillars independently since different ESG pillars have different impacts on financial results. The findings are relevant for financial institutions, investors, and policymakers, as the findings highlights the role of Governance (G) and Social (S) factors in driving the financial performance of the banking sector.

KEYWORDS: ESG integration, ESG, SDG, Nordea, Environmental Pillar, Social Pillar, Governance Pillar, Environmental Pillar, Social Pillar, Governance Pillar

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ABSTRACT:

Ympäristö-, yhteiskunta-, ja hallintotapa-asiat (ESG) ovat yrityksille keskeinen osa-alue, ja niiden avulla arvioidaan muun muassa yrityksen kestävyyttä, riskienhallintaa ja pitkän aikavälin arvoa. Lainsäädännöllinen velvollisuus raportoida ESG-asioista kasvaa jatkuvasti. Tässä tutkimuksessa tarkastellaan ESG-tekijöiden integroinnin ja pankkien taloudellisten tulosten välistä suhdetta, keskittyen erityisesti eurooppalaisiin pankkeihin ja Nordeaan vertailukohteena. Tämän tutkimuksen tavoitteena on selvittää, mitkä ESG-tekijät vaikuttavat eniten taloudelliseen tulokseen, sekä tutkia, vaikuttavatko ESG-pilarit kannattavuuteen, osakekurssien volatiliteettiin ja pääomakustanuksiin.

Empiirinen analyysi perustuu paneeliaineistoon, joka kattaa eurooppalaiset pankit vuosilta 1999-2024. Aineisto sisältää taloudellisia muuttujia, kuten oman pääoman tuotto (ROE), kokonaispääoman tuoton (ROA), osakekurssien volatiliteetin, ESG-pisteeseen (ESG Score) sekä yksittäiset pilarit: Ympäristö (E), sosiaalinen (S) ja hallinto (G). Tutkimuksessa käytetään paneeliregressiomenetelmiä, mukaan lukien kiinteiden ja satunnaisten vaikutusten mallit, ja sopivimman mallin määrittämiseen käytetään Hausmanin testiä.

Tulokset osoittavat, että ESG-kokonaispisteet (ESG scores) eivät ole johdonmukaisesti positiivisessa suhteessa kannattavuuteen. Sen sijaan erittelyanalyysi osoittaa, että yksittäisillä ESG-pilareilla, erityisesti sosiaalisella (S) ja hallintotavalla (G), on positiivinen ja tilastollisesti merkittävä yhteys taloudelliseen tulokseen. Myös ympäristöpilarilla (E) on positiivinen, mutta heikompi vaikutus. Nämä havainnot viittaavat siihen, että ESG-kokonaispisteet saattavat peittää tärkeitä eroja ESG-ulottuvuuksien välillä.

Lisäksi tulokset osoittavat, että ESG-tekijöillä on rajallisempi ja epäjohdonmukaisempi vaikutus osakekurssien volatiliteettiin ja pääomakustannuksiin. Tämä viittaa siihen, että vaikka ESG-integraatio saattaa vaikuttaa tiettyihin taloudellisen tuloksen osa-alueisiin, sen vaikutukset eivät ole yhtenäisiä kaikkien taloudellisten indikaattoreiden osalta. Tulokset korostavat myös, että ESG-sijoituksiin voi liittyä lyhyen aikavälin kustannuksia, kun taas niiden hyödyt saattavat toteutua pidemmällä aikavälillä.

Kaiken kaikkiaan tutkimus täyttää olemassa olevaa kirjallisuutta tarjoamalla näyttöä siitä, että ESG-integraatiolla on moniulotteinen vaikutus pankkien taloudelliseen tulokseen. Tulokset korostavat ESG-pilareiden erillisen analysoinnin tärkeyttä, sillä eri ESG-pilarit voivat vaikuttaa taloudellisiin tuloksiin eri tavoin. Tulokset ovat erityisen merkityksellisiä rahoituslaitoksille, sijoittajille ja päätöksentekijöille, sillä he korostavat hallinnon ja sosiaalisten tekijöiden roolia pankkisektorin taloudellisen tuloksen ajurina.

Avainsanat: ESG integration, ESG, SDG, Nordea, Environmental Pillar, Social Pillar, Governance Pillar

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Abbreviations

CSR Corporate social responsibility
ESG Environmental, Social, Governance
EU European Union
ROA Return on Asset
ROE Return on Equity
FE Fixed Effects estimator
RE Random Effects estimator
UN United Nations

1 Introduction

Concerns about companies' transparency, reputation, ethical, social, and environmental performance have grown as a result of financial crises and disputes according to Galbreath (2013). Media pressure plays a critical role for companies to increase ESG transparency (Garcia-Sancez et al., 2014). According to Wang et al., (2016) the discussion of ESG performance is shifted from traditional financial perspective towards socio-economic discussion.

For the past decade, the Sustainable Development Goals (SDGs), adopted by United Nations (UN) members in 2015, have been extremely relevant in creating policies and corporate strategies. Cordova and Celone (2019) explained three categories, into which SGDs are divided. The three categories were environmental, social and governance (ESG). Thus, the global banking industry endures significant changes because of integrating ESG issues into core business operations. It is believed that it has an effect of long-term sustainability, risk management as well as profits (Tashtamirov, 2023). The banking industry has shifted from a tradition profit-driven models into adapting new strategies with complex challenges and take ESG issues into consideration (Hayretci and Aydemir, 2021) as enterprises are pressured into taking sustainability into their core business processes (Broadstock et al., 2021).

Generally corporate governance model used in the Nordics is described by for instance high transparency, advanced stakeholder inclusion and a large emphasis on creating long term value (Thomsen et al., 2018). Nordic countries have adopted the ESG reporting more than companies in other regions (Mion & Loza Adaui, 2019). The complex regulatory made by EU creates strong ways to study ESG performance relationship and how does pillars affect banks in European countries.

The debates in the past have mainly focused on should companies maximize their short-term profits, which is viewed as shareholder theory, or should companies focus on longer-term value creation for the society in general, which is viewed as stakeholder

theory (Zumente & Bistrova, 2021). According to Smith (2003) there theories propose the role of companies in society's and what they should be.

Most of the literature only considers the overall ESG score and the particular ESG pillars are not reviewed as much (Halbritter and Dorfleitner, 2015). A study conducted by Cek and Eyupoglu (2020) shows that only social and governance pillars affect economic performance, which is measured as, for instance, both shareholder and client loyalty as well as overall performance, which proves company's ability in sustaining financial health as well as generating long-term shareholder value.

1.1 Purpose of the study

The purpose of the study is to examine how the banking industry has been affected by ESG integration. This study aims to find out, whether ESG scores all together or individual ESG pillars have more effect the financial results and to view the relationship between them. The main aim is to address the research gap by examining the relationship between ESG factors and bank profitability. This thesis focuses mainly on European banks, using Nordea Bank Abp. as a benchmark.

The study uses Nordea bank as a benchmark, because Nordea is a Nordic company, that operates globally and Nordea also focuses on ESG, and sustainability has been in center of Nordea's operation for decades. Nordic countries have adopted the ESG reporting more than companies in other regions (Mion & Loza, 2019), which is why Nordea is the benchmark.

This study examines the effect of ESG pillars performance on the financial performance of European banks using a quantitative research approach and panel data analysis. Fixed effects (FEM) and random effects (REM) regression models are used in this work to account for and control referred to as unseen variation between banks and time. To determine the appropriate model specification, this study performs a Hausman test.

The empirical model examines the relationship between ESG scores, ESG pillars and three dimensions of bank performance: profitability (ROE and ROA), stock volatility and cost of capital. Long data with 2470 observations on 28 variables was carefully cleaned and restructured. Data were collected over the period 1999-2024.

1.2 Research Question and Hypothesis

This thesis aims to find out whether ESG integration improve European banks financial performance. This thesis also aims to find out how ESG integration has affected Nordea bank. This research aims to answer following questions :

RQ_1 Does ESG integration improve banks' financial performance?
RQ_2 Which ESG areas (Environmental, Social, Governance) have the greatest impact on banks' financial performance

Based on peer reviewed articles and studies, this research has the following hypotheses :

H_0: No relationship was found between ESG (E, S, G) pillars and banks financial performance
H_1: ESG pillars (E, S, G) positively affect banks' financial performance

All of the hypotheses below are tested in this study and studies are limited to Nordea Bank and other publicly listed banks in Europe.

1.3 Structure of the research

This study is structured into five chapters: Introduction, Theoretical background, Research methodology, results, discussion, and the final chapter is conclusion. The introduction chapter acts as a beginning of the study. The chapter informs why this topic

was chosen and it provides a comprehensive introduction to ESG integration as well as ESG pillars. Introduction chapter also provides information about the purpose of the study as well as research question and hypothesis of the study.

The second chapter is theoretical background. In this chapter, the study will have a comprehensive review of sustainability, the concepts and purposes of sustainability reporting, sustainability reporting practices, ESG pillars, and key directives and standards.

The third chapter is the research methodology. The chapter begins with a paragraph on the type of research methodology the study has and how the information was obtained. This chapter also focuses on research strategy and plan, data collection, methods of analysis and lastly the reliability and ethical aspects of the study.

The fourth chapter shows the results of the research methodology and collected data. The development of Nordea's sustainability reporting is only conducted through the years 2008-2023. This section also provides a comparison of ESG numbers with competitors.

The fifth chapter consists of conclusion. Interpretation of results in relation to previous research and recommendations for improving banks' ESG integration. The study will end with key findings of the study as well as recommendations for further research.

2 Theoretical background

Sustainability concerns among firms, global organizations, and authorities has been growing in recent years (Kolk, 2004). Corporate Social Responsibility (CSR) activities is viewed to enhance both shareholder and stakeholder value (Deng et al., 2013). CSR is also defined as a commitment to of socio-economic development that will improve local communities, life of employees as well as society at large (World Business Council for Sustainable Development, 2000). According to recent studies, it is suggested that strong ESG performance has a positive impact in a bank's resilience to reducing the probability of financial distress and to adverse events (Zeng et al., 2024).

Figure 1. Source: Think Global Sustainability (n/d).

Theoretical foundations of sustainable disclosures mainly originate from agency theory (Jensen and Meckling, 1979), legitimacy theory (Suchman, 1995), and stakeholder perspectice (Freeman, 1995). Agency theory is viewed as a fundamental theory that addresses conflicts both between principals and agents. Agency theory also clarifies the

conflicts. (Jensen and Meckling, 1979). The theory promotes the utilization of independent directors to overcome the actions of management and to ensure shareholders interest (Chen et al., 2001.) Legitimacy theory is viewed as most remarkable theory regarding social norms and corporate behavior (Dowling & Pfeffer, 1975). Dowling and Pfeffer (1975) argues, that in order for companies to maintain legitimacy, they should align their societal norms and values accordingly, to meet the expectation that public has. Stakeholder perspective is introduced by Freeman and the main thesis is to address the ethical principles and values involved in organizational management (Freeman, 1995). According to (Gray et al., 1995) this theory is a leading framework in the field of Environmental, Social and Governance research.

