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Bibliometric Analysis and Research Trends in Climate Risks and Financial Stability (1988–2024)

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Abstract. With the increase in temperature and the decrease in precipitation, and their impact on economics, most researchers have turned their focus to Climate change as new source of risk for the global financial system. In the same context, this paper aims to study the impact of climate change on the financial sector, using a bibliometric analysis of 176 articles extracted from Scopus database from 1988 to 2024. This study shows that climate change risks and financial stability as a discipline has rapidly evolved since 2010 and peaked after the implementation of the Sustainable Development Goals (SDGs) and Paris Agreement in 2015. The main research themes selected are monetary policy, financial stability and corporate social responsibility, green finance and climate risk management. This study highlights the importance of integrating climate risk into financial policy to ensure economic stability and sustainability, further research and international collaboration are needed in this emerging area.

Keywords: *Climate risks; Financial stability; Bibliometric analysis; Scopus; Sustainable development.*

1. Introduction

Nowadays, climate risk poses a challenge to global financial stability for its deep economic consequences (Chabot & Bertrand, 2023) as the financial system faces three interconnected threats: physical risks, transition risks, and liability risks, which Carney (2015) identified while referencing the dilemma of "Tragedy of the Horizon". Physical risk materializes in extreme climate events and rising sea levels, while transition risk arises from regulation and adaptation to the new low-carbon economy (Dunz et al., 2021), with liability risk having a long-term impact, particularly in the case of compensation to the impacted parties (Batten et al., 2016; Monasterolo, 2020). The dilemma indicates that drastic climate change impacts unfold beyond the horizon of enterprises and policy makers, that is, beyond the short-term. In turn, these risks reshape conventional approaches to risk management due to their impact on financial institutions and markets.

The threat of climate change on financial stability is documented in empirical research, notably, Battiston et al. (2016) paper that highlights the estimated market volatility of 20 to 40% from climate mitigation strategies, making equity portfolios vulnerable. Dietz et al. (2016) estimate a $2.5 trillion devaluation of global financial assets if emissions continue unchecked, indicating the benefit of limiting global warming to 2°C on reducing financial risk. Krueger et al. (2020) find that institutional investors, ones emphasizing Environmental, Social, and Governance (ESG) criteria, are integrating climate risks into their investment strategies, indicating a shift in investment rationale.

The interest in the nexus of climate change and financial stability was accelerated by the Paris Agreement of 2015 and the 2030 United Nations Agenda; still, the field of research is disconnected as studies lack the systematic implication of the examined variable. This gap is to be fulfilled by our work, which enables the mapping of research progress, identification of thematic clusters, and identification of future routes of investigation.

In addressing this, the study employs a bibliometric analysis to examine 176 publications indexed in Scopus between 1988 and 2024 using performance analysis, science mapping, and network analysis to track the evolution of scholarly work, bring attention to influential authors and institutions and to frame the intellectual structure of the field. Our findings show an annual growth rate of 12.34% in scientific production, with China, Italy, and the United States as the most influential contributors, albeit, collaboration remains bound by geographical proximity. Through research clusters identification, we singled out five clusters: climate stress-testing in the financial system, climate change, monetary policy, and financial stability, integration of climate risk into financial regulation and policies, transparency and accountability, and corporate governance and climate risk.

Simultaneously, the paper highlights key research gaps, the absence of longitudinal studies on long-term climate-finance interactions, insufficient cross-country collaboration, and limited attention to the role of insurance in managing environmental risks, implying the necessity of advanced prediction models, greater international collaboration, and interdisciplinary engagement. This paper contribution resides in developing and outlining future directions through a comprehensive overview for academics and policymakers.

The remainder of the paper is structured as follows: Section 2 reviews the literature; Section 3 methodological choice and justification; Section 4 results presentation and discussion across performance analysis, science mapping, and network analysis; Section 5 limitations and recommendations; and Section 6 concludes.

This paper contributes to the literature by providing one of the first comprehensive bibliometric mappings focused exclusively on the intersection between climate risk and financial stability. Unlike prior studies that addressed these topics separately, our research integrates them within a single analytical framework, offering new insights into the intellectual structure, key contributors, and thematic evolution of the field.

2. Literature review

A financially stable economy is defined by its capacity to absorb shocks rather than amplify their consequences. However, this property is multifaceted. For instance, an economy may effectively absorb minor shocks while simultaneously exacerbating the impact of larger shocks. Consequently, although the economy can manage minor disruptions with relative ease, it may struggle to absorb more significant shocks, thereby intensifying their repercussions (Allen & Wood, 2006). Understanding these dynamics is essential when examining the role of climate-related risks in financial stability.

The literature classifies the risks posed by climate change to financial stability into two primary categories: physical risks and transition risks (Carney, 2015). Physical risks are associated with the economic costs of actual or anticipated extreme climate events, which can erode the monetary value of physical and financial assets, thereby increasing overall uncertainty in financial markets. Transition risks, by contrast, arise from sudden or disorderly changes in policy or market conditions, often triggered by unanticipated regulatory shifts. These risks can destabilize the financial system through lower portfolio values, higher non-performing loans on banks' balance sheets, or reduced returns for insurance companies (Batten et al., 2016). Recognizing the dual nature of these risks is fundamental to designing appropriate regulatory responses.

Since the Paris Agreement, the global financial landscape has undergone a significant transformation, with regulators emphasizing climate-related financial risks and systemic vulnerabilities. In response, organizations such as the Financial Stability Board (FSB) have initiated targeted programs, including the Task Force on Climate-Related Financial Disclosures (TCFD). These initiatives build upon the foundational work of leaders in economic governance, notably Mark Carney, whose 2015 research catalyzed the development of frameworks for integrating climate risk into assessments of financial stability. Through expert

panels and standardized reporting systems, regulators aim to harmonize market practices with objectives for climate resilience, addressing both immediate volatility and long-term systemic changes (Carney, 2015; FSB, 2023).

Building on these regulatory efforts, composite measures such as the climate-related financial policy index facilitate cross-country comparisons of green policymaking, highlighting disparities in adoption (D'Orazio & Thole, 2022). Supervisory guidelines further stress risk management and disclosure requirements, as set out by central banks (Brief, 2022; ECB, 2020). The intersection between green financial policies and fiscal space illustrates how climate risks can limit budgetary capacity for sustainability initiatives, while embedding ESG considerations into policy frameworks strengthens resilience (Gupta et al., 2024). In national contexts, such as Italy, climate stress tests evaluate household and firm vulnerabilities, feeding into policy design (Faiella et al., 2022). Meanwhile, central banks' discourse on climate change increasingly shapes European financial stability debates, underscoring the need for harmonized approaches (Lupu & Criste, 2023).

An analysis of existing climate-related financial policies reveals a lack of adoption of macroprudential measures in G20 countries regarding capital requirements, leverage ratios, systemically important banks, and liquidity standards (D'Orazio, 2021; D'Orazio 2022). Nonetheless, some supervisory initiatives have been implemented, most notably climate-related stress testing. Additionally, disclosure requirements for climate-related financial risks play a key role in developing a credible green financial system and mitigating the risk of greenwashing (TCFD, 2022). Together, these regulatory measures represent critical steps toward a resilient financial system, though gaps remain in their comprehensive application.

Carbon taxation (CT) has emerged as a pivotal component of climate policy frameworks, as governments adopt these measures to support decarbonization. Economides and Xepapadeas (2018) developed a New Keynesian model to assess the macroeconomic trade-offs of carbon taxation, finding that while CT may initially reduce economic output, it can stimulate long-term growth. Similarly, Gu et al. (2023), using the Global Trade Analysis Project, demonstrated that although CT may induce short-term economic shocks, it can guide economies toward a green transition. In a stock-flow consistent framework, Dunz et al. (2021) found that CT increases production costs for polluting companies, lowers profitability and market value, and raises default risks, resulting in higher non-performing loans and negative implications for financial stability. Stress tests by Nehrebecka (2021) further indicate that CT diminishes the profitability of non-financial firms, elevating default rates and amplifying credit risk. Together, these studies highlight that carbon taxation represents both a policy tool and a potential source of short-term financial stress, reinforcing the importance of systemic risk assessment.

The banking system has increasingly begun to incorporate climate risks into its operations, particularly in European contexts. Nevertheless, studies reveal significant gaps in the identification, measurement, and management of banks' exposures, making it challenging to predict their vulnerability to climate-related shocks (Sevillano & Gonzalez, 2019). These findings underscore the need for both robust policy frameworks and empirical assessment tools to guide banks' risk management strategies effectively.

Recent empirical studies underscore the impact of climate change on banking operations. Climate factors influence lending behavior, with credit increasingly redirected toward sustainable projects while exposure in high-emission sectors heightens vulnerabilities (Aslan et al., 2022). Evidence from U.S. and European banks shows that climate risks amplify systemic threats, though higher ESG scores may help mitigate these effects for both insurers and lenders (Curcio et al., 2023; Curcio et al., 2024). Cross-country analyses further confirm that climate risks weaken bank stability, particularly in jurisdictions with uneven regulatory frameworks (Garcia-Villegas & Martorell, 2024; Le et al., 2023). Moreover, macroprudential stress testing offers a tool to quantify and address these systemic risks, highlighting the

importance of strengthening capital requirements (DeMenno, 2023).

Empirical evidence further illustrates the impact of climate risks on financial institutions. Zhang et al. (2022) examined the interaction between climate change and the financial stability of China's banking sector, focusing on dependencies between financial institutions and firms in climate-related industries. The study demonstrates that Chinese banks are increasingly financing renewable energy firms over conventional fossil fuel companies. From 2009 to 2019, risk exposure to the renewable energy sector increased by 60%, while exposure to traditional energy decreased by 37%. This shift is attributed to green policy incentives, as banks channel more capital into renewable projects despite risks such as variable profitability and longer investment horizons. Post-2012 data indicate that systemic risk from the renewable sector to banks has surpassed that of conventional energy, reflecting a policy-driven reorientation of economic focus.

