The Journal of Asia Entrepreneurship and Sustainability RESEARCH ARTICLE

Mapping the Global Landscape of ESG Ratings Research: A Bibliometric Analysis of Hotspots, Trends, and Future Directions

Adnan Ahmed[1*], Prof. Sana Beg[2], Dr. Vardah Saghir[3]
[1*]Research Scholar, Department of Management Studies, Jamia Hamdard, Delhi, India.
Email Id: adnan.ahmad82@gmail.com Orcid Id: 0009-0000-5485-152X
[2]Professor, Department of Management Studies, Jamia Hamdard, Delhi, India.
Email Id: sbeg@jamiahamdard.ac.in , Orcid: 0000-0003-2971-8449
[3]Assistant Professor, Department of Management Studies, Jamia Hamdard, Delhi, India
Email Id: drvardah@jamiahamdard.ac.in, Orcid Id: 0000-0002-6318-5052

Abstract
ESG, an acronym that has gained considerable attention and prevalence in recent years, has prompted significant changes in the operational landscape of businesses. Furthermore, with the introduction of recent regulatory modifications, ESG Ratings/Score has emerged as a crucial gauge for organizations. The imposition of obligatory ESR reporting mandates for enterprises has also led the investor community to consider ESG Ratings as a principal performance metric in their assessment of firms and in their decision-making processes across diverse industries. This investigation conducts an analysis of paper-level metrics in the literature pertaining to ESG Ratings with the aim of outlining a research agenda that delineates current focal points and emerging trends. Leveraging a dataset encompassing more than 2000 papers on ESG Ratings from the Scopus Collection database dating from 2020 onwards, VOSviewer is utilized to present a comprehensive bibliometric assessment encompassing publication pattern, citation structures, author affiliations, institutional affiliations, geographic distributions, journal repositories, and key terminologies related to this thematic domain. Moreover, the study outlines the underlying philosophy of the ESG ratings system, the various determinants impacting ESG ratings, the consequential influence of ESG ratings, and the correlation between ESG ratings and the investor community as significant areas of scholarly investigation. Additionally, three emerging research directions are elucidated: investigation into the influencing factors and economic implications of ESG ratings within emerging markets, in-depth analysis of the mechanism by which ESG ratings affect the capital market, and further exploration of ESG reporting disclosure and ESG ratings. Our research contributes to the advancement of ESG ratings theory and offers fresh avenues for scholars and professionals in responding to newly implemented regulations on ESG reporting.

Keywords: ESG Ratings; ESG Score; Responsible Investment with ESG; Investors;Investment; ESG Regulations; Bibliometric Analysis; Hotspots on ESG Ratings; Research Trends on ESG Ratings; VOSviewer.

Introduction

ESG, an acronym that stands for Environmental, Social, and Governance, is a multifaceted framework used to assess the non-financial performance and impact of a company, organization, or investment. This approach recognizes that a company's or investment's success is not solely determined by financial metrics, but also by its ability to operate sustainably, ethically, and responsibly within its larger ecosystem.

The "E" in ESG pertains to a company's environmental practices, encompassing its carbon footprint, energy usage, waste management, and resource efficiency. Researchers gauge a company's environmental impact through indicators like greenhouse gas emissions, water usage, and efforts for biodiversity preservation.

The "S" in ESG represents the social dimension, focusing on the company's interactions with employees, customers, suppliers, communities, and other stakeholders. This includes aspects such as labour practices, diversity, human rights, customer satisfaction, community engagement, and philanthropic initiatives to assess the company's social responsibility.

Lastly, the "G" in ESG signifies governance, centring on a company's leadership, management practices, and internal controls. Governance factors such as board composition, executive compensation, ethical standards, risk management, and shareholder rights help evaluate the company's management quality and adherence to high ethical and transparency standards.

ESG strives to understand the interplay between these non-financial factors and a company's financial performance and long-term value creation. By integrating ESG considerations into investment analysis and company evaluations, researchers can uncover deeper insights into potential risks and opportunities in the market.

According to the Forum for Sustainable and Responsible Investment (USSIF), sustainable and responsible investments grew by over 38% from 2016 to 2018. This notable increase reflects a structural shift in the investment sector, with significant implications for the broader financial industry and other sectors. The rise is attributed to asset managers giving greater weight to ESG criteria in their selection

process, as well as the use of ESG indexes as performance benchmarks. With the increasing trend of socially responsible investing (SRI), ESG ratings have been elevated to the forefront of financial analysis. SRI aims to invest in companies that exhibit strong ESG ratings and investigate their impact on both investment returns and societal wellbeing. Consequently, stakeholders are encountering a growing demand for accurate information on companies' ESG standing, which is being addressed by the emerging market of specialized ESG ratings.

ESG ratings play a pivotal role in the ESG framework as they provide a quantitative assessment of a company's environmental, social, and governance performance. These ratings are crucial for investors and regulators as they offer a standardized and objective measure to evaluate the ESG practices of companies and investments.

ESG ratings are typically assigned by independent rating agencies or research firms, which use a wide array of data points and evaluation criteria to determine a company's ESG score. These ratings are based on a thorough analysis of a company's policies, practices, and performance in areas such as environmental impact, social responsibility, and governance practices. For instance, ESG ratings may consider a company's carbon emissions, labour practices, diversity initiatives, board composition, and ethical business conduct. Estimated revenues from the ESGrating market rose from $617 million in 2019 to $1 billion by 2021 (Foubert, 2020).

The impact of ESG ratings on investments and businesses is multifaceted. From an investment perspective, ESG ratings influence capital flows as investors increasingly consider a company's ESG performance when making investment decisions. Higher ESG-rated companies are often perceived as having lower risk, greater long-term sustainability, and enhanced reputation, making them more attractive to socially responsible investors. Moreover, ESG ratings can also influence the cost of capital for companies. Those with higher ESG ratings may have easier access to financing at more favourable terms due to their perceived lower risk and stronger sustainability practices.

Furthermore, ESG ratings can impact a company's ability to attract and retain talent, build partnerships, and enhance brand reputation, as ESG considerations are increasingly important to employees, customers, and other stakeholders.

In summary, ESG ratings serve as a crucial quantitative tool for assessing a company's ESG performance, influencing investment decisions, and driving corporate responsibility and sustainability. Understanding and incorporating ESG ratings is essential for academic researchers to comprehensively evaluate the impact of ESG practices on investments and various areas of business.

2. Objective

The primary aim of this study was to examine the development and research pertaining to ESG Ratings with review of already existing publications through Bibliometric Analysis. To have a broad outline and define broad themes around ESG Ratings research. Identification and proposing of potential future research trends on the area of ESG Ratings.

3. Literature Review

3.1. ESG ratings as instruments for sustainability assessment

Environmental, social, and governance (ESG) ratings have emerged as central instruments for assessing firms' sustainability performance and ethical conduct. Beyond providing a snapshot of environmental, social, and governance practices, ESG scores are increasingly viewed as tools for capturing firm-level exposure to non-financial risks and long-term value creation potential (Drempetic et al., 2020; Widyawati, 2020). As a result, they are widely used by investors, creditors, regulators, and other stakeholders to evaluate corporate alignment with sustainable development and responsible investment principles (Pedersen et al., 2020).

The literature consistently finds that high ESG ratings are associated with enhanced corporate reputation and greater trust among stakeholders, thereby contributing to legitimacy and reduced information asymmetry (Friede et al., 2015; McKinsey & Company, 2023). Empirical evidence suggests that ESG ratings can be linked to aspects of business performance, including risk management quality, operational efficiency, and financing conditions (Berg et al., 2022; Pedersen et al., 2020). In this sense, ESG ratings function not only as descriptive indicators but also as market signals that may shape capital allocation and strategic corporate behaviour.

3.2. ESG ratings and investment decisions

The rise of socially responsible investment (SRI) and broader sustainable investment strategies has heightened the relevance of ESG ratings in capital markets (Pedersen et al., 2020). Institutional investors increasingly integrate ESG scores into asset selection, portfolio construction, and engagement policies, with the aim of managing long-term risks and aligning investment practices with normative sustainability objectives (Dimson, 2020; Serafeim & Yoon, 2022a). This development is accompanied by a gradual shift towards pricing firm-specific ESG risks and incorporating ESG factors alongside traditional financial metrics in valuation models.

However, the literature also highlights significant challenges. While many studies document positive or at least non-negative relationships between ESG performance and financial outcomes (Friede et al., 2015), others identify ambiguous or even adverse effects in certain contexts. For example, Landi (2022), analysing 222 firms in the S&P 500 index over 2014–2018, finds that higher ESG assessments can coincide with increased risk exposure, suggesting perceptions of uncertainty among investors. This evidence nuances

the often-assumed linear relationship between ESG quality and risk mitigation, and points to context-specific dynamics, sectoral heterogeneity, and differing investor interpretations of ESG information.

3.3. Methodological issues: Divergence, transparency, and greenwashing

A central concern in the ESG ratings literature is the considerable divergence among rating agencies. Despite broadly similar conceptual foundations, rating providers differ substantially in their choice of indicators, weighting schemes, aggregation procedures, and handling of missing or qualitative information (Berg et al., 2022; Widyawati, 2020). These methodological discrepancies yield significant variation in ESG scores assigned to the same firm, which raises questions regarding reliability, comparability, and construct validity (Sacchi & Rossi, 2023).

The divergence is often attributed to the absence of standardisation and the pervasive role of subjectivity in the selection, measurement, and weighting of ESG dimensions (Sacchi & Rossi, 2023; Widyawati, 2020). One important consequence is the potential dissemination of misleading or inconsistent information, which in turn may reinforce information asymmetries between firms and investors and hinder effective market discipline (Berg et al., 2022). Furthermore, examinations of major rating frameworks have highlighted limited transparency around aggregation rules and materiality assessments, thereby constraining users' ability to understand how overall scores are derived (Drempetic et al., 2020; Widyawati, 2020).

These methodological limitations interact with the growing debate on greenwashing. Some empirical studies suggest that high ESG performance scores are not always indicative of substantive sustainability practices; instead, they may partly reflect strategic disclosure or reputational motivations (Li et al., 2020). This observation is particularly salient where ESG assessments heavily rely on self-reported data and voluntary corporate reports. Consequently, scholars and socially responsible investors increasingly call for a reassessment of the criteria employed by rating agencies and advocate greater transparency in rating methodologies to mitigate opportunistic behaviour and enhance the credibility of ESG ratings (Drempetic et al., 2020; Li et al., 2020).