Agency Theory	Legitimacy Theory	Stakeholder Perspective
- Fundamental theory that addresses conflicts both between principals and agents.	- Address that companies must align the societal norms and values accordingly.	- Address the ethical principles and values involved in organizational management.

Table 1. An overview of theories

In addition to Agency Theory, Legitimacy Theory and Stakeholder Perspectice, there is Institutional factors. According to Dacin et al. (2007) institutional environment such as government and society impose pressures on organizations to justify strategic actions and outputs. DiMaggio and Powell (1983) suggested that organizational actions are motivated by socially and normatively justifications. Authors also suggest that companies are motivated to both establish and maintain legitimacy, because doing so

enables companies to gain technical and strategic advantages including resources and support from important stakeholders.

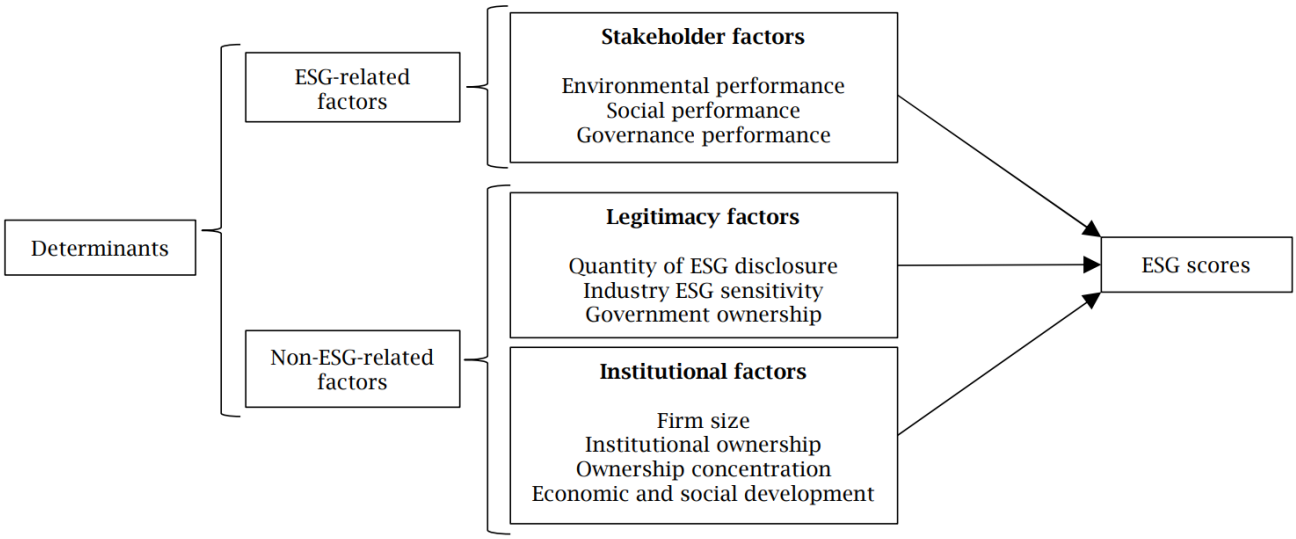


Figure 2. Source from CFA Institute

In this chapter the thesis focuses on theoretical research. First section is about sustainability reporting, after which the thesis will focus on the definition and relevance of ESG integration in the banking sector and the relationship between sustainability reporting and ESG integration. At the end of this chapter, this thesis will explain ESG Pillars.

2.1 Sustainability reporting: concepts and purpose

One of the main reasons for sustainability reporting is for organizations to disclose their environmental, social, and governance (ESG) performance and their impact. (Herremans et al., 2016). According to Adnyana et al., (2021) reporting on sustainability matters enhances companies' transparency, builds stakeholder trust, and demonstrates corporate responsibility. Organizations are held responsible for their sustainability performance and affirms when ESG measurements are regularly disclosed. This enhances both

transparency and accountability. Stakeholder engagement means that sustainability reporting provides stakeholder, such as customers, regulators, investors and employees information on company's sustainability, enhancing decision-making. (Manetti, 2011) Measuring and reporting on sustainability metrics can end up highlighting areas for improvement, which leads to both operational efficiency and reduced environmental impact. Different regions have different directives. For instance, the European Union (EU) has Corporate Sustainability Reporting Directive (CSRD), requires certain companies to disclose sustainability data to ensure standard and similar reporting across organizations.

ESG integration describes the methodical incorporation of environmental (E), social (S), and governance (G) factors into risk management, company strategy, and investment decision-making (Friede et al., 2015). However, according to Reynolds (2014), the shift from investors toward accepting investing towards sustainable practices remain slow. In addition to advancing sustainable development, ESG integration seeks to improve long-term financial performance and lower risk associated with climate change, human rights violations, or unethical governance. There are plenty of frameworks and assessment methodologies created to assist companies and investors in organizing, evaluating, and disclosing sustainability performance in order to encourage ESG integration. These frameworks are for instance, Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), Task Force on Climate-related Financial Disclosures (TCFD) and Sustainable Finance Disclosure Regulation (SFDR). These are primarily the main frameworks of sustainability reporting, but the frameworks create standards and recommendations for companies on how to report ESG matters.

Carbon Disclosure Project (CDP) is an international nonprofit organization, that both collects and publishes companies, municipalities and countries environmental information. The organization was founded in London in 2000 and currently CDP manages one of the world's largest environmental datasets.

Morgan Stanley Capital International (MSCI) is known best for providing ESG research, rating, and analytical tools. MSCI is a global financial service firm, which supplies ESG metrics that are used by asset managers, investors, regulators, and banks worldwide.

ESG integration is the systematic and explicit inclusion of ESG factors into investment decisions as well as traditional financial analysist (LÄHDE). MSCI always assigns companies an ESG rating on a scale from AAA to CCC. This reflects the respective company's resilience to industry-specific ESG risks. The methodology in MSCI ESG rating is based on three pillars, Environmental (E), Social (S), and Governance (G). Each pillar is a key issue, weighting according to sector-specific financial materiality,

Thus, the primary aim of sustainability reporting is for companies to communicate sustainability initiatives as well as performance to stakeholders (Manetti, 2011). According to Manetti (2011), communicating these will help companies to set new goals, implement strategies that will also promote long-term value creation. There are several frameworks and standards in sustainability reporting, such as Global Reporting Initiative (GRI), Sustainability Accounting Standard Board (SASB), Task Force on Climate-Related Financial Disclosures (TCFD).

2.2 Definition and relevance of ESG integration in the banking sector

Companies, particularly banks, are under intense pressure to include ESG considerations into their risk management and business strategy as a result of growing stakeholder demands and global regulatory expectations (Kotsantonis et al., 2016). ESG integration is seen as the inclusion of ESG factors into investment analysis and decision-making processes (PRI, 2021). ESG integration identifies ESG-related risks as well as opportunities that could impact company's' financial performance. (Rahul & Shroff, 2025). ESG integration in banking sector covers major part of the business areas and business in general, such as corporate governance, asset management, compliance, and lending decisions. (Rahul & Shroff, 2025). ESG integration highlights materiality, which means that banks

prioritize ESG issues that are more financially applicable to both risk exposures and business models (Rahul & Shroff, 2025).

As banks play a crucial role in financing the global economy (Allen et al., 2020), their ESG integration and performance practices are immensely important and increasingly recognized as financially material to the banking sectory. For instance, environmental risk could impact capital requirements as well as credit risk, social factor can affect both reputational and operational risk. Governance is vital in banking, because governance influences directly long-term stability. (Cek & Eyupoglu, 2020). Banks that integrate ESG considerations successfully tend to have stronger customer trust, capital efficiency and risk management (Cek & Eyupoglu, 2020) Previous studies suggest that ESG performance, especially in long term is positively associated with financial performance and a strong governance reduces immensely operational risk. ESG integration enables banks in many ways such as improve compliance, reporting frameworks and attract long-term ESG investors.

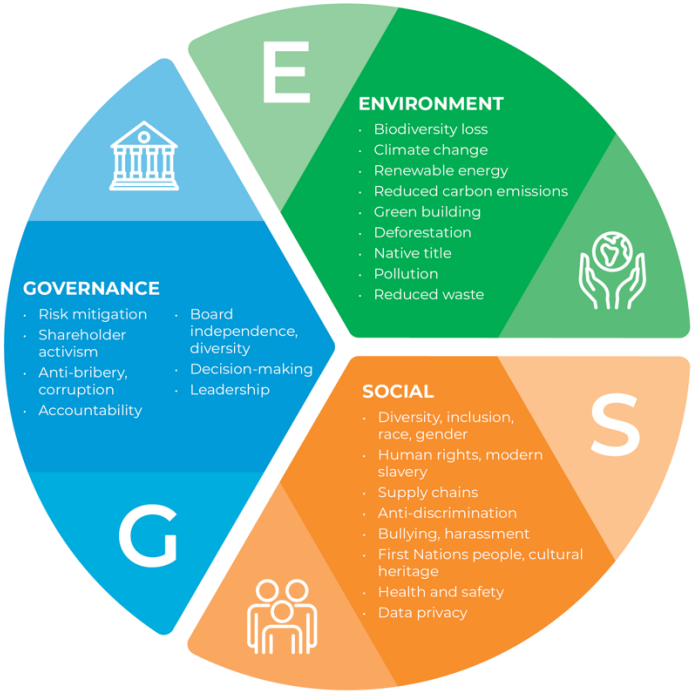


Figure 3. ESG. Source: Holding Redlich (2022)

Most of the literature only considers the overall ESG score and the particular ESG pillars are not reviewed as much (Halbritter and Dorfleitner, 2015). A study conducted by Cek and Eyupoglu (2020) shows that only social and governance pillars affect economic performance, which is measured as, for instance, both shareholder and client loyalty as well as overall performance, which proves company's ability in sustaining financial health as well as generating long-term shareholder value.

2.3 Relationship between sustainability reporting and ESG integration

This section examines the relationship between concepts mentioned previously and how sustainability reporting enables ESG integration in practice. Even though sustainability reporting and ESG integration serve different purposes within organizations, sustainability reporting and ESG integration are closely related concepts. Sustainability reporting concentrates on disclosing a company's ESG performance and ESG integration refers to integrating ESG factors into business strategy, decision-making processes, and risk management. (Friede et al., 2015).