At the market level, climate risks increasingly shape asset dynamics. Environmental news coverage has been shown to amplify transition risks, raising the likelihood of stock price crashes (Gan et al., 2024). Managerial perceptions of climate threats can heighten these risks, though transparent corporate disclosures, particularly in markets such as China, help mitigate them (Jung & Song, 2023; Lin & Wu, 2023). Broader implications for asset pricing and interest rates call for revised valuation models that account for climate-related uncertainty (Karydas & Xepapadeas, 2022). Likewise, "growth-at-risk" metrics reveal the potential for economic downturns triggered by climate events, while ESG-driven investments provide a stabilizing buffer during periods of volatility (Kiley, 2024; Naseer et al., 2024). Finally, transition risks also generate cross-border spillovers, underscoring their systemic impact on global stock markets (Wu & Wan, 2023).

Compounded risks, such as the combined effects of COVID-19 and climate-related events, interact with bank lending and government recovery policies, amplifying financial vulnerabilities (Dunz et al., 2023). Cross-country evidence further demonstrates that climate risks undermine stability, with temperature shocks significantly increasing systemic threats in markets such as China (Liu et al., 2024; Song & Fang, 2023). Network analyses of banks and investment funds illustrate how climate risks spread through financial systems, threatening overall stability (Roncoroni et al., 2021). In parallel, frameworks for measuring financial stress under energy transition scenarios capture the disruptions that arise from abrupt or disorderly adjustments (Vermeulen et al., 2021).

Enhancing economic stability through supply chain resilience and circular economy principles can help offset climate-induced disruptions, while integrating climate risks into financial stability frameworks supports green recovery strategies (Li, 2023; Safiullin et al., 2020). Finance-oriented climate stress testing further provides tools to assess the international monetary implications of climate shocks (Reinders et al., 2023).

3. Data and Methodology

Bibliometric analysis is a research method used to evaluate global trends within a specific field by examining outputs of academic publications, often indexed in databases such as Scopus or Web of Science (WoS) (Ellegaard & Wallin, 2015) known for their strong coverage for bibliometric studies (Zhu & Liu, 2020). This approach distinguishes between two main types of research: review papers, which synthesize existing knowledge, and bibliometric studies, which quantify and map research outputs to identify trends, patterns, research gaps, and future directions.

In this study, only the Scopus database was used. Scopus was selected for its broad coverage and detailed metadata, particularly in economics, finance, and environmental studies. Previous comparative studies (Mongeon & Paul-Hus, 2016) have shown that Scopus indexes a wider range of international journals and provides more consistent citation formats than Web of Science. Combining both databases can lead to data duplication and inconsistencies that may

bias network and co-citation analyses. Therefore, to ensure data homogeneity, replicability, and analytical reliability, only Scopus was retained as the source of bibliographic data. Future research may extend this work by comparing results across multiple databases.

For this study, publications from 1988 to 2024 were retrieved from Scopus, which was selected for its academic reliability and well-structured metadata. The starting year, 1988, was chosen because it corresponds to the earliest appearance in Scopus of publications linking climate change to themes of economic and financial stability. The search targeted articles containing the terms "climate risk" and "financial stability" in their titles, abstracts, or keywords, focusing on subject areas such as economics, sociology, business, and decision sciences. This initial search yielded 272 documents. All records were exported in plain text and CSV formats, including bibliographic details, keywords, and citation data.

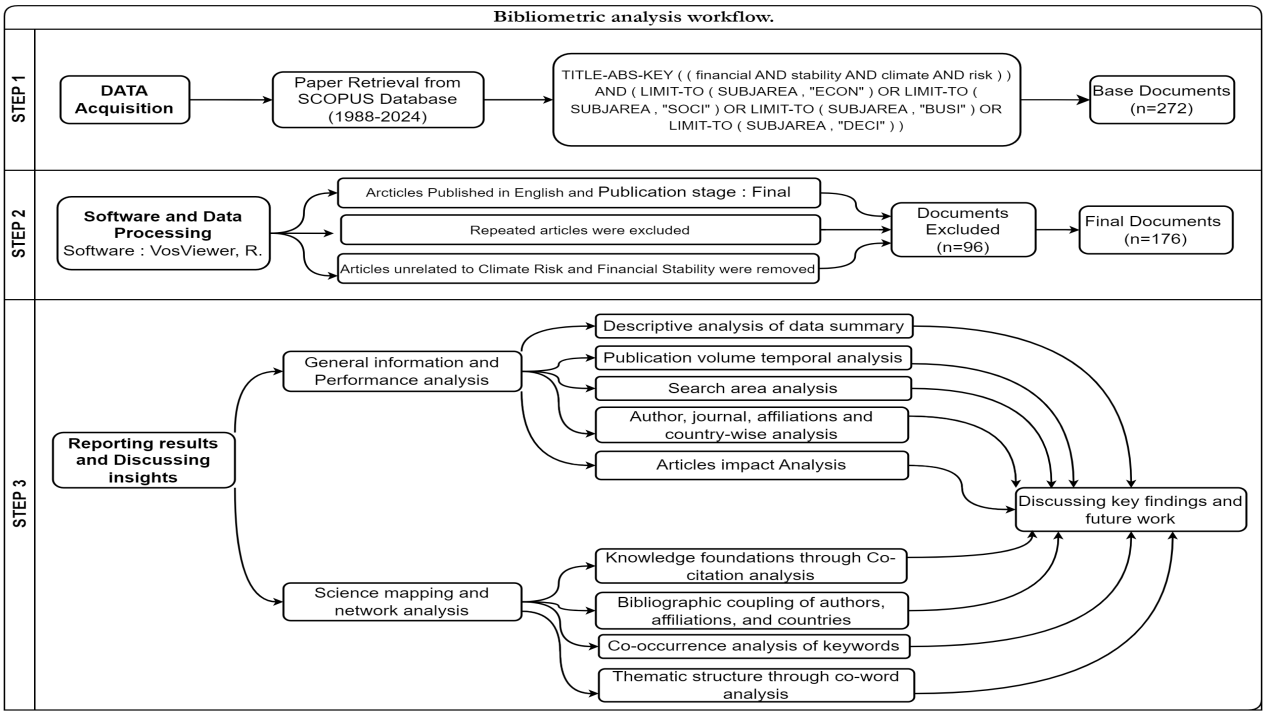
The dataset was then refined to ensure accuracy and relevance. Filters were applied to include only English-language publications, articles at the published stage, and studies where climate risk and financial stability constituted the main focus. Duplicate and irrelevant entries were removed, resulting in a final sample of 176 articles, offering a representative overview of research developments in the field. The dataset was analyzed from two complementary perspectives. The first involved general information and performance analysis across five dimensions: (1) descriptive statistics on the number of documents; (2) article influence, assessed through mapping to identify clusters of related studies and evolving knowledge networks; (3) the role of publication sources; (4) author contributions, ranked by total publications (TP) and total citations (TC), with impact measured as citations per publication (TC ÷ TP); and (5) the distribution of output across countries and organizations, also evaluated using citations per publication.

The second perspective focused on science mapping and network analysis, emphasizing five areas: (1) scientific collaboration networks; (2) the intellectual foundations of the field, explored through co-citation analysis following Small (1973), which highlights works with the highest co-citation indicators; (3) bibliographic coupling among authors, institutions, and countries, a retrospective approach that measures the degree of similarity between documents based on shared references (Zupic & Cater, 2015); (4) co-occurrence patterns within keyword networks, applying a minimum threshold of three to identify thematic focus and interrelationships; and (5) thematic structures, examined through co-word analysis of 250 authors' keywords with a minimum frequency of five, to capture the thematic evolution of research on climate risk and financial stability and expanding on it through Multiple Correspondence Analysis (MCA) of ten documents and fifty pre-selected keywords chosen for their thematic importance.

The analysis leveraged recent advances in visualization and bibliometric tools to extract meaningful insights. Specifically, VOSviewer software (Van Eck & Waltman, 2010) and the R-based Bibliometrix/Biblioshiny package (Aria & Cuccurullo, 2017) were employed to integrate and visualize information from the selected publications, enabling the identification of key research clusters, influential authors, and emerging topics within the domain of climate risk and financial stability.

The overall methodological process of this study is summarized in Figure 1, which illustrates the three-step workflow applied in the bibliometric analysis: data acquisition, software processing, and result reporting.

Figure 1: The outline of research design.



This figure outlines the three-step bibliometric analysis workflow: data acquisition, software processing, and result reporting.

4. Results and discussion

The bibliometric analysis presents results from two perspectives: general information and performance analysis; science mapping and network analysis. Each dimension offers unique insights, collectively providing a comprehensive understanding of the study's findings.

a. General information and performance analysis

The analysis of the publications is based on five dimensions: descriptive statistics of the number of documents, the influence of articles, sources, and authors, as well as the distribution across countries and organizations.

i. Descriptive statistics

476 authors wrote a total of 176 articles. Funding has motivated more researchers to participate in the publication of scientific articles. Collaboration is the key among authors, with 34 authors publishing solely. The annual percentage growth rate of scientific production is about 12.34, indicating a steady growth (Table 1).

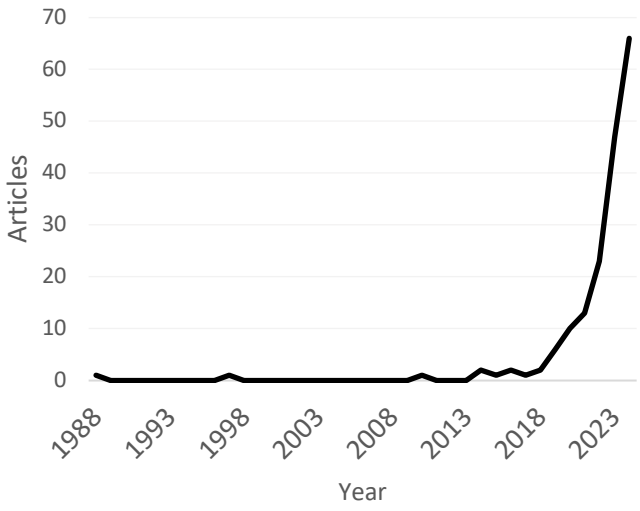
Table 1- Main Information about data.

