LUISS

Bachelor's Degree in Business Administration

Course of Managerial Accounting Planning & Control

The role of social performance for firm risk: Evidence from the S&P 500

Prof.ssa Claudia Arena

SUPERVISOR

Enrico Zuppardi - 264651

CANDIDATE

Academic Year 2024/2025

Introduction

The thesis in question stems from the growing interest that the academic world and market operators dedicate to the Environmental, Social and Governance (ESG) factors, with a particular attention to the "Social" dimension. While there is a strong mismatch between the ratings given by the world's leading rating agencies, many studies have highlighted the key role of social initiatives in creating value and mitigating business risk. The key point of the thesis is the fact that the same company can receive extremely different and contrasting ESG assessments depending on the criteria and weights attributed to each indicator by the agencies. This creates uncertainty among investors and managers. The proposed empirical survey is based on this information gap and aims to verify whether and to what extent a high Social Score is reflected in a reduction of share price volatility, a proxy for market risk. The hypothesis to be tested is therefore the following: H1: There is an inverse and statistically significant relationship between the social performance of the company and its market risk profile.

To test the hypothesis, data were collected from all S&P 500 companies in the time interval between 2020 and 2023, integrating the market series and ESG scores provided by Refinitiv Datastream. Key variables include the Social Score, annualised yield volatility, financial leverage, net sales, and the HighSocialExposure dummy variable, while the econometric model uses OLS cross-section regressions provided with fixed year effects and VIF diagnostics for multicollinearity. The structure follows a linear path: after the Introduction, Chapter 1 reconstructs the theoretical background on the link between ESG and company value; Chapter 2 formulates the research question focused on the link between social performance and risk; Chapter 3 describes the methodology in detail; Chapter 4 presents the empirical results; Conclusion, the final section, draws up a summary and opens up scenarios for further analysis. In this way, the work aims to fill an empirical gap, offering up-to-date evidence on the role of social performance as a risk mitigation factor in mature financial markets.

Chapter 1 – Theoretical Background

This chapter analyses the evolution of Environmental, Social and Governance (ESG) factors in financial markets, defining their role in business decisions and their impact on the value of the company. Over the past two decades, ESG has moved from being a defined secondary interest and relegated to social programmes to becoming a central principle in investment strategies and risk management.

In recent times, companies and investors are increasingly considering ESG as a key element of their investment plans, given the increasing stringency of government controls, changing consumer attitudes and changing sustainability goals.

The challenges associated with ESG ratings are analysed in depth, especially those related to discrepancies in social dimension scores (Social Score).

These discrepancies can alter investor confidence and make a company's strategic planning more complicated.

This analysis will be the basis for Chapter 2, which goes into all the information related to the Social Score and its implications in terms of financial risk, performance and profitability.

1.1 Evolution of ESG in Financial Markets

1.1.1 The Emergence of ESG Principles

ESG has evolved significantly both in its origins in CSR and in socially responsible investing (SRI). The key to this evolution was the approach that in early SRI practices routinely excluded what are called controversial activities. These activities include, for example, gambling, the sale and production of arms or tobacco and fossil fuels. At the time, the idea of integrating social or environmental issues was seen as an ethical position in relation to an activity capable of creating real value.

Over time, both companies and investors have heavily reconsidered this metric due to major events such as the 2008 crisis, increasing awareness of climate change, and increased activism in the above-mentioned areas. So the Social Score is becoming more integrated day by day. This change in perception has made it possible for regulators to develop standardised guidelines. The most important of these are the United Nations Principles for Responsible Investment (PRI), which encourage institutional investors to

consider and then integrate ESG factors into their investment decisions, and the Task Force on Climate-related Financial Disclosures (TCFD), which evaluates and makes recommendations for the assessment and communication of climate-related risks and opportunities. These global laws and regulations, together with regional EU and other jurisdictions' regulations, have contributed to the integration of ESG, Ensuring that market players such as venture capital recognise sustainability as a key factor of future value.

1.1.2 ESG in Investment Strategies and Corporate Decision-Making

The ever-growing interest in ESG has led to fundamental changes in how investors identify and select potential assets, develop portfolios and interact with companies.

Two global market giants like BlackRock and Vanguard have also strongly integrated ESG metrics into their investment strategies. This is further evidence that sustainability issues are linked to economic performance. Their engagement policies not only require greater transparency from the companies in which they believe and invest, but also encourage them to adopt stronger sustainability and governance practices. At company level, given the growing importance of these practices, the integration of ESG criteria has moved from simple declarations to more concrete and above all measurable actions.

Companies regularly report progress on various key performance indicators (KPIs) ranging from emission reduction targets to workforce diversity statistics.

This information serves two purposes: it communicates credibility to external stakeholders (e.g., investors and NGOs) and it defines the decision-making process for resource allocation, product development, and risk management.

In addition, companies that successfully interweave their operations and culture with ESG principles often have a stronger reputation and more resilient value chain capabilities that can be critical when dealing with emergencies such as the COVID-19 pandemic.

Increasing evidence suggests that ESG-compliant companies may experience greater stability in turbulent market conditions, as they are less likely to face regulatory fines, Litigation, or reputational damage related to negative environmental or social incidents.In a context of market volatility and uncertainty, this increased stability is particularly important.

1.1.3 The Three Dimensions of ESG and Their Impact

Environmental (E): This dimension focuses on a company's impact on natural resources and ecosystems. The criteria assessed are: greenhouse gas emissions, water use, waste management, and ability to withstand extreme weather events. Companies with strong environmental practices not only reduce the risks from a legislative and reputational point of view, but can also create opportunities Companies with strong environmental practices not only reduce the risks from a legislative and reputational point of view, but can also create opportunities for cost savings by innovating in energy efficiency, Supply chain optimisation, and circular economy.

Social (S): The social dimension concerns the relations of a company with key figures such as stakeholders, employees, customers, and society in general. Key metrics include fair wages, safe working conditions, diversity and inclusion, and respect for human rights. Although these observed factors may improve employee loyalty, they can also lead to possible differences in measurements between rating agencies as they are difficult to quantify.

Governance (G): Governance assesses the structures and processes through which companies are managed and controlled, including the composition of the board, executive salaries, shareholder rights, and management of conflicts of interest. Strong governance is usually associated with greater accountability and transparency, helping to reduce the incidence of fraud or unethical practices within the company itself. The Social Score remains the most uncertain and least standardized, generating debates about its reliability as a predictor of the true social performance of a company and financial health in general. Governance and Environmental variables are more standardized due to their relative ease of measurement.

1.2 ESG and Firm Value

1.2.1 Theoretical Perspectives on ESG's Financial Impact

Over the last three decades, scholars have developed five principal lenses for interpreting why firms adopt or resist ESG practices and how those choices shape

financial outcomes. Each theory foregrounds a different set of actors, incentives, and transmission channels; taken together, they provide a richer vocabulary for analysing the complex, sometimes contradictory, effects of ESG on firm value.