According to Herremans et al., (2016) ESG integration is possible for companies because sustainability reporting provides both information and transparency. Companies release ESG-related information by using frameworks such as the Task Force on Climate-related Financial Disclosures (TCFD), and Global Reporting Initiative (GRI), This lowers the information imbalance existing between companies and stakeholders, a crucial problem according to agency theory (Adnyana et al., 2021).

Sustainability reporting also supports ESG integration. For instance, according to Manetti (2021), sustainability reporting enhances transparency and accountability, which increases stakeholder trust. According to Suchman's (1995) legitimacy theory, companies seek to align their movement with societal expectation and sustainability reporting is viewed as a tool for the alignment. Thus, improved transparency may have a positive effect on a company's reputation.

ESG-related risks can be identified better by sustainability reporting. Companies are more capable of integrating environmental, social, and governance risk into operational and strategic decision-making when these risks are revealed. In the banking industry, ESG concerns are often viewed as affecting credit risk, operational risk, and regulatory risk. According to Freeman's (1995) stakeholder theory, addressing ESG-related issues can contribute to long-term value creation, which is enabled by sustainability reporting and taking ESG-related risk into consideration.

ESG integration and sustainability reporting do not necessarily go hand in hand. Reporting increases transparency, but it does not ensure that ESG considerations are successfully incorporated into a company's operations (De Silva Lokuwaduge & De Silva, 2022). According to De Silva Lokuwaduge and De Silva (2022), companies may practice "greenwashing", or symbolic reporting, which means that ESG disclosures are highlighted without significantly changing real performance.

The impact of sustainability reporting on financial performance remains debated in literature (Friede et al., 2015). According to (Damodaran, 2006) increased transparency results in better financial outcomes, such as a reduced cost of capital and higher firm valuation. Some studies, for instance (Buallay, 2019) argue that short-term profitability may be reduced by expenses related to ESG reporting and implementation. These conflicting results show that there is also a complicated and situation-specific relationship between sustainability reporting, ESG integration, and financial performance.

In this study, sustainability reporting is considered as a key factor of ESG integration and ESG pillars. Reporting processes enable the integration of ESG considerations into financial analysis and decision-making processes by offering standardized ESG data. ESG reporting are therefore thought to support more successful ESG integration, which may have an impact on banks' financial performance through better stakeholder relations, risk management, and corporate governance.

Figure 4. Core dimensions of ESG framework. Source: Springer Nature

As illustrated in Figure 4, Environmental, social, and governance aspects are among the many connected elements in ESG reporting. While the social pillar concentrates on subjects like human capital, diversity and the value chain, the environmental dimension covers areas like waste management, natural resource use, and climate stability. Transparency, risk management, and corporate governance are all part of the governance pillar.

These pillars show how sustainability reporting provides data on several ESG pillars, which companies use to integrate ESG factors into their decision-making procedures.

2.4 United Nations Sustainable Development Goals

On 25th October 2015, the United Nations approved 17 sustainable development goals (SDGs) in the 2030 Agenda for Sustainable Development (Cordova & Celone, 2019). The aim is to ensure peace and prosperity for all the humans and planet. Figure 5 shows all 17 United Nations Sustainable Development Goals.

Figure 5. UN Sustainable Development Goals (Sustainable Development Goals, (N.d.)

The UN Sustainable Development Goals can be divided roughly into three (3) categories shown in Table 2. (Szennay et al., 2019).

Society	Economy	Biosphere
1. No poverty 2. Zero Hunger 3. Good Health and Well-being 4. Quality Education 5. Gender Equality	8. Decent Work and Economic Growth 9. Industry, Innovation, and Infrastructure, 10. Reduced Inequality	6. Clean water and Sanitation 13. Climate action 14. Life Below Water 15. Life on Land

7. Affordable and Clean Energy 11. Sustainable Cities and Communities 16. Peace and Justice, Strong Institutions	12. Responsible Consumption and Production 17. Partnership to Achieve the Goal	

Table 2. United Nation Sustainable Development Goals categories

This thesis focuses mainly on ESG pillars and Nordea as a case company. Including both the domestic markets of the four Nordic countries of Finland, Sweden, Norway, and Denmark, Nordea Bank Abp operates in 20 other countries (Nordea.fi). Some of the key figures in 2024 were as follows: In 2024, Nordea's total assets were EUR 623,4 billion and operating income was EUR 12.1 million. The stock exchanges in Helsinki, Stockholm. and Copenhagen. Nordea is rated an AA-rating and has approximately 30,000 employees (Nordea.fi, 2025). The overall review of Nordea's sustainability reporting is that the Sustainable Development Goals are presented in a somewhat inconsistent manner. All of the goals are listed in the 2017 report, though some are given more importance than others. There are only two individual goals stated in 2019, compared to none in 2018. The goals have been addressed and further developed since 2020.

Sustainable Development Goals (SGDs)								
	2018	2019	2020	2021	2022	2023	2024	2025
Nordea	Mentioned	5, 10	4, 5, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17	4, 5, 7, 8, 9, 10, 12, 13, 14, 15, 16, 17	4, 5, 7, 8, 9, 10, 12, 13, 14, 15,	4, 5, 7, 8, 9, 10, 12, 13, 14, 15,	4, 5, 7, 8, 9, 10, 12. 13. 14, 15,	4, 5, 7, 8, 9, 10, 12. 13. 14, 15,

Table 3. SDG in Nordea

2.5 ESG Pillars

In this section, the thesis focuses Environmental (E), Social (S), and governance (G) pillars, which are crucial in this research. This chapter is divided into three parts The first part presents the Environmental (E) pillar. The second part presents Social (S) pillar. The third, and last part presents the governance (G) pillar.

Figure 6. Sustainable developments. Source: Proindia (2025)

This figure shows how the United Nations Sustainable Development Goals (SDGs) and Environmental, Social, and Governance (ESG) pillars are related. The environmental (E) pillar focuses on topics such as sustainability, natural resources, and climate action. The Social (S) pillar focuses on topics such as equality, social responsibility and human well-being. The Governance (G) pillar focuses on institutional excellence, ethics and

transparency. Together, these pillars show how ESG integration is related to more general global sustainability goals.

Pillar	*Description*	*Issues*
Environmental	Conservation of the natural world	• Climate change and carbon emissions; • Air and water pollution; • Biodiversity; • Deforestation; • Energy efficiency; • Waste management; • Water scarcity.
Social	Consideration of people and relationships	• Customer satisfaction; • Data protection and privacy; • Gender and diversity; • Employee engagement; • Community relations; • Human rights; • Labor standards.
Governance	Standards for running a company	• Board composition; • Audit committee structure; • Bribery and corruption; • Executive compensation; • Lobbying; • Political contributions; • Whistleblower schemes.

Table 4. Source: CFA Institute

As per table 4, the issues vary per pillar. For financial institutions the S and G pillars are the pillars that are viewed the most by stakeholders in financial institutions.

2.5.1 Environmental (E) pillar

Environmental pillar is supposed to represent the bank's environmental responsibility performance. Most of the literature only considers the overall ESG score and the particular ESG pillar are not reviewed as much (Halbritter & Dorfleitner, 2015). Shakil et al., (2019) found that especially in the emerging markets environmental pillar enhances the bank's performance in ROE and Tobin's Q (Azmi, et al., 2021). Sharfman and Fernando (2008) emphasize that strategic environmental risk management can be used to maximize long-term shareholder profit, optimize financial structure, and comply with regulations or corporate social responsibility.

According to Bâtae et al., (2021); Menicucci & Paolucci, (2023), the bank's commitment to environmental pillar can be evaluated through three key aspects: mitigating loan risk in polluting industries, financing environmentally responsible projects, and efficient use of the resource available in the bank. Environmental pillar also includes topics such as the Gaia hypothesis (Lovelock, 1972), the intrinsic value of nature (LÄHDE), and responsibility of humans for the state of the environment (LÄHDE). According to Table 4, provided by CFA institute the issues of Environmental (E) pillar are climate change, carbon emission, air and water pollution, biodiversity, deforestation, waste management and water scarcity.

2.5.2 Social (S) pillar

According to Table 4 provided by CFA institute the issues of Social (S) pillar are customer satisfaction, data protection and privacy, gender and diversity, employee engagement, community relations, human rights and labor standards. Littig and Griessler (2005) define social sustainability as "the quality of societes", meaning how well a society can maintain well-being, fairness, and inclusion now and into the future.

Li et al. (2021) explains how a company's management, ownership, social capital or stakeholders' relationship have an impact on the cost of capital. Strong social ties help company's reduce information asymmetry, because investors see less risk when the company is transparent and trustworthy. Moreover, the study believes that trust is crucial for companies. The Social pillar covers a wide range of issues such as fair labor practices, workplace safety, community engagement, diversity and inclusion, human rights and access to essential services (GRI, 2021)

According to Eccles et al. (2014), social sustainability plays a crucial role in how companies maintain legitimacy, build their reputation and manage risk. Companies that implement social issues into their strategies see benefits such as engaged employees, stronger relationship with consumers and stakeholders (Aguinis & Glavas, 2012).

A study was conducted by Sassen et al. (2016) that investigated the impact of corporate social performance using ESG factors as proxies. The study indicates that while environmental and governance factors have mixed effect, social performance has the most significant effect on reducing risk, significantly. lowering all three types of risk.

2.5.3 Governance (G) pillar

According to Table 4, provided by the CFA institute, the issues of Governance (G) pillar are board composition, audit committee structure, bribery and corruption, executive compensation, lobbying, political contributions and whistleblower schemes.

Corporate governance has the strongest empirical support when it comes to determining company's value. Due to Governance (G) pillar's direct link to strategic decision-making and and to management quality it is the most emphasized ESG pillar (Van Duuren et al. 2016).

Effective governance process can improve risk management, decrease agency problems, and increases transparency all of which may improve financial performance. Governance (G) pillar is particularly crucial in the banking industry, where stability and regulatory compliance depends on strong governance structures.

3 Data and Methodology

In this chapter the thesis centers on the data used in the study and the methodology used to test the hypotheses. The research design used in this thesis employs a quantitative method. The study aims to find out whether ESG integration has an impact on financial performance. In first chapter the thesis focuses on collection of research data and narrative of literature review in theoretical background. The second chapter focuses on research design and data sample, the third chapter focuses on data collection, the fourth chapter methods of analysis and last chapter focuses on reliability and ethical aspects of the study.

3.1 Collection of research data and narrative of literature review

A narrative literature review contains a thorough examination of the literature that has been published in books and journal articles. This study uses narrative literature review.