Description	Results	Description	Results
Timespan	1988 : 2024	References	10496
Sources (Journals, Books, etc)	110	Authors	476
Articles	176	Authors of single-authored Articles	34
Annual Growth Rate %	12,34	Single-authored docs	35
Article Average Age	1,95	Co-Authors per Article	3,01
Average citations per Article	14,08	International co-authorships %	29,55

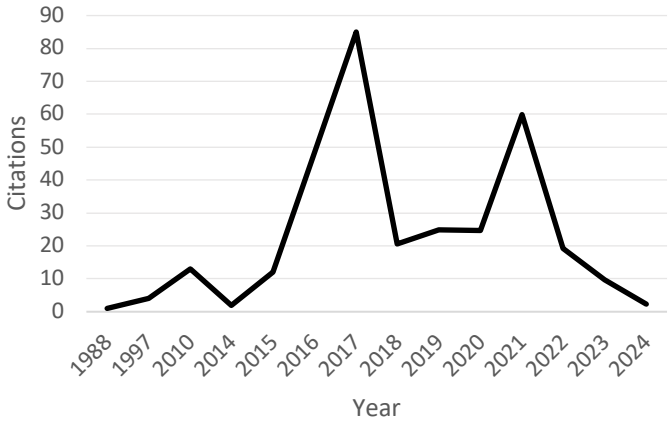
***Source**: Own elaboration with data from Scopus database.*
***Note**: This table summarizes key metrics of the dataset, including timespan, sources, articles, growth rate, article age, citations, authors, and collaboration patterns.*

Figure 2 plots the annual scientific production combined with the citation trend (measured by the average total number of citations per article) over a 36-year period from 1988 to 2024, in order to provide insights into the evolution of scientific publications in the field of climate risk and financial stability. Until 2021, the annual production ranged from 13 to 23, with an average of 14 publications per year. In the last four years, the productivity shows an exponential and sustained increase, with 47 papers published in 2023 and 66 in 2024. This rate of growth in production indicates a growing interest in the study of climate risk and financial stability.
The analysis of citation averages highlighted 2017 as the year with the greatest impact, where articles garnered an average of approximately 85 citations. Following this, 2021 and 2016 had average citation counts of around 60 and 40, respectively. These numbers suggest that key research related to climate risk and financial stability was produced during these years.

Figure 2: The number of publications and citations trend.



(a) Annual Scientific Production



(b) Average Citations Per

This figure illustrates the temporal trends in publication volume and citation patterns over time, highlighting growth and fluctuations in research activity.

ii. Influential articles

Table 2 highlights the distribution of the most influential journals, ranking the top ten according to their citation counts. This provides an overview of the main publication outlets shaping the discourse on climate risk and financial stability.

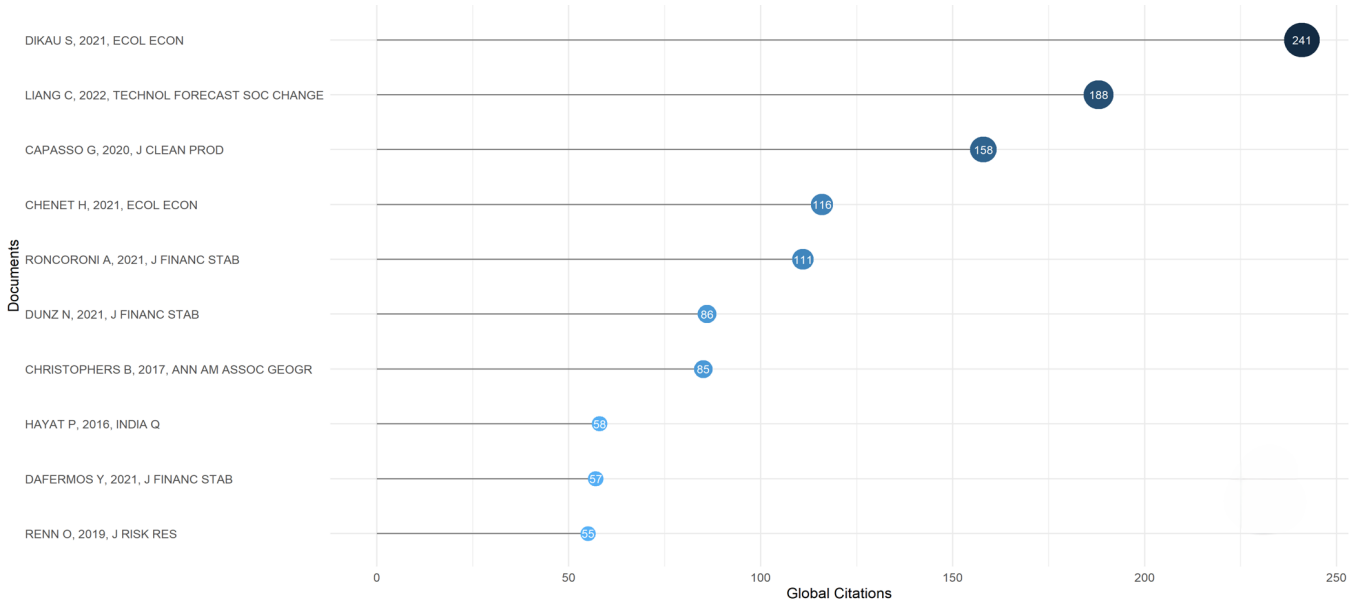
In addition, Figure 3 visually maps the bibliographic coupling of key articles, illustrating the intellectual connections that underpin this research field. Notably, the work of Dikau & Volz (2021) stands out, having accumulated approximately 241 citations for publications produced between 2021 and 2024. This underscores its significant impact and its role as a cornerstone reference within the literature.

Table 2 : Influential articles

Rank	Document	Citations	Rank	Document	Citations
1	DIKAU S, 2021, ECOL ECON	241	6	DUNZ N, 2021, J FINANC STAB	86
2	LIANG C, 2022, TECHNOL FORECAST SOC CHANGE	188	7	CHRISTOPHERS B, 2017, ANN AM ASSOC GEOGR	85
3	CAPASSO G, 2020, J CLEAN PROD	158	8	HAYAT P, 2016, INDIA Q	58
4	CHENET H, 2021, ECOL ECON	116	9	DAFERMOS Y, 2021, J FINANC STAB	57
5	RONCORONI A, 2021, J FINANC STAB	111	10	RENN O, 2019, J RISK RES	55

***Source** : Own elaboration with data from Scopus database. **Note** : This table lists the top influential articles based on citation counts, highlighting key contributions to the field.*

Figure 3: Most cited articles



***Note** : This figure visualizes the top-cited articles, ranking them based on their global citation counts.*

iii. Most relevant sources

In the analysis of the relative importance of article sources based on the number of published documents, the Journal of financial stability was identified as the most significant source, with 241 articles, followed by the International Review of Financial Analysis (188) and the Journal of Cleaner Production (158). Other noteworthy journals include Sustainability (Switzerland) (116) and Energy Economics (111). Journals with fewer contributions, such as Finance Research Letters (86) and Applied Economics Letters (58), also have a significant impact, demonstrating a comprehensive distribution of research output across a diverse range of publications (Table 3).

Table 3 : Influential source

Sources	N. of articles	Sources	N. of articles
Journal of financial stability	241	Finance research letters	86
International review of financial analysis	188	International review of economics and finance	85
Journal of cleaner production	158	Applied economics letters	58
Sustainability (switzerland)	116	Ecological economics	57
Energy economics	111	Journal of financial regulation	55

***Source** : Own elaboration with data from Scopus database. **Note** : This table lists the most influential sources based on the number of articles published in each.*

iv. Influential authors

Table 4 shows the most productive authors, ranked by total number of publications (TP) and total number of citations (TC). Some names stand out for their regular contribution to the literature in the field. BATTISTON S appears as the most cited author with 147 citations, indicating a notable influence in research on this subject. D'ORAZIO P and MONASTEROLO I also figure among the major contributors, both in terms of volume of publications and impact measured by citations.

Table 4- Influential authors.

Author	TP	TC	Author	TP	TC
BATTISTON S	4	147	LIN J-H	3	16
D'ORAZIO P	4	56	UMAR M	3	198
MONASTEROLO I	4	143	ANGELINI E	2	0
DUNZ N	3	110	CASTANHO RA	2	18
KIRIKKALELI D	3	43	CHANG C-H	2	0

***Source** : Own elaboration with data from Scopus database. **Note** : This table identifies influential authors based on their total publications (TP) and total citations (TC).*

v. Influential countries and organizations

Table 5 shows the most influential countries in terms of scientific contributions (TP - Total

Publications) and their impact (TC - Total Citations), analysed using VOSviewer. China has the highest number of publications with 99 documents and a high number of citations with 384, followed by Italy and the USA for their remarkable output. The United Kingdom has a low output of only 29 publications, but a high impact of 348 citations. France and Germany have stable contributions, while countries such as Australia, Ukraine and Turkey have lower figures. This highlights the different levels of research impact and global collaboration between nations (see Table 5 and Figure 4 & 5). Table 6 ranks the most influential organisations in terms of research output: Southwestern University of Finance and Economics has 9, Vienna University of Economics and Business 8 and Shandong Technology and Business University 7. Many institutions, such as De Nederlandsche Bank and the National University of Singapore, follow with 5 or 6 articles each, providing an overview of academic contributions from a wide range of authors around the world.

Table 5 : Most relevant countries by scientific contributions and citations.