1. Stakeholder Theory Stakeholder theory (Freeman, 1984) posits that long-run value maximisation requires balancing the interests of a constellation of constituencies, employees, capital providers, customers, suppliers, communities, governments, and the natural environment. Recent refinements, such as Fassin's (2009) "real-stakeholders, stakewatchers, stakekeepers" taxonomy map neatly onto the three ESG pillars: governance protects the claims of real financial stakeholders; social practices address internal and external stakewatchers; while environmental stewardship satisfies broader stakekeepers such as regulators and ecosystems. The results show that companies with good ESG scores enjoy less employee turnover, greater customer loyalty, and higher innovative strength, resulting in higher profitability.

2. Legitimacy Theory Legitimacy theory frames ESG as part of an implicit social contract. Organisations disclose or adjust activities to secure societal approval and ensure continued access to resources (Dowling & Pfeffer, 1975). ESG disclosure may be substantive (aligned with real changes) or symbolic (green- or social-washing). Because legitimacy is context-specific, disclosure intensity rises with industry visibility, crisis events, or government ownership. Analysts must therefore disentangle disclosure effort from genuine ESG performance.

3. Institutional Theory Institutional theory emphasises the coercive, normative, and mimetic pressures that drive convergence in corporate practices (DiMaggio & Powell, 1983). Stringent regulation, professional norms, and peer imitation push firms toward common ESG templates, yet national culture, economic development, and ownership structures mediate the pace and depth of adoption. Cross-country analyses thus need to control for these field-level forces to avoid attributing systemic effects to firm-specific strategy.

4. Signaling Theory From a signaling perspective, ESG communication reduces information asymmetry. Managers with superior private information about long-term prospects voluntarily disclose costly, hard-to-imitate ESG commitments (e.g., science-based targets, third-party audits) to attract patient capital and lower financing costs. Conversely, cheap talk can be counterproductive: recent studies link opportunistic

ESG disclosures to a higher risk of future crashes when stakeholders interpret them as hedging.

5. The agency theory offers a prudent point of view: if ESG budgets are poorly monitored, managers can shift resources to projects they prefer, damaging what is the wealth of shareholders. Earnings-management episodes surrounding ESG announcements, philanthropic spending that advances executives' personal agendas, and value-destroying over-investment illustrate this risk. On the flip side, well-designed ESG systems linked to pay and verified externally can mitigate information asymmetry and reduce the cost of capital.

1.2.2 Empirical Findings on ESG and Financial Performance

Several empirical studies on the impact of ESG on financial performance have yielded mixed but consistently improving and more optimistic results. Some research shows a strong link between ESG variables and economic returns, showing that companies with good ESG performance can access and benefit from lower cost of capital, reduced non-systematic risk, and higher profitability (Eccles et al., 2014; Khan et al., 2016).

Several reasons may explain this relationship: The first is a better corporate reputation: positive ESG profiles can boost consumer confidence, make it easier to acquire partnerships, and attract investors who seek to mitigate the risk of loss. A good brand image not only strengthens customer loyalty but also reduces the risk of activist campaigns or boycotts. Operational efficiency gains: Companies that respect the environment through green policies and therefore significantly reduce energy and resource consumption are finding new possibilities in terms of operating efficiency. Similarly, socially progressive enterprises gain lower employee turnover, improved morale and productivity, and create a virtuous circle of innovation and cost savings.

Risk mitigation: Companies through ESG investments can protect themselves from financial shocks related to lawsuits and penalties by managing environmental exposures in an intelligent and proactive manner. This is reflected in lower volatility of shares, especially in companies operating particularly in sectors such as consumer goods, where reputation plays a key role.

Despite these positive results, other studies offer a more cautious and moderate view. Highlighting the significant costs that arise from launching sustainability programmes or complying with strict reporting requirements, which can weigh heavily on profitability in the short term. Moreover, some market researchers argue that as ESG becomes more and more a common and demanded rule in the market, its premium could be gradually incorporated into market prices, limiting the potential in ESG-focused investment strategies.

This highlights that it is extremely important, instead of adopting a uniform approach, to conduct careful due diligence and select the most aligned ESG initiatives in terms of corporate strategy.

1.3 Disagreement in ESG Ratings

A challenge in ESG research is the lack of consistent valuation methodologies across major agencies, such as MSCI, Sustainalytics, Refinitiv and S&P Global.

Each company prioritizes different metrics and weights different factors using unique data sources for its assessments. This leads to a paradox in which the same company may receive a very high score from one rating agency and a very low score from another. This creates a lot of confusion among investors who do not find reliable and reference values with an objective value.

This variability of scores, therefore, complicates the investment decision-making process. Portfolio managers cannot rely on a single source because they may not assess risks or opportunities that could arise from another valuation methodology. On the contrary, if you consult multiple sources at the same time, you can experience the so-called "paralysis by analysis", full of conflicting data that generates enormous difficulties in finding an investment because it is impossible to reconcile divergent ESG assessments.

1.3.1 Measurement Challenges of ESG scores

Of the three ESG pillars, the Social Score remains the most contested and least standardised. This is due to measurement difficulties arising from the qualitative nature of social factors such as employee satisfaction, community relations, and other business

issues, which are not always suitable for clear and quantifiable metrics. These difficulties give rise to several problems:

Divergent rating methodologies: since each rating agency uses different indicators depending on what is actually more important for the latter, it can easily fall into the problem of subjectivity, as a company's social performance can be judged according to very different criteria. So it is not uncommon to see some agencies emphasize workers' rights and safety at work, while others place greater emphasis on data privacy, client welfare, or diversity and inclusion practices.

This gap allows companies to disseminate information in a rather selective manner, which can often lead to inflated or misleading claims about the social performance of the latter. Potential practices of greenwashing and social-washing: Companies that wish to improve their public image easily would have no difficulty in advertising small-scale social initiatives. For example, an oil company that installs wind turbines when more than 90% of its revenues are still based on oil. Or staying on the topic of Social Score, a company that sponsors a campaign for World Women's Day, but its board of directors is mainly made up of men. This obscures systemic problems such as poor working conditions or lack of diversity (Landi et al., 2022).

Due to the lack of statistically sound audits, investors are not able to distinguish between companies that commit themselves to real social commitments and those that use a mere advertising strategy. Given these discrepancies, many investors and researchers are not too confident in using social scores in isolation; a comprehensive assessment combining and processing data from multiple sources as public disclosures, third-party audits, and NGO reports.