The databases act as the primary source of research information for this study. This thesis sed databases such as ABI inform Complete, Science Direct, Academic Search Elite, and Scopus. In addition to previous databases, literature review data has been also collected using Google Scholar. Keywords used in research data were ESG, ESG integration, ESG pillars, sustainability reporting, European banks. Searches were limited based on years of publication, availability of the full text and peer review. The sources used have been peer reviewed and appears in journals in the field of sustainability and finance.

3.2 Research design and data sample

This study applies a quantitative research design, using panel data analysis in examining the impact of ESG performance on the European banks' financial performance. In order to account and control so called invisible variation between banks and time, this study uses fixed effects (FEM) and random effects (REM) regression models. This study also conducts a Hausman test to determine the right model specification.

The empirical models examine how ESG scores relate to three aspects of bank performance, which are cost of capial, stock volatility and profitability (ROE and ROA)

3.3 Data collection

Data was collected from Refinitic Datastream, which combines both the Refinitiv Worldscope and Refinitiv ESG databases. The data was provided by Senior Researcher Jaakko Tyynelä from University of Vaasa. The study retrieved annual data for 50 European listed banks for the period 1999-2024. The data includes key financial variables, such as return on equity (ROE), return on assets (ROA), total assets, stock price volatility, ESG scores, environmental (E), social (S), and governance (G) pillars.

The research material of theoretical background in this master thesis is mainly based on finance related databases. The most used databases in this thesis are ABI Inform Complete, Academic Search Elite, Science Direct, and Scopus. Google Scholar has been also used in collecting theoretical background. Keywords that were used in the theoretical section were used in data collection. The keywords were ESG, E pillar, S pillar, G pillar, bank, ESG integration. Searches have been limited based on the years of publication, peer review, and the availability of the full text. Boolean operator was used in the search to allow the search terms to be combining search terms. The sources used are mainly sectoral articles and studies, which are peer reviewed and appear in respected journals in the field of finance.

BNP Paribas	BNP
HSBC Holdings	HSBA
Crédit Agricole Group	ACA
Banco Santander	SAN
Société Générale	GLE
Barclays	BARC
Deutsche Bank	DBK
UBS Group	UBSG
ING Group	INGA
MBank	UCG
Intesa Sanpaolo	ISP
Lloyds Banking Group	LLOY
NatWest Group	NWG
KBC Group	KBC
Nordea Bank	NDA FI
SEB Group	SEB A
Swedbank	SWED A
Danske Bank	DANSKE
DNB ASA	DNB
Commerzbank	CBK
CaixaBank	CABK
Banco Bilbao Vizcaya Argentaria (BBVA)	BBVA
ABN AMRO	ABN
Raiffeisen Bank International	RBI
Erste Group Bank	EBS
Handelsbanken	SHB A
Bank of Ireland	BIRG
Allied Irish Banks (AIB)	AIBG
Banca Monte dei Paschi di Siena	BMPS
Banco BPM	BAMI
Bankinter	BKT
Sabadell	SAB
Alpha Bank	ALPHA
Eurobank Ergasias	EUROB
National Bank of Greece	ETE
Piraeus Bank	TPEIR
OTP Bank	OTP
PKO Bank Polski	PKO
mBank	MBK
Bank Pekao	PEO
Bank Millennium	MIL
Getin Noble Bank	GNB
Alior Bank	ALR
BPER Banca	BPE
Ubi Banca	UBI
Credem	CE
Groupe BPCE	BPCE
Addiko Bank AG	ADKO
NLB banka	N1V2
Mediobanca Banca Di Credito Fnnzr SpA	MB

Table 5. Banks used in the study

3.4 Methods of analysis

This thesis uses quantitative panel data analysis in examining the relationship between ESG performance and banks' financial performance. Panel data analysis is chosen the method allow for the analysis of cross-sectional and time-series variation. This will provide a deeper understanding of the relationship. Regression models are used in the empirical analysis, with financial performance measures used as dependent variables. Return on Equity (ROE), stock price volatility, and cost of capital are used in the study to evaluate financial performance. These variables are defined in table 6. Below is presented the regression equations used in the study:

(1) $$\mathrm{ROE} = \frac{\text{Net Income}}{Shareholder's\ Equity}$$

Where: ROE = Return on Equity

Net income = Company's net profit after taxes

Shareholders' Equity = Total equity held by shareholders

(2) $$\sigma = \sqrt{\frac{1}{n-1}\sum_{i=1}^{n}(R_1 - \bar{R})^2}$$

Where: σ = Standard deviation

R_1 = return at time i

$\bar{R}$ = Average return over the period

n = Number of observations

(3) $$ROE_{it} = \beta_0 + \beta_1 ESG_{it} + \sigma_i + \varepsilon_{it}$$

Where: ROE_{it} = Return on equity of bank i at time t

ESG_{it} = ESG score of bank i at time t

β_0 = Intercept term

β_1 = Coefficient measuring the effect of ESG on profitability

σ_i = Bank-specific fixed effect

ε_{it} = Error term

(4) $$ROE_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \sigma_i + \varepsilon_{it}$$

Where: ROE_{it} = Return on equity of bank i at time t

E_{it} = Environmental score of bank i at time t

S_{it} = Social score of bank i at time t

G_{it} = Governance score of bank i at time t

β_0 = Intercept term

β_1 = Coefficient measuring the effect of ESG on profitability

$\beta_{2,}\beta_3$ = Coefficients measuring the effects of social and governance factors

σ_i = Bank-specific fixed effect

ε_{it} = Error term

(5) $$VOLATILITY_{it} = \beta_0 + \beta_1 ESG_{it} + \sigma_i + \varepsilon_{it}$$

Where: $Volatility_{it}$ = Volatility of bank i at time t

ESG_{it} = ESG score of bank i at time t

β_0 = Intercept term

β_1 = Coefficient measuring the effect of ESG on profitability

σ_i = Bank-specific fixed effect

ε_{it} = Error term

(6) $$VOLATILITY_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \sigma_i + \varepsilon_{it}$$

Where: $Volatility_{it}$ = Volatility of bank i at time t

E_{it} = Environmental score of bank i at time t

S_{it} = Social score of bank i at time t

G_{it} = Governance score of bank i at time t

β_0 = Intercept term

β_1 = Coefficient measuring the effect of ESG on profitability

$\beta_{2,}\beta_3$ = Coefficients measuring the effects of social and governance factors

σ_i = Bank-specific fixed effect

ε_{it} = Error term

(7) $$COSTCAP_{it} = \beta_0 + \beta_1 ESG_{it} + \sigma_i + \varepsilon_{it}$$

Where: $COSTCAP_{it}$ = Cost of Capital of bank i at time t

ESG_{it} = ESG score of bank i at time t

β_0 = Intercept term

β_1 = Coefficient measuring the effect of ESG on profitability

σ_i = Bank-specific fixed effect

ε_{it} = Error term

(8) $$COSTCAP_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \sigma_i + \varepsilon_{it}$$

Where: $COSTCAP_{it}$ = Cost of Capital of bank i at time t

E_{it} = Environmental score of bank i at time t

S_{it} = Social score of bank i at time t

G_{it} = Governance score of bank i at time t

β_0 = Intercept term

β_1 = Coefficient measuring the effect of ESG on profitability

$\beta_{2,}\beta_3$ = Coefficients measuring the effects of social and governance factors

σ_i = Bank-specific fixed effect

ε_{it} = Error term

3.5 Data Preparation and Cleaning

Data were thoroughly cleaned and restructured from long data with 2470 observations on 28 variables (Figure 8) to 220 observations on 11 main variables (Figure 9). This involves removing missing values (NA) for financial variables such as Return on Equity (ROE), Price Volatility, and Interest Rates, alongside ESG scores as well as their sub-units (Environmental, Social, and Governance pillars). This derived data is strong in terms of analysis, with control for bank-specific, as well as for effects over time. This data allows regression analysis between banks' ESG performance and financial ratios over the years 1999-2024. Although the number of observations was reduced, the data is rich in structure and retains the statistically significant needed for analysis. To ensure a reliable estimation results and a balanced panel, this step was necessary. To increase the

transparency of data processing, sample screenshots of the raw data (figure 7), long data (figure 8) and final cleaned data (figure 9) are included. Clean data ensures both balanced and high-quality panel suitable for estimations.

Study Variables	Code
Return on Equity (ROE, %)	08301
Return on Assets (ROA, %)	08326
Total Assets	02999
Stock Price Volatility	08806
ESG Score	ESG_SCORE
Environmental Score	ENV_SCORE
Social Score	SOC_SCORE
Governance Score	GOV_SCORE
Carbon Emission Score	TRESGENERS
Value - Emission Reduction/Greenhouse Gas Emissions	ENERO03V
Executive Compensation linked to ESG Goals	EXEC_COMP_LINKED_ESG
Stock Performance (Price/Earnings Ratio - Current)	09102
Cost of Capital (Interest Rate - Estimated Average)	08356
ESG Combined Score	TRESGCS
Sustainable disclosure Score	CGVSDP026
Emission Reduction Objectives/Targets	ENERDP0161
ESG Controversy Score	TRESGCCS

Table 6. Variable list

data × long_data × clean_data ×

Filter

	Name	Code	1999	2000	2001	2002	2003	2004	2005
1	BNP PARIBAS SA - RETURN ON EQUITY - TOTAL (%)	F:BNP(WC08301)	10.01	20.08	17.49	12.91	13.76	15.98	15.94
2	BNP PARIBAS SA - RETURN ON ASSETS	F:BNP(WC08326)	NA	1.07	1.0	1.0	1.09	1.1	0.86
3	BNP PARIBAS SA - TOTAL ASSETS	F:BNP(WC02999)	6.96971E8	6.92325E8	8.24256E8	7.0933E8	7.82143E8	9.05001E8	1.257091
4	BNP PARIBAS SA - PRICE VOLATILITY	F:BNP(WC08806)	21.48	20.95	20.54	23.65	23.99	21.87	20.89
5	BNP PARIBAS SA - ESG Score	F:BNP(TRESGS)	NA	NA	NA	37.67	45.92	43.08	60.31

