

Sustainable Investing and ESG Rating Divergence: A Literature Review

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Preface

The thesis was written as part of our master's degree at the University of Agder. We have had the opportunity to work within the fascinating and ever-changing topic of sustainability. Although working on the thesis has proved challenging, the knowledge and experience we have gained have helped us overcome those challenges. We would like to express our gratitude to our supervisor, André Tofteland, for his invaluable inputs, ideas, discussions, and, most importantly, his patience. Finally, we would like to extend our thanks to our families and friends for their support throughout this journey. Thank you.

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Abstract

Purpose – As incorporation of ESG factors in investment-decisions are becoming increasingly popular, the amount of academic research in this area is also expanding amongst numerous dimensions. One line of inquiry is the relationship between corporate ESG-information and corresponding financial performance from an investor perspective. The purpose of this article is to explore the academic literature in this field of study.

Research framework – This literature review sets out to examine both the relationship between ESG-information and financial returns, and issues related to ESG-rating divergence presented in the academic literature. A vast number of articles were identified of which 30 from prominent peer-reviewed journals was selected.

Findings – The articles investigated presented conflicting views on the financial performance of sustainable investments, making it difficult to reach a definitive conclusion. The limited body of academic research on the ESG rating divergence create difficulty in making conclusionary remarks about its consequences and implications. However, the literature consistently advises investors to exercise caution when basing decisions on a single rating and to gather information from multiple sources.

Research limitations – Only top-tier journals or papers from prominent scholars were investigated. In addition, the key terms used to gather all reviewed papers could have been expanded.

Practical implications – Academics and investors alike could benefit from more research on the subject of ESG rating divergence and its consequences and implications for investors.

Keywords – Sustainable investing, ESG ratings, ESG rating divergence, financial performance in sustainable investing

Paper type – Literature review

1. Introduction

Sustainable investing has emerged as an investment strategy that considers both financial, and environmental, social, and governance factors (ESG). This strategy has gained attention in recent years as the challenges of environmental degradation, resource depletion, and climate change increasingly get publicity (Pastor et al., 2021) and incorporating ESG-factors in investment decisions allows investors to assess the long-term sustainability and ethical impact of their investments (Busch et al., 2015). ESG factors include environmental considerations (such as carbon emissions and resource usage), social factors (such as employee satisfaction and community relations), and governance factors (such as transparency and board diversity) (Conca et al., 2021). Liang and Renneboog (2020) highlights that ESG and corporate social responsibility (CSR) are often used interchangeably. CSR frequently aims to enhance social welfare and to promote sustainability in business activities (Christensen et al., 2021), and encompasses a wide range of topics, activities, and policies that pertain to environmental, social, and governance aspects (Christensen et al., 2021).

With the intent of increasing consistency in the language, we address the issue of terminology and its varied usage in the reviewed literature. Some authors focus on ESG, while others emphasize CSR. Consequently, both terms will be used interchangeably. Terms such as "uncertainty," "disagreement," and "divergence" can be interpreted as distinct phenomena. Nevertheless, given the diverse terminology employed across the reviewed literature to describe this concept, we will utilize these terms interchangeably to ensure consistency. Similarly, we observe that the terms "green investment" "socially responsible investment", "impact investing" and "sustainable investment" often represent the same underlying concept. By recognizing these variations in terminology, we aim to provide a comprehensive overview and facilitate a clear understanding of the literature's key findings in this field.

1.1 Topics from the literature

It is common to distinguish between two types of investors, referred to as "green" and "brown". "Brown" investors are primarily driven by financial profitability, while "green" investors derive non-financial utility from holding assets aligned with their preferences. "Brown" investors prioritize profit maximization and argue that allocating resources towards sustainability is too costly, while "green" investors recognize their responsibility to address environmental concerns and actively seek investments that involves more than mere profit maximization (Hartzmark & Sussman, 2019). Heinkel et al (2001) define green investors as those conducting investments where ethical considerations outweigh the yield, whereas neutral (brown) investors deprioritize

ethical considerations in favor of optimizing yield (Heinkel et al., 2001). Additionally, Pastor et al (2021) characterizes ESG investors as individuals who prioritize ESG information with the same level of importance as other types of information, while Zerbib (2022) identify sustainable investors as those excluding specific assets and modify their preferences regarding mean-variance by factoring the internalized cost of the associated externalities for the invested assets. Building upon this understanding, “green” investment is a strategic approach where investors consider both financial and ethical (social and environmental) factors when making investment decisions (Dyck et al., 2019; Barnea et al., 2005). Edmans (2023a) however, critique the idea that investors must exclusively adopt green investment approaches. He highlights that ESG does not need to be a specialized term, and that the relative importance of improving ESG performance should not overshadow the significance of other intangible factors when evaluating companies. Edmans (2023a; 2023b) emphasizes the importance of ESG for long-term value creation, emphasizing the need for all academics or practitioners, regardless of their specific focus, to acknowledge and prioritize ESG considerations. According to Edmans (2023a) there should not be a distinction between ESG investors and investors as their objective remains the same: to outperform the market. Riedl and Smeets (2017) argue that investors who possess a strong social motivation demonstrate a willingness to, on average, forgo financial returns in order to align their investments with their social preferences. According to Chincio et al (2022), investor motivation is primarily driven by the desire to protect the portfolio from potential losses and to identify assets that can provide a hedge against climate risk factors, even if it entails lower expected returns. Additionally, Hsu et al (2023) find that high-emission firms have a higher vulnerability to regulatory regime change risk, which results in compensation by higher average excess returns in the form of risk premia.

Investors can employ various sustainable practices to achieve investments aligned with their SRI strategies. According to Zerbib (2022), exclusionary screening and ESG integration are the two most extensively used sustainable practices. Exclusionary screening involves removing certain assets from the range of eligible investments, typically removing assets in industries that are the most socially controversial such as alcohol, weapon industry, and gambling (commonly known as “sin stocks”). The process of ESG integration however would consider and factorize ESG criteria into the investment decision-making process (Zerbib, 2022). Divestment, as a means of exclusionary screening, is employed by investors to eliminate high-emitting stocks from their portfolios, thus benefiting society by avoiding investment in companies that inflict societal and environmental costs (Berk and Van Binsbergen, 2021; Bolton and Kacperczyk,

2021). If a significant proportion of investors display even a small inclination towards social responsibility, strategies that promote engagement (referred to as voice strategies) are more likely to yield socially optimal outcomes (Broccardo et al., 2020). However, this does not reflect that if the majority are significantly socially responsible, strategies that promote exclusion like divestment and boycott (referred to as exit strategies) are the optimal strategy. These strategies can be effective if the majority of investors exhibit purely self-interested motivations (Broccardo et al., 2020). Instead of investors resorting to divestment, parts of literature suggests that socially conscious investors should actively invest and leverage their rights of control to encourage change in corporate policy (Berk and Van Binsbergen, 2021).

There are different opinions in relation to whether ESG will hurt or help investment performance (Pedersen et al., 2021). Asset owners and portfolio managers responsible for managing trillions of dollars, seek to integrate ESG factors into their investment processes (Pedersen et al., 2021). However, despite the growing interest, there is an absence of a clear guidance available to investors regarding the incorporation of ESG considerations into their portfolio choices (Pedersen et al., 2021). Economists are increasingly recognizing the potential for investors to value positive externalities, in addition to wealth, in their utility (Barber et al., 2021). ESG considerations are argued by some to lower expected return, while others argue that ESG strategies would outperform (Pedersen et al., 2021). Pastor et al (2021) highlight the importance of understanding the effects sustainable investing has on corporate behavior and asset prices, and Pastor et al (2022) states that one of the top motivation investors often cite for applying ESG criteria are improved returns. Furthermore, asset managers frequently promote sustainable investment products by positioning them as having the potential to deliver superior risk-adjusted returns (Pastor et al., 2022).

The importance of ESG information and ESG ratings are increasing as investors rely on more extensive and reliable data to be able to implement investment strategies efficiently (Dimson et al., 2020; Berg et al., 2022). Investors consider the importance of ESG information, recognizing its potential financial materiality in investment performance (Amel-Zadeh and Serafeim, 2018). The field of sustainable investing is experiencing rapid growth, with mutual funds that align with ESG ratings witnessing significant inflows of capital, as highlighted by Hartzmark and Sussman (2019). Because of these trends an increasing number of investors are relying on ESG ratings to obtain third-party evaluations of corporations' ESG performance (Berg et al., 2022). ESG ratings, and additionally supporting data, serve the primary purpose of addressing and evaluating a company's ESG performance (Berg et al., 2022; Christensen et al., 2022). It is

designed to evaluate a company's ability to manage ESG risk and opportunities (Christensen et al., 2022), and investors can use them to integrate ESG information in their investment decisions, generate investment ideas, conduct due diligence, determine opportunities for engagement and support the implementation of the UN PRI principles (Christensen et al., 2022). In response to the increased demand for ESG data collection, interpretation, aggregation, and dissemination, ESG rating agencies have emerged as an important source of information and can consist of various types of organizations (Christensen et al., 2022). Among them are major index companies, like MSCI and FTSE Russell, while others can be standalone providers. Some of the organizations are rating agencies, like S&P and Moody's, while others are financial data companies like Refinitiv, FactSet and Morningstar (Dimson et al., 2020). Berg et al (2022a) highlights the role that ESG rating agencies have for investors as they obtain and improve information due to the numerous reporting standards that exist. In an earlier paper, Berg et al (2020) argued that rating agencies have incentives to alter the result to make the association between ESG ratings and performance appear positive, to demonstrate the usefulness of their ratings.

The presence of significant differences in ESG ratings assigned by different agencies poses challenges for investors in assessing companies' level of sustainability (Chatterji et al., 2016). The divergence in ESG ratings gives rise to various challenges for investors when evaluating non-financial information, which includes lack of comparability, reliability, quantifiability, and timeliness (Amel-Zadeh and Serafeim, 2018). Avramov et al (2022) further emphasize that disagreement among ESG rating agencies prevents investors from reliably assessing a company's ESG performance, therefore exposing them to uncertainty. The bulk of the literature thus suggest that the number of ESG rating agencies, lack of mandatory disclosure, and standardization of metrics causes difficulties for investors. As an example, Dimson et al (2020) points to a specific case regarding the rating of Tesla. In 2018-2019, Tesla received an excellent rating of "AA" from MSCI, a "low" rating from FTSE, and a "mediocre" rating from Sustainalytics. In this case, MSCI measured the cars emission, while FTSE measured factory emissions and therefore considered the factories as high emitting.

The objective of this literature review is to investigate sustainable investment from an investor's perspective. Based on the topics highlighted, we base the final review of the literature on two separate topics: financial performance in sustainable investing and ESG rating divergence. Therefore, we have chosen to define our research theme as what the literature says about sustainable investment and rating divergence. In addition, we have chosen two research

questions (1) *Focusing on stock returns, what does the literature say regarding financial performance in sustainable investments* and (2) *What does the literature say about rating divergence*.

The rest of the paper is structured as follows: section 2 provides an overview of the research framework used to conduct this literature review, followed by section 3 that reviews literature regarding financial performance in sustainable investing; the subsequent section 4 reviews literature regarding ESG rating divergence, followed by a discussion of the literature in section 5; and we conclude the paper in section 6.

2. Research Framework

The objective of this systematic literature review is to systematically examine research to identify relevant articles regarding our topic, followed by a comparative analysis using a qualitative methodology as lined out in Snyder (2019). Our review is based on relevant academic literature in finance, accounting, and management and we provide an overview of the literature regarding sustainable investing, financial performance, and rating divergence (see appendix 1).

Our literature review follows the systematic process outlined by Xiao and Watson (2017) as a guiding framework. This approach involves three main stages for conducting a literature review. The initial stage involves planning the review, which consists of identifying the purpose of the review, specifying the research theme and questions, and the development of a research protocol. Second, the review is conducted by identifying and selecting the primary studies, extracting, analyzing, and synthesizing the data identified. Finally, the reporting stage of the review involves writing a report to disseminate the findings.

In line with Xiao and Watson (2017), the research questions we formulated for this literature review serve as drivers for the overall review process and additionally as guides for inclusion, exclusion, methodology, and reporting. After developing the initial research questions, we established a search strategy to identify relevant literature. As described by Snyder (2019), the search strategy includes selecting relevant search terms and databases. In line with Xiao and Watson (2017), the literature review's quality is dependent on the collected literature, and to acquire relevant literature we used three common primary sources: electronic databases, backward searching, and forward searching. Initially, we used electronic databases to conduct the preliminary search. We utilized Google Scholar, and Web of Science, as both are frequently used by researchers across disciplines, to find articles published in academic journals as outlined by Xiao and Watson (2017). Additionally, we have viewed articles using SSRN, as some of these have been working papers since the subject is still emergent.