3.4. Use of ESG ratings in practice: From "black box" to informed input

A recurrent theme in the literature is that ESG ratings, while valuable, must be used judiciously. Abhayawansa and Tyagi (2021) argue that investors should first identify which ESG constructs are material for a given sector or investment strategy and then select rating providers whose measures align closely with those constructs. Dimson (2020) similarly cautions against treating ESG scores as "black-box" metrics or using them in a purely mechanistic manner. Instead, ratings should be considered as an initial screening device, to be complemented by proprietary analysis and qualitative due diligence.

From this perspective, analysts and asset managers are encouraged to understand the construction of ESG ratings, including data sources, coverage biases, and materiality frameworks, and to integrate them with their own assessments of industry-specific risks and opportunities. Such an approach is seen as essential for ensuring that portfolios genuinely reflect the sustainability preferences and values of ultimate beneficiaries, rather than merely tracking third-party indices without critical scrutiny (Abhayawansa & Tyagi, 2021; Dimson, 2020).

3.5. Coverage biases, firm size, and market segment limitations

Another salient issue concerns the coverage and potential biases of ESG databases. Studies indicate that large firms tend to receive more extensive ESG coverage and higher-quality data due to their greater resources, visibility, and reporting capacity (Drempetic et al., 2020). For instance, the ASSET4 database has been criticised for potentially favouring larger companies that can allocate substantial resources to ESG reporting, thereby skewing ratings and potentially overlooking sustainability risks in smaller firms (Drempetic et al., 2020).

The limited availability of ESG data for small-cap companies constrains empirical analyses and may bias the literature towards large, publicly listed firms in developed markets (Gyönyörová, 2023). This is a notable gap because small and medium-sized enterprises can play significant roles in local economies and supply chains, and may face distinct sustainability challenges. While several ESG data providers have announced plans to expand coverage to smaller firms, current evidence suggests that such coverage remains incomplete, restricting our understanding of the reliability and generalizability of ESG ratings across the full corporate spectrum (Gyönyörová, 2023).

3.6. Regulatory developments and the need for standardisation

Policymakers and regulators are increasingly attentive to the quality and integrity of ESG information used in financial markets. As ESG considerations become embedded in regulatory frameworks, disclosure requirements, and stewardship codes, there is a growing call for clearer definitions of ESG investment benchmarks and more uniform practices for reporting on sustainable indicators (Billio et al., 2021). In this context, several scholars advocate the development of a harmonised roadmap analogous to the International Financial Reporting Standards (IFRS), aimed at standardising ESG disclosures and rating practices (Billio et al., 2021; Sacchi & Rossi, 2023).

Despite these initiatives, challenges related to theorisation, comparability, and transparency of ESG ratings are expected to persist in the near term.

Regulatory interventions may reduce some inconsistencies, particularly around disclosure quality and minimum transparency standards, but divergences in conceptualisation and weighting of ESG dimensions are likely to remain, reflecting heterogeneous stakeholder preferences, institutional contexts, and normative frameworks.

3.7. Existing bibliometric analyses on ESG and ESG ratings

Given the rapid expansion and multidisciplinary nature of ESG research, bibliometric methods have increasingly been employed to map the intellectual landscape, identify research fronts, and detect thematic evolution. Several recent studies have performed bibliometric analyses on ESG, ESG performance, ESG indices, or related domains, though relatively few have focused specifically on ESG ratings.

For example, Khatib et al. (2022) conducted a bibliometric study on ESG research more broadly, revealing exponential growth of publications and identifying core themes such as ESG performance, corporate governance, and sustainable investments. Matos and Albuquerque (2022) map five principal research streams in ESG—organizational theories, competitiveness, ESG–financial performance linkages, corporate social responsibility, and stakeholder theory— using co-citation and bibliographic coupling techniques. Similarly, Rahmawati and Hidayat (2024) analyse ESG and green finance literature, documenting a thematic shift from normative and regulatory issues towards more implementation-oriented and performance-based research, including ESG performance measures and green financial instruments.

In the domain of ESG indices, Sahoo and Saurin (2023) uncover key clusters related to index construction, risk–return characteristics, and regional ESG index developments, while Kumar and Singh (2024) provide a bibliometric overview of ESG performance studies from 2019 to 2024 using VOSviewer. These contributions collectively demonstrate the value of bibliometric tools in capturing macro-level patterns, mapping topic evolution, and identifying influential authors, institutions, and journals.

However, studies explicitly addressing ESG ratings as a distinct research object remain relatively scarce. Sacchi and Rossi (2023) undertake a bibliometric analysis of the "ESG rating conundrum", highlighting the fragmented nature of the literature on rating divergence and the lack of consensus regarding methodological standardisation. Çelik and Kaya (2023), and Karim et al. (2023), further examine ESG and corporate governance research from a bibliometric perspective, but they typically treat ESG ratings as one dimension within broader ESG or corporate responsibility frameworks rather than as the central focus.

Moreover, the bibliometric studies conducted to date vary in terms of database selection (e.g., Web of Science vs. Scopus), search strategies, and threshold parameters for keyword co-occurrence, co-authorship, and co-citation, which can lead to heterogeneous findings (Khatib et al., 2022; Matos & Albuquerque, 2022). Different data sources and methodological choices may yield distinct clustering structures, keyword networks, and interpretations of research hotspots. This heterogeneity underscores the need for further systematic bibliometric analyses that are explicitly dedicated to ESG ratings and utilise transparent and replicable methodological protocols.

3.8. Research gap and contribution of this study

The existing literature thus reveals two intertwined gaps. Substantively, the ESG rating literature is characterised by persistent methodological divergence, limited transparency, and coverage biases, alongside an evolving but incomplete understanding of how ratings influence risk, performance, and corporate behaviour. Methodologically, prior bibliometric works have primarily focused on general ESG, ESG performance, green finance, or ESG indices, with only a few studies explicitly centering on ESG ratings as an independent research domain (Sacchi & Rossi, 2023).

Against this backdrop, the present study aims to provide a comprehensive bibliometric and visual analysis of ESG ratings research. Drawing on 1,333 articles indexed in the Scopus database and employing VOSviewer for co-occurrence and clustering analyses, the study seeks to (i) map the evolution of the ESG ratings literature; (ii) identify key authors, journals, and countries; (iii) detect major thematic clusters and emerging research hotspots; and (iv) highlight areas for future research, particularly with respect to rating divergence, regulatory developments, and the integration of ESG ratings into investment decision-making. By doing so, this work addresses observed gaps in previous bibliometric studies and contributes a structured, macro-level perspective on the intellectual structure and trajectory of ESG ratings research.

4. Methodology And Data

A comprehensive statistical review of a specific topic can help researchers better understand the basic knowledge and knowledge structure within a subject field (Wan and Dawod, 2022). A bibliometric study mainly analyses the information on keywords, references, publications, and even the productivity of authors, countries, and institutions. Through bibliometric analysis, researchers can summarize the current situation and development trends of research fields and provide directions and ideas for future research (Lu et al., 2019). According to the previous study (Liao H., 2021) we used a bibliometric approach to analyze the present situation and development trends of ESG reporting research, and provided directions and ideas for future research. We used VOSviewer, which are commonly used bibliometric visualization tools for data analysis and visualization (Wang, 2021), for the ESG visual analysis. The publications were obtained from the Scopus Core database. Scopus is recommended as the preferred

database website for citation spatial analysis and contains citation information sources.

ESG reporting refers to how corporations and investors unite environmental, social and governance performance indicators in their reporting structure of the business which then is used by the rating agencies to provide ESG rating for the business. This study concerns ESG Ratings as a whole. Considering this factor, we defined the search topic keywords as "ESG Ratings" or "ESG Score" or "ESG Regulations" AND "Investor" or "Investment" or "Bibliometric" or "Vosviewer"" in the title, abstract, keywords, or text of the article. The time span was set from 2020 to 2024.

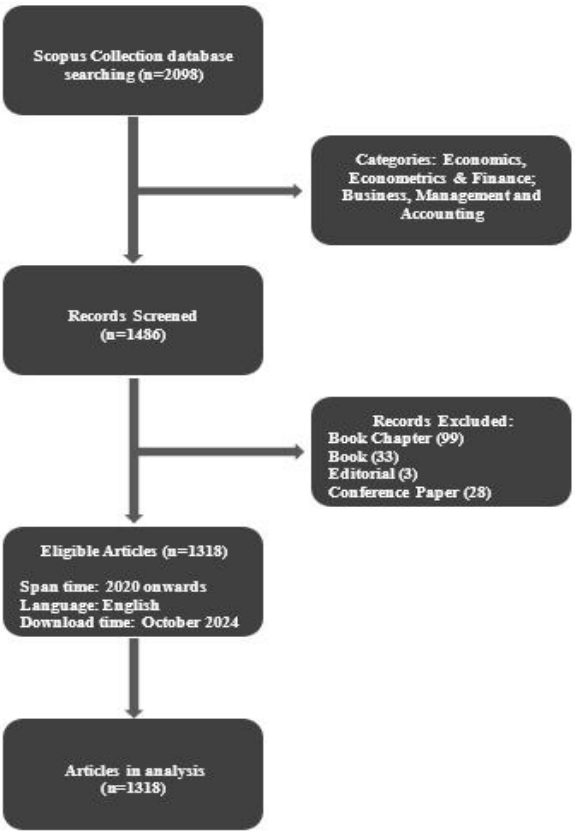

Fig.1. Selection process for including articles in the study

The search was conducted in October, 2024. The criteria for retaining documents were as follows: (1) Based on Scopus categories, relevant literature in non-economic and nonmanagement fields was excluded, and the categories of business, business finance, economics, and management remained; (2) the analysis considered only articles and reviews; (3) the language of the papers was English. In total, 2,098 publications were obtained, of which 612 publications containing non-economic and management categories were excluded. The selection strategy for including papers is illustrated in Fig. 1. Finally, 1318 articles were downloaded and exported to software for analysis.