Country	TP	TC	Country	TP	TC
CHINA	99	384	FRANCE	26	229
ITALY	52	150	NETHERLANDS	24	68
USA	45	126	AUSTRALIA	19	48
UK	29	348	UKRAINE	19	0
GERMANY	28	110	TURKEY	16	20

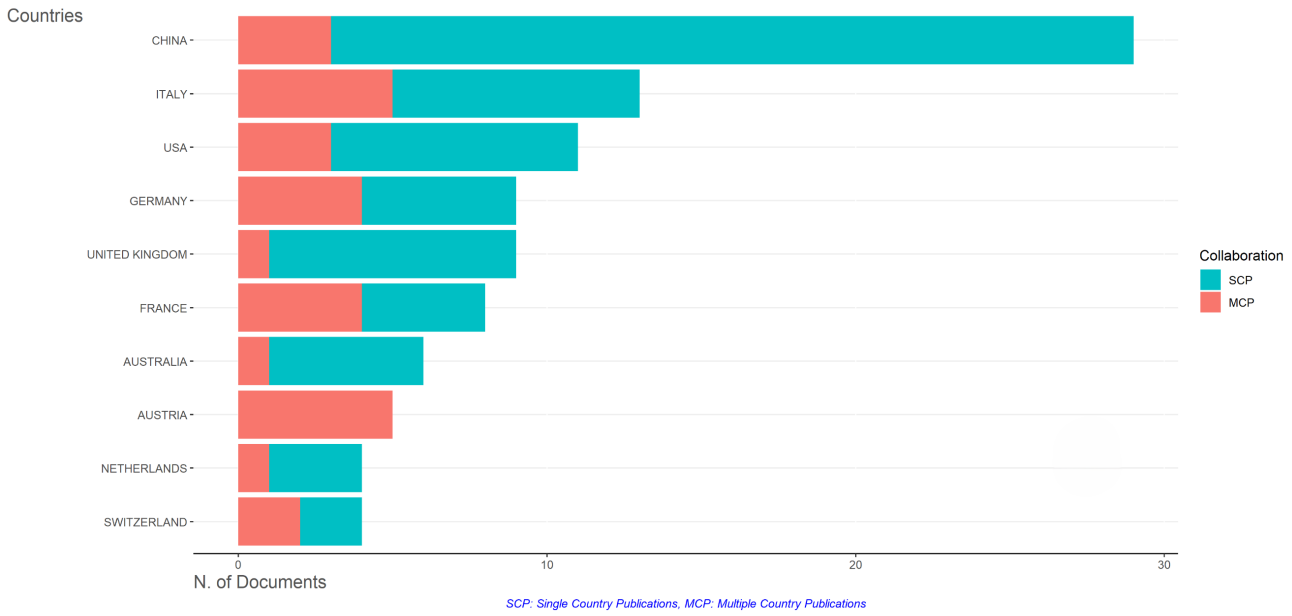
***Source** : Own elaboration with data from Scopus database. **Note** : This table ranks countries based on their total publications (TP) and total citations (TC).*

Table 6 : Influential organizations.

Rank	Affiliation	No. of Articles	Rank	Affiliation	No. of Articles
1	SOUTHWESTERN UNIVERSITY OF FINANCE AND ECONOMICS	9	6	EUROPEAN UNIVERSITY OF LEFKE	6
2	VIENNA UNIVERSITY OF ECONOMICS AND BUSINESS	8	7	NATIONAL UNIVERSITY OF SINGAPORE	6
3	SHANDONG TECHNOLOGY AND BUSINESS UNIVERSITY	7	8	STATISTICS AND RESEARCH	6
4	CHINA UNIVERSITY OF MINING AND TECHNOLOGY	6	9	KABUL UNIVERSITY	5
5	DE NEDERLANDSCHE BANK	6	10	UNIVERSITY OF BOLOGNA	5

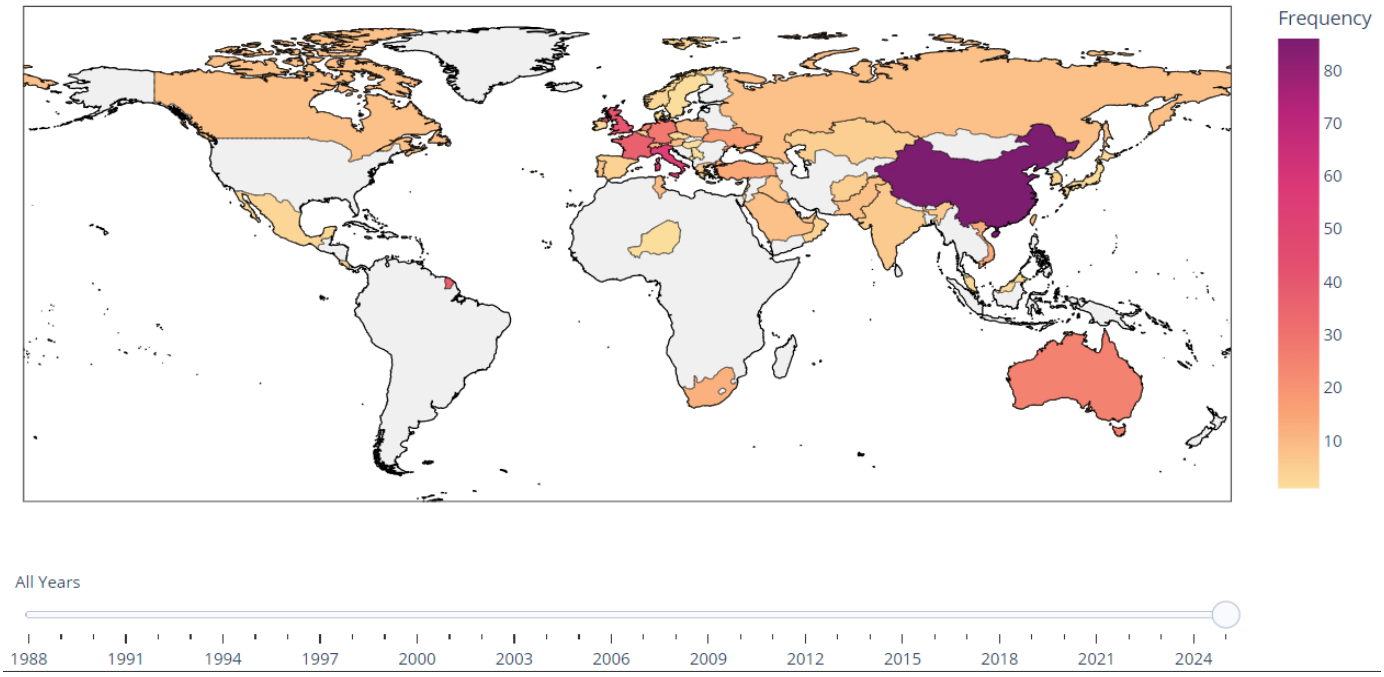
***Source** : Own elaboration with data from Scopus database. **Note** : This table lists the number of articles/topics for each organization.*

Figure 4 : Country production based on the corresponding authors



Note *: This figure shows the distribution of publications by country, distinguishing between single-country publications (SCP) and multiple-country publications (MCP).*

Figure 5 : Country scientific production



Note *: This figure visualizes the global distribution of scientific production across countries, with color intensity indicating frequency over time.*

b. Science mapping and network analysis

The analysis focuses on science mapping and network analysis, with a particular emphasis on five key dimensions: the analysis of scientific collaboration networks, the investigation of knowledge foundations through co-citation analysis, the mapping of bibliographic coupling between authors, affiliations, and countries, the exploration of co-occurrence patterns within keyword networks, and the analysis of thematic structures through co-word analysis.

i. Scientific collaboration network

Figure 6 depicts the co-authorship network of authors who have published at least two co-authored papers and have been cited at least ten times (41 authors). The illustration demonstrates that there is a notable lack of collaboration between co-authors in the scientific literature. Figure 7 illustrates the co-authorship network of the author's affiliated institutions. Of the 15 selected affiliations (at least 2 publications with at least 10 citations), the largest set of connected affiliations consists of 8 nodes. It is notable that the majority of institution collaborations are within the same country, which may be attributed to geographic proximity. Figure 8 illustrates the author's affiliation countries collaboration network, comprising 57 countries (out of 16 with at least 5 publications and 50 citations each) arranged in four clusters.The red cluster contains six countries, including the United States, Italy, and Germany, which serve as a hub for co-authorship publications in the field of climate risk and financial stability.

Figure 6: Co-authorship network visualization of relevant authors.

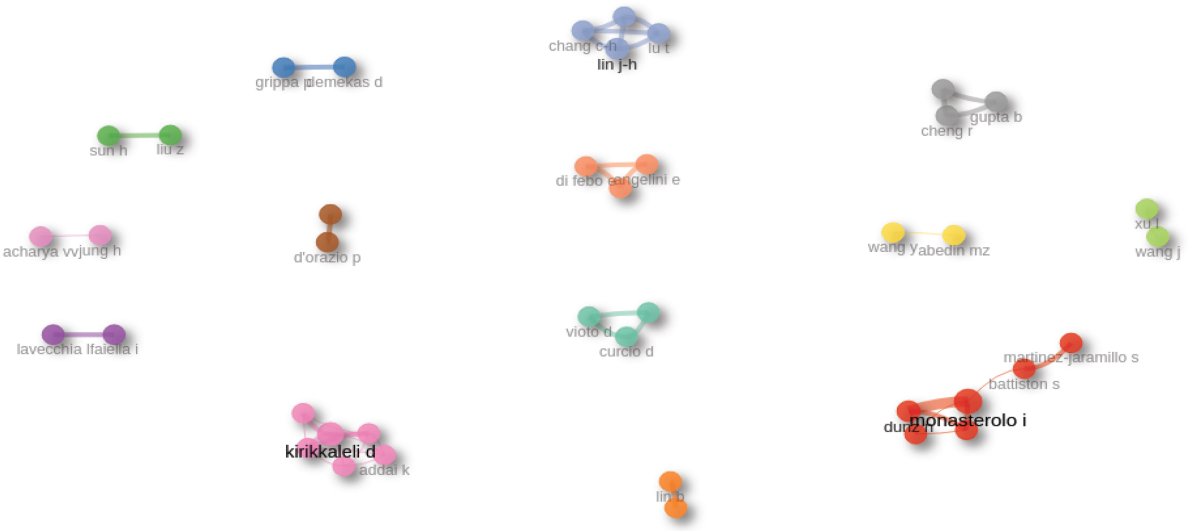
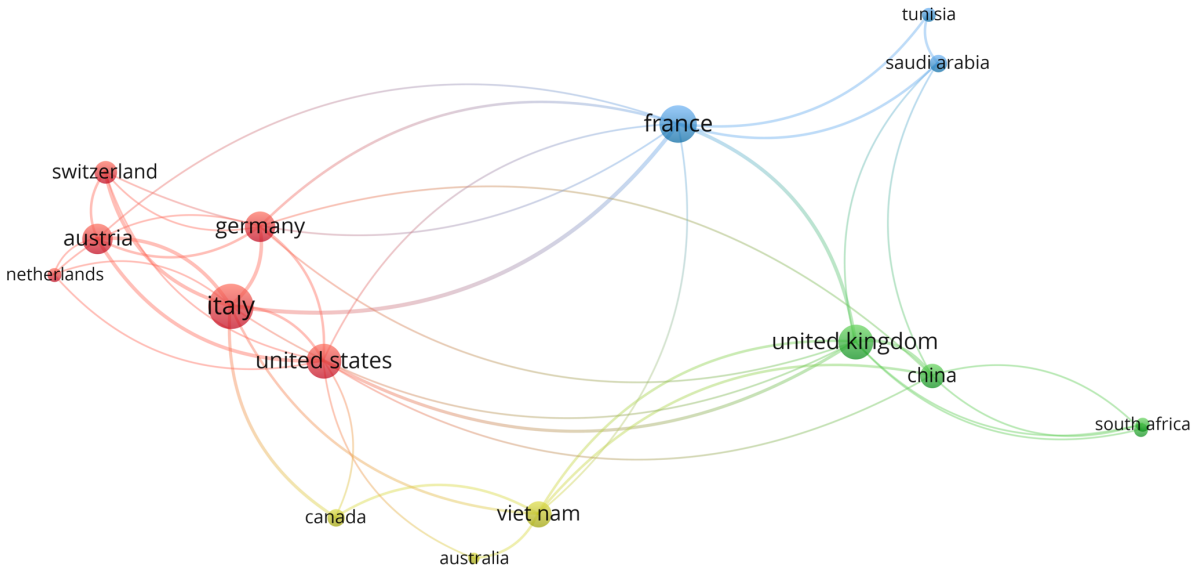