In line with the process outlined by Xiao and Watson (2017), we used our research questions to identify relevant search terms. We conducted a literature search using keywords such as "ESG rating divergence", "measurement divergence", ESG rating disagreement and stock returns", Investing + ESG disagreement, and Financial performance + ESG disagreement. The preliminary relevance of the articles was initially assessed based on the title and abstract, and if deemed relevant, the articles were included for further evaluation.

Due to the relatively high volume of articles obtained from initial searches, we utilized a selective approach to narrow the scope of the search, following the inclusion and exclusion criteria outlined in Snyder (2019). In this process, we primarily relied on Google scholar, an influential open access database. However, it is important to note that due to Google scholar being an open access database it also includes “gray literature” such as reports, theses, and conference proceedings as outlined by Xiao and Watson (2017). Several search findings were therefore excluded in the screening as they were “gray literature”. We evaluated the introduction, and findings from the chosen articles to further assess the relevance to our chosen research topic based on the process outlined by Xiao and Watson (2017) and Snyder (2019). We have chosen to focus on an investor perspective in our analysis and therefore excluded articles that primarily adopt a corporate perspective. Additionally, due to the extensive scope of the topic, our research specifically focuses on stocks as the investment object, excluding articles that exclusively analyze bonds.

Our primary objective was to pursue articles that were published in top journals and authored by leading academics within their respective fields. We referred to the Academic Journal Guide (AJG), to determine the quality of the journal where the AJG utilizes a scoring system that ranges from 1 to 4*, with 4* being the highest. We specifically selected the top journals listed in AJG, with scores of 4*, 4 and 3. However, due to the relatively new and limited research on this subject, not all the articles included in our review were published in top journals. Some of the articles were working papers or published in journals with a score of 2 or lower. In such cases, we conducted a thorough cross-check of the authors publication records to determine if they have published other works in top journals or have articles that have received a significant number of citations.

Furthermore, we employed forward and backward searches to identify additional relevant articles as outlined in Xiao and Watson (2017). The usage of a backward search aimed to enhance the comprehensive list of articles by identifying relevant works that are cited within the articles. Specifically, we examined the bibliography of the relevant article in order to identify additional relevant articles. In addition, we conducted a forward search to find articles that had cited the articles we reviewed. We conducted backward and forward search approaches by utilizing the authors cited in the reviewed articles to further expand our search. By identifying key authors, we explored their publications to see if they had published other relevant articles to include as outlined by Xiao and Watson (2017).

Our systematic search for articles to review was concluded by the end of April, apart from a few additional articles identified during the reading of already identified articles. We started with 110 articles but ended up with 30 due to a more critical assessment of the articles content and findings (see appendix 1). After the final sample was selected, a consistent approach was used to abstract appropriate information from the articles we chose based on the methodology highlighted in Snyder (2019).

Figure 1: Literature search and evaluation for inclusion

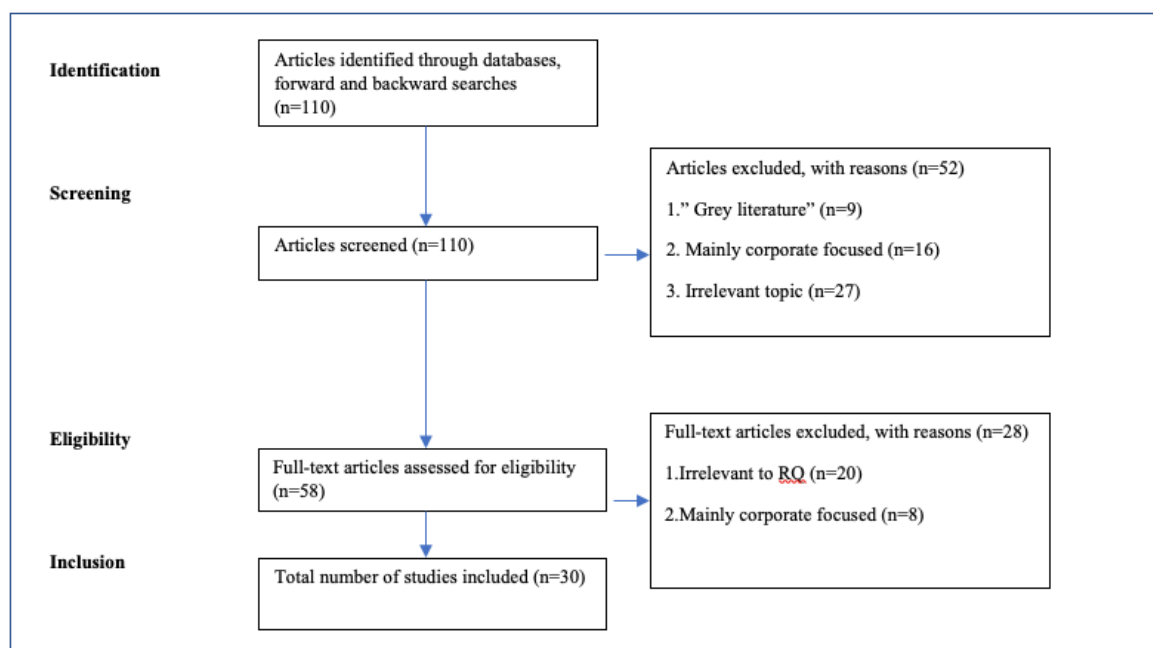


Figure 1 provides a summary of the systematic process we followed, from the number of articles identified, screened, assessed for eligibility and the total number articles included in our review. In addition, it shows the reasons for articles excluded both during the screening process and when assessed for eligibility.

During the selection process, one potential bias that might occur is the inclusion of articles leading to a skewed sample or the exclusion of studies that might be relevant to summarize the literature (Snyder, 2019), and we have implemented several measures to minimize this risk. To ensure comprehensiveness, we conducted searches using various search terms, and prioritized newer articles to minimize the possibility of overlooking relevant contributions. Furthermore, we leveraged references from reputable authors to complement our search through platforms like Google Scholar and Web of Science, thereby mitigating potential exclusion resulting from biased search terms. Additionally, we examined articles and authors within our existing data set, investigating citations, critiques, confirmations, and newer insights in the relevant literature. We expanded our scope across multiple disciplines, including finance, economics,

business ethics, and management, among others, in an effort to reduce the risk of a biased sample. Utilizing diverse databases and journals also contributed to mitigating this risk.

3. Financial performances in sustainable investing

The following section will highlight theoretical contributions and empirical findings from the literature regarding financial performance in sustainable investing. We do not distinguish between theoretical and empirical findings.

3.1 Negative relationship on financial performance

In an early paper, Fama and French (2007) construct a simple framework for studying how disagreement and tastes for assets as consumption goods can affect prices. They find that distortions in expected returns can occur in cases where misinformed investors or investors with specific asset preferences hold a substantial portion of invested wealth, possess limited knowledge about a wide range of assets, adopt positions different from the market portfolio, or underweight assets with low correlation to the assets they overweight. Fama and French (2007) do not study ESG or sustainable investing, but they illustrate the concept of “investor tastes” using socially responsible investing as an example of extreme asset preferences, where the refusal to hold sin stocks is driven by factors unrelated to expected returns.

Pastor et al (2021) develop an equilibrium model to analyze effects, both financial and real, of sustainable investing. The equilibrium model operates on the premise that the market behaves rationally, with key components including variations in firm’s sustainability levels and variations among investors in their degree of concern regarding sustainability. This spectrum is ranging from green to brown and Pastor et al (2021) provide evidence that agents taste for green holdings affect asset prices. They find that agents are willing to pay more for greener firms, which lowers the firm’s cost of capital, leading firms to be able to offer lower expected returns. Brown assets have positive alphas (expected return relative to the market), and green assets have negative alphas. According to Pastor et al (2021), in equilibrium, green assets have lower expected return and therefore financially underperform due to investors preferences of holding them and green asset’s ability to hedge climate risk. Consequently, Pastor et al (2021) provide evidence that the investors who value sustainability can derive utility not only from financial wealth, but from holding green firms in their portfolio while excluding brown firms. Moreover, Pastor et al (2021) extend the model by including climate in investors utility, which causes expected return to be a result not only of market betas and investor tastes, but also of climate betas. Accordingly, the expected returns of brown firms increase even further, which Pastor et al (2021) argues is caused by investors disliking unexpected deteriorations in the climate. If the climate experiences sudden deterioration, brown assets lose its relative value compared to green assets, causing investors to demand increased compensation for holding brown stocks. Pastor

et al (2021) view the ESG factor as to capture unexpected changes in ESG concerns, and the concerns changes in two ways; customers shifting their demands for greener goods, or investors increasingly appreciating green holdings. They find that the ESG factor affects the relative performance of green and brown assets and positive realizations can increase green assets while simultaneously decreasing brown assets, resulting in green assets outperforming brown (Pastor et al., 2021).

Building on Pastor et al (2021), Pastor et al (2022) addresses what past performance of green assets imply for future performance and argue that when investors move towards greener preferences, they increase the demand for these assets, consequently increasing asset prices. Additionally, as customers may change their preferences towards greener products, green firms' profits increase, causing stock prices to rise. Thus, Pastor et al (2022) explain that even though green assets may have higher realized returns, using recent outperformance as a predictor of future performance is not reliable.

The effect of exclusionary ethical investing on corporate behavior in a risk-averse, equilibrium setting is investigated by Heinkel et al (2001). They find that exclusionary ethical investing leads to fewer investors holding polluting firms, since green investors are actively avoiding these companies. Subsequently, the lack of risk sharing among brown investors results in lower stock prices for polluting firms, which increases the firms cost of capital. Furthermore, the authors find that if the cost of capital outweighs the cost of implementing reforms towards greater social responsibility, the firm will take action to reduce pollution. Heinkel et al (2001) argue that their model can help explain why socially responsible investment, through exclusionary activities, can encourage firms to adopt more socially responsible activities.

Albuquerque et al (2019), examine if CSR affects systematic risk as hypothesized by Bénabou and Tirole (2010), and the effects of CSR on firm risk and value across firms. They model CSR as an investment to increase product differentiation that allows firms to benefit from higher profit margins and the model predicts that CSR decreases systematic risk and therefore increases firm value. The authors find that companies with high levels of greenhouse gas emissions have higher costs of capital, which they posit to be a consequence of investors demanding a risk premium for holding high emitting firms. This finding suggests that climate change can have great effects on the cost of capital of firms, especially high polluting firms, potentially incentivizing the reduction of emissions to lower the cost of capital.

Another theoretical framework was developed by Pedersen et al (2021) to examine the impact of ESG on portfolio choice and equilibrium asset prices. They further extend their study to include an empirical analysis of the same topic. Their findings reveal that applying realistic limitations to portfolios considering ESG factors often leads to a decrease in overall performance, limiting the potential returns that can be achieved. When investors screen portfolios to exclude assets with low ESG scores, investors aiming to maximize risk-adjusted returns may end up selecting portfolios with even lower ESG scores compared to unrestricted investors. This highlights the complexity involved in incorporating ESG factors into portfolio construction. Pedersen et al (2021) propose that a stock's ESG score provides information about firm fundamentals and thus affects investors preferences. Their analysis indicates that the governance proxy (by proxy they mean measures of the specific ESG factor) consistently allowed ESG investors to achieve a sense of virtuousness without compromising financial performance. They argue that good governance could predict good fundamentals simultaneously as these assets attract modest investor demand (not enough to increase the stock price), leading to favorable valuations and positive expected return. The E and S proxies however, provided weaker predictors of future profits, as well stronger investor demand, which results in higher valuations and lower expected returns.

Baker et al (2022b) develop a model and estimate investor demand for index funds by utilizing a standard framework model. Their findings indicate that on average, index fund investors are willing to pay an additional annual premium for investments made with an ESG mandate, compared to identical funds lacking an ESG mandate. Thus, the authors suggests that as a collective, investors anticipate higher returns, whether financial or non-financial, from funds with an ESG mandate, indicating why sustainable investors are willing to pay more for these funds.

Barber et al (2021) investigate whether investors in impact funds are willing to sacrifice financial returns, in order to increase non-financial benefits drawn from impact investing. They present evidence that investors who allocate funds to dual-objective venture capital funds (funds aimed at generating positive externalities in addition to financial returns) derive non-financial utility, thus, impact funds yield lower financial returns compared to traditional venture capital funds. Barber et al (2021) interpret these findings as an indication that impact investing allows investors to align their investments with their values, thereby contributing to positive societal impact by encouraging firms to adopt more socially responsible strategies.

Hong & Kacperczyk (2009) investigate the influence of social norms on markets by studying sin stocks (corporations engaged in the production of alcohol, tobacco, and gaming). They shed light on the presence of societal norms by highlighting how institutional investors (such as pension funds and universities) refrain from holding sin stocks due to the public nature of their investments, the exposure to public scrutiny, and the diverse constituencies they serve. The divestment in sin stocks leads to higher expected returns for sin stocks as they become neglected, and face increased litigation risk. Resultingly, institutional investors willingly accept the financial cost of lower overall portfolio returns in order to align with prevailing social norms.