Inconsistencies in ESG and Social Scores are major hurdles for investors, portfolio managers, and companies. Investors are not too likely to trust ESG scores if they suspect methodological bias or insufficient data valuation. Such skepticism can lead to non-investment in companies that have really sound social practices, or it can lead to overinvestment in companies that have used favorable methods and ratings to inflate the scores. For companies, these rating discrepancies add levels of complexity in setting ESG objectives and communicating progress to investors. On the one hand, they must respond to the demands of the latter who seek measurable improvements in social

parameters; on the other hand, they must orient themselves between different reporting standards and adapt to the expectations of the stakeholders. Companies also risk reputational damage if stakeholders perceive a discrepancy between the stated ESG commitments and the practices actually achieved by the company. A gap that may be amplified by inconsistent assessments provided by external agencies.

Chapter 2 – Research Question

In this chapter, I will cover the detailed development of the research questions that guide our survey on the role of Social Score in the valuation of companies in the S&P 500. The discussion is defined in two main parts.The first part analyzes the general concept of Social Score, defining and evaluating the definition, the different components that constitute it, the important challenges related to its measurement and the ongoing debate on its role in improving business performance. The second part of the chapter instead highlights and deepens the link between social performance and profitability, questioning traditional financial indicators and proposing alternative measures, such as Social Return on Equity.

2.1 From Corporate Social Performance to Firm Value & Risk

Corporate Social Performance (CSP) can be defined as "the configuration of principles of social responsibility, processes of social responsiveness and observable outcomes as they relate to the firm's societal relationships" (Wood 1991). The financial relevance of CSP has been debated since Friedman's (1970) assertion that any spending on social causes is a misuse of shareholders' money. Contemporary scholarship, however, identifies several mechanisms through which CSP can add economic value rather than destroy it.

First, instrumental stakeholder theory argues that firms addressing stakeholder expectations build goodwill, trust, and reputational assets. Those intangible resources translate into pricing power, more resilient supply chains, and a more tolerant regulatory environment (Jones 1995; Fombrun, Gardberg & Barnett 2000). Second, the resource-based and dynamic-capability perspectives explain that social initiatives foster rare and inimitable relational resources, for example, an engaged workforce or privileged community ties that sustain competitive advantage over time. Third, the risk-management view emphasises the "moral-capital insurance effect": investments that are perceived as socially responsible temper the capital-market penalties imposed when negative events occur (Godfrey 2005).

These theories imply two concrete economic channels. The first is cash-flow enhancement. Positive labour relations raise productivity and reduce recruitment costs; responsible product practices boost repeat sales; and a strong licence-to-operate

facilitates market entry. Empirical work by Waddock & Graves (1997) and by Gregory, Tharyan & Whittaker (2014) shows that such benefits feed directly into higher expected growth rates and operating margins. The second channel is risk mitigation. A meta-analysis by Orlitzky & Benjamin (2001) documents a consistent negative association between CSP and both total and systematic risk, while Sharfman & Fernando (2008) demonstrate that pollution-prevention programmes can lower conditional Value-at-Risk by reducing exposure to regulatory shocks. Jo & Na (2012) confirm a similar volatility-dampening effect in controversial U.S. industries even after controlling for endogeneity.

The relationship is not invariably positive. Barnett (2007) introduces the notion of stakeholder influence capacity (SIC) and argues that firms must achieve a critical mass of SIC before social initiatives pay off; below that threshold, costs may dominate. Using a large U.S. panel, Barnett & Salomon (2012) find a U-shaped CSP-performance curve: firms with either very low or very high CSP outperform those positioned in the middle. Industry context also matters. Hull & Rothenberg (2008) show that CSP contributes most strongly to performance in low-innovation, low-differentiation sectors where social initiatives can substitute for product differentiation.

Taken together, prior research suggests that CSP can affect firm value through both higher expected cash flows and lower variability of those cash flows. Because risk mitigation manifests most clearly in capital-market variables, share-price volatility is an appropriate forward-looking proxy. Focusing on S&P 500 constituents enables us to examine whether the risk channel survives in a mature, information-rich market populated by sophisticated investors. The remainder of this chapter, therefore, clarifies how CSP is translated into a measurable Social Score, reviews sector-specific evidence on profitability, and formulates the empirical test of whether firms with top-quintile Social Scores indeed experience lower volatility.

2.2 Understanding Social Score

The concept of Social Score has emerged as a specialized metric within the broader scope of ESG (Environmental, Social, and Governance) assessments. Essentially, the Social Score aims to quantify a company's performance in areas that have an impact on stakeholders. Unlike financial indicators that are relatively easy to quantify, the Social Score focuses on intangible elements such as the quality of employee relations, the level of community involvement, Respect for human rights principles and ethical practices in products and services. The core difficulty of the measurement relies on the fact that the heterogeneous nature presented by such aspects leads to complexities for uniform measurement in providing a comprehensive viewpoint of CSR.(Huang, 2021; Liu et al., 2023).

Further problems are characterised by the variety of different methods used by ESG agencies to value the ratings, which are not uniform and differ from each other. Since basically different agencies prioritize the weights of social performance differently, such divergences create a notable variation in the final results of the score in question. Such variety in the communication directed towards stakeholders/shareholders decreases consistency and objective measurements. A clear example is the emphasis put on employee relations by particular agencies, whereas others prioritize the sustainable and ethical quality mirrored by the supply chain. (Capelle et al., 2021).

The fact that the same company may receive significantly different assessments depending on the methodology used is a lack of convergence that generates uncertainty among companies (Kotsantonis & Serafeim, 2019, in Huang, 2021). Another inherent problem in measuring social performance stems from the often qualitative nature of the data studied. Much of the information used to construct the social score is reported autonomously, which entails problems of bias and selective disclosure (Liu et al., 2023; Landi et al., 2022). Given that negative aspects could call into question the social performance, some companies naturally tend to highlight the best ESG campaigns or practices by deliberately omitting these aspects. Not only does it raise doubts about the objectivity of the data, but this modus operandi linked to voluntary disclosure complicates the possibility of conducting Rigorous and precise longitudinal analyses. It is also important to add that the evolution of norms and changes in social aspects cause

variations in reported scores, making the interpretation over time complex (Tóth et al., 2021).

Broader issues, such as the trade-offs between social responsibility and financial efficiency, are key points in the debate about the role of the Social Score in corporate performance. Those who support strong financial performance believe that strong social practices lead to a strengthening of the company's reputation and better relationships with stakeholders. Finally, a more sustainable competitive advantage can be observed (Brogi & Lagasio, 2018; Huang, 2021). According to stakeholder theory, companies that manage to align their operations with social expectations are better positioned to attract and retain talent, increase customer loyalty, and also benefit from lower capital costs.(Velte, 2017; Liu et al., 2023). There are also critics who argue that investing in social responsibility can reduce resources from core profit-generating activities, limiting financial performance in the short term. The literature to date shows opinions supporting both causes by providing empirical evidence of some studies indicating a positive association and others suggesting that the relationship may follow a non-linear or U-shaped trend (Barnett & Salomon, 2012; Tóth et al., 2021).