Figure 7 : Co-authorship network visualization of relevant affiliations

Figure 8 : Co-authorship network visualization of relevant countries



ii. Knowledge foundations through co-citation analysis

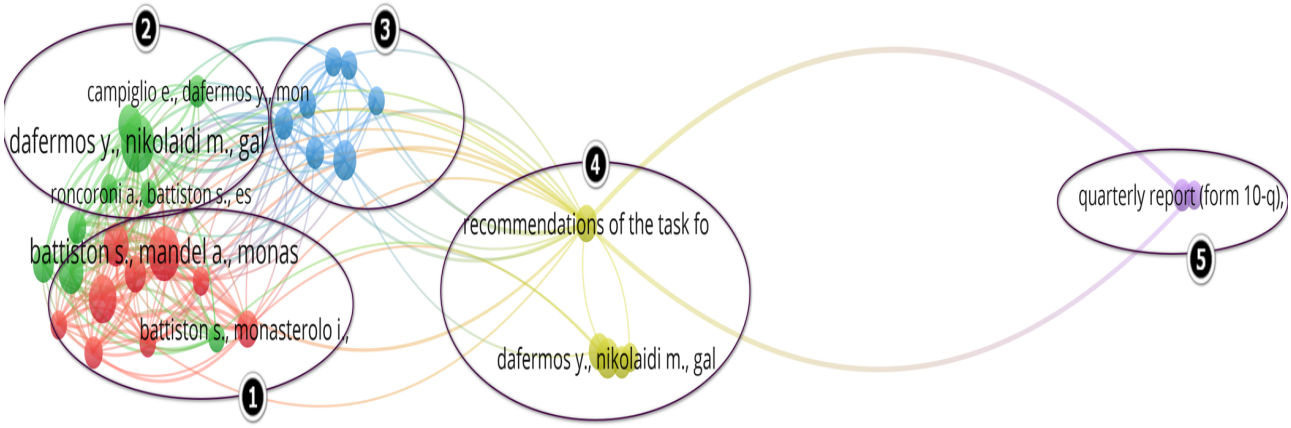
Co-citation analysis, as applied to the work of Small, H. (1973), represents an effective approach of defining the research knowledge foundations, or intellectual structures, represented by the papers with the highest co-citation indicators among citing publications. Figure 9 shows that co-citation analysis of 32 co-cited references (with at least 5 co-citations) suggests five foundational research clusters in the field of Risk, Climate, and Financial Stability.

The first cluster focuses on climate stress-testing within financial systems, with a particular focus on the work of (Battiston et al., 2017 ; Acharya, et al., 2023). The cluster examines the systemic risks posed by climate change, emphasising the development of novel methodologies for integrating environmental risks into financial risk assessment. Meanwhile, cluster 2 is grounded in the research of Dafermos, Y., Nikolaidi, M., and Galanis, G. (2018), which explores the nexus of climate change, monetary policy, and financial stability. This cluster explicitly addresses the manner in which climate risk factors exert an influence on macroeconomic and financial systems, thereby providing insight into the role of policy interventions as a means of mitigation.

Cluster 3 is defined by Mark Carney's (2015) influential speech, "Breaking the Tragedy of the Horizon," in which the long-term challenges posed by climate change on financial systems are elucidated. It emphasises the imperative of incorporating climate risk considerations into financial regulation and policy-making. This cluster reflects the increasing awareness among global policymakers and financial institutions of the necessity to address the systemic risks associated with climate change. Cluster 4 revolves around the work of the Financial Stability Board (2017), with a particular focus on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). The objective is to enhance transparency and accountability regarding the manner in which organizations assess and disclose climate-related risks and opportunities. The research conducted within this cluster emphasizes the necessity for the implementation of standardized reporting frameworks, which would assist financial markets in the valuation and management of climate risks in an effective manner. It serves as an important conduit for the integration of corporate governance and climate risk mitigation, thereby enabling informed decisions on the part of stakeholders.

Finally**,** Cluster 5 presents references such as the 2020 Quarterly Report, Form 10-Q, with an emphasis on corporate disclosures and reporting of climate-related risks. This cluster serves to illustrate how assessments of climate risk, in practice, are part of the perspective of regulatory compliance and financial disclosure. Furthermore, it demonstrates how corporate governance can address and minimize climate risks by providing transparency and accountability.

Figure 9: References Co-citation network.



***Note** : This figure depicts the co-citation network of references, with a threshold of 5 co-citations, illustrating key connections and clusters in the literature.*

iii. Bibliographic coupling of authors, affiliations, and countries

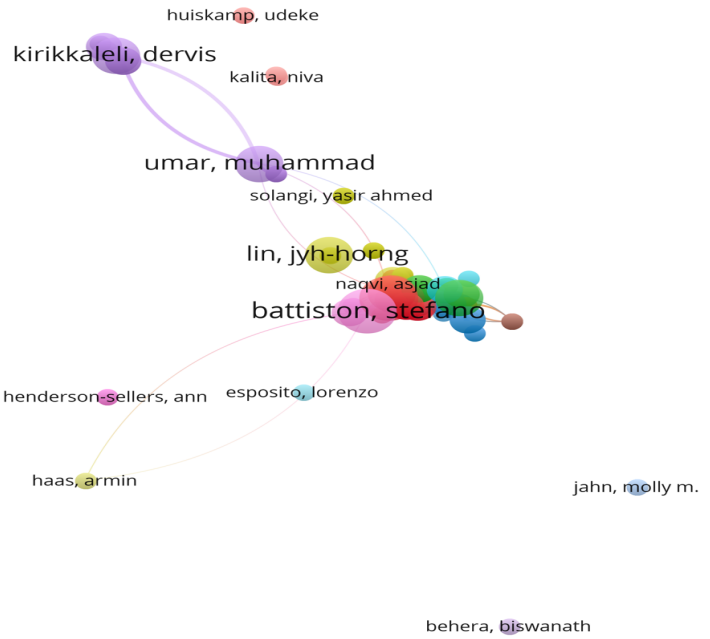
In contrast to the forward-looking perspective offered by co-citation, bibliographic coupling is a retrospective approach. The number of references shared by two documents serves as the basis for measuring bibliographic coupling (Zupic et al, 2015). The strength of the bibliographic coupling can be determined by the total number of references or citations of other second-party documents that the two items under consideration share. In this respect, bibliographic coupling provides an indication of their respective strengths of connection, specifically with regard to shared fields of focus. Figure 10 displays the bibliographic coupling of authors who publish in the fields of financial stability and climate risk (Fan et al, 2024).

Figure 11 depicts the bibliographic coupling of author affiliations, illustrating a network of interconnectivity between universities engaged in climate risk and financial stability studies. The network comprises 16 distinguishable clusters, with the largest cluster (red) linking 27 universities. It is notable that the most productive and influential universities in climate risk and financial stability economics also appear to exert influence in bibliographic coupling (Table 6).

Figure 12 presents the bibliographic coupling of countries with existing contributions in the field of financial stability and climate risk. Bibliographic coupling of countries occurs when publications from two countries reference publications from a third country.

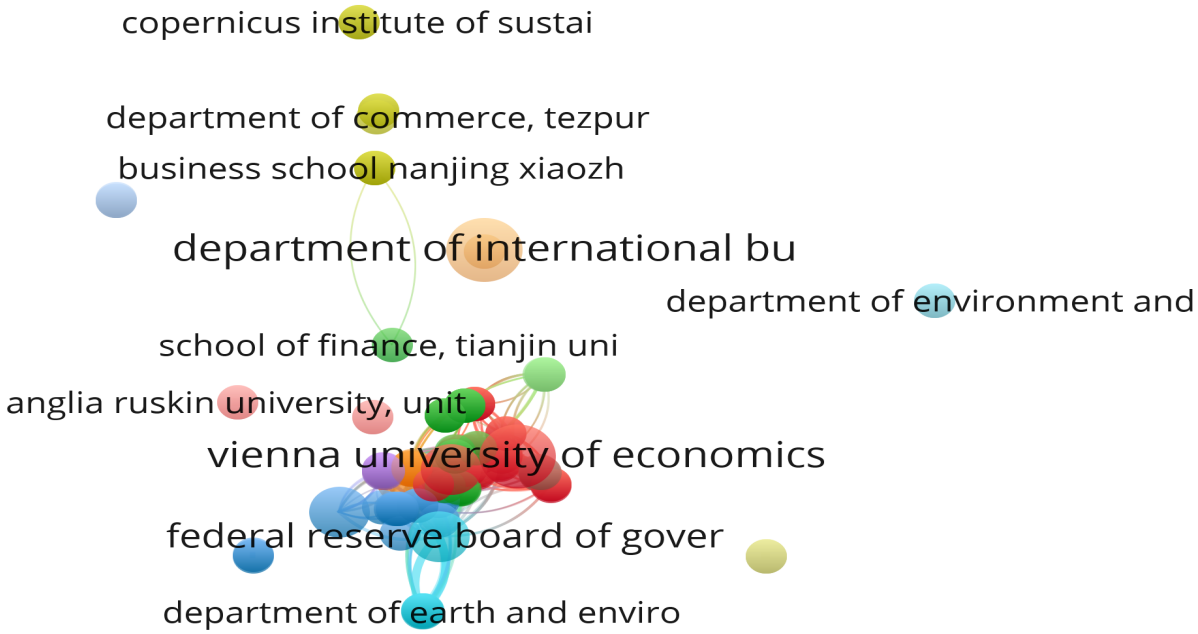
The figure suggests that the USA, China, Germany, and Italy have a central influence in the field. However, it also illustrates frequent coupling among other countries, including Australia, South Africa, and Switzerland.