Furthermore, Chava (2014) study the impact of a firm's environmental profile on its cost of equity and debt capital and finds a statistically and economically significant positive relationship between a firm's net environmental concerns and the expected returns on its stock. By reviewing the implied cost of capital, the authors provide evidence of investors demanding significantly higher expected returns on stocks excluded by environmental screens compared to stocks without such environmental concerns, as well as lenders charging higher interest rates on loans issued to firms with environmental concerns. Chava (2014) argues that these findings suggests that a firms' environmental profile can significantly impact its cost of capital, and therefore incentivize companies to improve their environmental performance to lower the cost of capital.

Bolton and Kacperczyk (2021) study whether carbon emission affects the cross-section of US stock returns, and if investors demand a carbon risk premium. Studying the behavior of institutional investors, they find them to implement exclusionary screens based on carbon emission intensity in certain industries. Furthermore, they find that high emitting firms earn higher returns, indicating that investors are already demanding compensation for their exposure to risks related to carbon emissions. Bolton and Kacperczyk (2021) refers to the increased returns with higher emissions as a "carbon premium". The authors posit that institutional investors, that invest on behalf of their clients, often have longer horizons, and are exposed to various regulations and fiduciary duties, and as such, they are more constrained by which assets to invest in.

Moreover, Bolton et al (2022) confirms the evidence of carbon premiums, and supports the previous hypothesis that investors increasingly view carbon emissions as a relevant risk that requires further compensation for exposure, due to investors increasingly considering the potential impact of climate change on companies. Bolton and Kacperczyk (2022) argues that

this is evident in the reduced price-to-earnings ratios observed in companies with higher emissions. Implying that investors perceive emissions as a risk factor that could impact financial performance, leading the market adjusting its valuation of companies based on emissions.

Aswani et al (2023a) revisit data from prior literature (Bolton & Kacperczyk, 2021) to assess the relationship between carbon emissions and stock returns. They provide evidence of the relationship being driven by two factors: First, stock returns are correlated only with unscaled emissions estimated by the data vendor, not with unscaled emissions disclosed by firms. Second, unscaled emissions are correlated with stock returns, but emission intensity is not. Consistent with Bolton & Kacperczyk (2021), they find a positive relation between the natural logarithm of unscaled emissions and stock returns. However, these findings disappear once they account for differences between agency-estimated and firm-disclosed emissions or scale emissions by firm size, indicating systematic differences between firms' disclosed results and agency assessments. Thus, Aswani et al (2023a) corroborates the earlier studies' findings that emission intensity is statistically insignificant. Furthermore, they indicate a lack of conclusiveness regarding the emergence of a carbon premium in the evidence.

In a recent paper Hsu et al (2023) examine the asset pricing implications of industrial pollution, with the aim of investigating the financial effects of uncertainty in environmental policies and regulations. They develop an equilibrium model where firms' cash flows are influenced by policy changes relating to environmental regulation. Hsu et al (2023) identifies a new source of systematic risk for investors, the risk of a regime shift in environmental regulation which affects high emission firms more than low emission firms. When assessing regime shift risk, which represents the perceived likelihood of stricter environmental regulations, they find that high-emitting firms experience a decline in long-term profits as regime shift risk increases. Due to the greater negative impact on the profitability of high-emitting firms, these firms are more exposed to regime shift risk, resulting in higher average excess returns as risk premia.

Cornell (2021) addresses the conceptual issue that arises when attempting to assess the relation between risk, return, and ESG. He analyzes the influence of investor preferences for ESG stocks and expected returns and examines whether ESG can be considered as a risk factor and if so, what implications it could have for expected returns. Cornell (2021) finds that the preference for highly rated companies causes green investors to face increased prices and lower financial returns, due to their preferences being aligned with environmental concerns. However, he suggests that the lower expected returns could indicate a lower discount rate, potentially

resulting in increased investment in green projects and higher market values for companies with high ESG ratings.

3.2 Positive relationship on financial performance

Even though the previous reviewed papers find a negative relationship between sustainable investing and financial performance, Edmans (2011) analyzes the relationship between employee satisfaction and long-run stock returns, finding that companies with high employee-satisfaction levels generate superior long-term returns. He suggests that employee satisfaction leads to stronger corporate performance through improved recruitment, motivation, and retention. The findings indicate that certain SRI screens based on employee relations can have a positive relationship with asset returns, but the results may not be applicable to other SRI screens (Edmans, 2011). Furthermore, Edmans (2011) argue that the positive excess returns found in his article is because the market initially expected a negative, or no relationship with being noted on the list of “100 best companies to work for in America”, where employee satisfaction in his study was shown to have a positive impact. However, if the market recognizes the positive correlation between being listed and future returns, Edmans (2011) expects the results to decline over time. He argues that the findings indicate that the market fails to value intangibles into stock valuations. Similarly, Pedersen et al (2021) found a positive relationship between the governance aspect (G proxy) and future profitability, as well as increased investor demand. The social proxy led to a negative relationship, although not significant, and the E proxy, and overall ESG exhibit a positive correlation with investor demand and high valuations.

Krüger (2015) study the shareholder value implications of positive and negative CSR events in the short run. He observes that CSR driven by agency problems negatively affects shareholder value. However, CSR news addressing problematic stakeholder relations and compensating for past social irresponsibility results in positive shareholder value. Krüger (2015) suggest that SRI strategies can result in positive expected returns when they are aimed at improving poor stakeholder relations and offsetting previous irresponsibility.

Moreover, Lo and Zhang (2021) propose a quantitative framework to assess the financial impact of impact investing, including SRI strategies, ESG objectives, and other non-financial investment criteria. They provide an example of the Cystic Fibrosis Foundation, where advancing drug development for rare diseases resulted in a significantly positive excess return. Thus, indicating the possibility of “doing well by doing good”, and emphasizes the potential for both financial success and positive social impact.

3.3 Summary of the literature

As presented in the two previous sections, most of the reviewed papers claims a negative relationship between sustainable investing and financial performance (see table 1), along a variety of perspectives, including different investor types, different timelines (short and long run), equilibrium models, and ESG factors. Even though a selected few papers argue that a positive relationship exists (see table 1), the main difference in approaches between those claiming a negative and positive approach, is that the ones reaching a positive relationship focus on intangible ESG factors not yet valued in the market, and these studies argue that when peer investors catch up, and the market incorporates these intangibles in the valuation of assets, the positive relationship will disappear (Edmans, 2011; Pedersen et al., 2021).

Table 1: *Summary of findings of financial performance*

Topic	Sources	Total
Negative relationship	Aswani et al (2023a), Hsu et al (2023), Baker et al (2022b), Bolton et al (2022), Bolton & Kacperczyk (2022) Pastor et al (2022), Barber et al (2021), Bolton and Kacperczyk (2021), Pastor et al (2021), Pedersen et al (2021), Cornell (2021), Albuquerque et al (2019), Chava (2014) & Hong and Kacperczyk (2009), Fama and French (2007), Heinkel et al (2001)	16
Positive relationship	Lo and Zhang (2021), Pedersen et al (2021), Krüger (2015) & Edmans (2011)	4

Table 1: In table 1 we have listed all the selected papers for our analysis categorized by negative and positive relationship on sustainable investing, and the number of articles is tallied up.

4. ESG ratings and divergence

The following section will highlight findings from the literature regarding rating divergence and the consequences and implications of rating disagreement and divergence.

4.1 The divergence in ESG-ratings

Goldstein et al (2022) create a simple equilibrium model to analyze the relationship between financial and ESG information, as well as the interactions between ESG investors and traditional investors. Trading based on either financial or ESG performances inherently diminishes the informativeness of asset prices in relation to the other aspect, as asset prices reflect both aspects. They find that because of preference heterogeneity, the two investor groups operate in different directions based on the same information, thus making the price noisier for one another. The authors argue that this effect can cause multiple equilibria with different pricing functions emerging, and as more ESG investors enter the market or as ESG information improves, this can reduce the price informativeness about a firm's financial performance, which may increase its cost of capital, and consequently force them to offer higher expected returns.

The convergent validity of six-well established social ratings is discussed in a paper by Chatterji et al (2016), and they provide evidence that there is low convergence in their CSR assessments. They find two main reasons for the divergence in the ESG ratings; what the rating agencies choose to measure (theorization), and whether it is measured consistently (commensurability). Chatterji et al (2016) argues that this lack of agreement is not only caused by differences in raters' theorization of CSR as the differences remain after adjusting for explicit differences in the interpretation. Instead, Chatterji et al (2016) argues that it implies that ratings have low validity. Chatterji et al (2016) advice consumers of SRI ratings to exercise caution and verify the reliability of these ratings when interpreting the relationship between CSR and social ratings, given the absence of convergence among them. They assert that in the event of invalid ratings, there is a potential for distributing misleading information to investors regarding which firms are the most responsible, which, in turn, could lead to the misallocation of trillions of dollars (Chatterji et al., 2016).

A comparison of different rating approaches and evaluations of the correlations among three rating agencies by looking at their ESG scores, their descriptive statistics, and distributions of the approaches are offered by Dorfleitner et al, in their 2015 paper. They suggest that there is an obvious lack in convergence between the different ESG measurement concepts. Dorfleitner et al (2015) discover that the correlation between corporate responsibility level and risk is low,

primarily due to disparities in scoring methodologies and variations in scores among ESG rating providers. Larger firms tend to receive higher scores, attributed to their increased reporting activities, among other factors.

Berg et al (2022a) decompose the divergence in six prominent rating agencies into three contributions: scope (based on distinct attributes sets), measurement (divergent viewpoint on the relative priority of attributes), and weight (employ diverse indicators to measure the same attribute). Their findings indicate that measurement contributes to more than half of the observed divergence, compared to the impacts of scope and weight. During further investigation of the underlying reasons for measurement divergence Berg et al (2022a) notice the presence of a rater effect, indicating a bias, where a rating agency's general opinion of a company, or a company's prior performance, affects the measurement of specific categories. While Berg et al (2022a) do not determine the underlying definitive cause of the observed rater effect, one plausible explanation is that ESG rating agencies allocate analyst's work by firm rather than by category. As a result, an analyst's overall perception of a company may influence assessments across different categories. Berg et al (2022a) argue that the divergence in ESG ratings goes beyond various definitions and stems from a disagreement regarding the underlying data. They acknowledge that different interpretations of the importance of specific categories in ESG assessments are reasonable, considering the diverse preferences for scope and weight for users of ESG ratings. However, they highlight the problem of measurement divergence if ESG ratings ultimately should rely on objective observations.

Dimson et al (2020) examined the degree of, and the reasons for, disagreement among prominent ESG raters. They discuss the important role of ESG metrics and the lack of agreement across raters and examine whether ESG ratings are predictive of investment returns as well as the possible implications for ESG investors. When discussing the causes for divergent ESG ratings, Dimson et al (2020) points to the four reasons presented by Kotsantonis and Serafeim (2019). Furthermore, Dimson et al (2020) propose that ESG ratings are often considered useful for enhancing risk-adjusted performance. Investors have potentially discovered financially beneficial opportunities by investing in companies with high ESG scores, particularly when they have identified undervalued attributes that the market has not fully recognized. However, consistent with the findings of Edmans (2011), these advantages are anticipated to diminish as other investors become aware of them.

The role of firms ESG disclosure on disagreement across rating agencies regarding which rating assigned to individual firms, are investigated in a study conducted by Christensen et al (2022).

Their findings suggest that an increased level of ESG disclosure by firms is associated with a higher degree of disagreement among rating agencies in assigning ESG ratings. Christensen et al (2022) divide the three ESG pillars and consider them separately. They find that environmental and social disclosure do affect the rating uncertainty more than governance disclosure due to the E and S pillars being relatively new and have a less shared understanding of which factors that represent good performance, compared to governance. Additionally, Christensen et al (2022) investigates which consequences are linked to rating disagreement, and find that it causes larger price movements, higher return volatility, and lower likelihood of issuing external financing. Their findings emphasize the significance of establishing a common understanding regarding the metrics employed to evaluate ESG performance, as well as a consensus on defining criteria for distinguishing between favorable and unfavorable ESG performance.

4.2 Consequences and implications

Analyzing the pricing and portfolio implications of ESG uncertainty to sustainable investing, examining the relationship between stock returns, ESG rating and the divergence of ratings, Avramov et al (2022) finds that uncertainty surrounding a company's ESG profile can have an impact on pricing and portfolio choices. Highlighting that the relationship is complex, Avramov et al (2022) argues that on one hand, increased ESG uncertainty leads to a higher market premium due to the increased perceived risk. On the other hand, in a green market, ESG investors derive non-financial benefits from holding green stocks, which could counterbalance the impact of uncertainty on the market premium. Additionally, Avramov et al (2022) provide evidence of ESG rating having a negative association with future performance when uncertainty is low, yet, as the uncertainty increases, the relationship becomes positive or insignificant. This suggests that the carbon premium, as highlighted by Bolton & Kacperczyk (2021), observed in certain stocks, can be attributed to the clear definition and minimal uncertainty surrounding sin stocks and companies emitting high levels of carbon. Therefore, Avramov et al (2022) argue that divergent ESG ratings causes sustainable investing to be riskier, which reduces investor participation. They support the argument that it would be useful with a common taxonomy to determine what ESG performance is deemed as “good”, as well as disclosing standards to help mitigate ESG rating uncertainty. Consequently, Avramov et al (2022) argues that the overall implications of ESG preferences with uncertainty for the market premium is inconclusive.

