



# ESG and financial performance: a visual analysis based on bibliometrics

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**Abstract.** The impact of ESG on Financial Performance is a topic of interest in sustainable finance today. However, our understanding of the relationship between ESG and FP remains fragmented. Using VOSviewer and bibliometrics, this study systematically reviews the four sections of major analysis annual trends, major countries and sources, keyword co-occurrence, and thematic strategic coordinate maps based on the mapping of 624 documents retrieved from the Web of Science (WoS) database from 1900-2023, using the concepts of systems thinking and knowledge connotation to summarize research results and promote further understanding of the ESG field by uncovering the possibility of new research areas. This study provides an important reference for exploring the relationship between ESG and FP, and suggests new research directions and possibilities for future research. This will help companies to better leverage the role of ESG factors in improving FP and achieving the goal of sustainable development.

**Keywords:** ESG、Financial Performance、Corporate social responsibility、Bibliometric analysis

## 1 Introduction

The 21st-century financial crisis raised concerns about environmental, social, and governance (ESG) standards[1], leading companies to implement measures and enhance transparency[2]. How ESG affects Financial Performance (FP) has been a controversial topic, and the results of related studies are still inconsistent and lack uniform standards and theoretical frameworks[3]. In addition, the COVID-19 pandemic has had a huge impact on all aspects of the economy[4], leading to an increasing number of studies on the relationship between ESG and financial performance[5].

The relationship between ESG and FP is controversial among academics. Early studies concluded that the two are negatively correlated[6], noting that companies that engage in environmentally friendly activities or receive green incentives experience negative abnormal returns[7]. Other studies have found that companies with better ESG performance tend to be less profitable in certain sensitive industries[8]. However, some researchers have also found that ESG performance has a positive impact on corporate FP, especially governance performance has the greatest impact[9]. Howev-

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er, recent studies confirm that ESG fulfillment has a dynamic and long-term impact on FP, which may have a negative impact in the short term but a positive impact on FP in the long term[10].

This paper utilizes literature visualization software to review and summarize the research progress in 1900-2023 on ESG and FP.

## 2 Data and Methods

To access relevant literature on ESG and FP, we used the following Web of Science (WoS) advanced search query:

TS=(" Financial Performance") AND TS=("ESG")

624 articles (including SCI-EXPANDED, SSCI.) through May 2023. Mapping was performed using VOSviewer and Bibliometric software. The total number of citations for these articles is 11,177, and the average number of citations per article is 17.91 with an h-index of 55.

## 3 Research Findings

### 3.1 Annual Trends

The number of publications was at a low and slow upward level in most countries until 2018, when countries started to show a rapid upward trend and peaked in 2022, with the most significant growth in China and the United States.

### 3.2 Main Sources and Countries

In Figure 1, "AU" represents the author, "AU\_CO" represents the author's country, and "ID" represents the keyword. The graph shows the relevance of different countries, authors, and keywords. The country of origin of the authors shows that authors from China occupy the largest share, followed by countries such as the United States and Italy. Currently active researchers in this field bully, Nasrallah, Khoury, and others also mostly focus on FP, corporate social responsibility(CSR), and impact.

In Figure 1, in addition to focusing on FP, CSR and impact, keywords such as management, responsibility and sustainability are also focused on. This indicates that the issue of how to balance governance issues, improve investment efficiency, and make impactful investment decisions has become the focus of current academic research in the area of responsible investment.

The width of the streamlines in Figure 2 indicates the relevance of related topics based on the number of shared keywords. Academic research from 2010 to 2021 focused on CSR, profitability, and resource-based perspectives, which were closely connected to early perceptions of ESG. In 2022-2023, there has been a shift towards research on CSR, ESG performance, stress, and empirical analysis, highlighting the increasing importance of ESG performance. Additionally, emerging studies have explored voluntary disclosure, leadership, indicators, and diversity. These changes

reflect the evolving perception of ESG from a peripheral topic to a central issue of interest for companies and investors worldwide.