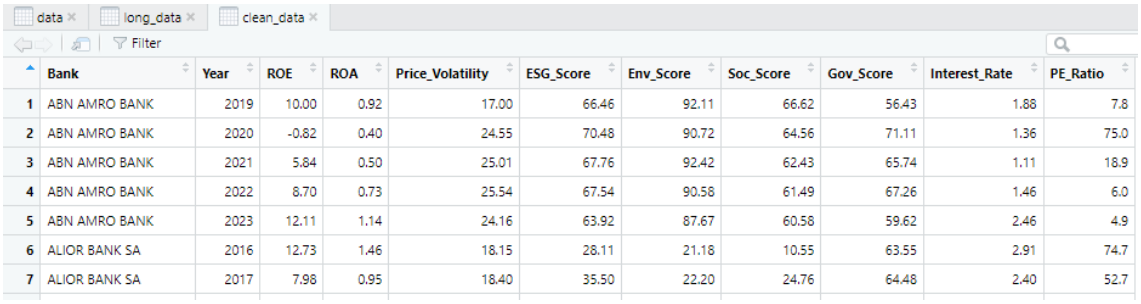
Figure 7. Screenshot of raw data (1083 observations of 28 variables)

data × long_data × clean_data ×

Filter

	Bank	Year	Code	ROE	ROA	Total_Assets	Price_Volatility	ESG_Score	Env_Score	Soc_Score	Gov_Score	Value -
1	ABN AMRO BANK	1999	H:ABN(WC08301)	NA	NA	NA	NA	NA	NA	NA	NA	NA
2	ABN AMRO BANK	2000	H:ABN(WC08301)	NA	NA	NA	NA	NA	NA	NA	NA	NA
3	ABN AMRO BANK	2001	H:ABN(WC08301)	NA	NA	NA	NA	NA	NA	NA	NA	NA
4	ABN AMRO BANK	2002	H:ABN(WC08301)	NA	NA	NA	NA	NA	NA	NA	NA	NA
5	ABN AMRO BANK	2003	H:ABN(WC08301)	NA	NA	NA	NA	NA	NA	NA	NA	NA

Figure 8. Screenshot of long data (2470 observations of 28 variables)



data × long_data × clean_data ×

Filter

	Bank	Year	ROE	ROA	Price_Volatility	ESG_Score	Env_Score	Soc_Score	Gov_Score	Interest_Rate	PE_Ratio
1	ABN AMRO BANK	2019	10.00	0.92	17.00	66.46	92.11	66.62	56.43	1.88	7.8
2	ABN AMRO BANK	2020	-0.82	0.40	24.55	70.48	90.72	64.56	71.11	1.36	75.0
3	ABN AMRO BANK	2021	5.84	0.50	25.01	67.76	92.42	62.43	65.74	1.11	18.9
4	ABN AMRO BANK	2022	8.70	0.73	25.54	67.54	90.58	61.49	67.26	1.46	6.0
5	ABN AMRO BANK	2023	12.11	1.14	24.16	63.92	87.67	60.58	59.62	2.46	4.9
6	ALIOR BANK SA	2016	12.73	1.46	18.15	28.11	21.18	10.55	63.55	2.91	74.7
7	ALIOR BANK SA	2017	7.98	0.95	18.40	35.50	22.20	24.76	64.48	2.40	52.7

Figure 9. Screenshot of clean data (220 observations of 11 variables)

4 Results

In this chapter the thesis will focus on results of empirical research. The data and methodology have been discussed previously. The results will cover Nordea's ESG scores and other European banks descriptive statistics. The first part of the chapter will focus on descriptive statistics. After descriptive statistics the thesis focuses on correlation analysis and correlation analysis of key variables. Then the thesis will focus on panel data models and Hausman test, after that there will be a Nordea ESG factor and comparison with competitions.

4.1 Descriptive Statistics

Descriptive Statistics

Statistic	N	Mean	St. Dev.	Min	Max
ROE	220	9.643	8.570	-43.140	39.930
ROA	220	0.994	0.731	-0.860	4.040
Price_Volatility	220	26.414	6.037	15.270	48.040
ESG_Score	220	63.636	18.217	11.910	95.680
Env_Score	220	74.662	23.256	15.260	98.980
Soc_Score	220	63.394	20.023	6.790	97.660
Gov_Score	220	64.457	19.541	12.440	95.800
Interest_Rate	220	1.844	1.041	0.140	6.210
PE_Ratio	220	15.153	15.149	0.700	122.900

Table 7. Summary statistics for key financial and ESG variables

Table 7's descriptive statistics indicate that sample mean ROE was 9.64% (SD=8.57), ranging from -43.14% to 39.93%. ESG scores averaged at 63.63 (SD=18.22), while Environmental pillar scores (M=74.66, SD=23.26) were considerably higher than Governance (M=64.46, SD=19.54) and Social scores (M=63.64, SD=20.02). Price volatility averaged at 26.41 (SD=6.04), indicating moderate volatility in stock prices. Chart 1 illustrates an upward trend in ESG scores over the years, increasingly so after 2015, reflecting greater emphasis on sustainability in the banking sector.

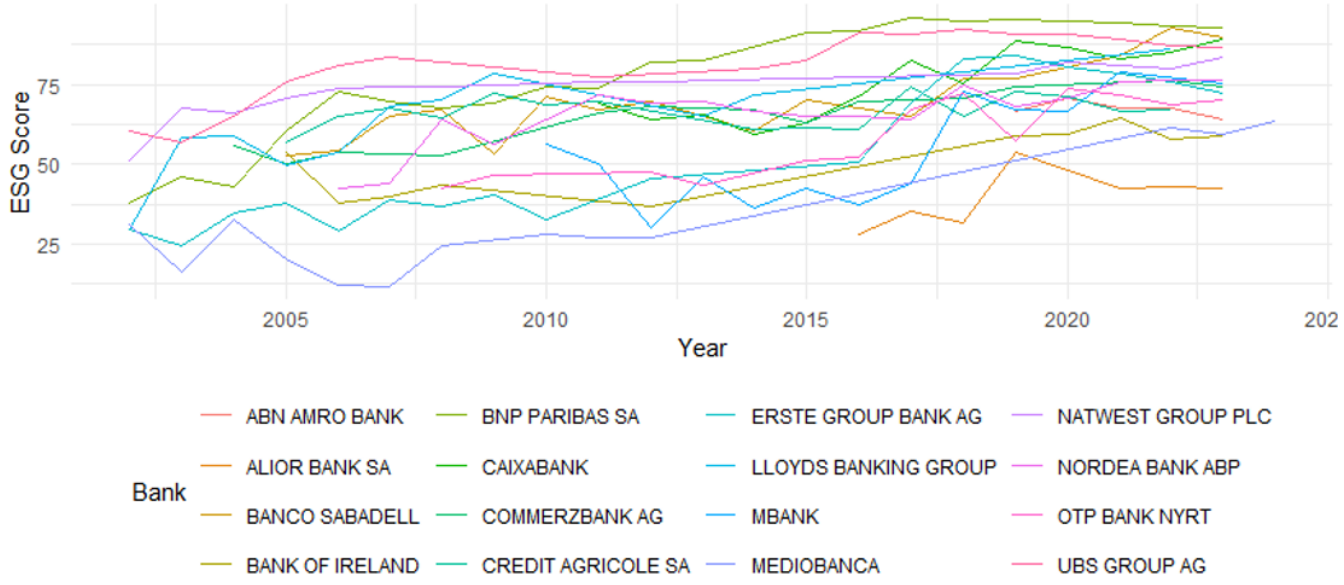


Figure 10. ESG Scores Over Time by Bank

Figure 10 present 16 European banks and the development of ESG scores over the sample period. Overall, the figure shows a clear positive trend for most banks, which indicates a growing need on sustainability and responsible business practices.

4.2 Correlation Analysis

The correlation matrix (Table 8 & Figure 11) reveals some noteworthy correlations. ESG scores negatively correlate weakly with profitability (ROE-ESG: -0.16), that is, good ESG performance is associated with less profitable banks. But ESG scores negatively correlate with Price Volatility (-0.01), which may reflect that green practices bring about stock price stability. Notably, strong inter-correlation between ESG pillars (Environmental-Social: 0.81) suggests caution while doing regression analysis to avoid multicollinearity.

	ROE	ROA	Price_Volatility	ESG_Score	Env_Score	Soc_Score	Gov_Score	Interest_Rate	PE_Ratio
ROE	1.00000000	0.6136704	-0.423319665	-0.164005286	-0.2357205	-0.14987494	-0.04182839	0.14316078	-0.197629558
ROA	0.61367038	1.0000000	-0.291636057	-0.429515729	-0.4173865	-0.36698044	-0.33499025	0.47754699	-0.087411104
Price_Volatility	-0.42331966	-0.2916361	1.000000000	0.008824263	0.1386116	0.07223022	-0.16610743	-0.10005285	0.003868841
ESG_Score	-0.16400529	-0.4295157	0.008824263	1.000000000	0.8466814	0.92215299	0.76149626	-0.24014280	-0.257669210
Env_Score	-0.23572050	-0.4173865	0.138611638	0.846681409	1.0000000	0.81370313	0.43530015	-0.11207480	-0.200965721
Soc_Score	-0.14987494	-0.3669804	0.072230217	0.922152995	0.8137031	1.00000000	0.48812368	-0.18069023	-0.273811602
Gov_Score	-0.04182839	-0.3349902	-0.166107432	0.761496256	0.4353002	0.48812368	1.00000000	-0.30347081	-0.173363050
Interest_Rate	0.14316078	0.4775470	-0.100052849	-0.240142796	-0.1120748	-0.18069023	-0.30347081	1.00000000	0.072754549
PE_Ratio	-0.19762956	-0.0874111	0.003868841	-0.257669210	-0.2009657	-0.27381160	-0.17336305	0.07275455	1.000000000