5. Results and Analysis

5.1 Analysis of Publications

Examining the temporal distribution of publications provides insight into the historical development and maturation of ESG ratings research. As shown in Figure 2, scholarly output on ESG ratings and ESG scores has expanded rapidly over the period 2020–2024. In 2020, 55 articles on ESG ratings were published, more than doubling to 102 in 2021. This upward trajectory accelerated in subsequent years, with 219 publications in 2022 and 375 in 2023, before reaching 567 articles in 2024. Overall, the annual volume of ESG ratings publications increased more than tenfold over this five-year period.

This pattern reflects not only a quantitative expansion but also a qualitative shift in the research agenda. The sharp rise in output from 2020 onwards is consistent with broader ESG trends documented in prior bibliometric and review studies, which report a marked surge in ESG-related research after 2017 and especially during the early 2020s (Senadheera et al., 2024; Widyawati, 2020). Several factors likely underpin this acceleration. First, the period from 2020 to 2024 has been described as a regulatory transformation era for ESG, characterised by the introduction and implementation of mandatory disclosure frameworks, such as the Corporate

Sustainability Reporting Directive (CSRD) and the European Sustainability Reporting
Standards (ESRS), as well as evolving taxonomies and stewardship codes (Frontiers in Sustainability, 2025; OECD, 2025). These regulatory developments have increased both the availability of ESG data and the urgency of understanding how ESG ratings operate in practice.
Second, the rapid institutionalisation of sustainable finance and the mainstreaming of ESG integration in investment processes have heightened the need for robust, decision-useful ESG metrics. As ESG rating providers have become influential intermediaries in capital markets, researchers have increasingly scrutinised issues such as rating divergence, methodological opacity, data quality, and the financial materiality of ESG scores (Berg et al., 2022; OECD, 2025). Third, major global shocks, including the COVID-19 pandemic and the intensification of climate-related risks, have triggered renewed interest in the resilience and risk-mitigation properties of ESG performance and ratings (Friede et al., 2015; Khan, 2022).
The steep, almost exponential growth depicted in Figure 2 therefore signals more than a simple increase in academic output. It points to the emergence of ESG ratings as a distinct and rapidly consolidating research domain within the broader ESG literature. While earlier bibliometric analyses primarily considered ESG performance and corporate social responsibility in general (e.g., Senadheera et al., 2024; Widyawati, 2020), the post-2020 period shows a progressive reorientation towards the specific mechanics, implications, and regulation of ESG ratings and scores. This trend underscores the timeliness of a dedicated bibliometric analysis focusing explicitly on ESG ratings, as it allows for the systematic mapping of a field that is both expanding rapidly and undergoing significant conceptual and regulatory transformation.

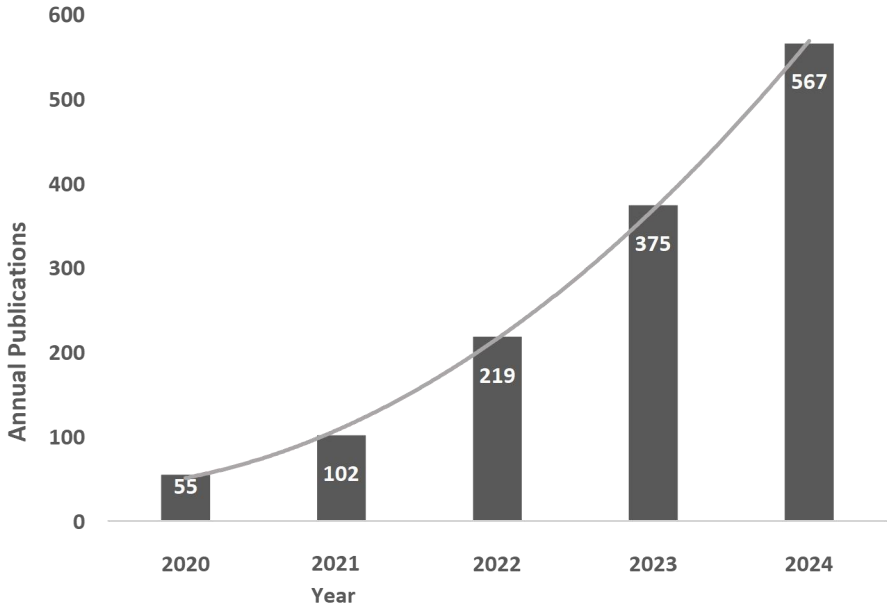

Fig. 2. ESG Ratings papers published annually (2020–2024)

5.2 Analysis of Citation Structure

An examination of the citation structure complements the publication trend analysis by revealing the intellectual foundations of ESG ratings research and the concentration of scholarly influence within the field. Table 1 presents the 30 most cited papers on ESG ratings/ESG scores between 2020 and 2024, while Table 2 summarises the distribution of citation counts across the full set of publications identified in this study.

5.2.1 Highly cited papers and thematic anchors

The most cited article in the sample is Responsible Investing: The ESG-Efficient Frontier by Pedersen, Fitzgibbons, and Pomorski (2021), with 557 citations and a very high field-weighted citation impact (FWCI = 44.8). This paper develops an ESG-efficient frontier framework that formally integrates ESG characteristics into modern portfolio theory. Its influence extends beyond responsible investment as such: it provides a rigorous quantitative foundation for assessing the trade-offs between ESG preferences, risk, and expected returns, and thus serves as a core methodological reference for subsequent work modelling the costs and benefits of ESG investing and ESG-tilted strategies.

Table 1. Top 30 cited papers about ESG Ratings during 2020–2024

Rank	Total Citations	Title	Authors	Year	Field-Weighted Citation Impact
1	557	Responsible investing: The ESG-efficient frontier	Pedersen L.H.; Fitzgibbons S.; Pomorski L.	2021	44.8
2	541	The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review	Drempetic S.; Klein C.; Zwergel B.	2020	39.41
3	520	Sustainable investing in equilibrium	Pastor; Stambaugh R.F.; Taylor L.A.	2021	41.94
4	506	Resiliency of environmental and social stocks: An analysis of the exogenous COVID-19 market crash	Albuquerque R.; Koskinen Y.; Yang S.; Zhang C.	2020	27.81
5	372	Mandatory CSR and sustainability reporting: economic analysis and literature review	Christensen H.B.; Hail L.; Leuz C.	2021	37.45
6	357	Greenwashing in environmental, social and governance disclosures	Yu E.P.-Y.; Luu B.V.; Chen C.H.	2020	14.81
7	316	Does CSR matter in times of crisis? Evidence from the COVID-19 pandemic	Bae K.-H.; El Ghoul S.; Gong Z.J.; Guedhami O.	2021	22.71
8	292	ESG disclosure and financial performance: Moderating role of ESG investors	Chen Z.; Xie G.	2022	34.92
9	240	Sustainable development, ESG performance and company market Value: Mediating effect of financial performance	Zhou G.; Liu L.; Luo S.	2022	26.32
10	209	Environmental, social and governance performance and financial risk: Moderating role of ESG controversies and board gender diversity	Shakil M.H.	2021	29.12
11	207	The impact of board composition on the level of ESG disclosures in GCC countries	Arayssi M.; Jizi M.; Tabaja H.H.	2020	7.92
12	201	ESG disclosure and Firm performance: A bibliometric and meta analysis	Khan M.A.	2022	13.39
13	201	A systematic literature review of socially responsible investment and environmental social governance metrics	Widyawati L.	2020	9.45

14	193	How Do Companies Respond to Environmental, Social and Governance Clementino E.; Perkins R. (ESG) ratings? Evidence from Italy	Clementino E.; Perkins R.	2021	25.36
15	190	ESG did not immunize stocks during the COVID-19 crisis, but investment in intangible assets did	Demers E.; Hendrikse J.; Joos P.; B.Lev	2021	18.12
16 17	187 184	Connecting the COVID-19 pandemic, environmental, social and governance (ESG) investing and calls for 'harmonisation' of sustainability reportingESG Rating Disagreement and Stock Returns	Adams C.A.; Abhayawansa S. Gibson Brandon R.; Krueger P.; Schmidt P.S.	2022 2021	27.62 16.23
18	179	Inside the ESG ratings: (Dis)agreement and performance	Billio M.; Costola M.; Hristova I.; Latino C.; Pelizzon L.	2021	12.8
19	174	ESG rating and stock price crash risk: Evidence from China	Feng J.; Goodell J.W.; Shen D.	2022	19.8
20	171	Shareholder Engagement on Environmental, Social, and Governance Performance	Barko T.; Cremers M.; Renneboog L.	2022	29.87
21	170	The relationship between environmental, social, and financial performance in the banking sector: A European study	Bătae O.M.; Dragomir V.D.; Feleagă L.	2021	9.58
22	153	Do ESG ratings promote corporate green innovation? A quasi-natural experiment based on SynTao Green Finance's ESG ratings	Wang J.; Ma M.; Dong T.; Zhang Z.	2023	37.15
23	152	Do ESG scores effect bank risk taking and value? Evidence from European banks	Di Tommaso C.; Thornton J.	2020	5.55
24	147	The Sustainable Development Goals and corporate sustainability performance: Mapping, extent and determinants	Khaled R.; Ali H.; Mohamed E.K.A.	2021	8.5
25	144	Divergent ESG ratings	Dimson E.; Marsh P.; Staunton M.	2020	8.23
26	141	ESG Disclosure and Idiosyncratic Risk in Initial Public Offerings	Reber B.; Gold A.; Gold S.	2022	28.24
27	133	ESG preferences, risk and return	Cornell B.	2021	18.41
28	119	Testing the institutional difference hypothesis: A study about environmental, social, governance, and financial performance	Garcia A.S.; Orsato R.J.	2020	4.01
29	119	Does green innovation affect the financial performance of Multilatinas? The moderating role of ISO 14001 and R&D investment	Duque-Grisales E.; Aguilera Caracuel J.; Guerrero-Villegas J.; García-Sánchez E.	2020	5.15

30	117	The Social Origins of ESG: An Analysis of Innovest and KLD	Eccles R.G.; Lee L.-E.; Stroehle J.C	2020	5.61

The second most cited article, The Influence of Firm Size on the ESG Score: Corporate Sustainability Ratings Under Review by Drempetic, Klein, and Zwergel (2020), has accumulated 541 citations (FWCI = 39.41). This study critically examines the ASSET4 (Refinitiv) ESG database, demonstrating that larger firms are more likely to obtain higher ESG scores, partly because they possess greater capacity to disclose and manage ESG information. By documenting systematic size-related biases, the paper has become central to debates on the reliability, comparability, and fairness of ESG ratings, and it is routinely cited in discussions of coverage biases, rating quality, and methodological transparency.