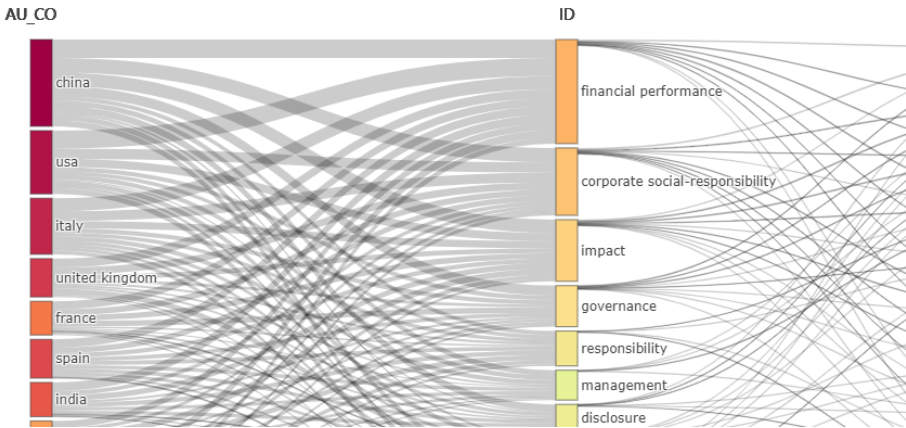


Fig. 1. Main countries, keywords and authors

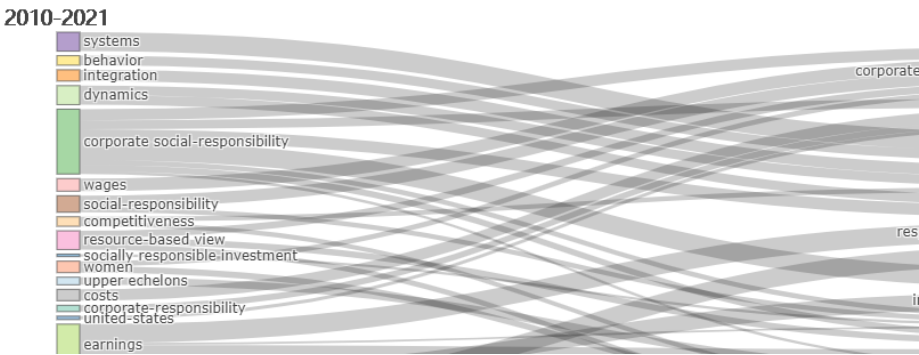


Fig. 2. Theme deduction

### 3.3 Coexistence of all keywords

Figure 3 shows that based on the mapping of author keyword co-occurrence networks, four main clusters can be clearly identified, as illustrated below:

The red cluster focuses on "impact" and discusses the relevant influencing factors. This cluster includes impact, disclosure, management, performance, CSR, etc., indicating how to develop impactful ESG disclosure that is relevant to corporate sustainability.

The green cluster is represented by "governance", including keywords such as governance, csr, environmental, stakeholder theory, and companies, focusing on the influence of stakeholders on aspects of governance activities.

The blue cluster focuses on "financial performance", showing a correlation between financial performance and ESG, sustainability, environmental performance, and covid-19, indicating that FP is vulnerable to social and environmental factors.

The yellow cluster is dominated by "sustainable development", including sustainable development, corporate governance, and firm value, indicating that focusing on ESG indicators has a significant impact on CSR and corporate governance as well as on achieving sustainable development. However, the yellow cluster does not have particularly prominent keywords, which shows that data-related research has a wider research opportunity.