2.3 Social Score and Profitability

Market-valuation studies confirm that CSP can be value-relevant. Gregory, Tharyan & Whittaker (2014) show that CSR strengths are priced because investors foresee higher long-run growth, while cost-of-capital effects are secondary. Using European firms, D'Amato & Falivena (2019) find that the positive CSP–Tobin's Q link weakens for smaller and younger companies, underscoring the role of firm characteristics. Risk-oriented work points in the same direction: Jo & Na (2012) report a negative CSP-volatility relation in controversial industries, whereas Sabbaghi (2023) shows that bad-news ESG shocks raise volatility far more than good-news events (Sabbaghi, 2023). Industry context matters too: Hull & Rothenberg (2008) reveal that CSP contributes most to performance in low-innovation, low-differentiation sectors, suggesting that social initiatives can substitute for product differentiation in commodity markets. Return on Equity (ROE) and Return on Assets (ROA) are two key financial indicators to adequately address the relationship between social score and profitability.

These indicators, while useful for measuring immediate financial returns, It is not uncommon they fail to reap the long-term benefits of investing in social responsibility (Gregory et al., 2014). We can define ROA and ROE as retrospective indicators that are based on and highlight past efficiency without considering the intangible returns generated by an improved relationship with stakeholders or by strengthening the reputation of the companiesDate these limits, As a result, there has been growing interest in the development of alternative metrics that directly integrate social performance into profitability measures. A promising metric emerging in this context is the Social Return on Equity (SROE). Social ROE is used to quantify the financial impact of a company's social initiatives by translating non-financial performance factors, employee satisfaction, and ethical business practices. This is defined in a monetary framework that more accurately reflects long-term value creation (Barnett & Salomon, 2012).

Empirical research has also shown that the relevance of social performance varies significantly between different sectors of the economy. In sectors where operations depend heavily on human labour and where employee relations have an immediate impact on operational stability, such as manufacturing, retail, and service industries, the benefits of sound social practices are particularly evident. In these labour-intensive industries, high levels of social performance can result in lower staff turnover, higher productivity, and a reduced risk of operational disruptions (Jo & Harjoto, 2011). This is confirmed by empirical research that has shown how the relevance of social performance varies between different sectors of the economy. In certain industries with high labour intensity and high levels of social performance can result in lower staff turnover and higher productivity. On the other hand, in capital-intensive industries or those where direct human interaction is less relevant and present, the direct impact of social performance on profitability may be less pronounced. In these cases, using a metric such as Social ROE is more effective since, unlike traditional performance measures, it captures a 360-degree view of the strategic advantages deriving from the company's social investments.

Studies focusing on the interaction between social performance and sector-specific factors suggest that the sectoral context is crucial to understanding the financial implications of social responsibility (Hull & Rothenberg, 2008). The sectoral context is

key to understanding the financial results of social responsibility. This is the result of studies that focus on research into the interaction between social performance and industry-specific factors. (Hull & Rothenberg, 2008). Another factor to observe is how there are asymmetries in the market reactions between positive and negative social news, and the latter causes a further complication in the relationship between social performance and profitability. Research has shown that negative events tend to have a disproportionate and negative impact compared to the benefits of positive social news regarding the valuation of the company. (Capelle-Blancard & Petit, 2019; Krüger, 2015; cited in Sabbaghi, 2023). These asymmetries indicate that investors tend to penalise companies more severely for their negative social responsibility performance than they do for rewarding noteworthy social practices. This observation has important insights into how companies manage their social responsibilities, as the cost of inappropriate social practices can go well beyond immediate financial losses. The market can impose heavy and long-term penalties that affect the stock's performance and the overall valuation of the company, further reinforcing the strategic importance of a high social score. It is also important to consider the moderating influence of the size and age of the enterprise. Studies have shown that smaller and younger enterprises may face greater difficulties in reporting and defining social investments as measurable financial returns (D'Amato & Falivena, 2019). These companies often lack a strong and established reputation over time and the financial resources necessary to fully exploit social initiatives, This may therefore lead to a situation where lower social scores contribute to higher operational risk and subsequent less favourable market valuation. By contrast, larger and more mature enterprises generally have the necessary infrastructure and market presence to make social investment an important resource, The multiple nature of the relationship between social and economic performance requires a re-evaluation both from a theoretical and an empirical point of view where an innovative way is found and functional to measure business success in the current societal context Whether traditional financial indicators are useful and verified; They may not fully grasp the benefits of sound social practices. The introduction of alternative measures such as Social ROE reflects that sustainable profitability must integrate both social and financial elements (Barnett & Salomon, 2012; Dorfleitner et al., 2015). Recognising

these dimensions, researchers and practitioners can work towards a more integrated framework that better explains the variations in business performance across sectors.

2.4 Hypothesis

To complete the theoretical discussion on the role of social scoring and its implications for business performance, we now propose a hypothesis that will guide empirical analysis.

The hypothesis (H1) states that companies with a higher Social Score should show lower Price Volatility. The logic behind this statement is that companies actively and consistently engaged in socially responsible behaviour tend to build a stronger reputation and maintain more stable relationships with stakeholders, which can reduce market uncertainty and contribute to a more stable financial performance. This hypothesis will be tested in the following methodological chapter, where the structure of the data, the construction of the variables, the estimation technique, and the calculation procedures. Through these results of empirical value and the theoretical framework built previously, I would like to answer the research question by explaining how social responsibility captured by the social score affects the risk of an enterprise interacting with financial indicators.

Chapter 3 – Methodology

3.1 Research Design

In this chapter, we will define the empirical strategy used to investigate and discover the relationship between corporate social responsibility (CSR) and corporate risk in financial markets.

The main objective is to test the hypothesis that companies actively engaged in socially responsible activities achieve lower volatility in share prices. The logic behind this premise is that a great social performance increases stakeholder confidence, improves reputation, and reduces exposure to negative social shocks. All these factors contribute to a much more stable risk profile. I used Refinitiv's social pillar score as a proxy for CSR performance, and annualised volatility will be used as a specific risk indicator. These two variables function as independent and dependent components of the regression. We will use an OLS (Ordinary Least Squares) regression cross-section given the structure of the dataset and the research objectives defined in Chapter 2. This decision stems from the ease of interpretation of the model, its robustness, and consistency with existing studies in the field of ESG and market risk. While more complex models (e.g., GMM, multilevel) could capture dynamics or unobserved heterogeneity, OLS provides clarity and transparency for hypothesis testing. The baseline specification includes control variables that capture firm-level financial characteristics, namely, financial leverage and firm size, as well as a dummy variable reflecting the firm's exposure to socially sensitive environments. This last variable, HighSocialExposure, has been used as a proxy for the degree to which social responsibility issues are distinctly relevant to a given enterprise. The regressions are made on annual aggregated business data, covering a period of four years, from 2020 to 2023.