Figure 10: Bibliographic coupling of authors



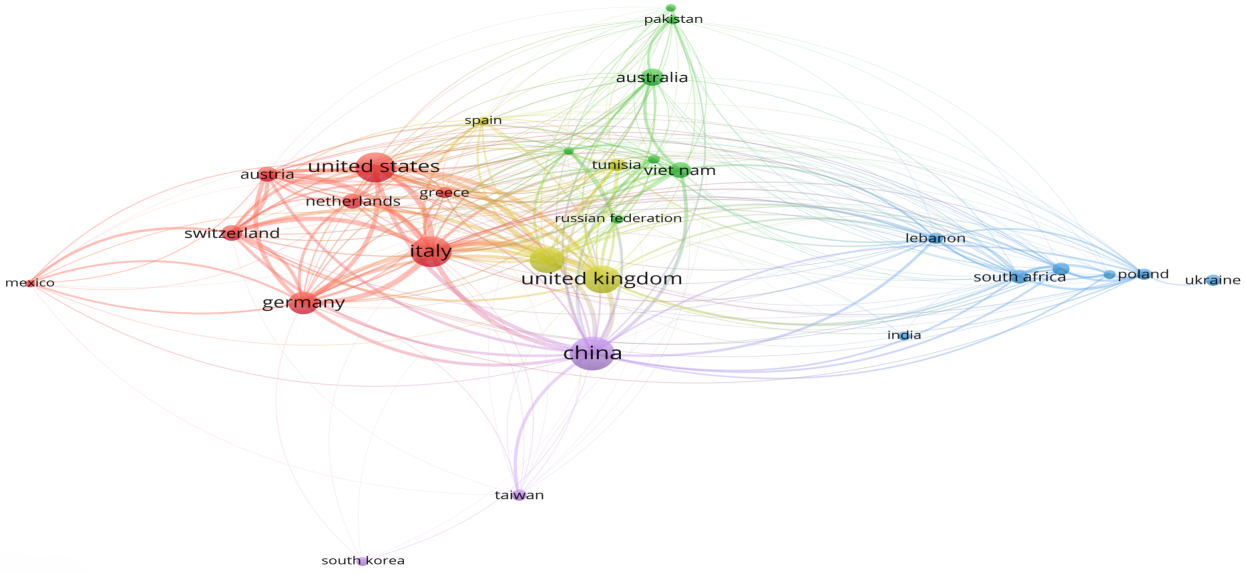
Note: Minimum publication threshold of 1 documents and 10 citations.

Figure 11: Bibliographic coupling of affiliations.



Note: Minimum publication threshold of 1 document and 10 citations.

Figure 12: Bibliographic coupling of countries.



Note : Minimum publication threshold of 2 documents and 10 citations.

iv. Co-occurrence analysis of keywords

The co-occurrence analysis carried out with VOSviewer helped identify the most frequently used keywords across the dataset. Setting a minimum co-occurrence threshold to three, it underlines the most frequently used keywords and gives deeper insights into the thematic focus and its interrelations in the research. It shows five clusters, each contributing to a different perspective on the interaction between climate risk and financial stability.

This study reveals several essential themes related to the effects of climate change on financial stability. A major focus is placed on risk assessment, specifically the tools and methodologies that are used to analyze climate risks. This involves evaluating credit risk, default risk, and physical risks, which are crucial for identifying vulnerabilities in the financial system. The aim is to quantify potential losses arising from climate events and to guide the formulation of mitigation strategies and policy decisions (Dietz, Bowen, Dixon et al, 2016; Fan et al, 2024; Daumas, 2024).

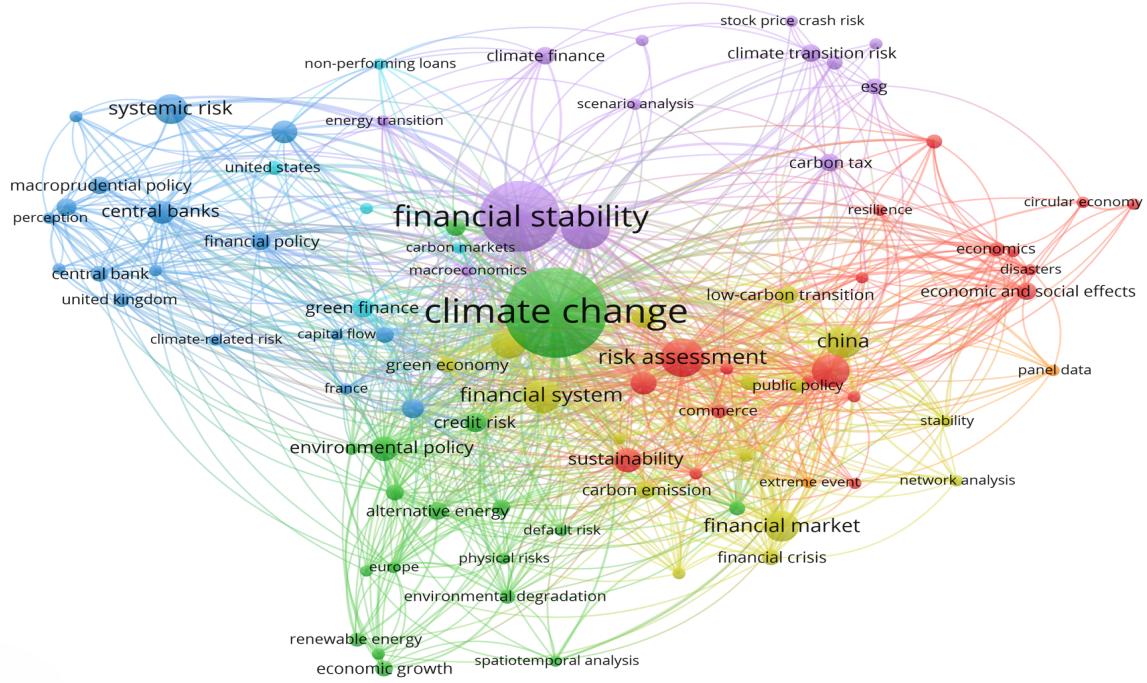
An essential aspect of research investigates how climate change interacts with economic and financial systems. Concepts like "carbon markets," "green economy," and "renewable energy" illustrate the growing integration of environmental objectives into economic frameworks (Chen, Huang, et al, 2023; Vaze, Meng, et al, 2019; Yang, Li et al, 2023; Li, 2023).

The analysis of systemic risk is a significant issue, especially concerning financial stability. Important aspects include macroprudential policies, the functions of central banks, and the handling of non-performing loans. These factors contribute to a deeper understanding of regulatory frameworks and the strategies employed to reduce risks that may threaten the stability of the financial system as a whole (Chabot et al, 2023; Campiglio, Daumas, Monnin et al, von Jagow, 2023; Yang, Li et al, 2023; Conlon, Ding, Huan et al, 2024; Ojea-Ferreiro, Reboredo et al, 2024).

The connection between the financial system and climate change is a subject of growing research interest. Key indicators such as capital flows, environmental policies, and economic growth are utilized to assess how financial frameworks respond to sustainability challenges (Schellhorn, 2020; Fabris, 2020; Durrani et al., 2020; Dikau et al, 2021; Diluiso et al., 2021; Vollmer, 2022).

Ultimately, the effects of climate change on financial stability are central to contemporary issues. This analysis delves into areas such as macroeconomics, climate finance, and the transition to renewable energy to uncover strategies that can preserve financial stability amid climate-related challenges (Dafermos et al., 2018; Dunz, Naqvi et al, 2021; Chenet et al., 2021; Roncoroni et al., 2021).

Figure 13: Network visualization of keyword co-occurrence.



***Note** : This figure illustrates the co-occurrence network of keywords related to "climate risk" and "financial stability," based on a dataset of 176 articles from the Scopus database.*

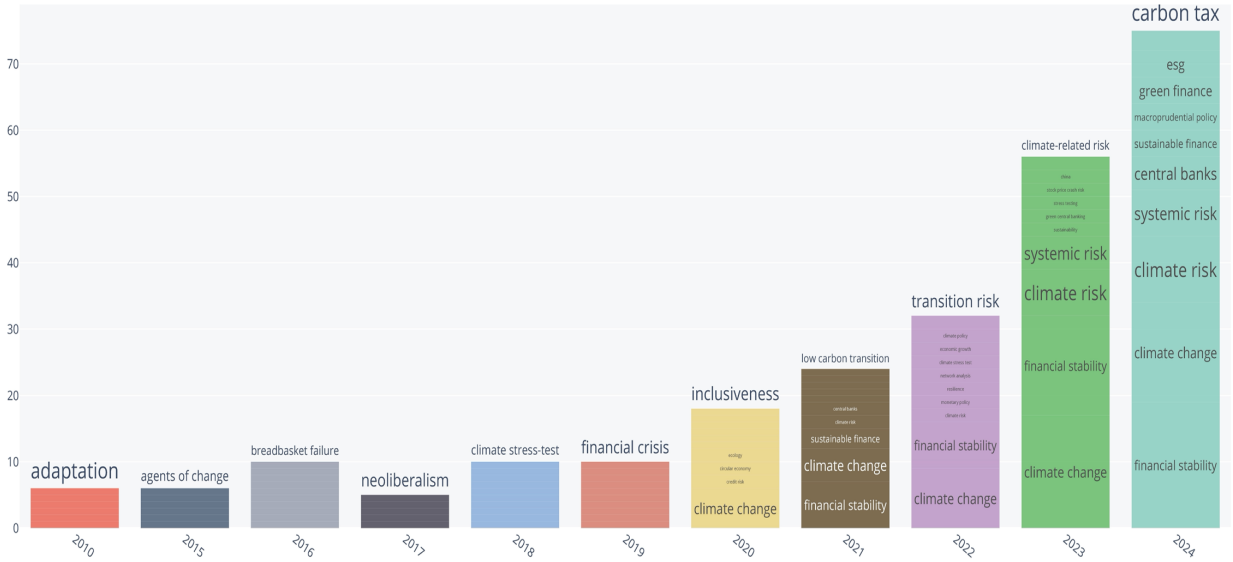
Future research can explore and analyze the relationships between the variables or keywords in Figure 13 by looking at how interrelated they are. This will help identifying research gaps and the analytical frameworks that have been employed based on the publications that have discussed these variables and keywords. The following are the top 10 keywords based on frequency of occurrence in table 7, which is derived from the same Scopus database on financial stability and climate risk.