Pastor, Stambaugh, and Taylor's (2021) Sustainable Investing in Equilibrium (520 citations; FWCI = 41.94) constitutes another conceptual cornerstone. Their equilibrium model shows how investors' sustainability preferences can simultaneously generate "green" asset price premia and induce real effects in the form of higher capital allocation to environmentally friendly firms and lower allocation to "brown" firms. This dual mechanism—price effects plus capital reallocation—underpins a large subsequent literature on how ESG-motivated investing can affect both financial outcomes and corporate behaviour.

The fourth most cited paper, Resiliency of Environmental and Social Stocks: An Analysis of the Exogenous COVID-19 Market Crash by Albuquerque et al. (2020) (506 citations; FWCI = 27.81), provides important empirical evidence on the performance implications of ESG/ES scores under stress. The authors show that firms with high environmental and social scores exhibited better stock price performance and higher operating profit margins during the initial COVID-19 shock, despite falling sales, and that these firms' stocks displayed lower return volatility. This work has been central to arguments that ESG performance, as captured by ratings or scores, may enhance corporate resilience during market disruptions and may reflect intangible assets such as customer loyalty and stakeholder support.

Beyond these four anchor studies, the remaining highly cited papers in Table 1 cluster around several recurring themes:

- **ESG disclosure, ratings, and financial performance:**
  - Chen and Xie (2020) analyse how ESG disclosure and ratings interact with the relationship between CSR activities and financial performance, emphasising moderating roles of ESG investors.
  - Zhou et al. (2022) and Shakil (2021) examine how ESG performance and controversies affect company market value and financial risk, respectively.
  - Reber et al. (2022) explore ESG disclosure and idiosyncratic risk in initial public offerings.

- **ESG ratings, disagreement, and capital market outcomes:**
  - Gibson Brandon et al. (2021) investigate ESG rating disagreement and stock returns, documenting how dispersion in ratings can be associated with return predictability.
  - Billio et al. (2021) focus on "inside the ESG ratings," examining disagreement and performance implications, while Feng et al. (2020) analyse ESG rating and stock price crash risk in China.

- **Governance structures and ESG ratings:**
  - Arayssi et al. (2020) explore the impact of board composition on ESG disclosures in GCC countries.
  - Barko et al. (2022) study shareholder engagement and its impact on ESG and financial performance, linking investor stewardship with changes in ESG practices and potentially ratings.

- **Meta-reviews and conceptual contributions:**
  - Khan (2021) provides a bibliometric and meta-analytic review of ESG disclosure and firm performance, and Widyawati (2020) offers a systematic review of socially responsible investment and ESG metrics, both acting as consolidating works often cited when framing new studies.
  - Eccles et al. (2020) analyse the origins of ESG ratings through the Innovest and KLD systems, adding historical and conceptual depth to the evolution of ESG measurement.

Collectively, these highly cited works function as intellectual anchors for the ESG ratings research domain. They articulate the main conceptual frameworks (ESG-efficient frontiers, equilibrium models of sustainable investing), reveal structural biases within rating systems (size effects, data and coverage asymmetries), and empirically link ESG ratings and disclosures to risk, return, valuation, and crisis-period performance. The high FWCI for several of these articles indicates that they are not only widely cited but also cited significantly more often than comparable publications within their respective subject areas.

5.2.2 Citation distribution and knowledge diffusion

While the top-cited papers exert substantial influence, the broader citation distribution (Table 2) reveals how knowledge is diffusing across the field. Across 1,318 articles published between 2020 and 2024, only a very small fraction (0.7%) achieved more than 400 citations, and 1.2% exceeded 300 citations. Papers with more than 200 citations constitute 2.0% of the total, and those with more than 100 citations account for 3.9%.

In contrast, 13.1% of the publications have more than 20 citations, 19.3% have more than 10 citations, 26.3%

surpass five citations, and 37.6% have been cited at least once.

Table 2. Paper citation structure by year during 2020–2024

Year	Total Papers	Total Citations	>400	>300	>200	>100	>50	>20	>10	>5	>1
2020	55	3794	3	4	6	9	17	22	31	34	38
2021	102	5292	2	6	8	12	21	31	47	52	64
2022	219	5934	3	4	7	16	24	52	72	89	112
2023	375	4688	1	2	5	14	27	44	68	107	145
2024	567	1685	0	0	0	1	11	23	37	64	137
Ratio %	-	-	0.7%	1.2%	2.0%	3.9%	7.6%	13.1%	19.3%	26.3%	37.6%

This long-tailed distribution is typical of an expanding, still-consolidating research area. A small number of seminal contributions—many of them published around 2020–2021—serve as focal points for subsequent work, while an increasingly large cohort of newer papers is beginning to accumulate citations. The relatively high share of articles with at least one citation (37.6%) is indicative of growing integration of ESG ratings research into the wider ESG and finance literature, and suggests that a substantial portion of recent work is already entering scholarly dialogues rather than remaining isolated.

The temporal pattern in Table 2 also reflects a citation-age effect. Articles published in 2020 and 2021 naturally have had more time to accrue citations, and this is visible in their higher total citation counts (3,794 and 5,292 respectively), as well as in the number of papers exceeding the higher citation thresholds. By contrast, 2023 and especially 2024 publications show lower absolute citation counts—not because of lower impact per se, but because they are more recent. As these cohorts mature, it is likely that more papers will move into the >20 and >50 citation brackets, further broadening the core of influential studies.

Importantly, the citation statistics corroborate the thematic observations from Section 5.1 and from prior ESG bibliometric research (e.g., Khatib et al., 2022; Kumar & Singh, 2024). The most cited ESG ratings papers predominantly address:

- Asset pricing and portfolio implications of ESG (e.g., Pedersen et al., 2021; Pastor et al., 2021);
- Methodological robustness and bias in ESG ratings and disclosure systems (e.g., Drempetic et al., 2020; Gibson Brandon et al., 2021; Billio et al., 2021);
- The relationship between ESG scores/ratings, firm performance, and risk—especially during crises such as COVID-19 (e.g., Albuquerque et al., 2020; Demers et al., 2021; Bae et al., 2021); and
- Governance, stakeholder engagement, and institutional determinants of ESG outcomes (e.g., Arayssi et al., 2020; Barko et al., 2022; Adams & Abhayawansa, 2022).

These citation patterns emphasise that ESG ratings research is not confined to measurement issues alone; rather, it straddles asset pricing, corporate finance, risk management, disclosure regulation, and corporate governance. The field's citation structure therefore reflects both methodological debates (e.g., divergence, bias, and transparency) and substantive questions about how ESG ratings affect firms' cost of capital, resilience, and long-term value creation.

Overall, the analysis of citation structure demonstrates that, while a small set of pioneering works currently dominates the citation landscape, a broad and rapidly growing body of literature is emerging around them. This dynamic, combined with the increasing proportion of cited papers, suggests that ESG ratings research is moving from an exploratory phase towards a more consolidated, cumulative scientific field.

5.3 Analysis of authors

Table 3 reports the 25 most productive authors in the ESG ratings literature over the period 2020–2024, based on the Scopus dataset used in this study. Together, these authors form a core group of scholars who have shaped the empirical and conceptual development of ESG ratings research, both in terms of publication volume and citation impact.

Table 3. The most productive authors writing on ESG Ratings

Rank	Author Name	Total Papers	Total Citations	Citation per paper
1	Goodell, John W.	7	203	29
2	He, Feng	6	163	27
3	Yan, Jingzhou	6	62	10
4	Paimanova, Viktoriia	6	57	10
5	Bax, Karoline	6	45	8
6	Galloppo, Giuseppe	5	46	9
7	Xiong, Xiong	5	42	8
8	Zwergel, Bernhard	4	590	148
9	Klein, Christian	4	579	145
10	El Ghoul, Sadok	4	333	83
11	Hübel, Benjamin	4	140	35
12	Li, Chao	4	114	29
13	Tampakoudis, Ioannis	4	108	27
14	Mirza, Nawazish	4	63	16
15	Umar, Muhammad	4	63	16
16	Chen, Mike	4	61	15
17	Zhang, Jianing	4	47	12
18	Ryu, Doojin	4	42	11
19	Rastogi, Shailesh	4	36	9
20	Tsang, Albert	4	36	9
21	Paterlini, Sandra	4	35	9
22	Jin, Ick	4	27	7
23	Singh, Kuldeep	4	22	6
24	López-Arceiz, Francisco J.	4	21	5
25	Makarenko, Inna	4	13	3

John W. Goodell ranks first in terms of productivity, with seven publications and 203 citations (approximately 29 citations per paper). His work primarily examines the implications of ESG ratings for corporate behaviour and risk management, often situating ESG within broader macro-financial and policy contexts. Goodell's studies investigate how ESG ratings interact with market uncertainty, financial crises, and institutional settings, thereby linking firm-level ESG assessments to systemic risk and global financial stability. This contribution positions ESG ratings as an integral part of the architecture of financial risk analysis rather than as a narrow corporate-level metric.

The second-most productive author is Feng He, with six publications and 163 citations (27 citations per paper). His research focuses predominantly on Chinese listed firms and financial markets, thus contributing important evidence from an emerging-market context that is frequently

under-represented in ESG rating studies. He's work highlights pronounced divergence in ratings across providers, examines how ESG performance is associated with stock price crash risk, and documents links between corporate misconduct, weak ESG scores, and capital market penalties. Several of his studies also show how institutional investors and ownership structures can influence firms' disclosed ESG information and, ultimately, their ratings. This strand of research is particularly valuable for understanding how ESG ratings operate in markets characterised by rapid regulatory change and evolving disclosure practices.

In terms of citation intensity, Christian Klein stands out as the most influential author in this group. Although

ranked ninth by number of publications (four papers), he has accumulated 590 citations and an average of 148 citations per paper, the highest citation-per-paper figure among all authors listed. Klein's work addresses several core issues in the ESG ratings debate: the impact of rating changes and rating levels on stock performance, the financial and informational consequences of rating disagreement, and the implications of ESG ratings for sustainable investment behaviour. His contributions also touch on the role of integrated reporting and the potential of ESG ratings to support the achievement of the Sustainable Development Goals. The combination of relatively few but highly cited papers suggests that his studies are widely used as benchmarks in empirical work and as theoretical references in discussions of market reactions to ESG information.