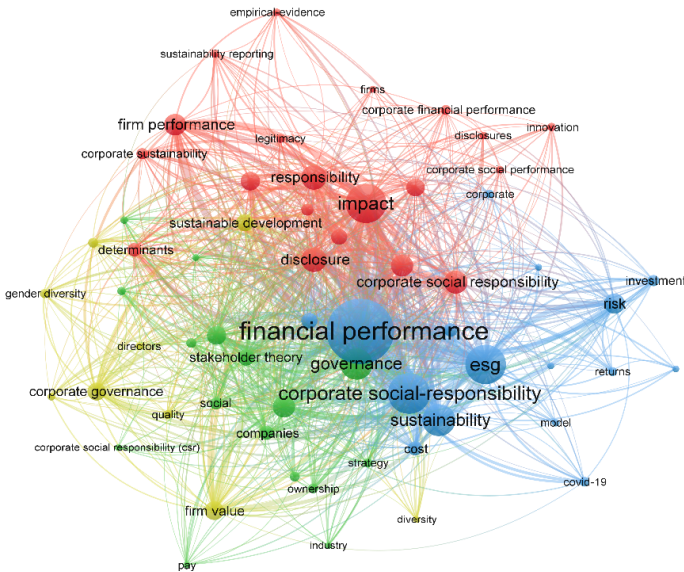


Fig. 3. Coexistence of all keywords

### 3.4 Strategic Coordinate Chart

Figure 4 presents a strategic coordinate diagram that consists of four quadrants. The vertical coordinate represents the Density Index, measuring cohesion between nodes, while the horizontal coordinate represents the Centrality Index, measuring relevance between topics. The first quadrant represents highly mature core, important and developed areas including green, innovation, China, etc.; the second quadrant represents isolated topics with the high maturity: factors, learning, mechanics, models, diversity, gender, context, etc. are well developed but not important to the current field and can be further developed into important topics. The third quadrant includes the three topics of overview, survey, and literature, which are not well developed, they may be emerging or may be about to disappear; the fourth quadrant represents the basic topics with low maturity, which may become the future development trend or research direction, the topics of responsibility, investment, society, performance, ESG, sustainable,

analysis, and market are very important in the field, and there is still a lot of research space.

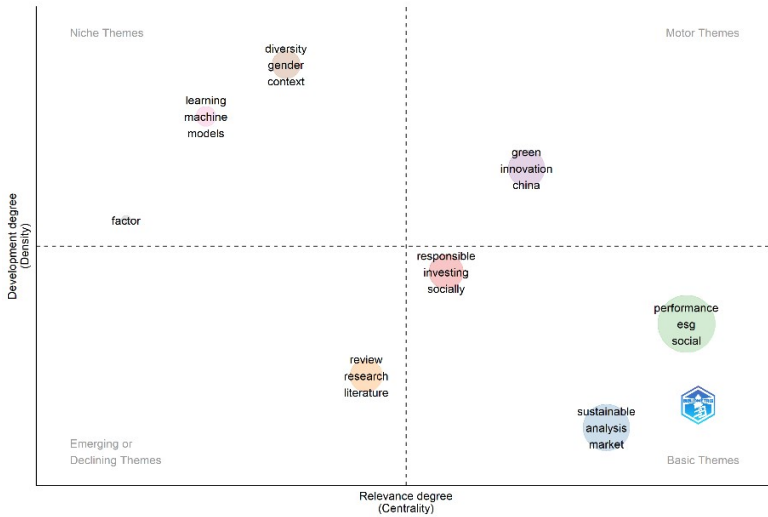


Fig. 4. Thematic map

## 4 Conclusion

ESG, an emerging field in sustainable finance, is currently fragmented in terms of impact studies on FP. However, the number of publications and citations in the field of ESG and FP has been on a rapid upward trend since 2018. The keyword co-occurrence analysis revealed that CSR and ESG performance are prominent research themes, while ESG voluntary disclosure and sustainable development are emerging themes. Future research could be conducted in the direction of voluntary disclosure, sustainability, and green innovation, and combine more disciplinary perspectives to comprehensively analyze the impact of ESG on FP. The paper's limitation is that it only focuses on SSCI in the WoS database, which may not provide comprehensive and accurate coverage. Future research should expand literature sources and improve study quality for a deeper exploration of the ESG and FP relationship.

## 5 Confirmation

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