Gibson et al (2021) investigates the relationship between ESG rating disagreement and stock returns, explores the presence of a risk premium for firms with higher uncertainty, and identifies

the key factors within ESG ratings that drive this relationship. Their findings reveal a positive association between expected returns and ESG rating uncertainty, suggesting the existence of a risk premium for companies with higher levels of uncertainty. Moreover, they find disagreements regarding environmental results to be especially prominent, compared to social and governance results, possibly indicating that the environmental rating dimension is the only one priced by the market so far (Gibson et al., 2021).

Berg et al (2021) proposes a simple model that establishes the relationship between ESG performance and stock returns, demonstrating that as the level of uncertainty surrounding the measured ESG performance increases, the sensitivity of stock returns to ESG performance decreases. Differently from Avramov et al (2022) and Gibson et al (2021) who indicate that ESG rating uncertainty leads to higher risk premiums, Berg et al (2021) propose a different perspective, interpreting ESG divergence as a measurement error reducing the true effect of ESG performance on stock returns. Berg et al (2021) therefore argue that high levels of noise in estimates causes a significant bias in the standard regressions analyzing ESG performance effects. Consequently, one of the implications of ESG rating divergence is the need for multiple ratings in order to reduce the noise among them, and retrieve reliable results (Berg et al., 2021).

The financial performance of ESG portfolios in the United States, Europe and Japan based on the data of six major ESG rating agencies are analyzed by Berg et al (2023). Berg et al (2023) find statistically significant excess returns for U.S. and Japanese ESG portfolios during the period 2014 - 2020, while no such returns are observed in Europe. They suggest different methods, including statistical and voting-based approaches, to combine individual ESG ratings and discover that aggregated ESG ratings enhance portfolio performance. Furthermore, they observe that a portfolio constructed with Treynor-Black weights further enhances the performance of ESG portfolios. These findings indicate that despite the inherent noise in ESG ratings, they can be utilized for constructing portfolios, and aggregating individual ESG ratings significantly improves portfolio performance.

Kotsantonis and Serafeim (2019) provide a guide for the rapidly growing number of people entering the ESG finance field and the use of ESG information in investment decisions. According to Kotsantonis and Serafeim (2019), ESG metrics and non-financial reporting are results of the increased demand for information that portrays how companies use different forms of capital, how companies perform on other dimensions than financial, and how companies affect society through positive and negative externalities. They identify four factors contributing to inconsistencies in ESG ratings: data discrepancies, benchmark choice, data

imputation, and information overload. Kotsantonis and Serafeim (2019) argue that investors must insist on making ESG information measurable and manageable and point out that the primary obstacle to using ESG information in investment decision-making is the absence of metric comparability across companies.

4.3 Summary of the literature

The literature reviewed is conclusive regarding the existence of divergent ESG ratings. However, this literature is not decisive in sources of divergence. They divide along a variety of perspectives, such as scoring methodologies (Dorfleitner et al., 2015), data discrepancies, benchmark choice, data imputation, and information overload (Kotsantonis and Serafeim, 2019), increased disclosure (Christensen et al., 2022), lack of theorization and commensurability (Chatterji et al. 2016), and the decomposition of ESG rating divergence into three contributions; Scope, weight and measurement (Berg et al., 2022). As presented, the findings regarding the perspective of ESG rating divergence and how it affects stock returns are inconclusive. Parts of this literature suggest that ESG rating uncertainty increases the risk premium (Avramov et al., 2022; Gibson et al., 2021), while another part interprets ESG rating divergence as measurement error and thus dampens the actual impact of ESG performance on stock returns (Berg et al., 2021)

Table 2: *Summary of findings of rating divergence*

Topic	Sources	Total
Rating divergence	Berg et al (2022a), Christensen et al (2022), Goldstein et al (2022), Dimson et al (2020), Chatterji et al (2016) & Dorfleitner et al (2015)	6
Consequences and implications	Berg et al (2023), Avramov et al (2022), Berg et al (2021), Gibson et al (2021) & Kotsantonis & Serafeim (2019)	5

Table 2: In table 2 we have listed all the selected papers for our analysis categorized by rating divergence, and consequences and implications of rating divergence and the number of articles is tallied up.

5. Discussion

As presented in section 3, most of the reviewed papers claims a negative relationship between sustainable investing and financial performance of listed stocks (see table 1), however they vary in perspectives. Among the market participants investing in green companies, different motivations exist. Institutional investors, such as pension funds or university funds, are influenced by social norms induced by their customers, as highlighted by Hong and Kacperczyk (2009), leading them to avoid "sin stocks" and redirect their investments towards greener options. These institutional investors are subject to public scrutiny and serve a diverse customer base, making them more responsive to societal expectations (Hong & Kacperczyk, 2009). On the other hand, non-institutional investors are primarily not driven by social norms but rather by their own preferences. Green investors derive utility from non-financial factors, indicating that their investment decisions are influenced by considerations beyond purely financial gains. In contrast, brown investors are not motivated by societal norms or a specific ethical alignment. Their investment choices are predominantly guided by the pursuit of a risk adjusted financial return (Pedersen et al., 2021)

The literature widely acknowledges that sustainable investments are commonly associated with lower financial returns, which can be attributed to several underlying factors. Firstly, the practice of exclusionary screening leads to a reduced investor base for the assets that are excluded, consequently resulting in heightened risk for the remaining investors due to a diminished pool of risk-sharing participants (Bolton and Kacperczyk, 2021; Heinkel et al., 2001). Consequently, excluded companies are compelled to offer higher expected returns to attract investments. There is an ongoing discussion regarding the statistical associations between carbon emissions and financial returns, which is currently unresolved (Aswani et al., 2023a; Aswani et al., 2023b; Bolton and Kacperczyk., 2023). Secondly, green companies exhibit reduced exposure to climate risk, rendering them less vulnerable to potential adverse consequences in the event of climate-related shocks. As a result, they often serve as a hedge against such risks (Chinco et al., 2022; Pastor et al., 2021). Consequently, the necessity for a risk premium due to exposure to climate shocks is decreased in the case of green investments (Pastor et al., 2021). Thirdly, companies characterized by high pollution levels face an increased regulatory risk. This risk arises from the potential enactment of new laws and regulations that impose penalties on firms with significant pollution levels. Consequently, such companies are compelled to compensate investors for the associated higher risk premium in the form of higher excess returns (Hsu et al., 2023).

While a minority holds the belief that a positive relationship may be achievable, the primary distinction between those advocating for a negative versus positive approach lies in their respective focuses. The proponents of a positive relationship emphasize the inclusion of ESG factors that currently lack market valuation, primarily intangible aspects. These studies contend that once peer investors catch up and the market integrates these intangibles into asset valuation, the previously observed positive relationship will diminish (Edmans, 2011; Pedersen et al., 2021).

As presented in section 4, the reviewed literature is conclusive regarding the existence of ESG rating divergence. Although the literature demonstrates a lack of consensus of the underlying reasons to the divergent ESG ratings, they divide along a variety of perspectives. Some scholars attribute rating divergence to disagreements in scope, weight, and measurement (Berg et al., 2022), and that these differences in interpretation lead to variations in ratings. Another perspective suggests that lack of theorization and commensurability contributes to rating divergence (Chatterji et al., 2026). Additionally, discrepancies in data, benchmark choices, data imputation, and information overload have been put forth as explanations for rating divergence (Kotsantonis & Serafeim, 2019; Dimson et al., 2020). Furthermore, increased ESG disclosure has been identified as a factor that intensifies disagreements among ratings (Christensen et al., 2022). Overall, the literature agrees that one of the main causes of rating divergence is the interpretation of corporate social responsibility (CSR) and the choices made regarding what to measure, and how to measure it. However, there is a broad consensus that efforts should be made to promote a common framework that fosters convergence in ratings to facilitate investors' decision-making process.

There is a divide in the reviewed literature regarding manage the divergent ESG ratings. Some strands of this literature advocate for the implementation of universal standard and stricter regulations, supporting the proposition that establishing a common taxonomy is beneficial in determining the criteria for defining "good" ESG performance (Avramov et al., 2022; Christensen et al., 2022). Additionally, they highlight the need for a consensus on disclosing criteria to address and reduce ESG rating divergence. Contrary to other reviewed literature, Edmans (2023a) presents a distinct perspective on the need for rigorous ESG regulations. He views ESG as an important but not exceptional set of long-term value drivers. Overemphasizing ESG at the expense of other factors may explain underperformance of ESG funds. Divergent ESG ratings result from varying views on intangible asset quality, making it challenging to determine which factors should be measured. Edmans (2023a) argues that ESG ratings are

opinions, not facts, and the divergence provides investors with diverse perspectives. However, comparability in ESG metrics is crucial for benchmarking. Edmans (2023b) acknowledges the nascent state of academic research on ESG, leading to a reliance on intuition rather than peer-reviewed studies.

Regarding the consequences and implications of rating divergence, there appears to be a limited body of research conducted on this topic. Some studies suggest that divergent ratings create uncertainty, leading investors to demand a higher market premium due to the perceived increased risk (Avramov et al., 2022; Gibson et al., 2021). On the other hand, other research argues that the implications of divergent ratings necessitate the use of multiple ratings to reduce noise and obtain reliable results (Berg et al., 2021).

This literature review primarily relies on articles obtained from top journals, while excluding gray literature, and it is therefore important to note that future studies with an updated sample may yield different findings. Additionally, the choice of search terms could potentially lead to the exclusion of relevant articles. We could have broadened the scope of our search terms and thus have a larger scope of papers to review. The time constraint of our study limits our capacity to review a larger number of studies, thus resulting in a limited number of articles included in our review. Additionally, we acknowledge that our review does not encompass all themes or topics within sustainable investing and ESG rating divergence. Furthermore, it is worth noting that research on sustainable investing and rating divergence is still relatively new, and as such, ongoing studies may uncover newer findings not discussed in this review.

The current literature acknowledges the lack of correlation in ESG ratings, leading to uncertainty and disagreements. Different perspectives exist on how to address this divergence. Some advocate for governmental intervention and the establishment of regulations and standards. Others emphasize cultural differences and the unique nature of companies, suggesting that a unified approach may not be suitable. This ongoing debate underscores the importance of addressing ESG rating divergence and the need for further research. Additionally, there is a gap in the literature regarding the financial consequences of ESG rating divergence from an investor perspective. Further research is needed to understand the impact of divergence in non-financial information on investors' decision-making processes and financial performance.

Several articles provide valuable insights and directions for future research in the field of ESG analysis. Aswani et al (2023a) offer a detailed analysis of the relationship between carbon

emissions and stock returns, emphasizing the importance of considering vendor estimation methods and scaling emissions by firm size. This highlights the need for further investigation in these areas to enhance the understanding of this relationship. Avramov et al (2022) suggests extending the analysis of ESG equilibrium to multiperiod dynamic settings, allowing for the exploration of time-varying market ESG dynamics and the identification of additional asset pricing factors. Additionally, incorporating investors' learning processes regarding a firm's ESG profile is seen as a valuable avenue for gaining deeper insights. Berg et al (2022a) reveal a "rater effect" in ESG ratings and speculate whether rater-specific assumptions and economic incentives could influence the assessments made by ESG raters, which could be worth exploring in future research endeavors.

6. Conclusion

Sustainable investing, and its relation to financial performance, has extensive attention from both academics and investors. There is a substantial number of studies focusing on the role of corporations regarding ESG, and fewer studies are dedicated towards the effect ESG has on investors. We examine what financial, economic, and managerial literature (with their respective subcategories) say about financial performance, focusing on stocks, in sustainable investing and ESG rating divergence. The reviewed literature on financial performance in sustainable investing lacks consensus, with most studies included in this review indicating a negative relationship between sustainable investing and financial performance. In contrast, while there are conclusive findings regarding ESG rating divergence, there is variation in this literature regarding the consequences and implications, with some studies suggesting negative effects and others pointing to positive outcomes. In conclusion, our literature review, and the findings therein, contribute to existing literature on sustainable investing and ESG rating divergence by providing an overview of prominent literary works creating a foundation for current, and future research.