Other authors in the top 25 provide additional thematic and regional breadth to the field:

- Bernhard Zwergel (4 papers, 579 citations; 145 citations per paper) is closely associated with the critical reassessment of ESG ratings and sustainability scores, particularly regarding size bias and methodological robustness (e.g., Drempetic et al., 2020).
- Sadok El Ghoul (4 papers, 333 citations; 83 citations per paper) contributes extensively to the literature on ESG, corporate finance, and cost of capital, often linking ESG ratings and disclosures to firm valuation and risk.
- Benjamin Hübel, Chao Li, Ioannis Tampakoudis, Nawazish Mirza, and Muhammad Umar (each with 4 publications) collectively explore topics such as ESG ratings and stock price crash risk, ESG disclosure quality, and the interaction between governance mechanisms, institutional investors, and ESG performance.
- Authors such as Jingzhou Yan, Viktoriia Paimanova, Karoline Bax, and Giuseppe Galloppo (with 5–6 publications each) help extend ESG ratings research into areas including behavioural finance, regional and sectoral applications, and the integration of ESG ratings into portfolio construction and risk assessment models.

Viewed together, the author analysis reveals several important characteristics of the ESG ratings research community. First, the field is not dominated by a single "super-author," but by a cluster of scholars with complementary expertise: some specialise in methodological and measurement issues (e.g., Klein,

Zwergel), others in asset-pricing and risk implications (e.g., Goodell, El Ghoul), and others in country- or region-specific applications (e.g., He in China). Second, the coexistence of high productivity (e.g., Goodell, He) and high citation-per-paper profiles (e.g., Klein, Zwergel, El Ghoul) suggests a healthy balance between extensive and intensive contributions—both breadth and depth.

Finally, the distribution of authors across institutions and countries (not shown in Table 3 but evident from the underlying data) indicates that ESG ratings research is geographically diverse, with notable clusters in Europe, North America, and Asia. This diversity is consistent with earlier bibliometric analyses of socially responsible investment and ESG (e.g., Haigh & Viviers, 2014; Khatib et al., 2022) and reflects the global nature of debates around ESG disclosure, rating divergence, and sustainable finance. As the field matures, the work of these core authors is likely to continue shaping research agendas on rating methodologies, regulatory reforms, and the real economic effects of ESG ratings.

5.4 Analysis of Universities and Countries

Analyzing the institutional and geographical distribution of publications helps to identify where research capacity on ESG ratings is concentrated and how knowledge production is diffusing globally.

5.4.1 Leading universities

Table 4 reports the top 20 universities ranked by number of ESG-ratings-related publications during 2020–2024. Tianjin University (China) occupies the first position, with 8 papers and 253 citations (approximately 32 citations per paper), indicating both high productivity and solid impact. Its output suggests the presence of an active research group working at the intersection of ESG ratings, corporate finance, and risk management.

Half of the institutions in the top-20 list are Chinese universities, including Sichuan University, the Capital University of Economics and Business, the Central University of Finance and

Economics, Jinan University, Sun Yat-Sen University, Shandong University of Finance and Economics, Nankai University and Fudan University. This concentration underscores China's strong and rapidly expanding research interest in ESG ratings, consistent

with the country's broader emphasis on green finance, sustainable development, and the integration of ESG considerations into capital markets.

Table 4. Top 20 productive and influential universities involved in ESG ratings research

Rank	University	Country	Total Papers	Total Citations	Citations per paper
1	Tianjin University	China	8	253	32
2	Lebanese American University	Lebanon	7	51	7
3	Sichuan University	China	6	62	10
4	Capital University Of Economics And Business	China	5	157	31
5	Central University Of Finance And Economics	China	5	28	6
6	University Of Trento	Italy	4	132	33
7	Sohar University	Oman	4	5	1
8	Jinan University	China	3	295	98
9	University of London	United Kingdom	3	254	85
10	Sun Yat-Sen University	China	3	156	52
11	University Of Macedonia	Greece	3	103	34
12	Zhongnan University Of Economics And Law	China	3	102	34
13	University Of Portsmouth	United Kingdom	3	98	33
14	Shandong University Of Finance And Economics	China	3	83	28
15	Boston College	United States	3	61	20
16	Nankai University	China	3	46	15
17	Excelia Business School	France	3	43	14
18	Fudan University	China	3	38	13
19	University Of Essex	United Kingdom	3	35	12
20	University Of Viterbo La Tuscia	Italy	3	32	11

Several non-Chinese institutions also feature prominently. The Lebanese American University ranks second in terms of publication volume (7 papers), indicating that ESG ratings research is not limited to large Western research universities but is also being actively pursued in emerging and smaller higher-education systems. European universities such as the University of Trento and the University of Viterbo La Tuscia (Italy), the University of Macedonia (Greece), and the University of London, the University of Portsmouth and the University of Essex (United Kingdom) obtain high citation-per-paper figures—often above 30—pointing to comparatively strong influence despite smaller absolute publication counts. For instance, Jinan University (China) and the University of London (UK) have 3 publications each but very high citation intensity (98 and 85 citations per paper, respectively), indicating that their contributions have been particularly impactful.

The presence of institutions such as Boston College (United States) and Excelia Business School (France) further illustrates the disciplinary breadth of the field, spanning economics, finance, management and business schools. This pattern aligns with observations in other sustainability-related domains, where leading contributions frequently come from specialised economics and business faculties rather than purely environmental or engineering departments (cf. Zhang et al., 2023 for carbon-emissions research).

5.4.2 Geographic distribution and collaboration among countries

Table 5 summarises the output of the top 20 countries in ESG ratings research. In terms of publication volume, China leads with 319 papers and 4,156 citations (13 citations per paper), followed by the United States with 182 papers and 5,317 citations (29 citations per paper) and the United Kingdom with 135 papers and 4,812 citations (36 citations per paper).

Italy and India complete the top five by volume.
Several points emerge from these figures:
Scale versus impact: China is the most prolific country in terms of the number of ESG-ratings publications, reflecting both the rapid growth of Chinese scholarship on sustainable finance and the strong presence of Chinese universities in the institutional rankings. However, the United States and the United Kingdom exhibit higher average citations per paper (29 and 36 respectively), suggesting that their contributions are, on average, more frequently cited and possibly more central in shaping the global research agenda. Canada, despite a smaller volume (38 papers), records the highest citations per paper (41), indicating a high concentration of influential studies.

Table 5. Top 20 Countries involved in ESG ratings research

Country	Total Papers	Total Citations	Citation per paper	2023 GDP Rank
China	319	4156	13	2
United States	182	5317	29	1
United Kingdom	135	4812	36	6
Italy	130	2700	21	8
India	94	997	11	5
Germany	91	1934	21	3
France	64	705	11	7
Spain	63	647	10	15
Malaysia	62	683	11	37
Australia	60	1287	21	13
South Korea	39	392	10	14
Canada	38	1559	41	10
Russian Federation	33	336	10	11
Indonesia	30	100	3	16
United Arab Emirates	22	331	15	29
Greece	20	358	18	54
Hong Kong	20	672	34	39
Pakistan	20	159	8	44
New Zealand	19	204	11	51
Switzerland	19	439	23	20

Alignment with economic size and sustainability priorities: Many of the leading contributors—China, the United States, the United Kingdom, Germany, France, Italy and India—are also among the world's largest economies (Table 5, GDP rank column). This is consistent with evidence from other areas of sustainability research, where large economies with developed research systems and strong policy interest in climate and ESG issues dominate knowledge production (Zhang et al., 2023). At the same time, emerging economies such as Malaysia, Indonesia, the United Arab Emirates and Pakistan appear in the top-20 list, albeit with lower citation intensity, suggesting that ESG ratings research is spreading beyond traditional academic centres.

Regional breadth: The presence of countries from Europe, North America, Asia-Pacific and the Middle East indicates that ESG ratings have become a global research topic. This echoes developments in global sustainability rankings (e.g., THE Impact Rankings; QS Sustainability Rankings), where universities from East and South-East Asia, Europe, and North America increasingly compete on ESG and SDG-related performance (Times Higher Education, 2024; QS, 2025).

The international co-authorship network depicted in Figure 3 further illuminates the structure of global collaboration. China, the United States and the United Kingdom appear as the largest nodes, reflecting their high publication volumes and central positions in the network. The dense linkages among these three countries indicate strong collaborative ties, with many

co-authored papers bridging Chinese, American and British institutions.

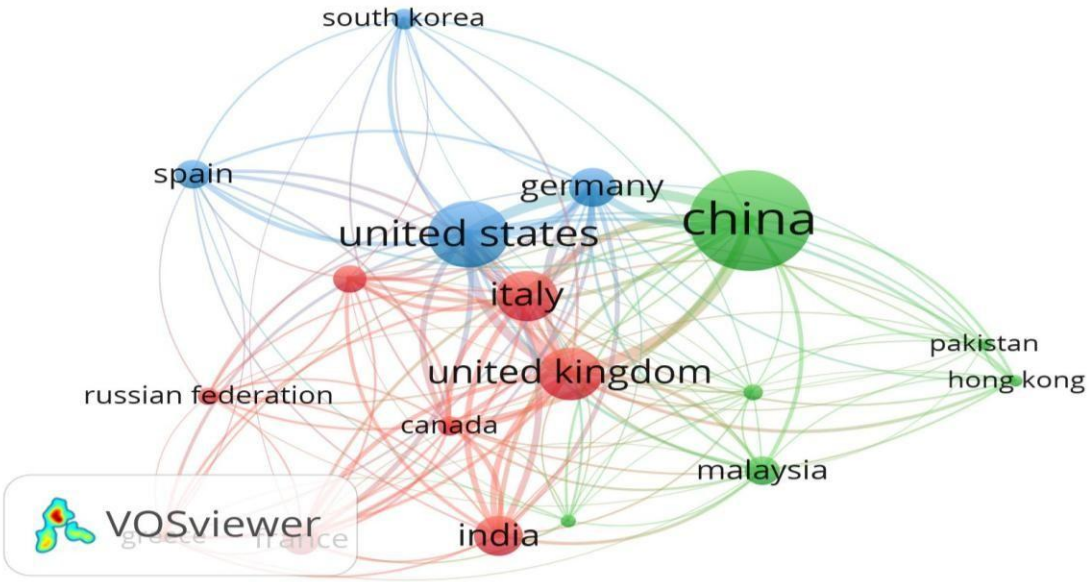

Fig. 3. Citations for publications from Countries (>20 papers) on ESG Ratings, published (2020–2024).