3.2 Data source and variable definition

The dataset was obtained from Refinitiv Datastream, a platform considered highly reliable for ESG and financial data. The sample includes all firms listed in the S&P 500

index between 2020 and 2023, covering a wide spectrum of industries and corporate structures. Each observation corresponds to a unique firm-year pair, resulting in a panel structure with up to four time points per firm. This time horizon allows the analysis to capture both pre- and post-pandemic years, which may be especially relevant in terms of shifts in stakeholder expectations and corporate behavior. To avoid bias and distortions, and to ensure accuracy in the results and consistency with the variable table before analysis, the dataset has undergone several stages of improvement and cleaning. First, all relevant variables were renamed, and then observations with missing variables (NaNs) were excluded. Third, a dummy variable named *HighSocialExposure* was constructed. This binary indicator equals 1 for firm-year observations where the firm's Diversity Score exceeded the annual median of the sample. This allows for a rough segmentation between firms with relatively high and low visibility or sensitivity to social issues, and introduces an additional dimension of nuance to the empirical specification.

The table below summarizes the key variables used in the analysis:

The variables SocialScore and Volatility are crucial to the analysis, representing, respectively, the firm's level of social performance and its exposure to market-based financial risk.

Table 1 – Description and Construction of the Variables

Source: Own elaboration

Variable	**Type**	**Description**
Volatility	Dependent	Annualized StD of Stock Returns
SocialScore	Continuous	Refinitiv Social Pillar Score 1-100
FinancialLeverage	Continuous	Ratio of Total debt to common equity

Sales	Continuous	Total net revenues for the fiscal year
HighSocialExposure	Dummy	Equals 1 if Diversity Score is above the annual median
HumanRights	Continuous	Score Evaluating the firm's policies and practices on human rights issues
Controversies	Continuous	Score reflecting the company's exposure to social controversies
Inclusion	Continuous	Score measuring diversity and inclusion practices
Workforce	Continuous	Score capturing labor relations, employee,well-being,and training efforts

3.3 Model Specification

The empirical model used to test the hypothesis is defined as:

$$\textbf{Volatility}_{i□} = \beta_0 + \beta_1 \cdot \textbf{SocialScore}_{i□} + \beta_2 \cdot \textbf{FinancialLeverage}_{i□} + \beta_3 \cdot \textbf{Sales}_{i□} + \beta_4 \cdot \textbf{HighSocialExposure}_{i□} + \delta_□ + \varepsilon_{i□}$$

Where $\delta_□$ represents year fixed effects (i.e., dummy variables for each year).

To verify the stability of the relationship, we estimated two versions of the model: one with year fixed effects ($\delta_□$) and one without. The inclusion of year fixed effects did not effectively alter the significance of the main coefficients. Therefore, in line with

standard panel-data practices and to control for unobserved time-specific shocks, we retained the specification with year fixed effects for all models discussed in this thesis.

3.4 Multicollinearity Diagnostics

The Variance Inflation Factor (VIF) was used to verify the multicollinearity, and this was done in order to guarantee the reliability of the estimated coefficients. All variables, as shown in the table below, have values well below 5 which is the conventional threshold of this test.

In addition to the core specification, I also calculated VIFs for the extended model that includes the disaggregated components of the Social Pillar Score. All values remained below the conventional threshold of 5, confirming that multicollinearity is not a problem even when considering potentially related social dimensions.

Table 2 – Multicollinearity Test: Variance Inflation Factor (VIF)

Source: Own elaboration

Variable	**VIF**
SocialScore	1.13
FinancialLeverage	1.00
Sales	1.03
HighSocialExposure	1.13
Human rights	1.42
Controversies	1.37
Inclusion	1.68
Workforce	1.52

These results confirm the absence of multicollinearity problems in the model.

3.5 Addressing Methodological Challenges

As in many other ESG studies of this type, we have encountered some methodological challenges. One of the main issues is the risk of reverse causation: it is possible that the most stable and less volatile companies are those that invest more in social responsibility and not vice versa. In chapter 4, to address this issue, we included a robustness test that uses delayed values of the Social Score by creating a time separation between variables. The model chosen is an OLS cross-section regression, with no fixed business effects. This choice is dictated by the short time extension of the dataset, which in fact is limited to 4 years. However, fixed effects per year are included to check common macroeconomic events. In order to ensure the validity of the measures, the variable HighSocialExposure is constructed with an annual median of the Diversity Score, allowing a comparability across the years. Chapter 4 also analyzes separately the components of the Social Pillar (Human Rights, Workforce, Inclusion, Disputes) to explore their effects on business risk. These choices aim to improve the reliability of results,reducing bias and strengthening the theoretical consistency of the analysis.

Chapter 4 – Empirical Results

4.1 Descriptive Statistics

In Table 3, I have reported the descriptive statistics of the variables of the regression models. The average price volatility is about 22.77%, with a standard deviation of 6.36%, indicating a substantial variation in the enterprise risk. The score of the Social pillar, with an average of 69.57 varies widely from 15.77 to 97.55, highlighting a high heterogeneity in social performance.

Leverage was measured as the ratio of total debt to ordinary equity and shows significant variability, probably due to outliers or accounting differences between companies. Net sales also show a wide dispersion, with the corporate size ranging from small firms to large-cap companies. The components of the Social Pillar (for example, Human Rights, Inclusion, Labour Force) also present a significant variation, which justifies their inclusion in the extended model.

Table 3 – Descriptive Statistics of Key Variables

This table reports summary statistics (mean, standard deviation, minimum, and maximum) for all key variables included in the empirical analysis, including firm-specific risk, social performance, and financial controls.

Source: Own Elaboration.

	Mean	**Std. Dev.**	**Min**	**Max**
PRICE VOLATILITY	22.77	6.36	11.54	67.89
Social Pillar Score	69.57	16.1	15.77	97.55
TOTAL DEBT %	66.51	1573.55	-38450.03	20744.9

COMMON EQUITY				
NET SALES OR REVENUES	30392795.94	59300683.14	302554.0	638916000.0
Human Rights Score	61.77	27.94	0.0	96.88
TRDIR Controversies Score	94.73	12.51	25.0	100.0
TRDIR Inclusion Score	44.61	24.77	0.0	96.0
Workforce Score	71.2	21.46	4.46	99.88

4.2 Baseline Regression with Year Fixed Effects

Table 4 presents the results of the basic OLS regression, in which the company-specific volatility is related to the Social Pillar score, leverage, and company size (approximated by net sales), including fixed effects per year.