Table 8. Correlation matrix to check for multicollinearity

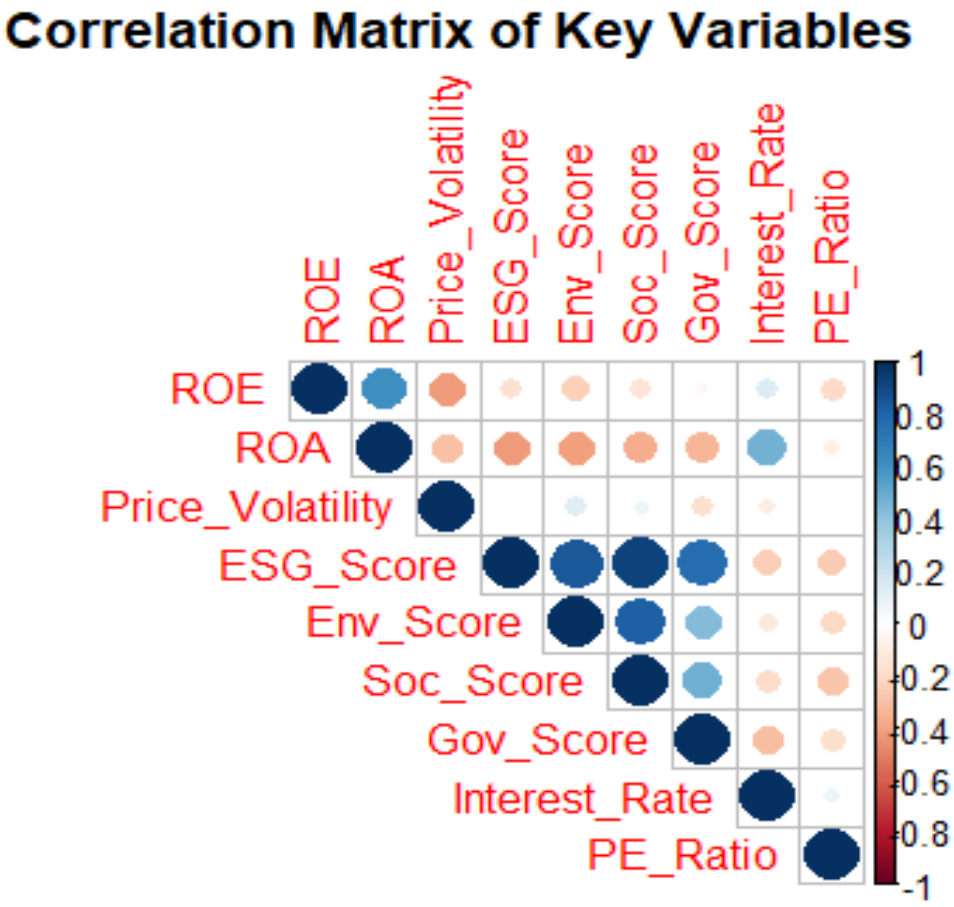


Figure 11. Visualization of the correlation matrix

The correlation matrix provides an overview of the relationships between key financial and ESG variables. The correlation matrix suggests that the ESG score has a weak negative correlation with profitability measures (ROE and ROA), which supports that higher ESG performance may be associated with lower short-term profitability. The individual ESG pillars, specifically Social (S) and Governance (G) to some extent, show positive correlations with profitability, supporting that different ESG dimension can be associated with financial performance in different ways.

Strong positive correlation between ESG pillars is observed through (E) and (S), suggesting potential multicollinearity issues. The study suggests that when including all ESG pillars simultaneously in regression models, it should be done with caution. Because the correlation seem to be moderate to strong instead of perfectly overlapping, the study

suggests that multicollinearity can be presented without invalidating the regression analysis.

4.3 Panel Data Models

Model 1 (Effect on Profitability): Fixed effects regression (Column X) shows that ESG score possesses a significant negative coefficient value (-2.755, $p<0.05$), contrary to expectation. Disaggregate analysis, however, is mixed: Environmental (0.349, $p<0.05$), Social (1.377, $p<0.05$), and Governance (1.074, $p<0.05$) scores all possess positive but significant relationships with ROE. The random effect model (Column 2), however, reveals that ESG score possesses a significant but negative Environmental (0.307, $p<0.05$), Social (1.224, $p<0.05$), and Governance (0.945, $p<0.05$) scores all possess positive coefficients. This suggests that although constituent ESG score may be masking underlying dynamics, individual pillars—particularly Social and Governance—are unequivocal drivers of profitability.

Model 2 (Stock Volatility and ESG): Fixed effects estimates (Column 3) suggest that ESG score is associated with higher volatility (0.929, $p<0.05$), which is contrary to anticipation. Pillar-level estimates, however, explain: Social (-0.431, $p<0.05$) and Governance (-0.461, $p<0.01$) scores have a negative influence on volatility, with an insignificant influence from the Environmental pillar. In contrast, results in the random effect specification (Column 4) reveal evidence on ESG score positively but on Social (-0.376, $p<0.05$), and Governance (-0.409, $p<0.05$) scores negatively. This can indicate that stakeholders penalize banks with high composite ESG scores for trade-offs, even if good Social and Governance standards increase stability.

Model 3 (Cost of Capital and ESG): Composite ESG score as well as individual pillars have no statistically significant relationships with Interest Rates (Cost of Capital) in fixed effects estimation (Column 5) as well as in random effects estimation (Column 6). This is

theory contrary but in keeping with arguments on gradual discovery by financial markets about ESG benefits. R-squared values across models (0.128-0.239) suggest that although ESG factors still remain relevant, other unobserved variables play determining roles in financial performance.

Panel Regression Results

	Dependent variable:					
	ROE		Price_Volatility		Interest_Rate	
	Profitability-FE	Profitability-RE	Volatility-FE	Volatility-RE	Cost of capital-FE	Cost of capital-RE
	(1)	(2)	(3)	(4)	(5)	(6)
ESG_Score	-2.755***	-2.441***	0.929**	0.808**	0.054	0.054
	(0.620)	(0.585)	(0.407)	(0.395)	(0.077)	(0.072)
Env_Score	0.349***	0.307***	-0.047	-0.043	0.001	-0.001
	(0.126)	(0.119)	(0.083)	(0.080)	(0.016)	(0.015)
Soc_Score	1.377***	1.224***	-0.431**	-0.376*	-0.039	-0.038
	(0.310)	(0.290)	(0.203)	(0.196)	(0.039)	(0.036)
Gov_Score	1.074***	0.945***	-0.461***	-0.409***	-0.041	-0.040
	(0.234)	(0.220)	(0.153)	(0.149)	(0.029)	(0.027)
Constant		3.476		28.550***		3.391***
		(4.087)		(2.833)		(0.500)
Observations	220	220	220	220	220	220
R2	0.177	0.156	0.213	0.239	0.128	0.147
Adjusted R2	0.099	0.140	0.138	0.225	0.045	0.131
F Statistic (df = 4; 200)	10.766***	38.675***	13.521***	44.963***	7.324***	30.686***

Note: *p<0.1; **p<0.05; ***p<0.01

Table 9. Panel regression results (Fixed effects and random effects)

Hausman tests for models 1 and 3 indicate there is no incompatibility between fixed effects models and random effects models. The Hausman test (Figure 12) for model 2, on the other hand, verifies that fixed effect model is preferred in this case (p=0.003). This is after unobserved heterogeneity at the bank-level is controlled.

```
> # Display Hausman test results
> print("Hausman Test Results for Model 1 (ROE):")
[1] "Hausman Test Results for Model 1 (ROE):"
> print(hausman_test1)

        Hausman Test

data:  ROE ~ ESG_Score + Env_Score + Soc_Score + Gov_Score
chisq = 5.3385, df = 4, p-value = 0.2543
alternative hypothesis: one model is inconsistent

>
> print("Hausman Test Results for Model 2 (Price Volatility):")
[1] "Hausman Test Results for Model 2 (Price Volatility):"
> print(hausman_test2)

        Hausman Test

data:  Price_Volatility ~ ESG_Score + Env_Score + Soc_Score + Gov_Score
chisq = 15.961, df = 4, p-value = 0.003072
alternative hypothesis: one model is inconsistent

>
> print("Hausman Test Results for Model 3 (Interest Rate):")
[1] "Hausman Test Results for Model 3 (Interest Rate):"
> print(hausman_test3)

        Hausman Test

data:  Interest_Rate ~ ESG_Score + Env_Score + Soc_Score + Gov_Score
chisq = 1.6073, df = 4, p-value = 0.8075
alternative hypothesis: one model is inconsistent
```

Figure 12. Result of Hausman test

The Hausman test was conducted for all regression models. The test evaluates if the unique errors (u_1) are correlated with the regressors. This will determine. whether the FEM or the REM provides both efficient and consistent estimates.

4.4 Nordea ESG integration

Nordea is a Nordic bank with roots dating back to 1820. (Nordea.com). Through mergers first 300 banks were merged after 1970 and in 1990s there were four big banks in the Nordics, which decided to merge. Nordea has merged from four banks Sparekassen for Kjøbenhavn og Omegn (Denmark), Wemlandsbanken (Sweden), Chrisiania Kredikasse

(Norway), and Föreningsbanken I Finlan/Suomen Yhdyspankki (Finland). (Nordea.fi) In 2018, Nordea participated in the launch of the Principles for Resposible Banking at a UN round table summit in Paris in collaboration with 27 other banks and the United Nation. The principles attempt to bring the financial sector into line with the Paris Climate Agreement and the Sustainable Development Goals (SDG). Out of all the banks, Nordea is the only bank from the Nordic region (Nordea.fi). On 1st of October 2018, Nordea was redomiliced to Finland. As of then Nordea has been regulated by the same regulations and regulatory framework as other European banks under the banking union. Nordea's Swedish parent company Nordea Bank AB also merged into the newly established Nordea Bank Oyj in Finland.

Nordea has promoted equality, sustainable investing and sustainability for a long time. Since 2002, Nordea has reporting on both environmental and sustainability performance annualy. After 2021, sustainability reporting has been integrated into Nordea's Annual Report. Nordea's focuses on climate target methodologies for the lending portfolio, climate change disclosure methodology, green asset ratio methodology and also climate target methodologies for subsidiary Nordea Life & Pension.

Metric	R-Squared	Coefficient (ESG Score)	P-Value	Intercept
ROE	0,463	-0,2332	0,00135	27,34
ROA	0,348	-0,0151	0,00785	2,05

Figure 13. Nordea Bank Abp. ROE and ROA

The data from Nordea was collected between years 2008 to 2023. In this simple linear regression model the depended variable are Return on Equity (ROE), Return on Assets (ROA) and the independent variable is the ESG Score using method (4).

In the ROE model, the R-squared 0,463 tells that 46,3% of the variation in ROE can be explained by the ESG score, which is a moderately strong relationship. the ESG Score is -0,2332, meaning that a one-unit increase in the coefficient (ESG score) is related with a 0.2332 unit decrease in ROE, whilst holding everything else constant. The P-value is 0.00135, which is statistically significant. The P-value suggests that the relationship is unlike due to random chance. Intercept in this analysis was 27,34, which shows that when the ESG Score is zero, the model predicts an ROE of 27,34.

In the ROA model, the R-squared is 0.348, which shows that 34,8% of the variation in ROA is explained by the ESG Score. This result is weaker than in the ROE model, but still shows moderate relationship. The ESG Score is -0.0151, which showed that a one-unit increase in ESG Score is associated with a 0.0151 unit decrease in ROA, when holding everything else constant. P-value was 0.00785, which is statistically significant. The P-value in ROA model indicates that there is a reliable relationship. The intercept is 2.05, which proves that when ESG Score is zero, the predicted ROA is 2.05.

Overall, there is a statistically significant negative relationship between ESG Score and both ROE and ROA. According to the negative coefficient, higher ESG Scores are associated mainly with lower profitability. ROE appears to have stronger relationship than ROA.