Table 7 : Top keywords for climate risk and financial stability based on number of occurrences of keyword

No	Keyword	Occurrences
1	Climate Change	74
2	Financial Stability	51
3	Climate Risk	23
4	Risk Assessment	20
5	Sustainable Development	16
6	Financial System	16
7	Financial Market	14
8	Systemic risk	13
9	Environmental Economics	10
10	Finance	9

Source : Own elaboration with data from Scopus database. **Note(s)** : This table lists the top keywords related to "climate risk" and "financial stability," ranked by their frequency of occurrence in the dataset.

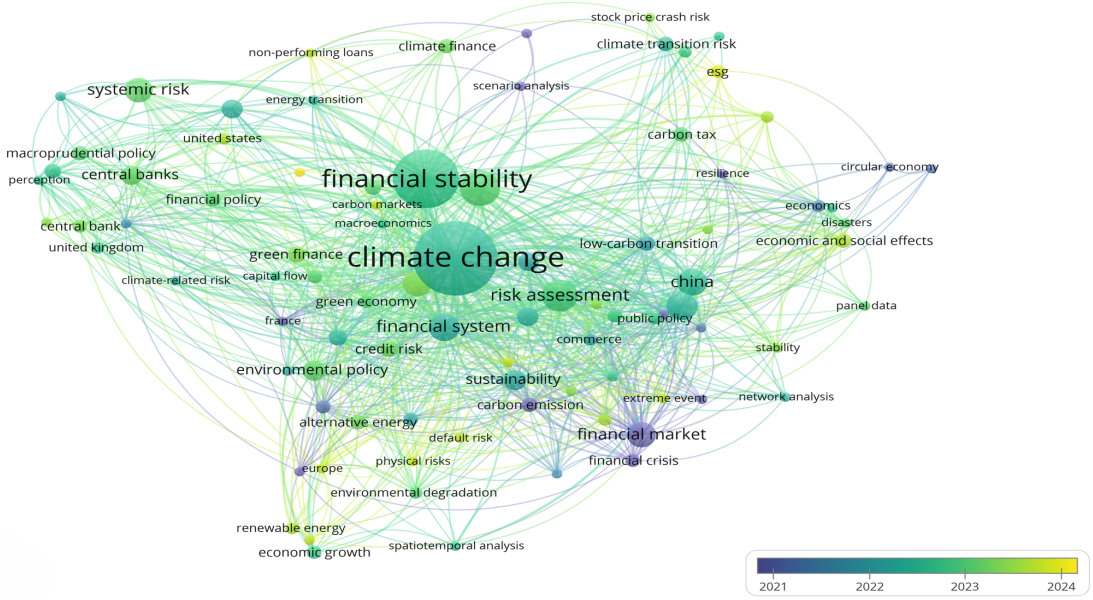
Figure 14 : Yearly trends in the occurrence of keywords



***Note**: This figure shows the yearly trends in keyword occurrences (n = 176) based on the Scopus database, highlighting key terms and their fluctuations over time.*

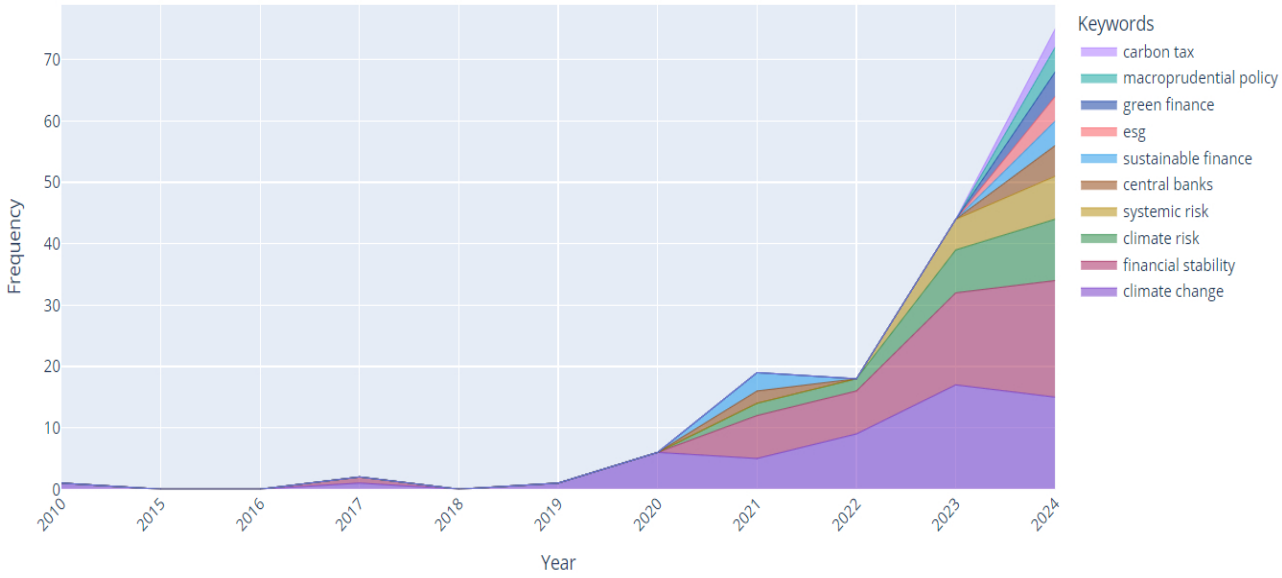
As can be seen from Table 7, the keyword "climate change" is the most utilized, appearing 74 times. "Financial stability" (51 occurrences) and "climate risk" (23 occurrences) are the next two most frequently occurring keywords. Other keywords that alternately show up in Figure 13 are environmental economics, finance, systemic risk, sustainable development, risk assessment, and financial system and market. This suggests that many studies on climate risk and financial stability center on how climate change affects the financial system. The fact that the keyword "climate change" is so prevalent shows how important it is when talking about financial risk. In other words, before discussing how these climate concerns affect financial stability, researchers typically begin their analysis from the perspective of climate change. Figure (14-15-16) below illustrates the changing relationships between keywords associated with financial stability variables and climate risk over time.

Figure 15: Overlay visualization of keywords based on the average frequency of occurrence between 2021 and 2024



Note: This figure highlights the evolving focus on climate risk and financial stability

Figure 16: Yearly trends in the occurrence of keywords (n = 176) based on the Scopus database. by tracking the frequency of key terms over time.

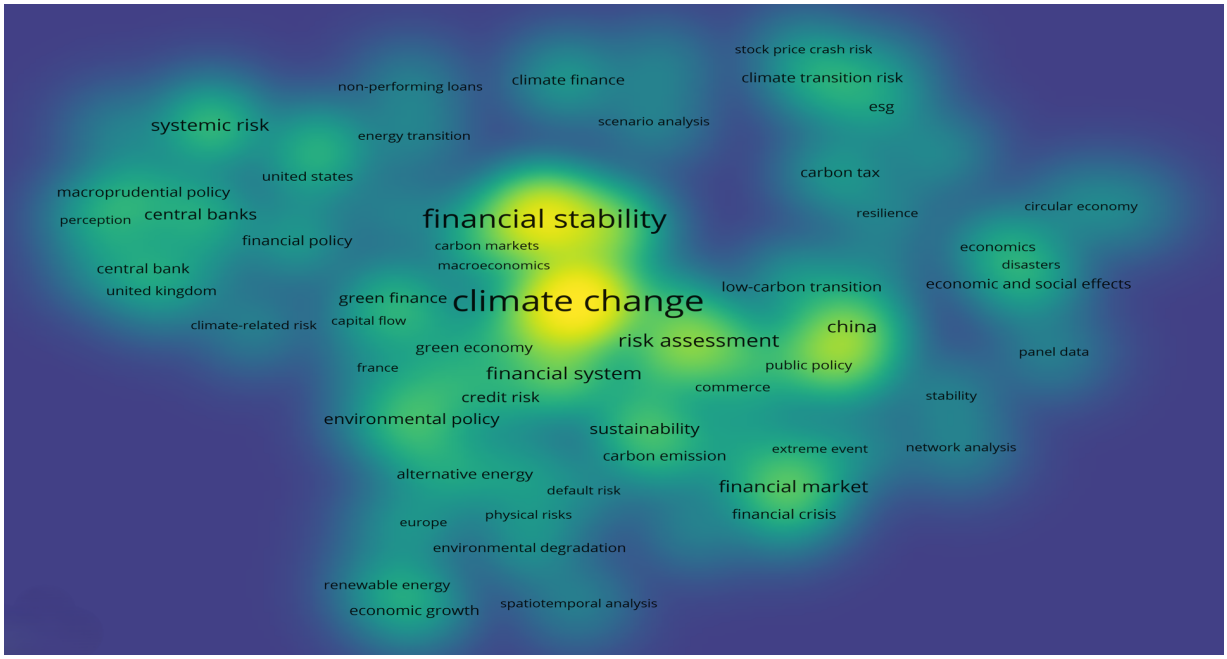


Note : This figure highlights the evolving focus on climate risk and financial stability

The keywords appearing from 1988 to 2024 can be observed from their size, as shown in Figure (14-15-16). In 2022, the keyword 'climate change' was the largest, indicating that it was the most frequently used keyword in that year. It was followed by the keywords 'sustainability' and 'climate finance', as well as other variables or keywords. From 2022 to 2023, the keyword 'financial stability' became the most important, indicating that it was the most used during this period, followed by 'climate risk', 'climate finance' and other variables or keywords.
Climate risk refers to the risks arising from climate change that affect financial stability, through

physical risks and transition risks. The interaction between these risks has the potential to exacerbate instability in the financial system, particularly within interconnected networks of financial institutions, making climate risk management a critical issue for financial authorities. Next, using the same software, VOSviewer, a bibliometric (density) analysis was performed on the same database, yielding the results shown in Figure 17.