We can observe how the coefficient associated with the score of the Social Pillar is negative and statistically significant at 1% (β = -0,0460, $p < 0,001$), indicating that better social performance is associated with lower stock price volatility. This result supports the hypothesis that socially responsible behaviour reduces business risk. The leverage variable is negative and marginally significant (p 0.055), showing a weak inverse relationship with volatility. Firm size, represented by net sales, also shows a small but significant negative effect, indicating that larger firms tend to have lower volatility. The model's adjusted R2 is moderately high, suggesting that the variables and fixed effects per year explain a significant part of the variance in the specific volatility of the firm. Multicollinearity was evaluated in Chapter 3 through the calculation of the

Variance Inflation Factors (VIF), which confirmed that all variables in the basic model have acceptable levels of collinearity (VIF < 5). This strengthens the reliability of the estimated coefficients and supports the regression results.

Table 4 – Baseline OLS Regression – Social Score and Volatility (with Year Fixed Effects)

OLS estimates of the relationship between Social Pillar Score and stock price volatility, controlling for leverage, firm size, and year fixed effects (2021–2023).

Source: Own Elaboration.

	Coeff.	**Std.Err**	**t**	**P>|t|**	**[0.025**	**0.095]**
Intercept	26.013	0.7331	35.4854	0.0	24.5752	27.4508
SocialScore	-0.046	0.0098	-4.7189	0.0	-0.0651	-0.0269
Leverage	-0.0002	0.0001	1.9238	0.0546	-0.0004	0.0
Sales	-0.0	0.0	-2.9188	0.0036	-0.0	-0.0
Year_2021	-0.1707	0.4226	-0.404	0.6863	-0.9996	0.6582
Year_2022	0.4067	0.424	0.9592	0.3376	-0.4249	1.2382
Year_2023	0.2883	0.4535	0.6358	0.525	-0.6011	1.1778

4.3 Extended Model: Disaggregated Social Pillar

In this section, we have extended the benchmark by breaking down the Social Pillar Score into its main components; this has been done to improve the understanding and mechanisms that link social performance and enterprise risk. Two alternative specifications were estimated: one using these variables in their continuous form, and

another using dummy variables equal to 1 if the score was above the annual median for the respective year. The extended model is represented by the following equation:

$$\mathbf{Volatility}_{i,t} = \beta_0 + \beta_1 \cdot \mathbf{FinancialLeverage}_{i,t} + \beta_2 \cdot \mathbf{Sales}_{i,t} + \beta_3 \cdot \mathbf{HumanRights}_{i,t} + \beta_4 \cdot \mathbf{Controversies}_{i,t} + \beta_5 \cdot \mathbf{Inclusion}_{i,t} + \beta_6 \cdot \mathbf{Workforce}_{i,t} + \delta_t + \varepsilon_{i,t}$$

where δ_t represents year fixed effects.

The final model selected for empirical interpretation in the next chapter is one that uses broken-down variables, because it allows a more detailed interpretation of the role of social components. In this model, as in the basic one, fixed effects per year are also included in order to control the period-specific shocks, which would otherwise distort the results.

Table 5 shows the results from the extended model, where the Social Pillar Score is disaggregated into its main components: Human Rights, Controversies, Inclusion, and Workforce. As in the baseline model, financial leverage, firm size, and year fixed effects are included. Analyzing one by one the social components, we can see that the score on Disputes presents a negative and statistically significant coefficient ($\beta = -0.0494$, $p < 0.01$), suggesting that companies that are more exposed to disputes have a higher volatility of prices. This result highlights the effect of negative public events on risk. The Human Rights score has a negative but statistically non-significant (p 0.30), indicating that there is no strong evidence of an influence of the single variable. Similarly, the scores for Inclusion and Workforce are not statistically significant, although the signs of the coefficients are consistent with the expected risk-reducing effect. The adjusted R^2 remains coherent with the basic model, suggesting that the disaggregated structure of the Social Pillar score does not significantly improve the explanatory power . As already discussed in Chapter 3, the model was tested for multicollinearity using VIFs, and all variables returned values below the VIF = 5 thresholds, confirming the robustness of the results.

Table 5 – Disaggregated Social Pillar (with Year Fixed Effects)

Regression results using disaggregated social sub-scores (Human Rights, Controversies, Inclusion, Workforce) alongside financial controls. Year fixed effects are included.

Source: Own Elaboration.

	Coef.	Std.Err	t	P>|t|	[0.025	0.975]
Intercept	27.9906	1.601	17.4833	0.0	24.85	31.1312
Leverage	-0.0002	0.0001	-2.4484	0.0145	-0.0004	-0.0
Sales	-0.0	0.0	-1.9057	0.0569	-0.0	0.0
HumanRights	-0.0066	0.0063	-1.0424	0.2974	-0.019	0.0058
Controversies	-0.0494	0.0146	-3.3765	0.0008	-0.0781	-0.0207
Inclusion	-0.0676	0.0083	-8.1771	0.0	-0.0838	-0.0514
Workforce	0.0384	0.0102	3.7532	0.0002	0.0183	0.0585
Year_2021	-0.2485	0.4345	-0.5719	0.5675	-1.1007	0.6038
Year_2022	0.4985	0.4446	1.1212	0.2624	-0.3737	1.3707
Year_2023	0.2777	0.4756	0.5838	0.5594	-0.6554	1.2107

4.4 Robustness Check: Year Fixed Effects

To assess the robustness of regression estimates, the extended model with and without fixed effects per year is compared. The results, shown in Table 5 and Table 6 respectively, show that the inclusion of the Dummy Variables per year does not alter the sign or the statistical significance of the main variables of the model.

For example, the score coefficient on Disputes remains negative and highly significant in both models, with a $\beta = -0.0494$ with fixed effects per year and a $\beta = -0.0529$ without these effect . This result highlights that exposure to litigation is a constant predictor of higher business-specific risk. Similarly, leverage and corporate size maintain expected negative associations with volatility in all specifications.

The Adjusted R^2 remains stable with or without year effects, reinforcing the idea that time-specific shocks are not the basis of the main results. The stability of the results confirms the cross-sectional robustness of the reports and justifies the inclusion of fixed effects per year in the final specification, and ensures methodological rigour.

Table 6 – Disaggregated Social Pillar (without Year Fixed Effects)

Alternative specification of the extended model, excluding year fixed effects. Results are consistent with the fixed effects version, supporting robustness.

Source: Own Elaboration.