European countries such as Germany, Italy, Spain and France, as well as Asia-Pacific economies including South Korea, Malaysia and Hong Kong, are connected to this core, suggesting an integrated and increasingly globalised research community.

The configuration of the network also mirrors the pattern of sustainability and impact rankings in higher education. Countries that perform strongly in global SDG-oriented rankings—such as the UK, Australia, Canada, and several Asian economies (THE Impact Rankings 2024; QS Sustainability Rankings 2025)—also appear as important contributors and collaborators in ESG-ratings research. This suggests a mutually reinforcing relationship between universities' strategic focus on sustainability (as captured in global rankings) and their research output on ESG topics.

Overall, the analysis of universities and countries indicates that ESG-ratings research is characterised by:

- A strong concentration of institutional output in China, complemented by highly cited contributions from European and North American universities.
- A geographically diversified but structurally centralised country network, with China, the United States and the United Kingdom forming the core hubs; and
- An emerging role for institutions in the Global South and smaller economies, which are beginning to participate more actively in the production of ESG-ratings knowledge.

These patterns highlight both the global reach of ESG-ratings research and the importance of cross-country collaboration for understanding how rating practices, regulations and market responses differ across institutional and economic contexts.

5.5 Analysis of Journals

Table 6 shows the distribution of ESG ratings publications across the most productive journals, revealing the publication outlets that have been most instrumental in shaping and disseminating this literature. The results indicate that ESG ratings research is concentrated in a relatively small number of high-impact journals spanning finance, economics, business ethics, and sustainability-oriented management. This disciplinary spread reflects the inherently interdisciplinary nature of ESG ratings,

which sit at the intersection of corporate finance, responsible investment, environmental management, and organizational ethics.

Table 6. Top 20 Journals publishing on ESG ratings

Rank	Journal Name	Total Papers	Total Citations	Citations per paper
1	Finance Research Letters	93	1328	14
2	International Review Of Financial Analysis	48	952	20
3	Journal Of Cleaner Production	43	989	23
4	Corporate Social Responsibility And Environmental Managemen	42	916	22
5	Research In International Business And Finance	35	1035	30
6	Energy Economics	31	327	11
7	Business Strategy And The Environment	28	1141	41
8	International Review Of Economics And Finance	28	151	5
9	Journal Of Portfolio Management	25	390	16
10	Journal Of Sustainable Finance And Investment	25	517	21
11	Journal Of Risk And Financial Management	21	95	5
12	Resources Policy	18	349	19
13	Pacific Basin Finance Journal	17	357	21
14	Sustainability Accounting, Management And Policy Journal	17	387	23
15	Journal Of Business Ethics	16	1380	86
16	Economic Modelling	14	267	19
17	Journal Of Asset Management	14	236	17
18	Global Finance Journal	13	191	15
19	Borsa Istanbul Review	12	241	20
20	Economic Analysis And Policy	12	154	13

Among the journals listed, Finance Research Letters is the most productive outlet, with 93 papers and 1,328 citations. Its prominence suggests that it has become a key venue for shortformat, timely empirical contributions on ESG ratings, particularly studies addressing market reactions, stock performance, disclosure effects, and risk implications. The journal's high publication volume indicates that ESG ratings have become a recurring topic in contemporary finance research, especially where scholars seek rapid dissemination of empirical findings.

The International Review of Financial Analysis ranks second with 48 papers and 952 citations, while the Journal of Cleaner Production follows closely with 43 papers and 989 citations. These journals represent two important but somewhat different strands of the literature: the former is strongly aligned with financial econometrics, asset pricing, and market-based analysis, whereas the latter reflects the sustainability and production-oriented side of ESG research, including corporate environmental performance, disclosure practices, and sustainable business transformation. Their strong presence confirms that ESG ratings are not confined to financial economics alone but also attract substantial attention from sustainability and management scholars.

Other journals in the top tier further reinforce this interdisciplinary profile. Corporate Social Responsibility and Environmental Management (42 papers; 916 citations) and Business Strategy and the Environment (28 papers; 1,141 citations) are especially important for research focused on corporate sustainability strategy, stakeholder management, and ESG integration into business decision-making. Notably, Business Strategy and the Environment records one of the highest citations-per-paper values in the table (41 citations per paper), indicating that although its publication count is smaller than that of some finance journals, its articles are highly influential and frequently cited. This pattern suggests that the journal hosts work of strong conceptual and practical relevance, often addressing the strategic implications of ESG ratings for firms and investors.

A particularly striking result is the performance of the Journal of Business Ethics, which, despite publishing only 16 papers, has accumulated 1,380 citations and an exceptional 86 citations per paper—the highest in Table 6. This demonstrates that the journal publishes fewer but highly impactful studies, often dealing with the normative, governance, and ethical dimensions of ESG ratings. Its strong citation profile indicates that it functions as a central reference point for discussions about ESG disclosure credibility, rating divergence, greenwashing, and the broader moral foundations of sustainable business practices.

The citation data also show that journals with moderate publication output can exert substantial influence. For example, Research in International Business and Finance (35 papers; 1,035 citations), Sustainability Accounting, Management and Policy Journal (17 papers; 387 citations), and Journal of Sustainable Finance and Investment (25 papers; 517 citations) all contribute meaningfully to the field. These outlets are especially relevant for work on ESG disclosure, integrated reporting, sustainability accounting, and the financial implications of ESG integration. In particular, Journal of Sustainable Finance and Investment plays an important bridging role between finance and sustainability, aligning closely with the literature on responsible investing and ESG portfolio construction.

By contrast, some journals such as Energy Economics, International Review of Economics and Finance, and Journal of Risk and Financial Management publish a sizeable number of ESGrelated articles but exhibit comparatively lower citation intensity. This may reflect the more specialized or applied nature of some of their ESG contributions, or the fact that they cover a broader thematic range beyond ESG ratings alone. Similarly, journals such as Borsa Istanbul Review, Pacific Basin Finance Journal, and Economic Analysis and Policy indicate that ESG ratings research has also been taken up in regional finance and policy-oriented outlets, broadening the geographical and thematic scope of the field.

Overall, the journal analysis highlights three main patterns:

Concentration in finance and sustainability journals: The largest number of papers appears in finance-oriented journals, especially *Finance Research Letters* and *International Review of Financial Analysis*, confirming that ESG ratings are a major topic in financial research.

High citation impact in ethics and strategy journals: Journals such as *Journal of Business Ethics* and *Business Strategy and the Environment* have fewer papers but much higher citations per paper, indicating that they publish particularly influential work on the conceptual and strategic dimensions of ESG ratings.

Interdisciplinary dissemination of ESG research: The spread of publications across finance, business ethics, accounting, environmental management, and policy journals reflects the broad relevance of ESG ratings to multiple academic communities.

These findings also align with recent bibliometric studies of ESG research, which show that leading publication venues often include Sustainability, Business Strategy and the Environment, Journal of Business Ethics, and Journal of Sustainable Finance and Investment, all of which serve as important knowledge hubs for ESG-related scholarship. The dominance of these journals indicates that ESG ratings research is still being consolidated across a small number of core outlets, but with increasing diffusion into adjacent disciplinary and regional journals as the field continues to expand.

5.6 Analysis of keywords

Keyword analysis examines how frequently key terms co-occur across papers, thereby
revealing the main research foci and the underlying intellectual structure of a field. In this study, we used author-provided keywords as the unit of analysis, as they most directly reflect how scholars position their own work (Panchal et al., 2017).

From a total of 3,357 author keywords, those appearing at least 15 times (47 keywords) were retained to construct a robust and interpretable network. Table 7 lists the 30 most frequent keywords, headed by “ESG” (318 occurrences; total link strength 362), “sustainability” (116; 185), and “corporate social responsibility” (86; 117). These high frequencies and strong link strengths confirm that ESG ratings research is embedded in broader conversations about sustainability and CSR.

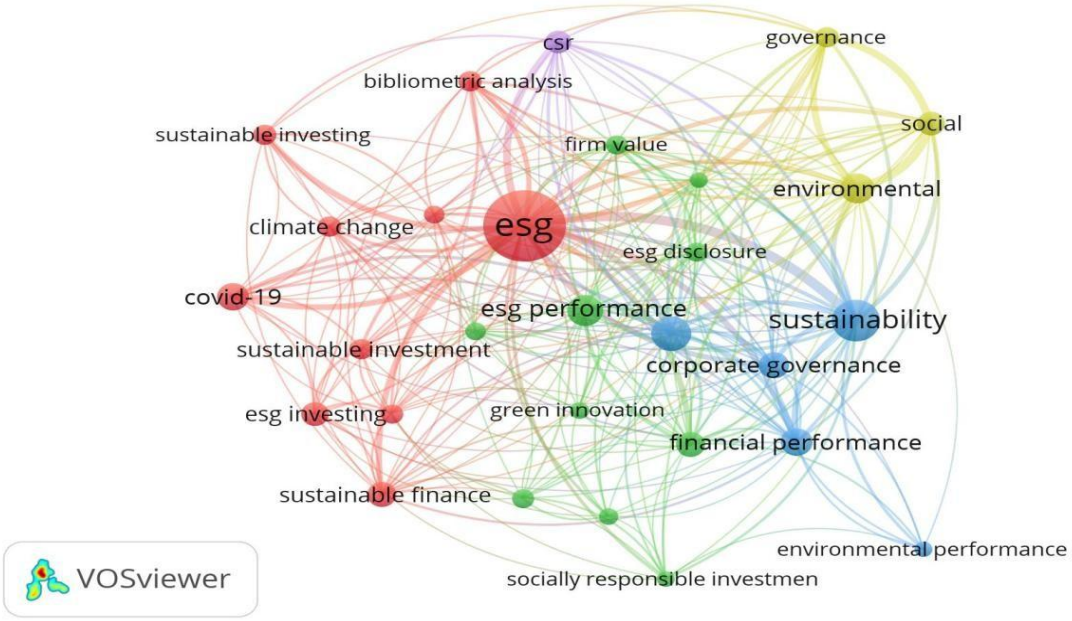

Fig. 4. Citations for Author Keywords (>15 frequency), published (2020–2024).