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8. Appendix

Appendix 1

Topic	Type	Author	Year	Title	Journal	AGJ	Findings	Selected
Financial performance	Theoretical	Albuquerque, Koskinen & Zhang	2019	Corporate social responsibility and firm risk: theory and empirical evidence	Management Science	4*	CSR decreases systematic risk and increases firm value and that these effects are stronger for firms with high product differentiation.	Yes
Financial performance	Empirical	Aswani, Raghunanandan & Rajgopal	2023a	Are carbon emissions associated with stock returns?	Review of Finance	4*	We re-examine data from influential emerging literature and conclude that these associations are driven by two factors.	Yes
Financial performance	Reply	Aswani, Raghunanandan & Rajgopal	2023b	Are carbon emissions associated with stock returns? - Reply	Review of Finance	4*	Evidence of an increased “carbon premium” post-2015 may simply reflect a change in the sample proportion of firms with estimated emissions figures rather than an actual economic effect.	No
Financial performance	Mixed	Atmaz & Basak	2018	Belief dispersion in the stock market	Journal of finance	4*	Stock price is convex in cash-flow news and increases in belief dispersion	No
Financial performance	Theoretical	Baker, Bergstresser, Serafeim & Wurgler	2022a	The Pricing and Ownership of U.S. Green Bonds	Annual review of financial economics	3	Green municipal bonds are issued at a premium to otherwise similar ordinary bonds. We also confirm that green bonds, particularly small or essentially riskless ones, are more closely held than ordinary bonds	No
Financial performance	Theoretical	Baker, Egan & Sarkar	2022b	How do investors value ESG?	Working paper		Investors are willing, on average, to pay 20 basis points more per annum for an investment in a fund with an ESG mandate as compared to an otherwise identical mutual fund without an ESG mandate, suggesting that investors as a group expect commensurately higher pre-fee, gross returns, either financial or non-financial, from an ESG mandate.	Yes

Financial performance	Mixed	Barber, Morse & Yasuda	2021	Impact investing	Journal of Financial Economics	4*	We show that investors derive nonpecuniary utility from investing in dual-objective Venture Capital (VC) funds, thus sacrificing returns.	Yes
Financial performance	Empirical	Bauer & Hann	2010	Corporate Environmental Management and Credit Risk	Working Paper		We provide support for the view that the credit standing of borrowing firms is influenced by legal, reputational, and regulatory risks associated with environmental incidents.	No
Financial Performance	Empirical	Bauer, Ruof & Smeets	2021	Get Real! Individuals Prefer More Sustainable Investments	The Review of Financial Studies	4*	Two-thirds of participants are willing to expand the fund's engagement with companies based on selected SDGs, even when they expect engagement to hurt financial performance.	No
Financial performance	Empirical	Berchicci & King	2022	Corporate sustainability: a model uncertainty analysis of materiality	Journal of financial reporting	1	We further explore the relationship between material-sustainability and stock returns by performing a "model uncertainty analysis."	No
Financial performance	Empirical	Bialkowski & Starks	2016	SRI Funds: Investor Demand, Exogenous Shocks and ESG Profiles	Working paper		We provide evidence that investor demand for socially responsible or sustainable and responsible (SRI) mutual funds differs from that of conventional funds in that flows to SRI funds have shown greater growth and more persistence than flows to conventional funds.	No
Financial performance	Empirical	Billio, Costola, Hristova, Latino & Pelizzon	2022	Sustainable finance: a journey toward ESG and climate risk	Working paper		We consider studies describing and evaluating ESG methodologies and those studying the impact of ESG on credit risk, debt and equity costs, or sovereign bonds.	No
Financial performance	Empirical	Bollen	2007	Mutual fund attributes and investor Behaviour	Journal of Financial and Quantitative Analysis	4	The monthly volatility of investor cash flows is lower in socially responsible funds than in conventional funds.	No
Financial performance	Empirical	Bolton, Halem & Kacperczyk	2022	The Financial cost of carbon	Journal of Applied Corporate Finance	1	First, prudent investors will seek to hedge climate change risk by reducing their exposure to this risk. Second, investors will demand compensation for holding this risk. Third, investors will engage with companies to urge them to reduce this risk if they are not adequately compensated for it.	Yes

Financial performance	Comment	Bolton & Kacperczyk	2023	Are carbon emissions associated with stock returns? - Comment	Review of Finance	4*	Their disagreement is just about interpretation and is based on highly selective evidence. They insinuate that our findings are not robust and that the evidence on the emergence of a carbon premium in recent years is not conclusive.	No
Financial performance	Empirical	Bolton & Kacperczyk	2021	Do Investors Care about Carbon Risk?	Journal of Financial Economics	4*	We find that stocks of firms with higher total carbon dioxide emissions (and changes in emissions) earn higher returns, controlling for size, book-to-market, and other return predictors	Yes
Financial performance	Empirical	Bolton & Kacperczyk	2022	Global Pricing of Carbon-Transition Risk	Working paper		We find a widespread carbon premium—higher stock returns for companies with higher levels of carbon emissions (and higher annual changes)—in all sectors over three continents, Asia, Europe, and North America.	Yes
Financial performance	Empirical	Bouri, Iqbal & Klein	2022	Climate policy uncertainty and the price dynamics of green and brown energy stocks	Finance Research Letter	2	We provide the first empirical evidence that climate policy uncertainty is a significant determinant of the performance of green energy stocks relative to brown energy stocks	No
Financial performance	Empirical	Chava	2014	Environmental Externalities and cost of capital	Management Science	4*	Find that investors demand significantly higher expected returns on stocks excluded by environmental screens (such as hazardous chemical, substantial emissions, and climate change concerns) compared to firms without such environmental concerns.	Yes
Financial performance	Empirical	Chinco, Hartzmark & Sussman	2022	A new test of Risk Factor Relevance	The Journal of Finance	4*	Textbook models assume that investors try to insure against bad states of the world associated with specific risk factors when investing. This is a testable assumption, and we develop a survey framework for doing so.	Intro
Financial performance	Empirical	Choi, Gao & Jiang	2020	Attention to Global Warming	The Review of Financial Studies	4*	We show that attention to climate change, as proxied by Google search volume, increases when the local temperature is abnormally high.	No
Financial performance	Empirical	Cornell	2021	ESG preferences, risk and return	European Financial Management	3	There are two primary factors that affect expected returns for companies with high ESG (environmental, social and governance) ratings—investor preferences and risk.	Yes

							Although investor preferences for highly rated ESG companies can lower the cost of capital, the flip side of the coin is lower expected returns for investors.	
Financial performance	Empirical	Da Fermo, Tanzi, Nicolosi & Stanghellini	2022	On the Relationship Between Financial and Sustainable Variables: Insights from Graphical Gaussian Model	Working paper		Main results show that companies with low ESG scores make generally less disclosure of sustainability data and are more volatile than companies with a high ESG score.	No
Financial performance	Empirical	Della Croce, Kaminker & Stewart	2011	The role of Pension funds in Financing Green growth initiative	Working paper		With their USD 28 trillion in assets, pension funds - along with other institutional investors - potentially have an important role to play in financing such green growth initiatives.	No
Financial performance	Empirical	Edmans	2011	Does the stock market fully value intangibles? Employee satisfaction and equity prices	Journal of Financial Economics	4*	employee satisfaction is positively correlated with shareholder returns and need not represent managerial slack and the stock market does not fully value intangibles	Yes
Financial performance	Theoretical	Fama & French	2007	Disagreement, tastes, and asset prices	Journal of financial economics	4*	We provide a simple framework for studying how disagreement and tastes for assets as consumption goods can affect asset prices.	Yes
Financial performance	Empirical	Friede, Busch & Bassen	2015	ESG and financial performance: aggregated evidence from more than 2000 empirical studies	Journal of Sustainable Finance and Investment	1	The results show that the business case for ESG investing is empirically very well founded. Roughly 90% of studies find a nonnegative ESG–CFP relation. More importantly, the large majority of studies reports positive findings. We highlight that the positive ESG impact on CFP appears stable over time.	No
Financial performance	Theoretical	Hart & Zingales	2017	Companies should maximize shareholder welfare not market value	Journal of Law, Finance, and Accounting		We argue that maximization of shareholder welfare is not the same as maximization of market value. We propose that company and asset managers should pursue policies consistent with the preferences of their investors.	No
Financial performance	Empirical	Hartzmark & Sussman	2019	Do Investors Value Sustainability? A Natural Experiment Examining Ranking and Fund Flows	The journal of finance	4*	We present causal evidence that investors market wide value sustainability: being categorized as low sustainability resulted in net outflows of more than \$12 billion while being	Intro

							categorized as high sustainability led to net inflows of more than \$24 billion	
Financial performance	Theoretical	Heinkel, Kraus & Zechner	2001	The Effect of Green Investment on Corporate Behavior	The journal of Financial and quantitative analysis	4	We show that exclusionary ethical investing leads to polluting firms being held by fewer investors since green investors eschew polluting firms' stock.	Yes
Financial performance	Empirical	Hong & Kacperczyk	2009	The price of sin: the effects of social norms on markets	Journal of financial economics	4*	We hypothesize that there is a societal norm against funding operations that promote vice and that some investors, particularly institutions subject to norms, pay a financial cost in abstaining from these stocks.	Yes
Financial performance	Mixed	Hsu, Li & Tsou	2023	The pollution premium	The journal of finance	4*	We propose and model a new systematic risk related to environmental policy uncertainty. We use the growth in environmental litigation penalties to measure regime change risk and find that it helps price the cross section of emission portfolios' returns	Yes
Financial performance	Theoretical	Khan, Serafeim & Yoon	2016	Corporate sustainability: First evidence on materiality	The accounting review	4*	Using both calendar-time portfolio stock return regressions and firm-level panel regressions, we find that firms with good ratings on material sustainability issues significantly outperform firms with poor ratings on these issues.	No
Financial performance	Empirical	Krüger	2015	Corporate goodness and shareholder wealth	Journal of financial economics	4*	Investors respond strongly negatively to negative events and weakly negatively to positive events. I then show that investors do value "offsetting CSR," that is positive CSR news concerning firms with a history of poor stakeholder relations	Yes
Financial performance	Empirical	Krüger, Sautner & Starks	2020	The Importance of Climate Risks for Institutional Investors	The review of financial studies	4*	Institutional investors believe climate risks have financial implications for their portfolio firms and that these risks, particularly regulatory risks, already have begun to materialize	No
Financial performance	Mixed	Lo & Zhang	2021	Quantifying the Impact of Impact Investing	Working paper		We derive conditions under which impact investing detracts from, improves on, or is neutral to the performance of traditional mean-	Yes

							variance optimal portfolios, which depends on whether the correlations between the impact factor and unobserved excess returns are negative, positive, or zero, respectively.	
Financial performance	Theoretical	Niehaus	2014	A theory of good intentions	Working paper		I study a new explanation grounded in the idea that altruists want to think they are helping. Frictions arise because perception and reality can diverge ex post when feedback is limited.	No
Financial performance	Empirical	Nofsinger, Sulaeman & Varma	2019	Institutional investors and corporate social responsibility	Journal of corporate finance	4	Institutional investors appear to have selective preferences regarding CSR. They appear indifferent to the presence of positive environmental (E) and social (S) indicators, but underweight stocks with negative ES indicators.	No
Financial performance	Empirical	Pastor, Stambaugh & Taylor	2022	Dissecting green returns	Journal of financial economics	4*	Green assets delivered high returns in recent years. This performance reflects unexpectedly strong increases in environmental concerns, not high expected returns.	Yes
Financial performance	Theoretical	Pastor, Stambaugh & Taylor	2021	Sustainable investing in equilibrium	Journal of financial economics	4*	In equilibrium, green assets have low expected returns because investors enjoy holding them and because green assets hedge climate risk	Yes
Financial performance	Theoretical	Pedersen, Fitzgibbons & Pomorski	2021	Responsible investing: The ESG efficient frontier	Journal of financial economics	4*	We propose a theory in which each stock's environmental, social, and governance (ESG) score plays two roles: (1) providing information about firm fundamentals and (2) affecting investor preferences.	Yes
Financial performance	Theoretical	Renneboog, Ter Horst & Zhang	2011	Is ethical money financially smart? Nonfinancial attributes and money flows of socially responsible investment funds	Journal of financial intermediation	4	In their investment decisions, investors in SRI funds may be more concerned with ethical or social issues than with fund performance. Therefore, SRI money flows are less related to past fund returns.	No
Financial performance	Review	Renneboog, Ter Horst & Zhang	2008	Socially responsible investments: Institutional aspects, performance, and investor behavior	The Journal of Banking & Finance	3	Critical review of the literature. We conclude that the existing studies hint but do not unequivocally demonstrate that SRI investors are willing to accept suboptimal financial performance to pursue social or ethical objectives.	No