4.5 Nordea's comparison with competitors

In this section, the thesis will focus the comparison of Nordea with competitors. The two competitors chosen were BNP Paribas SA and UBS Group AG. The main reasons for the selection of these firms were because they are all three major financial institution, that operates both in Europe and globally. They share several key similarities in services, structure as well as strategy, which provides a reliable comparison.

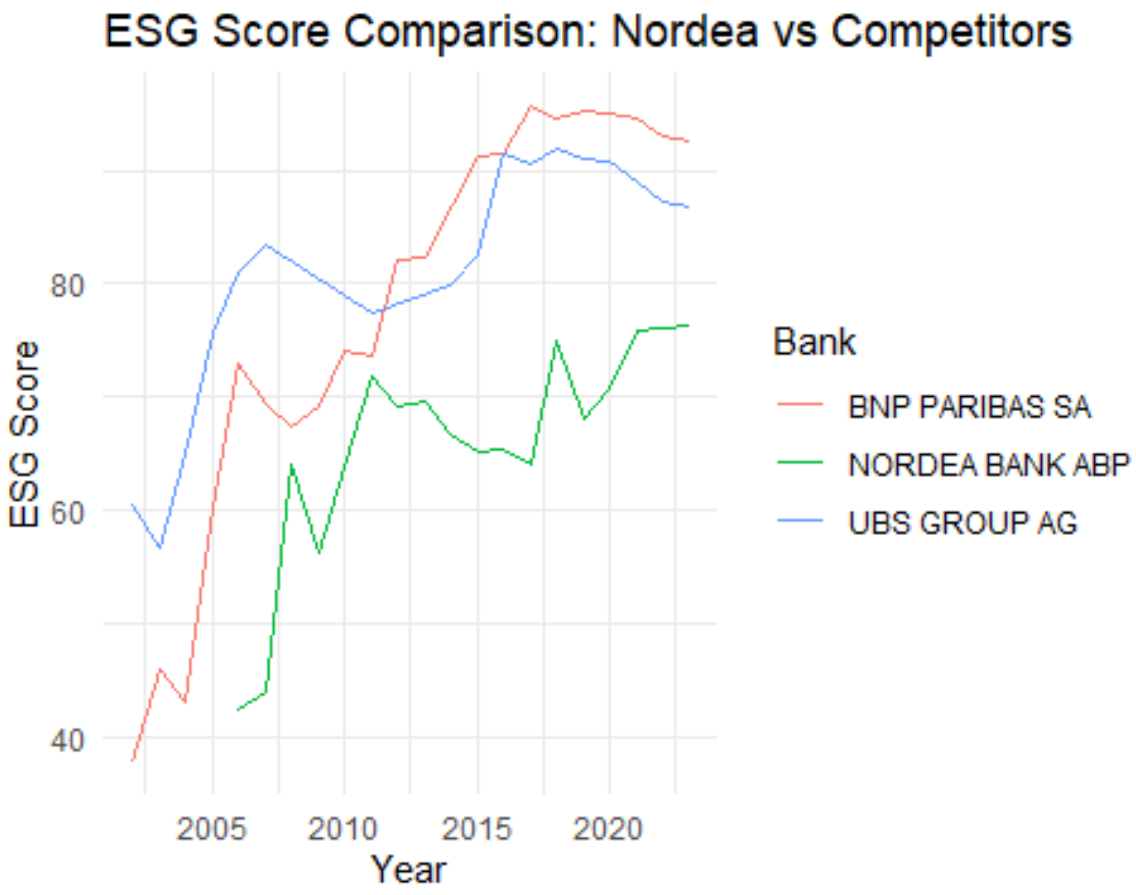


Figure 14. Comparing ESG performance

This figure compares ESG scores for Nordea Bank Abp, BNP Paribas SA, and UBS Group AG. The figure indicates that ESG scores have increased over the observed time period for all three banks. The figure reflects the growing importance of sustainability practices in financial sector. In the figure it can be viewed that BNP Paribas demonstrates the highest ESG score after 2000s, which indicates a strong performance in activities relating sustainability. UBS Group AG sustains also relatively high ESG scores, however below BNP Paribas SA. Nordea's ESG scores are lower than competitors, but the figure shows improvement over time. The figure suggests that Nordea has made progress in ESG performance.

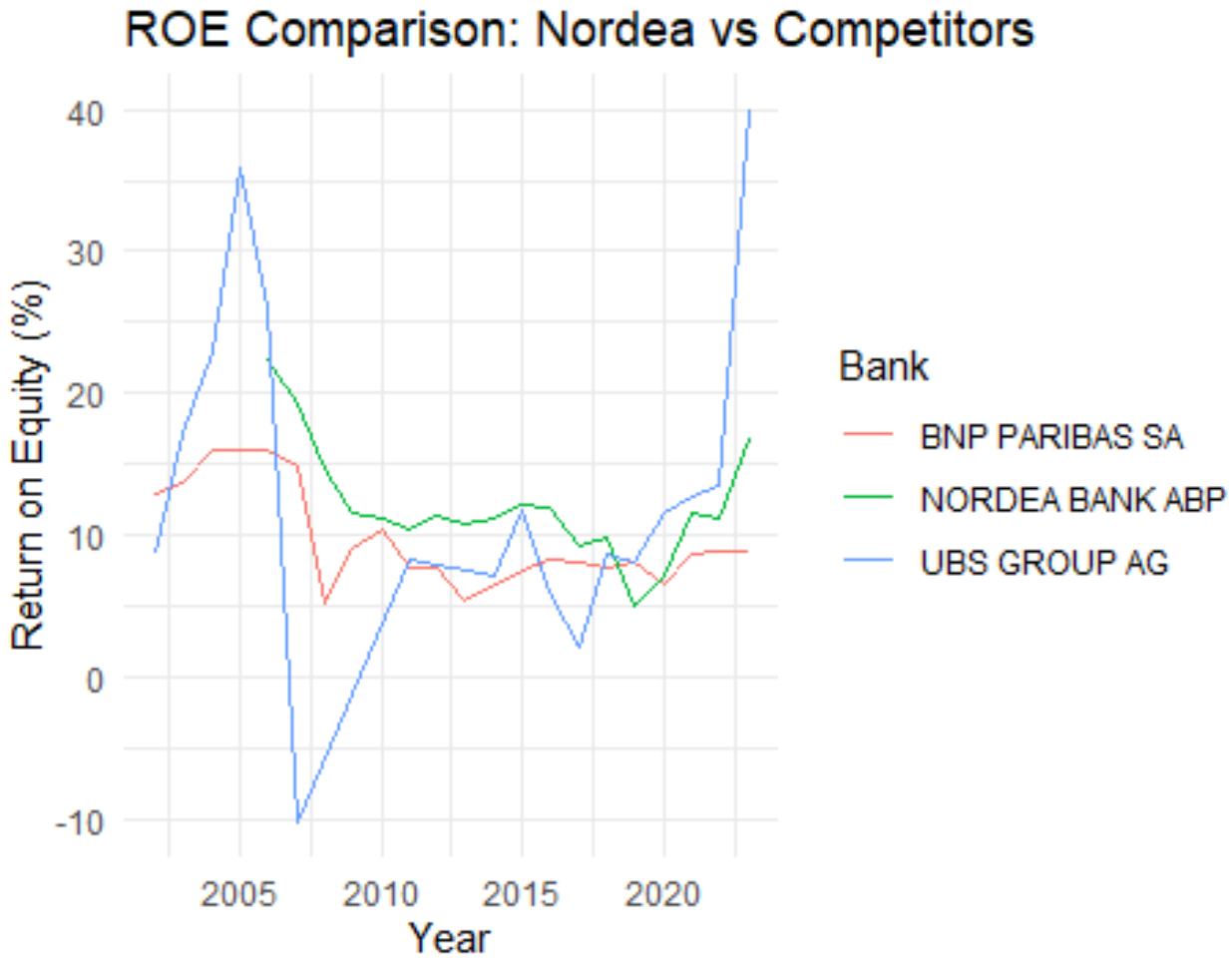


Figure 15. Comparing profitability

The figure compares Return on Equity (ROE) for BNP Paribas SA, Nordea Bank ABP, and UBS Group AG. The results indicate that ROE levels vary across all three banks, with UBS Group AG showing highest volatility in ROE, with a significant decline during the mid-200s. However, the figure shows a strong recovery and high profitability after the decline. BNP Paribas SA display stable ROE throughout time period while being lower in some years than Nordea Bank ABP or UBS Group AG. Nordea Bank Abp maintains a moderate profitability level and the ROE is around similar level as its competitors. Nordea shows improvement in the later years. This figure indicates that UBS has stronger financial performance in ROE comparison.