Using VOSviewer, we generated a co-occurrence network of the selected keywords (Figure 4). The software groups closely related keywords into clusters based on their co-appearance patterns. Five main thematic clusters emerge:

1) The philosophy and macro-context of ESG (Red),
2) ESG disclosure, performance and firm outcomes (Green),
3) Sustainability linkages and governance (Blue),
4) The relationship between ESG and its individual dimensions (Yellow), and
5) The association between ESG and CSR (Purple).

Together, these clusters provide a nuanced map of how ESG-ratings research is organised conceptually, and they complement the citation and journal analyses by showing the topics around which the literature actually coalesces.

5.6.1 Philosophy and macro-context of ESG

The red cluster is centred on the keyword "ESG" itself and includes terms such as "climate change," "COVID-19," "sustainable finance," "sustainable investing," "ESG investing," and "bibliometric analysis." This cluster reflects the foundational and macro-level discourse surrounding ESG:

- It captures work that theorises why ESG matters—linking ESG to global challenges such as climate change and the COVID-19 pandemic, and exploring how these shocks have reshaped investor preferences and risk perceptions.
- The presence of "sustainable finance" and "sustainable investment" indicates a strong focus on integrating ESG into the architecture of financial systems, including asset-pricing models, portfolio construction, and prudential regulation.
- The inclusion of keywords like "bibliometric analysis" shows that the field has reached a stage where scholars are beginning to reflect systematically on its own evolution, structure, and knowledge gaps.

This cluster embodies what might be termed the "philosophy" or overarching paradigm of ESG: it situates ESG investing as a response to systemic environmental and social risks, and frames ESG ratings as tools for channelling capital towards more resilient and sustainable economic activities. The strong interlinkages among "ESG," "climate change," "COVID-19," and "sustainable finance" in Figure 4 underscore how external crises have accelerated the integration of ESG considerations into mainstream finance.

5.6.2 ESG disclosure and impact on firm performance

The green cluster revolves around "ESG performance," "ESG disclosure," "financial performance," "firm value," "green innovation," and "socially responsible investment." It captures the micro-level, firm-centred strand of the literature, which asks:

- Do higher ESG ratings or better ESG disclosure improve firm value and financial performance?
- How do ESG scores relate to innovation (especially green innovation), cost of capital, and risk (e.g., crash risk, downside volatility)?
- How do socially responsible investors interpret and use ESG information?

High-frequency keywords such as financial performance (54 occurrences; link strength 86) and corporate governance (50; 65) in Table 7 illustrate that much of the ESG-ratings research focuses on quantifying the economic consequences of ESG activities and ratings. The coexistence of "ESG disclosure," "ESG rating(s)," and "information asymmetry" (21 occurrences) also indicates an important sub-theme: whether ESG ratings and

disclosures reduce information frictions in capital markets.

Overall, this cluster emphasizes the instrumental value of ESG: it treats ESG metrics as potential drivers of value creation, risk mitigation, and innovation, thereby providing empirical grounding to the theoretical models reviewed in the citation analysis.

Table 7. Top 30 author keyword occurrences

Rank	Author Keyword	Frequency	Total Link Strength
1	Esg	318	362
2	Sustainability	116	185
3	Corporate Social Responsibility	86	117
4	Esg Performance	69	50
5	Environmental	63	127
6	Covid-19	54	61
7	Financial Performance	54	86
8	Corporate Governance	50	65
9	Sustainable Finance	46	59
10	Sustainable Development	45	67
11	Social	43	110
12	Esg Investing	41	31
13	Csr	39	70
14	Climate Change	33	37
15	Sustainable Investment	33	36
16	Governance	32	87
17	Sustainable Investing	32	43
18	Bibliometric Analysis	31	42
19	Esg Disclosure	29	37
20	Esg Rating	29	25
21	Esg Ratings	29	31
22	Firm Value	28	46
23	China	26	24
24	Sustainability Reporting	24	29
25	Green Innovation	22	20
26	Information Asymmetry	21	18
27	Environmental Performance	20	21
28	Firm Performance	20	34
29	Socially Responsible Investment	20	30
30	Corporate Social Responsibility (Csr)	19	25

5.6.3 Sustainability linkage and governance

The blue cluster links "sustainability" with "corporate governance," "environmental performance," "environmental performance," "sustainable development," and "financial performance." Its focus is on how governance structures and sustainability objectives interact:

- It encompasses studies that investigate how governance mechanisms—board composition, shareholder engagement, ownership structure—affect firms' environmental and social outcomes and, through them, financial results.
- The simultaneous presence of "sustainability," "sustainable development," and "sustainability reporting" (24 occurrences) indicates a strand of research that connects firm-level ESG practices to broader societal goals, such as the SDGs, and explores how reporting frameworks (e.g., integrated reporting, sustainability standards) shape ESG assessments.

This cluster thus highlights the governance–sustainability nexus: ESG ratings are not only market signals but also reflections of internal governance quality and strategic alignment with long-term sustainability objectives.

5.6.4 Relationship between ESG and its individual dimensions

The yellow cluster is structured around the keywords "environmental," "social," "governance," and "information asymmetry." It represents research that disaggregates ESG into its constituent pillars:

- Scholars in this cluster analyse, for example, how governance quality interacts with environmental or social performance, or which pillar is most strongly associated with financial outcomes or

risk reduction.

- The prominence of "social" (43 occurrences; link strength 110) and "governance" (32; 87) suggests growing interest in non-environmental dimensions, complementing the climate-centric focus of earlier ESG work.
- Linkages to terms like "firm performance" and "information asymmetry" reflect attempts to understand whether particular ESG dimensions are more informative to investors or more effective in mitigating agency problems.

This cluster contributes to unpacking whether ESG should be treated as a single composite construct or as a set of distinct yet interrelated factors, and how rating agencies' weighting schemes across E, S and G dimensions might affect the interpretation of ESG scores.

5.6.5 Association between ESG and CSR

The purple cluster concerns the connection between ESG and corporate social responsibility (CSR), represented by keywords such as "corporate social responsibility," "CSR," "socially responsible investment," and "China":

- It captures research exploring how the long-standing CSR concept has evolved into, or coexists with, the more financially oriented ESG framework.
- Studies in this cluster often examine whether ESG ratings adequately capture CSR activities and how investors reconcile CSR-driven motives with ESG-based, risk-return considerations.
- The presence of "China" (26 occurrences) within this cluster highlights the particular importance of CSR–ESG debates in emerging markets, where regulatory frameworks and disclosure practices are still evolving.

The convergence of ESG and CSR keywords underscores a broader conceptual integration: firms increasingly frame their responsibilities to stakeholders and society through ESG metrics, while investors and regulators use ESG ratings as operational tools to enforce or encourage CSR-aligned behaviour.

5.6.6 Synthesis and implications

Taken together, the keyword analysis reveals that ESG-ratings research is structured around a coherent set of interlocking themes:

- A macro-philosophical strand that situates ESG within responses to climate change, pandemics and systemic risk;
- A micro-financial strand that quantifies the effects of ESG disclosure and performance on firm value, risk, and innovation;
- A governance and sustainability strand that connects internal governance with external sustainability outcomes;
- An ESG-pillar strand that disaggregates E, S, and G to understand their distinct contributions; and
- A CSR–ESG convergence strand that links older notions of corporate responsibility with newer, rating-based frameworks.

The high total link strengths for core keywords such as "ESG," "sustainability," "CSR," "financial performance," and "corporate governance" indicate dense interconnections among these themes, suggesting that the field is moving toward a more integrated, systems-oriented understanding of ESG ratings. Combining statistical keyword analysis with visual network mapping, as recommended in the keyword-network literature (e.g., Aria & Cuccurullo, 2017; Panchal et al., 2017), thus provides a rich picture of both the macro-trends and micro-linkages that define current ESG-ratings research and can help identify promising directions for future work.

6. Conclusions

The primary objective of this study was to map and synthesise the development of research on Environmental, Social, and Governance (ESG) ratings. Using data retrieved from the Scopus Core Collection and visualised with VOSviewer, we conducted a comprehensive bibliometric analysis that combined bibliographic coupling, keyword co-occurrence, and co-citation techniques. This multifaceted approach allowed us to uncover the intellectual structure of the ESG-ratings field, identify leading contributors, and highlight emerging thematic trends. As with all bibliometric studies, our findings are contingent on the database, search strategy, and time window employed; alternative sources (e.g., Web of Science, Dimensions) or extended periods could yield partially different results (Singh et al., 2022; Gao et al., 2021). Future reviews might apply more inclusive threshold settings to reveal weaker but potentially important linkages between niche subtopics.

The citation patterns and network structures point to rapidly growing scholarly interest in ESG ratings, especially in their connections with sustainable investing and firm-level outcomes. Consistent with recent ESG bibliometric surveys (e.g., Kocmanová et al., 2011; Clément et al., 2022; Sahu et al., 2025), we find that a rising share of studies examines how ESG ratings relate to firm risk, cost of capital, financial performance, and overall corporate value. The increasing use of ESG ratings as explanatory variables in empirical finance and corporate governance research underscores their evolution from a niche tool of responsible investment to a mainstream metric for assessing organisational sustainability and risk management.

In terms of geographical and institutional contributions, our analysis shows a pronounced concentration of output in a few countries and universities. A substantial proportion of the publications originates from authors affiliated with institutions in China, the United States, and the United Kingdom, mirroring findings from broader ESG bibliometric work (Frontiers in Environmental Science, 2022; Khan, 2022). Tianjin University (China), Lebanese American University (Lebanon), and Sichuan

University (China) emerge as the top three institutions in terms of publication volume, while Jinan University (China) achieves the highest citation count, indicating particularly influential contributions. Half of the top 20 universities are located in China, highlighting that country's leading role and growing research capacity in ESG-ratings scholarship, especially in the context of emerging markets and rapidly evolving regulatory frameworks.