Financial performance	Empirical	Riedl & Smeets	2017	Why do investors hold socially responsible mutual funds	The journal of finance	4*	We find that both social preferences and social signaling explain socially responsible investment (SRI) decisions. Financial motives play less of a role.	Intro
Financial performance	Empirical	Tang & Zhang	2020	Do shareholders benefit from green bonds?	Journal of corporate finance	4	We document that stock prices positively respond to green bond issuance. However, we do not find a consistently significant premium for green bonds, suggesting that the positive stock returns around green bond announcements are not fully driven by the lower cost of debt.	No
Financial performance	Empirical	Tetlock	2010	Does Public Financial News Resolve Asymmetric Information?	Review of financial studies	4*	Certain investors trade on information before it becomes public; then, public news levels the playing field for other investors, increasing their willingness to accommodate a persistent liquidity shock	No
Financial performance	Theoretical	Zerbib	2022	A Sustainable Capital Asset Pricing Model (S-CAPM): Evidence from Environmental Integration and Sin Stock Exclusion	Review of finance	4	I develop an asset pricing model with partial segmentation and heterogeneous preferences. I characterize two <i>exclusion premia</i> generalizing Merton's (2987) premium on neglected stocks and a <i>taste premium</i> that clarifies the relationship between ESG and financial performance.	Intro
ESG information	Empirical	Amel-Zadeh & Serafeim	2018	Why and how Investors use ESG information: Evidence from a global survey	Financial Analysts Journal	3	We provide insights into why and how investors use reported environmental, social, and governance (ESG) information. Relevance to investment performance is the most frequent motivation, followed by client demand, product strategy, and then, ethical considerations.	Intro
ESG information	Empirical	Baldini, Maso, Liberatore, Mazzi & Terzani	2018	Role of country – and firm-level determinants in Environmental, Social, and Governance disclosure	Journal of business ethics	3	Results obtained using a cross-country sample of 14,174 firm-year observations during 2005–2012 provide evidence that country-level characteristics such as a political system (legal framework and corruption), labor system (labor protection and unemployment rate), and cultural system (Social Cohesion and Equal	No

							Opportunities) significantly affect firms' ESG disclosure practices.	
ESG information	Empirical	Benuzzi, Klaser & Bax	2022	Which ESG Dimension Matters Most to Private Investors? An Experimental Study on Financial Decisions	Working paper		We introduce an F-dimension, which encompasses actions that aim to directly impact future generations. when adopting a purely sustainable perspective, the E-Pillar ranks first, while when adopting a financial perspective, the S-Pillar is the most relevant. Finally, the F-pillar does not seem to play a significant role in the decision, because it is perceived as a factor complementary to the other three.	No
ESG information	Review	Christensen, Hail & leuz	2021	Mandatory CSR and sustainability reporting: economic analysis and literature review	The Review of Accounting Studies	4	We draw on relevant academic literatures in accounting, finance, economics, and management to discuss and evaluate the potential economic consequences of a requirement for CSR and sustainability reporting for U.S. firms, including effects in capital markets, on stakeholders other than investors, and on firm behavior.	Intro
ESG information	Empirical	Climent, Garrigues, Paraskevopouls & Santos	2021	ESG Disclosure and Portfolio Performance	Risks	-	ESG disclosure is associated with improved return growth, with the Governance pillar exhibiting the strongest effect on corporate performance.	No
ESG information	Empirical	Conca, Manta, Morrone & Toma	2021	The impact of direct environmental, social, and governance reporting: Empirical evidence in European-listed companies in the agri-food sector	Business strategy and the environment	3	ESG disclosure practices of the companies impact corporate profitability; specifically, evidence is provided for the existence of a positive relationship between profitability and disclosure practices of strictly environmental and social information and a negative effect between company market value and disclosure practices relating to governance.	Intro
ESG information	Empirical	Cui, Jo & Na	2018	Does Corporate Social Responsibility Affect Information Asymmetry?	Journal of Business Ethics	3	We find an inverse association between CSR engagement and the proxies of information asymmetry after controlling for various firm characteristics.	No

ESG information	Empirical	Dunn, Fitzgibbons & Pomorski	2018	Assessing risk through environmental, social and governance exposures	Journal of Investment Management	-	Stocks with worst ESG exposures have total and stock-specific volatility that is up to 10-15% higher, and betas up to 3% higher, than stocks with the best ESG exposures.	No
ESG information	Empirical	Dupuy & Garibal	2022	Cross-dispersion bias-adjusted ESG rankings	Journal of Asset Management	2	We show that the cross-dispersion bias may have a significant impact on ESG scores formation and that our proposed adjustment tends to weather it.	No
ESG information	Empirical	Engle, Giglio, Kelly, Lee & Stroebe	2020	Hedging Climate Change News	The Review of Financial Studies	4*	We discipline the exercise by using third-party ESG scores of firms to model their climate risk exposures. We show that this approach yields parsimonious and industry-balanced portfolios that perform well in hedging innovations in climate news both in sample and out of sample.	No
ESG information	Empirical	Flammer	2018	Corporate Green Bonds	Journal of Financial Economics (Forthcoming)	4*	Investors respond positively to the issuance announcement, a response that is stronger for first-time issuers and bonds certified by third parties.	No
ESG information	Empirical	Lang & Lundholm	1996	Corporate disclosure policy and analyst behavior	The accounting review	4*	Firms with more informative disclosure policies have a larger analyst following, more accurate analyst earnings forecast, less dispersion among individual analysts forecasts and less volatility in forecast revisions.	No
ESG information	Empirical	Liang & Renneboog	2017	On the foundations of corporate social responsibility	The journal of finance	4*	We find that a firm's CSR rating and its country's legal origin are strongly correlated.	No
ESG information	Empirical	Louche, Delautre, & Balvedi Pimentel	2023	Assessing companies' decent work practices: An analysis of ESG rating methodologies	International labour review	2	Building on the analysis of six rating agencies, this article investigates how these actors measure and assess companies' performance in terms of decent work and related areas and identifies the challenges they face in this endeavor	No
ESG information	Empirical	Martin & Moser	2016	Managers' green investment disclosures and investors' reaction	Journal of accounting and economics	4*	Investors respond favorably when managers make and disclose an investment and highlight the societal benefits rather than the cost to the company.	No

Rating uncertainty	Empirical	Azarmsa & Shapiro	2022	The market for ESG ratings	Working paper		The social optimum may be for the raters to specialize in different subcategories, while the competitive outcome may be for them to generalize among subcategories. Generalizing increases their stand-alone value and, hence, their pricing power. We also demonstrate that specialization maximizes divergence among ratings. Hence, divergence may be a poor measure of welfare	No
Rating uncertainty	Theoretical	Avramov, Cheng, Lioui & Tarelli	2022	Sustainable investing with ESG rating uncertainty	Journal of Financial Economics	4*	In equilibrium, the market premium increases and demand for stocks declines under ESG uncertainty	Yes
Rating uncertainty	Empirical	Berg, Fabisik & Sautner	2020	Is history repeating itself? The (un)predictable past of ESG ratings	Working paper		When comparing the initial and rewritten ESG scores around the methodology change, we observe that the ex-post score changes have in part been “data-mined”.	Intro
Rating uncertainty	Empirical	Berg, Kölbel & Rigobon	2022a	Aggregate confusion: The divergence of ESG Ratings	Review of Finance	4*	We document the rating divergence and map the different methodologies onto a common taxonomy of categories, and decompose the divergence into contributions of scope, measurement, and weight.	Yes
Rating uncertainty	Empirical	Berg, Heeb & Kölbel	2022b	The Economic Impact of ESG Ratings	Working paper		This suggests that fund managers use ESG ratings mainly to comply with ESG mandates rather than treating them as updates to firms' fundamentals.	No
Rating uncertainty	Mixed	Berg, Kölbel, Pavlova & Rigobon	2021	ESG confusion and stock returns: Tackling the Problem of Noise	Working paper		The corrected estimates demonstrate that the effect of ESG performance on stock returns is stronger than previously estimated: after correcting for attenuation bias, the coefficients increase on average by a factor of 2.6, implying an average noise-to-signal ratio of 61.7%	Yes
Rating uncertainty	Empirical	Berg, Lo, Rigobon, Singh & Zhang	2023	Quantifying the Returns of ESG Investing: An Empirical Analysis with Six ESG Metrics	Working Paper		We document statistically significant excess returns in ESG portfolios from 2014 to 2020 in the U.S. and Japan.	Yes

Rating uncertainty	Empirical	Billio, Costola, Gristova, Pelizzon	2021	Inside the ESG ratings: (Dis)agreement and performance	Corporate social responsibility and environmental management	1	There is a lack of a commonality in the definition of ESG (i) characteristics, (ii) attributes and (iii) standards in defining E, S and G components	No
Rating uncertainty	Empirical	Chatterji, Durand, Levine & Touboul	2016	Do ratings of firms converge? Implications for managers, investors and strategy researchers	Strategic Management Journal	4*	Raters of firms play an important role in assessing domains ranging from sustainability to corporate governance to best places to work. Managers, investors, and scholars increasingly rely on these ratings to make strategic decisions	Yes
Rating uncertainty	Empirical	Christensen, Serafeim & Sikochi	2022	Why is Corporate Virtue in the Eye of The Beholder? The Case of ESG Ratings	The Accounting Review	4*	We predict and find that greater ESG disclosure actually leads to greater ESG rating disagreement.	Yes
Rating uncertainty	Empirical	Dimson, Marsh & Staunton	2020	Divergent ESG ratings	Journal of Portfolio Management	3	Companies with a high score from one rater often receive a middling or low score from another rater. The weightings given to each pillar of an ESG rating also vary across agencies.	Yes
Rating uncertainty	Empirical	Dorfleitner, Halbritter & Nguyen	2015	Measuring the level and risk of corporate responsibility – An empirical comparison of different ESG rating approaches	Journal of Asset Management	2	The article suggests an evident lack in the convergence of ESG measurement concepts. The different ratings neither coincide in distribution nor in risk.	Yes
Rating uncertainty	Empirical	Dumrose, Rink & Eckert	2022	Disaggregating confusion? The EU Taxonomy and its relation to ESG rating	Finance Research Letters	2	ESG firm-level ratings tend to differ across ESG data providers, affecting investment decisions due to uncertainty about a firm's sustainability performance.	No
Rating uncertainty	Empirical	Eccles & Stroehle	2018	Exploring social Origins in the construction of ESG measures	Working Paper		Show how the origin of each company (their founding principles, legal status, purpose, etc.) strongly influences its conception of sustainability, definition of materiality, and by extension, the way ESG issues are measured and sold.	No
Rating uncertainty	Review	Edmans	2023a	The end of ESG	Financial Management	3	ESG is both extremely important and nothing special.	Intro

Rating uncertainty	Review	Edmans	2023b	Applying Economics- No gut feel- to ESG	Working Paper		Interest in ESG is at an all-time high. However, academic research on ESG is still relatively nascent, which often leads us to apply gut feel on the grounds that ESG is so urgent that we cannot wait for peer-reviewed research.	Intro
Rating uncertainty	Empirical	Erhart	2022	Take it with a pinch of salt— ESG rating of stocks and stock indices	International Review of Financial Analysis	3	We find that ratings from two different rating providers (Sustainalytics and Refinitiv) for the same listed stocks are only weakly correlated, even if the scaling differences of the ratings are adjusted.	No
Rating uncertainty	Empirical	Gibson Brandon, Krueger & Schmidt	2021	ESG Rating Disagreement and Stock Returns	Financial Analyst Journal	3	We found that stock returns are positively related to ESG rating disagreement, suggesting a risk premium for firms with higher ESG rating disagreement.	Yes
Rating uncertainty	Theoretical	Goldstein, Kopytov, Shen & Xiang	2022	On ESG investing: Heterogeneous preferences, information, and asset prices	Working paper		We show that the equilibrium price may not be uniquely determined. An increase in the fraction of green investors and an improvement in the ESG information quality can reduce price informativeness about the financial payoff and raise the cost of capital.	Yes
Rating uncertainty	Empirical	Harrison, Yu & Zhang	2023	Consistency among common measures of corporate social and sustainability performance	Journal of Cleaner production	2	This study evaluates ESG measures from three widely used and easily accessible databases— KLD, Sustainalytics and Asset4.	No
Rating uncertainty	Empirical	Hu, Hua, Liu & Wang	2023	The green fog: Environmental rating disagreement and corporate greenwashing	Pacific-Basin Finance Journal	2	We find that Environmental Rating Disagreement would increase the future probability of corporate greenwashing, mainly through mechanisms of agency costs and corporate information opacity.	No
Rating uncertainty	Empirical	Immel, Hachenberg, Kiesel & Schiereck	2022	Green bonds: Shades of green and brown	Risks related to Environmental, Social, and Governmental issues	-	Examining a unique dataset of green bonds, we find a statistically significant influence of ESG ratings on bond spreads	No
Rating uncertainty	Empirical	Jacobs & Levy	2022	The challenge of Disparities in ESG ratings	The journal of impact	-	Due to data vendors' lack of a common framework for creating ESG ratings, substantial	No

					and ESG investing		disparities exist across vendors in their ESG ratings for the same company.	
Rating uncertainty	Empirical	Kimbrough, Wang, Wei & Zhang	2022	Does Voluntary ESG Reporting Resolve Disagreement among ESG Rating Agencies?	European Accounting Review	3	We find that disagreement among ESG rating agencies is lower for firms that voluntarily issue ESG reports. In particular, disclosures about the environmental and social dimensions help reduce disagreement about the company's performance on those dimensions.	No
Rating uncertainty	Empirical	Kotsantonis & Serafeim	2019	Four Things No One Will Tell You About ESG Data	Journal of Applied Corporate Finance	4	As the ESG finance field and the number of people using ESG data in investment decisions continue to grow, it is important to shed light on and express our concerns about several important aspects of ESG measurement and data	Yes
Rating uncertainty	empirical	Kräussl, Oladrian & Stefanova	2023	ESG as protection against downside risk	Working paper		Firms with high ESG disparity have a higher option-implied cost of protection against downside tail risk. The impact of the misalignment across the different dimensions of the ESG score is distinct from that of ESG score level itself.	No
Rating uncertainty	Review	Liang & Renneboog	2020	Corporate social responsibility and sustainable finance	Working Paper		Rating agencies have developed firm-level measures of ESG performance that are widely used in the literature. However, these ratings show inconsistencies that result from the rating agencies' preferences, weights of the constituting factors, and rating methodology.	Intro
Rating uncertainty	Theoretical	Reber, Gold & Gold	2022	ESG Disclosure and Idiosyncratic Risk in Initial Public Offerings	Journal of business ethics	3	Using data from the United States, we demonstrate that (1) voluntary ESG disclosure reduces idiosyncratic volatility and downside tail risk and (2) higher ESG ratings have lower associated firm-specific volatility and downside tail risk during the first year of trading in the aftermarket.	No
Rating uncertainty	Empirical	Serafeim & Yoon	2022a	Stock price reactions to ESG news: the role of ESG ratings and disagreement	Review of accounting studies	4	We find that the consensus rating predicts future news, but its predictive ability diminishes for firms with large disagreement between raters.	No