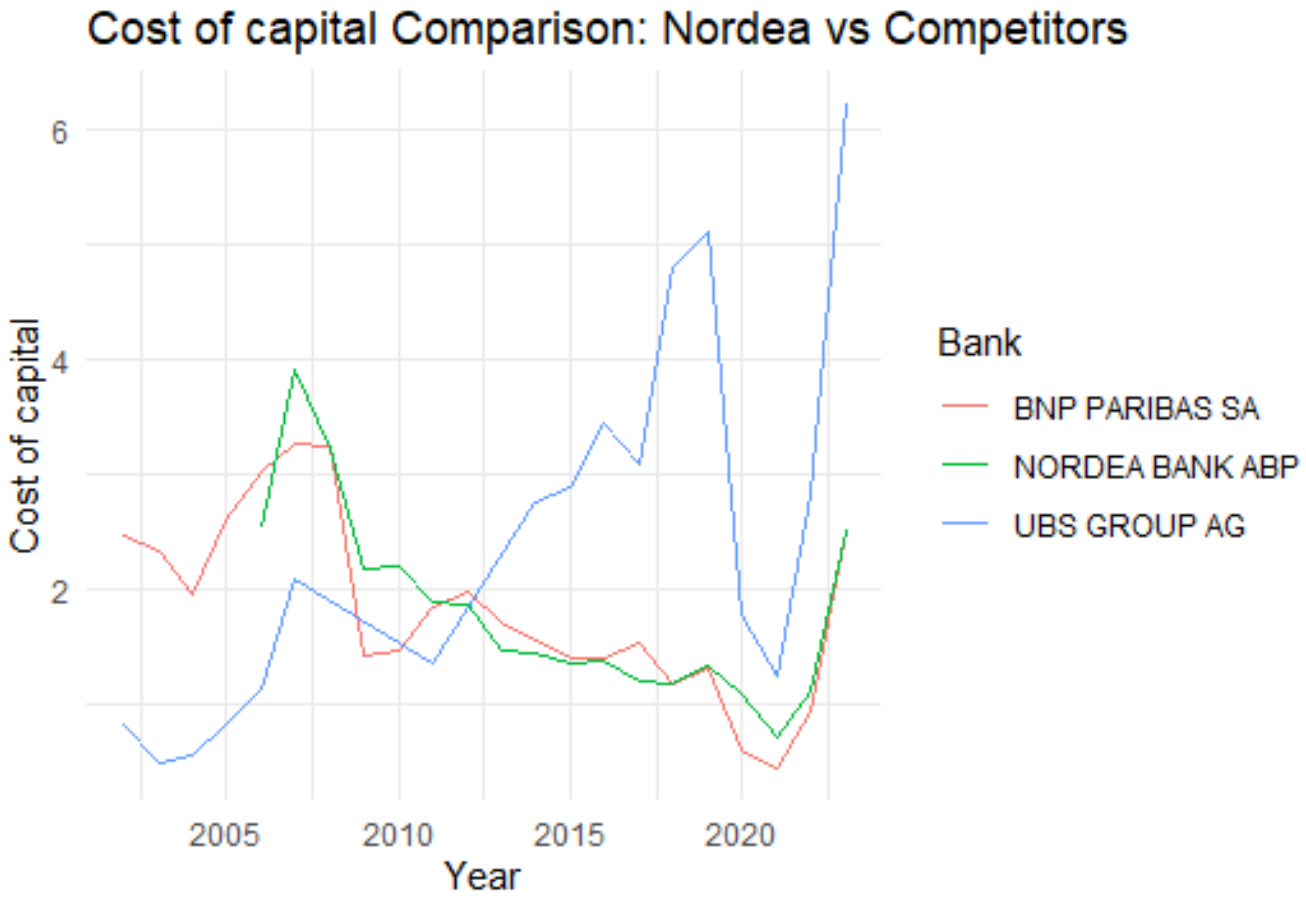


Figure 16. Comparing Cost of Capital

This figure compares the cost of capital for Nordea Bank Abp, BNP Paribas SA, and IBS Group AB. The figure shows that across all the three banks, the cost of capital varies noticeably. This can be explained by the differences in both financial conditions and market expectations. In the figure it can be seen that BNP Paribas and Nordea shows relatively similar cost of capital levels and UBS shows higher results with a significant increase in the 2020s. Overall, the results suggest that Nordea's cost of capital can be compared to majority of its European competitors and UBS experiences higher volatility.

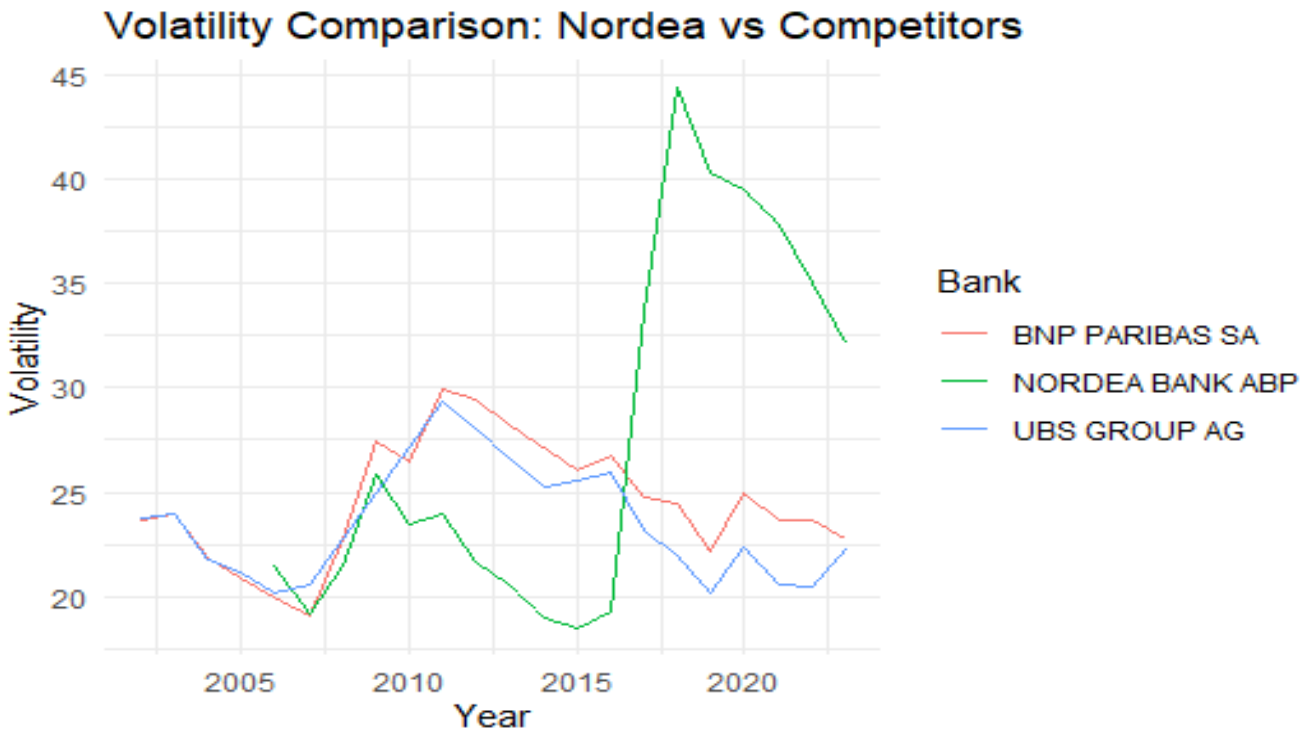


Figure 17. Comparing volatility

This figure compares stock price volatility for Nordea Bank ABP, BNP Paribas SA, and UBS Group AG. The figure shows that volatility levels also vary across all the three banks and the response to market conditions is noticeable. BNP Paribas SA and UBS Group AG have a similar volatility pattern most of the respective period. Nordea experiences a significant increase in the later years and the volatility is higher compared to competitors. This can be explained by sensitivity to market developments during 2010s.

The analysis finds an overall relationship between ESG integration and financial performance. Disaggregation from composite ESG scores to Environmental, Social, and Governance pillars finds persistent positive impacts, most prominently for Governance (G), on profitability but also stability. Nordea peer groups demonstrate such correlation using ESG strength to achieve financial performance. The dampened impact on Cost of Capital implies, however, that ESG risks and opportunities remain not fully priced by markets. Subsequent research should explore non-linear relationships as well as ESG materiality by sectors to refine these insights. Alternative statistical test that may be employed

include non-linear models for ESG and performance relationship or lagged impacts of ESG on financial performance.

The results show Nordea's ESG performance (figure 14) ranks below that of its rivals like BNP PARIBAS SA and UBS GROUP AG. In terms of profitability, Nordea beats only BNP PARIBAS SA (figure 15). In recording cost of capital, the two have lower rates compared to UBS GROUP AG (figure 16). The price volatility in Nordea is high compared to the peers (figure 17). From the observations made, Nordea's poor ESG performance is one among the reasons for its financial performance.

5 Conclusion

This final chapter discusses key findings of the study based on results, comparison to previous literature and provides recommendation to further research and limitations to the study.

5.1 Key findings of the study

One of the main findings in the study was according to regression results that both the Social (S) and Governance (G) pillars are statistically significant as well as positively associated with the profitability of banks', highlighting the role of Social and Governance as the key drivers within the broader ESG framework.

In the beginning of this research, two research questions was provided. The research questions are:
RQ_1: Does ESG integration improve banks' financial performance ?
RQ_2: Which ESG areas (Environmental, Social, Governance) have the greatest impact on banks' financial performance

Based on the empirical results of this research, ESG pillars does have an effect on the financial performance of banks, which means that the null hypothesis (H_0) "No relationship was found between ESG (E, S, G) pillars and banks financial performance" can be rejected and the alternative hypothesis (H_1) "ESG pillars (E, S, G) positively affect Nordea's financial performance" can be supported based on results provided. The reason for this is that a statistically significant, but negative correlation was found between ESG score and profitability (ROE, ROA), suggesting that the initial costs of ESG measures may weaken the short-term results. However, in contrast, individual pillars, particularly the social (S) and governance (G) pillars showed both positive and a significant correlation with profitability, which can be viewed as supporting the idea of long-term benefits of ESG. Even though the impact of the environmental (E) pillar was positive, it was

weaker than social (S) and governance (G) pillars, which can be due to the slow return of investment. The results implies that areas of responsibility related to stakeholders, governance and personnel can improve the financial stability and efficiency of banks. Overall, the study shows that ESG integration has a significant but compounded impact on the financial performance of banks.

	Description	Answer / Supported
Research question 1 (RQ_1)	Does ESG integration improve banks' financial performance	Yes
Research question 2 (RQ_2)	Which ESG areas (Environ-mental, Social, Governance) have the greatest impact on banks' financial performance	Social (S), and Governance (G) showed both positive and a significant correlation with profitability
Hypothesis 0 (H_0)	No relationship was found between ESG (E, S, G) pillars and banks financial performance	Not supported
Hypothesis 1 (H_1)	ESG pillars (E, S, G) positively affect Nordea's financial performance"	Supported

Table 10. Answers to research questions and hypothesis

5.2 Limitation of the study, comparison to previous literature and recommendations for further research

The limitation of the study was, for instance the lack of ESG-related data from early years, which unfortunately affected the clear data. However, the data collected was reliable and thus significantly important.

The study's findings are consistent with previous literature showing that there is a complicated relationship between financial performance and ESG integration (Friede et al., 2015; Buallay, 2019). The result of this study confirms previous literature that suggest the overall ESG score does not consistently show as positive with profitability (Halbritter & Dorfleitner, 2015).

When ESG is divided into its individual pillars, the study's findings show a significant relationship. Specifically, financial performance is statistically strongly correlated with the Social (S) and Governance (G) pillars. These findings are consistent with previous research highlighting the role of long-term value creation (Freeman, 1995; Cek & Eyupoglu, 2020), and the importance of improving operational efficiency (Jensen & Meckling, 1979).

The result also confirms previous studies' findings that the effects of ESG has inconsistent effects on financial performance, in which some research claim minimal or even negative relationship (Buallay, 2019; Damodaran, 2006). The short-term cost associated with ESG investment may affect any potentiaol long-term benefits. (Friede et al., 2015).

Recommendations for further research can be, for instance to research how the trend will move forward i.e. does the importance of E pillar rise in shareholders. Also, it would be important to further the research in looking how different policies and regulations affect not only ESG integration of companies but stakeholders' opinion as well. Future

research will benefit from more comprehensive ESG-related data as well as more research into each ESG pillars.

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