	Coef.	**Std.Err.**	**t**	**P>|t|**	**[0.025**	**0.975]**
Intercept	28.429	1.5493	18.3491	0.0	25.3897	31.4682
Leverage	-0.0002	0.0001	-2.4309	0.0152	-0.0004	-0.0
Sales	-0.0	0.0	-1.9725	0.0487	-0.0	-0.0
HumanRights	-0.0063	0.0063	-0.9978	0.3185	-0.0186	0.0061
Controversies	-0.0529	0.0145	-3.6523	0.0003	-0.0813	-0.0245
Inclusion	-0.0663	0.0082	-8.1018	0.0	-0.0823	-0.0502
Workforce	0.0375	0.0102	3.6801	0.0002	0.0175	0.0575

4.5 Summary of Findings

In this chapter, we have shown empirical evidence on the relationship between corporate social performance and specific risk, measured through volatility of share prices. Regression with the base model showed that higher scores in the Social Pillar Score are strongly associated with lower volatility, supporting the hypothesis that strong social governance contributes to a more stable risk profile.

We also evaluated the extended model, which revealed that, among the different components of the Social Pillar, the score on Disputes is the one with the most significant impact, suggesting that firms involved in frequent or serious disputes are exposed to increased market risk. On the other hand, variables such as Human Rights, Inclusion, and Workforce scores showed a negative relationship with volatility as expected, but their effects were not statistically significant.

Then we included the fixed effects per year, but the inclusion of these ulrimi did not substantially change the estimated coefficients, confirming the robustness of the results. Multicollinearity was excluded, and the corrected R2 values indicated a consistent explanatory capacity across models.

Overall, these findings suggest that ESG social factors, particularly reputational risks, are not only ethically relevant but may also have concrete implications for financial stability. This has important consequences for investors and managers who want to integrate ESG metrics into performance assessment processes and risk management models.

Conclusion

The empirical analysis fully confirms the starting hypothesis: the coefficient associated with the Social Score is negative and highly significant, attesting that a better social positioning corresponds to a lower equity volatility. The breakdown of the score also showed that the sub-index "Controversies" is the most powerful driver: companies involved in disputes register a significant increase in risk, while the Human Rights dimension, Inclusion, and Workforce show consistent but not always significant effects. These results reinforce the stakeholder/risk-management perspective, according to which the quality of social relations generates "moral capital" capable of attenuating reputational shocks and, consequently, price volatility.

Theoretically, the work helps to clarify the risk mitigation channel, suggesting that aggregate metrics may conceal significant heterogeneity between different social components. This calls for future research to use more granular indicators and longitudinal approaches to capture long-term effects. For management practice and investors, the evidence indicates the usefulness of integrating reputational profile - and in particular exposure to disputes - into capital allocation models and processes.

However, there are limitations: the observation period of only four years, the adoption of a cross-sectional model, and the dependence on a single data provider could reduce the generalizability of results. It will therefore be appropriate to extend the time horizon, explore different geographical contexts, experiment with alternative risk metrics (value at risk, drawdown, credit spreads) , and integrate textual sources, such as news sentiment and social media, through machine learning techniques.

To sum up, the thesis exposes and consequently demonstrates that social performance is not only an ethical factor, but is also a real risk reduction tool in stock markets; It therefore offers an empirical compass for both scholars and practitioners aiming to combine sustainability and financial soundness.

Bibliography

Antunes, J., Wanke, P., Fonseca, T., & Tan, Y. (2023). Do ESG risk scores influence financial distress? Evidence from a dynamic NDEA approach. *Sustainability, 15*(9), 7560. https://doi.org/10.3390/su15097560

Bao, X., Sadiq, M., Tye, W., & Zhang, J. (2024). The impact of ESG rating disparities on corporate risk: The mediating role of financing constraints. *Journal of Environmental Management, 371*, 123113. https://doi.org/10.1016/j.jenvman.2024.123113

Barnett, M. L., & Salomon, R. M. (2012). Does it pay to be really good? Addressing the shape of the relationship between social and financial performance. *Strategic Management Journal, 33*(11), 1304–1320. https://doi.org/10.1002/smj.1980

Barnett, M. L. (2007). Stakeholder influence capacity and the variability of financial returns to corporate social responsibility. *Academy of Management Review, 32*(3), 794–816. https://doi.org/10.5465/amr.2007.25275520

Bătae, O. M., Dragomir, V. D., & Feleagă, L. (2020). Environmental, social, governance (ESG), and financial performance of European banks. *Accounting and Management Information Systems, 19*(3), 480–501. https://doi.org/10.24818/jamis.2020.03003

Brogi, M., & Lagasio, V. (2019). Environmental, social, and governance, and company profitability: Are financial intermediaries different? *Corporate Social Responsibility and Environmental Management, 26*(3), 576–587. https://doi.org/10.1002/csr.1704

Capelli, P., Ielasi, F., & Russo, A. (2021). Forecasting volatility by integrating financial risk with environmental, social, and governance risk. *Corporate Social Responsibility and Environmental Management, 28*(4), 1483–1495. https://doi.org/10.1002/csr.2180

Chen, S., Song, Y., & Gao, P. (2023). ESG performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management, 345*, 118829. https://doi.org/10.1016/j.jenvman.2023.118829

Chen, Z., & Xie, G. (2022). ESG disclosure and financial performance: Moderating role of ESG investors. *International Review of Financial Analysis, 83*, 102291. https://doi.org/10.1016/j.irfa.2022.102291

Cornell, B. (2021). ESG preferences, risk and return. *European Financial Management, 27*(1), 12–19. https://doi.org/10.1111/eufm.12295

D'Amato, A., & Falivena, C. (2020). Corporate social responsibility and firm value: Do firm size and age matter? *Corporate Social Responsibility and Environmental Management, 27*(2), 909–924. https://doi.org/10.1002/csr.1855

Dorfleitner, G., Halbritter, G., & Nguyen, M. (2015). Measuring the level and risk of corporate responsibility – An empirical comparison of different ESG rating approaches. *Journal of Asset Management, 16*(7), 450–466. https://doi.org/10.1057/jam.2015.31

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment, 5*(4), 210–233. https://doi.org/10.1080/20430795.2015.1118917

Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: Aggregated evidence from more than 2000 empirical studies. *Journal of Sustainable Finance & Investment, 5*(4), 210–233. https://doi.org/10.1080/20430795.2015.1118917

Gal, G., Akişik, O., & Wooldridge, W. (Eds.). (2018). *Sustainability and social responsibility:Regulation and reporting*. Springer. https://doi.org/10.1007/978-981-10-4502-8

Gibson Brandon, R., Krueger, P., & Schmidt, P. S. (2021). ESG rating disagreement and stock returns. *Swiss Finance Institute Research Paper No. 19-67 / ECGI Finance Working Paper No. 651/2020.* https://ssrn.com/abstract=3433728

Gregory, A., Tharyan, R., & Whittaker, J. (2014). Corporate social responsibility and firm value: Disaggregating the effects on cash flow, risk and growth. *Journal of Business Ethics, 124*(4), 633–657. https://doi.org/10.1007/s10551-013-1898-5