Rating uncertainty	Theoretical	Serafeim & Yoon	2022b	Which Corporate ESG News Does the Market React To?	Financial analyst journal	3	We find that prices react only to financially material ESG news, and the reaction is larger for news that is positive, receive more news coverage, and related to social capital issues.	No
Rating uncertainty	Review	Tsang, Frost & Cao	2023	Environmental, Social, and Governance (ESG) disclosure: A literature review	The British accounting review	3	The objective of this survey study is to provide a comprehensive review of the ESG disclosure literature in accounting research with suggestions for the future.	No
Rating uncertainty	Theoretical	Yu, Liang, Liu & Wang	2023	News-based ESG sentiment and stock price crash risk	International review of financial analysis	3	First, there is a significant negative relationship between ESG news sentiment and stock price crash risk, indicating that higher ESG news sentiment can reduce the crash risk	No
Rating uncertainty	Empirical	Zumente & Lāce	2021	ESG rating – Necessity for the investor or the company?	Sustainability	-	The results suggest substantial divergence in the ratings awarded to the European companies; therefore, companies should pay attention to the methodologies and practices applied by differing agencies to make sure that their efforts are appropriately evaluated, while investors should bear in mind the correlation coefficient of only 0.58 between the two most popular ESG ratings.	No
Socially responsible investing	Empirical	Barnea, Heinkel & Kraus	2005	Green investors and corporate investment	Structural change and economic dynamics	2	We find that green investors can induce polluting firms to reform and that SRI results in under-investing by polluting firms, which leads to lower total investment in the economy.	Intro
Socially responsible investing	Empirical	Berk & Van Binsbergen	2021	The Impact of Impact investing	Working Paper		We demonstrate that the impact on the cost of capital is too small to meaningfully affect real investment decisions.	Intro
Socially responsible investing	Theoretical	Broccardo, Hart & Zingales	2022	Exit versus voice	Journal of political economy	4*	We show that if the majority of investors are even slightly socially responsible, voice achieves the socially optimal outcome	Intro
Socially responsible investing	Empirical	Busch, Bauer & Orlitzky	2015	Sustainable development and financial markets: old paths and new avenues	Business & Society	3	The authors identify two main challenges within the field of sustainable investments that are relevant for entering new avenues that may help overcome this situation.	Intro

Socially responsible investing	Empirical	Edmans, Levit & Schneemeier	2022	Socially Responsible Divestment	Working Paper		We show that a more effective strategy may be tilting -- holding a brown stock if the firm has taken a corrective action	No
Socially responsible investing	Empirical	Guedhami, Louton, Saraoglu & Zheng	2022	ESG Investing: A Decision-Making Paradox?	The Journal of Impact and ESG investing	-	Comparing the results from two multi-criteria decision-making methods for selecting ESG portfolio stocks, we illustrate the sensitivity of the resulting selections to various approaches.	No
Socially responsible investing	Theoretical	Oehmke & Oppi	2019	A theory of socially responsible investing	Working paper	-	We characterize the conditions under which a socially responsible (SR) fund induces firms to reduce externalities, even when profit-seeking capital is in perfectly elastic supply.	No
CSR	Empirical	Bénabou and Tirole	2010	Individual and Corporate Social Responsibility	Economica	3	We discuss the benefits, costs, and limits of socially responsible behavior as a means to further societal goals.	No
CSR	Empirical	Chen, Dong & Lin	2020	Institutional Shareholders and Corporate Social Responsibility	Journal of Financial Economics	4*	We first find that an exogenous increase in institutional holding caused by Russell Index reconstitutions improves portfolio firms' CSR performance. We then find that firms have lower CSR ratings when shareholders are distracted due to exogenous shocks.	No
CSR	Empirical	Delmas, Etzion & Nairn-Birch	2013	Triangulating Environmental Performance: What Do Corporate Social Responsibility Ratings Really Capture?	Academy of Management Perspectives	4	We identify the principal components of corporate environmental performance. We find that two distinct factors—the environmental processes and practices implemented by firms, and the environmental outcomes they generate—explain 80% of the variance of the data.	No
CSR	Empirical	Dorfleitner & Grebler	2022a	Corporate social responsibility and systematic risk: international evidence	The Journal of Risk Finance	1	This paper aims to close gaps in the current literature according to whether there are differences regarding the relationship between corporate social performance (CSP) and systematic risk when diverse regions of the world are considered, and what the respective drivers for this relationship are.	No
CSR	Empirical	Dorfleitner, Kreuzer & Sparrer	2022b	To sin in secret is no sin at all: On the linkage of policy, society, culture, and firm	Journal of Economic	3	We argue that companies tend to have fewer scandals if there is a high level of institutional	No

				characteristics with corporate scandals	behavior and Organization		pressure or if corporate scandals pose a high-level threat to organizational legitimacy.	
CSR	Empirical	Dyck, Lins, Roth & Wagner	2019	Do institutional investors drive Corporate social responsibility? International Evidence	Journal of Financial Economics	4*	Institutions are motivated by both financial and social returns. Investors increase firms' E&S performance following shocks that reveal financial benefits to E&S improvements.	Intro
CSR	Empirical	Eccles, Ioannou & Serafeim	2014	The Impact of Corporate Sustainability on Organizational Processes and Performance	Management Science	4*	We find that corporations that voluntarily adopted sustainability policies by 1993—termed as high sustainability companies—exhibit by 2009 distinct organizational processes compared to a matched sample of companies that adopted almost none of these policies—termed as low sustainability companies	No
CSR	Empirical	Zhang	2022	Environmental regulation and firm product quality improvement: How does the greenwashing response?	International review of financial analysis	3	This paper discusses the internal mechanisms of environmental regulation to improve the product quality during this green transformation period by enhancing the greenwashing capabilities of firms.	No

Appendix 2

Discussion paper

By Marthe Aanestad

RESPONSIBLE

Summary of the master thesis

The main goal of this master thesis we write (me and Aleksander Gresseth Hamre) is to find out what the literature says about sustainable investment and financial performance, and rating uncertainty and potential impacts and consequences. The literature mainly distinguishes between “green” and “brown” investors, and their motivation differ between financial and non-financial factors. Furthermore, socially responsible investment strategies (SRI) can be used by investors to invest aligned with their values. We used investors motivation and socially responsible investment strategies as a framework for the literature analyses we conducted. Opinions within the literature differ regarding the potential impact of ESG on investment performance. Some suggest that it would help while other suggest that it would affect the financial performance negative (Pedersen et al., 2021). We analyze theoretical papers like Pastor et al (2021), Heinkel et al (2001), Albuquerque et al (2019), Fama and French (2007), Baker et al (2018), Pedersen et al (2021), Barber et al (2021) and Baker et al (2022). Some empirical papers like Aswani et al (2023), Hsu et al (2023), Bolton et al (2022), Pastor et al (2022), Barber et al (2021), Bolton and Kacperczyk (2021), Cornell (2020), Chava (2014) & Hong and Kacperczyk (2009) provide evidence that sustainable investing affect financial performance negative, while Lo and Zhang (2021), Pedersen et al (2021), Krüger (2015) & Edmans (2011) provide evidence that sustainable investing affect financial performance positive. In addition, we analyze literature regarding ESG rating divergence and uncertainty Berg et al (2022), Christensen et al (2022), Dimson et al (2020), Chatterji et al (2016) & Dorfleitner et al (2015) provide empirical papers regarding ESG rating divergence and Berg et al (2023), Yu et al (2023), Avramov et al (2022), Berg et al (2021), Gibson et al (2021) & Kotsantonis & Serafeim (2019) provides empirical papers regarding implications and consequences of ESG rating uncertainty.

Discussion regarding being responsible

From the first year of studying Business Administration on University of Agder I have been thought to be responsible, even though I might not be as aware of it as I am now after almost being done with my fifth year. It is even incorporated in the UiA school of Business and Law's mission statement and strategy. Cambridge dictionary define responsible as to "have control and authority over something or someone and the duty of taking care of it, him or her" (Cambridge dictionary, n.d). I will use this discussion paper to highlight my main points regarding my responsibility towards myself and others and additionally my academic responsibility regarding writing my master thesis.

We have learned to be responsible for our own learning since day one. All lectures have been voluntary to attend, and except one pass or fail assignment during the semester, the entire grade rely on the final exam in the end of the semester. Until this, all your learning depends on yourself. This teaches you that you have to be responsible over your own studying, reading and learning. We only have one exam in the end of the semester, with the exception of a work requirement that are only graded passed/not passed. Due to this, you have to distribute the reading and studying through the semester so that you have learned what you need until the exam date. In addition, through working with others in groups, a master's degree in business economic also taught us to be responsible for other than ourselves. These groups teach us that everyone have to contribute to the assignment, and that if some group members do not contribute it creates more work for everyone else in the group. Both these two responsibilities are important when entering the job market. After five years of school at University of Agder, most students are now starting to work. There you will use both the knowledge of being responsible of your own work and responsible of others. You are responsible for your own work tasks, and to do what is expected of you. Additionally, when working together in teams, as often required, you are responsible for doing your part so that it does not create more work for your associates.

In addition, UiA has also taught us to be responsible regarding our academic work. This consist of being responsible when using and citing other people's work. We are responsible to be objective and be transparent about any potential bias and conflicts. We also have the responsibility to be transparent with the method we have used to conduct this study so that it is easier for other academic research to verify our findings.

Our master thesis is mainly a review of literature, where we gather other people's research to answer our research questions. In this case, we therefore have a responsibility when using other peoples work. We have firstly a responsibility to refer to the work we have used. When collecting data from other articles it is important to make sure that it is clear in the thesis that it is not our own thoughts and research. It is important to acknowledge that other people have used time and resources to find this information, ideas, and findings. By referring to the academic researchers and authors in the thesis we give credit to them, by using their work. We have the responsibility to recognize their effort and not stealing it for our own gain.

Secondly, by using other people's research we have the responsibility to make sure that the text we write match the authors intention and their content of the text. When rewriting other authors text so that it is our explanation of it, sometimes it could happen that the meaning gets lost in the change of words. In addition, when reading English literature and then translate for yourself into Norwegian for then rewriting in English, some words can get lost or distorted in the

translation. For example, is there sometimes several English words for one Norwegian, or opposite. In that case the meaning of these words could be slightly different but used wrong due to a lack of understanding for the right usage.

This is also connected with the responsibility to stay objective while reading and using other people's work. When reading through other academic research it is easy to have a subjective perspective. As mentioned earlier, this could affect how we interpret and rewrite other people's work, and thus introduce bias in the thesis. Since we humans are subjective people by nature, it is impossible to eliminate this subjective bias completely. In this case it is our responsibility to be transparent and acknowledge if there are any potential bias or conflict of interest in the research we have conducted. One potential bias that could occur when writing a literature review is the selection of articles included. For example, to include or exclude articles that could be in favor of your findings. In this case our responsibility is to include all articles that is relevant, whether it is supporting your hypothesis and research question. We have a research theme that examine what the literature says about sustainable investment and rating uncertainty. In addition, we have two research questions: first, what does the literature say regarding financial performance in sustainable investment and second, what does the literature say about rating uncertainty. Through examining databases, forward and backward searches, we have done our best to mitigate the potential bias of include or exclude articles that are in favor for our findings. Bias can also be introduced in the literature review if the articles and literature included only comes from a small amount of research so that it could be too narrow in the selection. In addition, bias could be introduced if a majority of the articles included have one of the authors included in several articles. This can also be the case if most of the articles comes from the same journal which can be revised by the same researchers. We have the responsibility when conducting a literature review to make sure that all perspectives is included. We used several journals where the majority range from 3 to 4* in the AJG guide. In addition we have used several different authors in the literature review to minimize the potential risk of introduce bias in the review by using the same authors in the majority of articles included. In addition, we included Aswani et al (2023) and Bolton and Kacperczyk (2021), which publicly disagree in their findings and provide responses to each other findings. With the inclusion of authors that clearly disagree, we also hope to mitigate the risk of a skewed sample.