The journal analysis reveals that ESG-ratings research is anchored in a relatively small set of core outlets in finance, sustainability, and business ethics. Finance Research Letters is the leading journal by publication volume, signalling that ESG-related questions—particularly those dealing with market reactions, asset pricing, and risk—have become central topics in empirical finance. Highly cited contributions in journals such as Journal of Business Ethics, Business Strategy and the Environment, and Journal of Cleaner Production demonstrate that the conceptual, ethical, and environmental dimensions of ESG ratings remain equally important. This distribution confirms the multidisciplinary character of the field and its close connection to debates on corporate sustainability, responsible investment, and sustainable development.

Our keyword co-occurrence analysis further clarifies how the field is thematically organised. Five main clusters emerge:

1. The philosophy and macro-context of ESG, including climate change, COVID-19, sustainable finance, and ESG investing;
2. ESG disclosure and its impact on firm performance, encompassing financial performance, firm value, green innovation, and socially responsible investment;
3. Sustainability linkages, focusing on the interplay between sustainability, corporate governance, environmental performance, and sustainable development;
4. The relationship between ESG and its individual dimensions, examining how environmental, social, and governance pillars jointly and separately affect outcomes; and
5. The association between ESG and corporate social responsibility (CSR), reflecting the conceptual evolution from CSR and socially responsible investment (SRI) towards ESG-based assessment and decision-making (Gao et al., 2021; Singh et al., 2022).

These clusters confirm that ESG ratings are studied not only as technical scoring mechanisms but also as part of a broader transformation in how firms, investors, and regulators conceptualise corporate responsibility and sustainability.

Building on these findings, we identify several promising avenues for future research:

1. **Determinants and consequences of ESG ratings in emerging markets:** Much of the existing empirical evidence is drawn from developed markets. There is scope to investigate how institutional environments, regulatory quality, ownership structures, and cultural factors shape ESG ratings and their financial implications in emerging and frontier economies. This includes understanding rating coverage, potential biases, and the role of domestic versus global rating agencies.
2. **Mechanisms linking ESG ratings to capital markets:** While numerous studies document correlations between ESG ratings and risk, returns, or cost of capital, the underlying mechanisms remain imperfectly understood. Future work could explore channels such as information asymmetry, investor clientele effects, liquidity, and behavioural biases, possibly using high-frequency data or natural experiments (e.g., regulatory shocks, index inclusions).
3. **ESG reporting, disclosure quality, and rating methodologies:** Given the ongoing standardisation efforts (e.g., ISSB, EU CSRD) and the proliferation of rating providers, there is a need for deeper analysis of how different **disclosure regimes, assurance practices, and rating models** affect rating outcomes and their comparability. Research could examine rating divergence, transparency of methodologies, and the implications of alternative weighting schemes across E, S, and G pillars (Clément et al., 2022).
4. **Integration of ESG ratings into real-economy outcomes and SDGs:** Future studies could link ESG ratings more explicitly to tangible environmental and social outcomes—such as emissions reductions, resource efficiency, or community impacts—and to progress on Sustainable Development Goals. This would help assess whether high ESG ratings truly reflect substantive sustainability performance or primarily capture disclosure efforts and governance formality.
5. **Methodological innovation and cross-disciplinary approaches:** There is ample room for employing advanced methods—machine learning, text mining of ESG reports, causal inference techniques—and for integrating insights from law, political science, and environmental science. Relaxing bibliometric thresholds, as suggested in this study, could also reveal emerging micro-topics and facilitate more granular mapping of the field.

From a practical standpoint, our findings underscore that adherence to an ESG-oriented investment philosophy can support the standardisation of listed companies' behaviour, enhance transparency, and contribute to healthier and more resilient financial markets (Janah & Sassi, 2021; Malik & Kashiramka, 2024). Well-designed ESG rating systems can guide capital allocation towards firms that manage environmental and social risks effectively, thereby

supporting long-term value creation and the achievement of sustainability objectives.

For policymakers and regulators, the evolving ESG-ratings literature provides a growing theoretical and empirical foundation for designing or refining ESG reporting and rating standards. Understanding how investors use ESG ratings, how rating divergence arises, and how ratings influence firm behaviour can inform regulatory initiatives aimed at improving comparability, reliability, and accountability in the ESG information ecosystem.

At the same time, this study has several limitations that should be acknowledged. First, the analysis is restricted to documents classified in the Scopus categories Economics, Econometrics & Finance and Business, Management & Accounting. Relevant contributions from other domains—such as environmental science, law, or engineering—may therefore be under-represented, even though ESG research is inherently interdisciplinary (Wan et al., 2023). Second, our search was limited to topic fields (titles, abstracts, and author keywords), which may have led to the omission of papers that discuss ESG ratings extensively but do not foreground the term in these fields. Third, reliance on a single database may introduce coverage biases relative to other sources. These constraints imply that our corpus, while substantial, does not fully encompass all ESG-ratings research.

Future bibliometric studies could mitigate these limitations by:

- Triangulating multiple databases (e.g., Scopus, Web of Science, Dimensions, and Google Scholar),
- Expanding subject categories beyond business and finance,
- Incorporating additional document types (e.g., book chapters, conference proceedings, and high-impact policy reports), and
- Employing richer search strings and synonymous terms to capture conceptual variants of ESG ratings.

Finally, the exploration of more fine-grained research areas could be enhanced by integrating closely related subtopics (such as impact investing, climate risk disclosure, or stewardship) into the mapping exercise and experimenting with alternative clustering techniques and similarity measures. Such efforts would allow scholars to capture the dynamic evolution of ESG-ratings research more precisely and to identify nascent themes at an earlier stage.

In sum, this study provides a structured overview of the ESG-ratings literature and highlights its main actors, venues, and themes. By clarifying where the field has been and where it is heading, it offers a useful reference point for researchers, practitioners, and policymakers seeking to deepen their understanding of ESG ratings and to leverage them more effectively in support of sustainable and responsible finance.

References

1. Landi, G. C., Iandolo, F., Renzi, A., & Rey, A. (2022). Embedding sustainability in risk management: The impact of environmental, social, and governance ratings on corporate financial risk. Corporate Social Responsibility and Environmental Management, 29(4), 10961107.
2. Dimson, E., Marsh, P., & Staunton, M. (2020). Divergent ESG ratings.
3. Gyönyörová, L., Stachoň, M., & Stašek, D. (2023). ESG ratings: relevant information or misleading clue? Evidence from the S&P Global 1200. Journal of sustainable finance & investment, 13(2), 1075-1109.
4. Billio, M., Costola, M., Hristova, I., Latino, C., & Pelizzon, L. (2021). Inside the ESG ratings:(Dis) agreement and performance. Corporate Social Responsibility and Environmental Management, 28(5), 1426-1445.
5. Widyawati, L. (2021). Measurement concerns and agreement of environmental social governance ratings. Accounting & Finance, 61, 1589-1623.
6. Albuquerque, R., Koskinen, Y., Yang, S., & Zhang, C. (2020). Resiliency of environmental and social stocks: An analysis of the exogenous COVID-19 market crash. The Review of Corporate Finance Studies, 9(3), 593-621.
7. Pedersen, L. H., Fitzgibbons, S., & Pomorski, L. (2021). Responsible investing: The ESGefficient frontier. Journal of financial economics, 142(2), 572-597.
8. Serafeim, G., & Yoon, A. (2023). Stock price reactions to ESG news: The role of ESG ratings and disagreement. Review of accounting studies, 28(3), 1500-1530.
9. Pástor, Ľ., Stambaugh, R. F., & Taylor, L. A. (2021). Sustainable investing in equilibrium. Journal of financial economics, 142(2), 550-571.
10. Abhayawansa, S., & Tyagi, S. (2021). Sustainable investing: The black box of environmental, social and governance (ESG) ratings. Abhayawansa, S. and Tyagi, S.,(2021), Sustainable investing: The black box of environmental, social and governance (ESG) ratings, Journal of Wealth Management (Forthcoming).
11. Drempetic, S., Klein, C., & Zwergel, B. (2020). The influence of firm size on the ESG score: Corporate sustainability ratings under review. Journal of business ethics, 167(2), 333-360.
12. Christensen, H. B., Hail, L., & Leuz, C. (2021). Mandatory CSR and sustainability reporting: Economic analysis and literature review. Review of accounting studies, 26(3), 1176-1248.
13. Yu, E. P. Y., Van Luu, B., & Chen, C. H. (2020). Greenwashing in environmental, social and governance disclosures. Research in

International Business and Finance, 52, 101192.
14. Chen, Z., & Xie, G. (2022). ESG disclosure and financial performance: Moderating role of ESG
15. Zhou, G., Liu, L., & Luo, S. (2022). Sustainable development, ESG performance and company market value: Mediating effect of financial performance. Business Strategy and the Environment, 31(7), 3371-3387.
16. Shakil, M. H. (2021). Environmental, social and governance performance and financial risk: Moderating role of ESG controversies and board gender diversity. Resources Policy, 72, 102144.
17. Khan, M. A. (2022). ESG disclosure and firm performance: A bibliometric and meta analysis. Research in International Business and Finance, 61, 101668.
18. Widyawati, L. (2020). A systematic literature review of socially responsible investment and environmental social governance metrics. Business Strategy and the Environment, 29(2), 619637.
19. Clementino, E., & Perkins, R. (2021). How do companies respond to environmental, social and governance (ESG) ratings? Evidence from Italy. Journal of Business Ethics, 171(2), 379-397.
20. Demers, E., Hendrikse, J., Joos, P., & Lev, B. (2021). investors. International Review of Financial Analysis, 83, 102291.

ESG did not immunize stocks during the COVID-19 crisis, but investments in intangible assets did. Journal of business finance & accounting, 48(3-4), 433-462.
21. Gibson Brandon, R., Krueger, P., & Schmidt, P. S. (2021). ESG rating disagreement and stock returns. Financial analysts journal, 77(4), 104-127.
22. Feng, J., Goodell, J. W., & Shen, D. (2022). ESG rating and stock price crash risk: Evidence from China. Finance Research Letters, 46, 102476.
23. Barko, T., Cremers, M., & Renneboog, L. (2022). Shareholder engagement on environmental, social, and governance performance. Journal of Business Ethics, 180(2), 777-812.
24. Wang, J., Ma, M., Dong, T., & Zhang, Z. (2023). Do ESG ratings promote corporate green innovation? A quasi-natural experiment based on SynTao Green Finance's ESG ratings. International Review of Financial Analysis, 87, 102623.
25. Cornell, B. (2021). ESG preferences, risk and return. European Financial Management, 27(1), 12-19.