Hong, Y., & Rosli, R. (2024). Exploring determinants of environmental, social, and governance scores for listed firms: An organizational context. *Journal of Governance & Regulation, 13*(4), 207–217. https://doi.org/10.22495/jgrv13i4art20

Huang, D. Z.-X. (2022). Environmental, social and governance factors and assessing firm value: Valuation, signalling and stakeholder perspectives. *Accounting & Finance, 62*(S1), 1983–2010. https://doi.org/10.1111/acfi.12849

Hull, C. E., & Rothenberg, S. (2008). Firm performance: The interactions of corporate social performance with innovation and industry differentiation. *Strategic Management Journal, 29*(7), 781–789. https://doi.org/10.1002/smj.675

Hutauruk, C. I., & Nurazi, R. (2024). Does the individual environment, social, government score could mitigate the financial distress risk? *East Asian Journal of Multidisciplinary Research, 3*(3), 1213–1230. https://doi.org/10.55927/eajmr.v3i3.8639

Jo, H., & Harjoto, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of Business Ethics, 103*(3), 351–383. https://doi.org/10.1007/s10551-011-0869-y

Jo, H., & Harjoto, M. A. (2011). Corporate governance and firm value: The impact of corporate social responsibility. *Journal of Business Ethics, 103*(3), 351–383. https://doi.org/10.1007/s10551-011-0869-y

Jo, H., & Na, H. (2012). Does CSR reduce firm risk? Evidence from controversial industry sectors. *Journal of Business Ethics, 110*, 441–456. https://doi.org/10.1007/s10551-012-1492-2

Keleş, E., & Çetin, A. (2023). Corporate social responsibility, investor sentiment, and stock returns. In G. Gal, O. Akişik, & W. Wooldridge (Eds.), *Sustainability and social responsibility: Regulation and reporting* (pp. 443–461). Springer. https://doi.org/10.1007/978-981-10-4502-8_18

Kim, S., Lee, G., & Kang, H.‐G. (2021). Risk management and corporate social responsibility. *Strategic Management Journal, 42*(1), 202–230. https://doi.org/10.1002/smj.3224

Kimbrough, M. D., Wang, X. F., Wei, S., & Zhang, J. I. (2024). Does voluntary ESG reporting resolve disagreement among ESG rating agencies? *European Accounting Review, 33*(1), 15–47. https://doi.org/10.1080/09638180.2022.2088588

Landi, G. C., Iandolo, F., Renzi, A., & Rey, A. (2022). Embedding sustainability in risk management: The impact of environmental, social, and governance ratings on corporate financial risk. *Corporate Social Responsibility and Environmental Management, 29*(6), 1096–1107. https://doi.org/10.1002/csr.2256

Lee, S., & Jung, H. (2016). The effects of corporate social responsibility on profitability: The moderating roles of differentiation and outside investment. *Management Decision, 54*(6), 1383–1406. https://doi.org/10.1108/MD-07-2015-0268

Lisin, A., Kushnir, A., Koryakov, A. G., Fomenko, N., & Shchukina, T. (2022). Financial stability in companies with high ESG scores: Evidence from North America using the Ohlson O-Score. *Sustainability, 14*(1), 479. https://doi.org/10.3390/su14010479

Liu, J., Ge, Z., & Wang, Y. (2024). Role of environmental, social, and governance rating data in predicting financial risk and risk management. *Corporate Social Responsibility and Environmental Management, 31*(1), 260–273. https://doi.org/10.1002/csr.2567

Mahmud, M. T. (2020). Quest for a single theory to explain managerial motivations for sustainability disclosures: Legitimacy theory, stakeholder theory or institutional theory. *The Japanese Association for International Accounting Studies Annual Report, 2019*(1・2), 135–147.

Makridou, G., Doumpos, M., & Lemonakis, C. (2024). Relationship between ESG and corporate financial performance in the energy sector: Empirical evidence from European companies. *International Journal of Energy Sector Management, 18*(4), 873–895. https://doi.org/10.1108/IJESM-01-2023-0012

Oikonomou, I., Brooks, C., & Pavelin, S. (2012). The impact of corporate social performance on financial risk and utility: A longitudinal analysis. *Financial Management, 41*(2), 483–515. https://doi.org/10.1111/j.1755-053X.2012.01190.x

Porta, M. (2023). *The relationship between ESG performance and financial stability: Are sustainable companies less likely to fail?* [Master's thesis, University of Vaasa].

Quintiliani, A. (2022). ESG and firm value. *Accounting and Finance Research, 11*(4), 37–47. https://doi.org/10.5430/afr.v11n4p37

Sabbaghi, O. (2023). ESG and volatility risk: International evidence. *Business Ethics, the Environment & Responsibility, 32*(4), 802–818. https://doi.org/10.1111/beer.12512

Shakil, M. H. (2021). Environmental, social and governance performance and financial risk: Moderating role of ESG controversies and board gender diversity. *Resources Policy, 72*, 102144. https://doi.org/10.1016/j.resourpol.2021.102144

Singh, I. (2022). *Integrating ESG factors to equity valuation* (Master's thesis, MIT Sloan School of Management). https://dspace.mit.edu/handle/1721.1/145785

Story, J., & Neves, P. (2015). When corporate social responsibility (CSR) increases performance: Exploring the role of intrinsic and extrinsic CSR attribution. *Business Ethics: A European Review, 24*(2), 111–124. https://doi.org/10.1111/beer.12084

Tang, Z., Hull, C. E., & Rothenberg, S. (2012). How corporate social responsibility engagement strategy moderates the CSR–financial performance relationship. *Journal of Management Studies, 49*(7), 1274–1303. https://doi.org/10.1111/j.1467-6486.2012.01068.x

Tóth, B., Lippai-Makra, E., Szládek, D., & Kiss, G. D. (2021). The contribution of ESG information to the financial stability of European banks. *Public Finance Quarterly, 66*(3), 429–450.

Tsang, A., Hu, W., & Li, X. F. (2020). CSR and firm value: A comparative study of CSR performance measures. *Social Science Research Network*. https://ssrn.com/abstract=3709340

Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. *Journal of Global Responsibility, 8*(2), 169–178. https://doi.org/10.1108/JGR-11-2016-0029

Verheyden, T., Eccles, R. G., & Feiner, A. (2016). ESG for all? The impact of ESG screening on return, risk, and diversification. *Journal of Applied Corporate Finance, 28*(2), 47–55. https://doi.org/10.1111/jacf.12174

Zhang, J., Zheng, C., & Shan, Y. G. (2024). What accounts for the effect of sustainability engagement on stock price crash risk during the COVID-19 pandemic—Agency theory or legitimacy theory? *International Review of Financial Analysis, 93*, 103167. https://doi.org/10.1016/j.irfa.2024.103167

Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. *Business Strategy and the Environment, 31*(8), 3371–3387. https://doi.org/10.1002/bse.3089