We additionally have a responsibility to be transparent regarding the methodology we have used in our thesis. In our case, we have used a research approach to search for relevant literature. This is important for the integrity of the paper for several reasons. For example, we have the responsibility to be transparent to be able to secure the replicability of the research conducted. A transparent methodology can make sure that other researchers can replicate the study the same way that we did. If we do not describe the correct methodology in our paper, this makes it significantly more difficult for others to replicate the study. It does make it difficult for other to use our research for further research. In worst case of scenario this could mean that the research we have done is pointless because it is not possible to verify the validity of the findings.

We also have the responsibility to make sure that weaknesses or mistakes could be identified and then corrected. This is easier for others to identify if the research approach is transparent. In our research, we used different databases to find articles. We found top journals in AJG 2021 (ranked 3 or 4) and used articles that was published in these top journals. However, there was some articles that we did not find in these journals. In this case we were open that we did not find them in top journals, but that the authors were prominent academics in their fields, or the article was cited or downloaded

a high number of times. We have the responsibility to make sure that we are open with the reader when it comes to exceptions.

When writing a research paper, you have the responsibility to protect the privacy to people involved. These people could for example be people interviewed, observed or answered questions through a survey. When conducting research for our master thesis we used other academic research and thus secondary data, which made it easier for us to avoid ethical challenges related to privacy protection. We also conducted a case study where we used companies own sustainability report, thus also use of secondary data. We found these sustainability reports on their own websites, which was public for everyone to see. Therefore, we did not have to take privacy protection into consideration.

Summary/ conclusion

To summarize this discussion paper, I have highlighted my main arguments regarding my responsibilities towards myself and others and the importance that I will use further in my work life. I have additionally discussed the main points regarding my academic responsibility towards writing my master thesis.

After soon ending a five-year master-program at University of Agder, we have learned to be responsible for both our own learning and other fellow students. We have learned to be responsible for going to classes, reading the syllabus and learning what is needed to gain knowledge not only for passing your classes, but for creating a fundament that is needed when starting a new job after graduating.

In addition to the personal responsibilities, we have learned to have responsibilities regarding our academic work. As mentioned above, there are also several factors that you have to consider regarding responsibility when writing your master thesis. We have the responsibility to correctly use and cite other authors papers. We additionally have the responsibility to be objective when we are analyzing the literature, and what to include or exclude in our literature review. Furthermore, we are responsible to be transparent regarding our method used and regarding any potential bias and conflicts that might arise when conducting the literature review.

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Appendix 3

Discussion paper

Aleksander Gresseth Hamre

RESPONSIBLE

Presentation of the master's thesis

The master thesis I am currently co-writing is, as of now, called “Sustainable investing and uncertainty in ESG measures”. We are conducting a literature review (or perhaps a review of the literature) on the themes of the role of non-financial information for (SRI) investors, and the uncertainty that follows the lack of regulating of this information. With uncertainty referring to the topic known as ESG rating disagreement/ESG rating divergence, which depicts the lack of correlation in ESG scores from different rating agencies. We set out to find out what causes this disagreement, the implications it poses, and the implications of rating disagreement. The main source was found, among others, in Berg et al (2022) where they point to rating divergence, and measurement divergence as the main cause for lack of correlation (additionally, other authors mention

plausible reasons). We then draw on other literature either supporting or questioning the topics surrounding ESG rating disagreement, in an attempt to gather the most relevant academic works on this topic.

The main body of the literature used in our thesis is Sustainable investors motivation / Ethics / Utility / Preferences, The use of ESG measures (Ratings) in SRI, and the case of uncertainty in ESG measures. Where we find literature regarding the different types of investors and how they differ in the sense of utility functions, and what motivates them. We then delve deeper in how investors make use of ESG measures, such as ESG ratings. Furthermore, we research the literature about the situation of uncertainty in ESG measures, and how it can affect investors.

In light of the topic

The topic of the master thesis is something I view as directly connected to *responsibility*.

Already before the start of the semester my partner and I wanted to write about sustainability in some form. Sustainability has become a topic I am fairly interested in after it was introduced during my time at UiA. The first meeting I, as a student had with sustainability was in a way during the ethics class as a first-year student. There was an attempt of introducing students to a more responsible way of doing business, and I remember the professors being adamant about people in business needing to incorporate more ethical views in the coming years. From then on, sustainability was always incorporated, in some way or form in most of our topics. But it was not until my fourth year, during a sustainability related class, where we were introduced to the concept of “green growth” I really found an interest in the topic. From that point I knew I wanted to write my master thesis on sustainability.

In terms of the title being sustainable investing, which could be viewed as a synonym to socially *responsible* investing, but also the mindset of thinking more ethically about an investment than just focusing on financial returns. Sustainable investing is an investment approach that considers environmental, social, and governance (ESG) factors in portfolio selection and management. By accounting for such factors, investors can make decisions that not only benefits themselves financially but also contribute to the greater good. For example, by investing in companies with strong ESG practices, investors can support sustainable business practices and promote positive change. Investors incorporating other factors than the ones that merely affect the financial returns, but also affect other stakeholders show a degree of responsibility by acknowledging that their action have consequences. The ones incorporating such factors show responsibility by either trying to strictly hold portfolios that can be viewed as green / sustainable as per the definitions of (Pedersen et al., 2021; Pastor et al., 2021; Heinkel et al., 2001), or by trying to uphold a certain level of sustainability in their portfolio.

In writing about such an approach, I help connect the thesis with the concept of responsibility. As it takes into account the impact of investments on society and the environment, uncertainty about the corporate ESG profile can be an important barrier to sustainable investing. by addressing this uncertainty and improving the accuracy

of ESG measures, investors can make more informed decisions and better fulfill their responsibilities towards society and the environment (Avramov et al., 2022)

In light of the research question(s)

The research questions we aim to answer in our thesis is related to what the academic literature has to say about (1) sustainable investing and its relationship with financial performance, and what the literature says about (2) the effects ESG rating uncertainty has on financial performance in sustainable investing. These two questions are, in my opinion, directly connected with “responsibility” as we want to examine the financial performance in sustainable (responsible) investing.

In light of the unit of analysis

As this thesis is a literature review, we have not analyzed companies, organizations, individuals, or such. We have although, studied empirical evidence (such as Pedersen et al., 2021; Pastor et al., 2021; Zerbib, 2022; Berg et al., 2022) in the articles reviewed for the thesis. Some of the articles, especially those identifying different types of investors make arguments that there are at least two types of investors. My interpretation of the two types is that the one described as “green”, “sustainable”, or “ESG”-friendly are taking more responsibility of their actions compared to the “brown” investors. And that, incentivizing sustainable investors going forth could be a step in the right direction for more responsibility in investments. However, our review of the literature highlights that most of the research done on financial performance in sustainable investing finds a negative relationship. Meaning, that investing sustainably will likely result in lower expected returns, creating difficulty in staying sustainable, as one of the key elements of sustainability is financial sustainability in order to keep the company “alive”. There are other researchers finding a positive relationship between expected returns and sustainable investing, which tells me that the literature is not entirely conclusive on this topic, and that it will be interesting to see what future research may uncover. Especially regarding the possibility of new governmental regulations, and disclosure requirements.

Address real ethical challenges, and how they could be managed.

One of the biggest challenges that ESG rating disagreement poses is the noise or uncertainty the available information brings. This disagreement can make it difficult for investors to accurately assess a company’s ESG performance and make informed investment decisions. This is because different rating agencies may use different criteria, attributes, and standards to define and measure ESG performance. For example, if different rating agencies provide conflicting ratings for a company’s environmental performance, it can be challenging for investors to determine the company’s true impact on the environment. This uncertainty can lead to higher risk premiums for firms with higher ESG rating disagreements but better stock returns (Gibson et al., 2021). Companies with high disagreement in their ESG ratings may face higher costs of capital, which can affect their ability to raise funds and invest in sustainable business practices. As a result, investors may face ethical dilemmas when trying to balance their financial goals with their desire to invest responsibly. On the other

hand, investors who are willing to take on the additional risk associated with ESG rating disagreement may be able to achieve better returns.

Overall, ESG rating disagreements present an ethical challenge for investors who want to invest responsibly but also need to consider their financial goals. By addressing this challenge and improving the accuracy and consistency of ESG ratings, investors can make more informed decisions and better fulfill their responsibility towards society and the environment.

One way of managing the challenge of ESG rating disagreement is by improving the transparency and consistency of ESG reporting. This can be achieved by establishing clear standards for ESG reporting and encouraging companies to provide more detailed and accurate information about their ESG practices.

Investors can also take steps to manage the challenge of ESG rating disagreement, for example, they can conduct their own research and analysis to gain a better understanding of a company's ESG performance, rather than relying solely on ratings from external agencies.

Rating agencies can also work towards improving their methodologies and increasing the transparency of their rating process. This can involve developing more rigorous and standardized approaches to assessing a company's ESG performance, as well as providing more detailed information about how ratings are calculated. By improving their methodologies and increasing transparency, rating agencies can help investors make more informed decisions and reduce the level of disagreements among different raters.

Edmans (2023) provide interesting arguments to the discussion of incorporating ESG-related factors in investment decisions. He argues that ESG should not receive special treatment compared to other factors being accounted for. There should not be a distinction between regular and ESG-related information, and ESG-factors should be accounted for regardless. Due to the materialization of ESG-information, it has become critical for a company's long-term value and therefore, should be treated as any other factor (Edmans, 2023).

Summarize and conclude the discussion

The study on sustainable investing and ESG rating divergence is undeniably connected to the responsibility. In today's world, where environmental and social concerns are at the forefront, investors have recognized the significance of incorporating responsible practices into their investment decisions. The study delves into the intricate relationship between sustainable investing, ESG ratings, and the uncertainties associated with them, shedding light on the difficulty investors bear when navigating these complex issues.

At its core, sustainable investing seeks to generate financial returns while simultaneously promoting positive environmental and social outcomes. Investors who embrace this approach recognize their responsibility to allocate capital in a manner that supports sustainable business practices, promotes social justice, and mitigates

harm to the environment. Through careful selection and evaluation of companies based on their ESG performance, investors attempt to align their investments with their personal values and broader societal concerns.

However, the study also emphasizes the inherent uncertainties surrounding ESG ratings. ESG ratings are crucial tools that assess companies' performance on various environmental, social, and governance metrics. They provide investors with a standardized framework to evaluate and compare companies' sustainability practices. Nonetheless, these ratings are not exempt to subjectivity and methodological variations, leading to discrepancies and inconsistencies. The study explores the potential impact of ESG rating uncertainties on investors' decision-making process.

Investors, armed with noisy and ambiguous information due to rating uncertainties, face the responsibility of conducting thorough due diligence. They must scrutinize ESG ratings, understanding their limitations and potential biases, to make informed investment choices. Socially responsible investing requires a deep commitment to transparency, integrity, and critical thinking. Investors need to delve beyond the surface-level ratings and encourage greater disclosure and accountability to enhance the information.

Moreover, the study investigates the responsibility of investors in influencing corporate behavior. By allocating capital to companies with strong ESG performance, investors have the potential to incentivize positive change and drive corporate responsibility. Companies are increasingly realizing that adopting sustainable practices not only aligns with societal expectations but also attracts capital from responsible investors, which could lower their cost of capital, and reduce the expected returns. Thus, investors bear the responsibility of using their financial power to shape corporate behavior, advocating for improved ESG practices, and rewarding companies that prioritize sustainability.

The thesis also enquires the broader responsibility of society as a whole. Sustainable investing is not solely the domain of investors, it requires collective action and collaboration. Governments, regulators, and civil society organizations have a shared responsibility to create an environment that encourages sustainable practices and reduces ESG rating divergence. By implementing robust reporting standards, ensuring transparency, and establishing clear regulations, these stakeholders can contribute to ensuring actionable data regarding assets which investors can benchmark, and thus act on.

In conclusion, the study on sustainable investing and ESG rating divergence emphasizes the central role of responsibility. Investors hold a responsibility to align their investments with their values, navigate rating uncertainties with due diligence, compare multiple ratings, and use their influence to drive positive change. Moreover, society at large shares the responsibility of encouraging an environment beneficial to responsible

investing. By recognizing and embracing this responsibility, stakeholders can collectively contribute to a more sustainable and equitable future.

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