Figure 17: Trends in Keyword Occurrences (n=176) Based on the Scopus Database.



Note : This figure visualizes the spatial distribution of keyword occurrences, highlighting clusters around "financial stability" and "climate change."

"Climate change" is the most frequently used keyword, as shown by its largest size in Figure 17. This is followed by the keyword "financial stability" and "climate risk", as well as other variables or keywords. The results of the bibliometric literature analysis in Figure 14, using articles from the Scopus database, and the results of the same study in Figure 15 show that the keywords 'climate risk', 'climate change' and 'financial stability' are highly valued. Furthermore, the smaller font size of the keywords in Figure 17, such as 'environmental policy', 'climate finance' and 'sustainable finance', suggest that these topics or variables have not received much attention and thus offer prospects for future research directions.

v. Thematic structure through co-word analysis

We used a co-word analysis of the authors' keywords (number of words = 250, minimum frequency = 5) and created a two-dimensional thematic map in Figure 18 to further examine the thematic structure and evolution of research on climate risk and financial stability.

Some research topics, like commerce, credit risk, and decision-making have solid theoretical and methodological backing (Agliardi et al, 2021; Heo, 2024; Ojea-Ferreiro et al., 2024), they tend to stay within their own lanes a bit. There's a real opportunity to connect this work with broader, interdisciplinary themes. Take credit risk assessment, for example – despite the progress, we could really benefit from linking it to things like systemic financial risk or even climate policy. Bringing this specialized knowledge into newer fields like environmental finance or climate economics could make it much more useful and relevant.

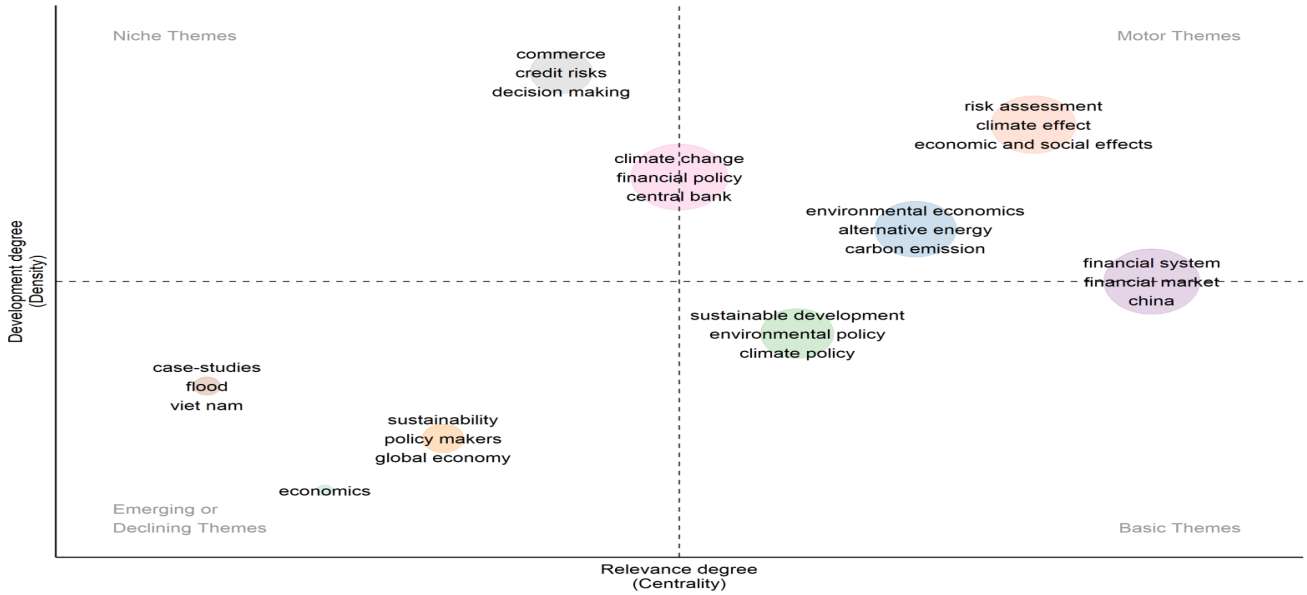
On the other hand, topics such as risk assessment, climate effects, and socio-economic impacts are key for tackling global challenges (Monasterolo, 2020; Dunz, Naqvi et al, 2021). This research helps us build practical models to lessen the socio-economic fallout from climate change, especially in vulnerable areas. The attention these subjects get in the literature highlights their potential to spark new ideas and real-world solutions.

In addition, frequently cited topics like the financial system, financial markets, and China remain fundamental to the structural architecture of the field (Monasterolo, 2020). While essential for linking diverse research threads, these areas often lack in-depth specific analyses. A more comprehensive exploration of China's financial market, particularly concerning financial stability and climate risk, could yield valuable insights and facilitate more integrated investigations.

In order to find the conceptual structure in a corpus of documents, the method of Multiple Correspondence Analysis (MCA) was used. A set of ten documents and fifty pre-selected keywords based on topic importance were used in this research. MCA is very useful for revealing latent dimensions in the data set by highlighting clusters of co-occurrence and showing the interactions between terms (Figure 19).

The relationship between financial stability and climate policy is a central theme in Cluster 1, which shows how financial stability and climate policy are intertwined. Research focused on the transition to sustainable economic models is reflected in the prevalence of keywords such as low-carbon transitions, public policy, climate risk, and financial stability. This team explores how economic resilience and climate risk mitigation can be achieved through policy initiatives.

Figure 18 : Thematic Map through co-word analysis.



This figure presents a thematic map based on co-word analysis, illustrating the relationships between key themes and their relevance and development.

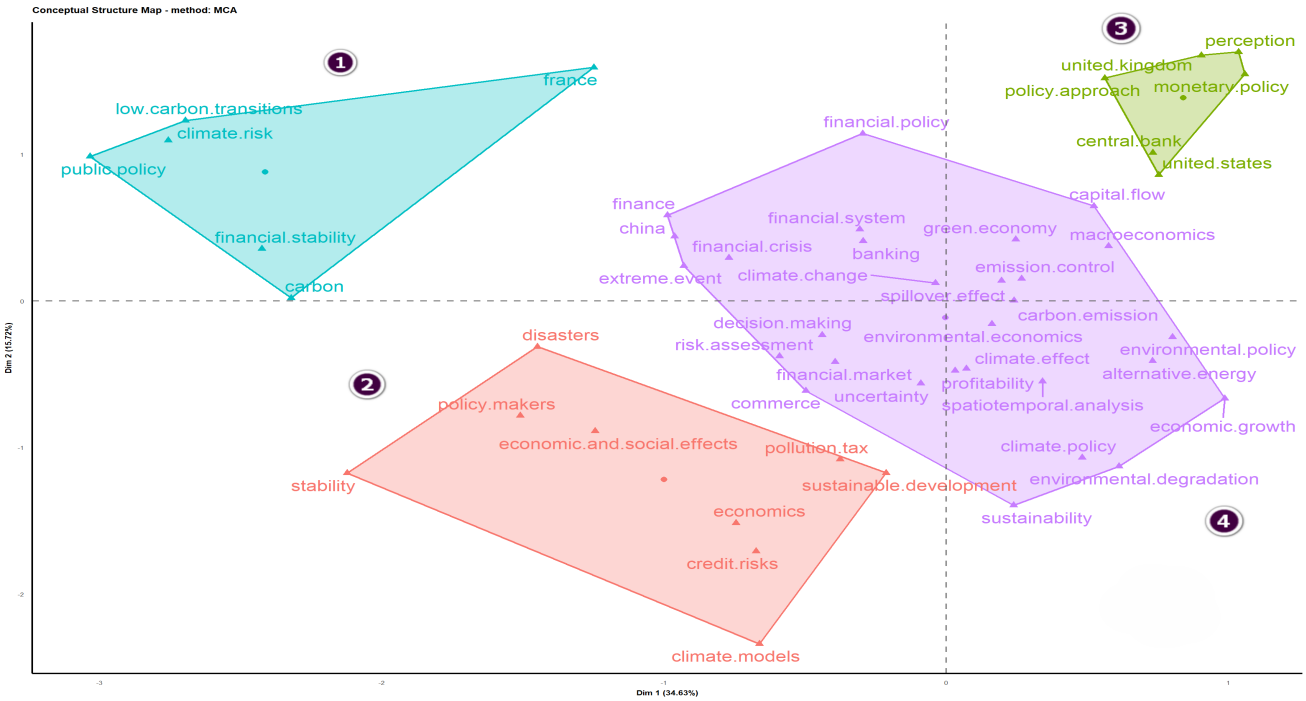
In Cluster 2, attention shifts to the socio-economic impacts of environmental challenges, as indicated by phrases such as economic and social effect, policy makers and pollution tax, this cluster focuses on the socio-economic effect of climate issues. It draws attention to the need to assess systemic risks, such as credit and catastrophe risks, and their broader impacts on social cohesion and economic stability.

A strong focus on sustainability emerges in Cluster 3, which combines emissions control,

financial policy, climate change and the green economy. It promotes studies that focus on sustainability and examine how alternative energy sources and policy frameworks can support economic growth.

Finally, international dimensions of climate policy are addressed in Cluster 4, which combines geographic keywords such as the United States and the United Kingdom with policy approach and monetary policy. This cluster explores the role of central banks and policy perceptions in mitigating climate risks globally, reflecting a governance-oriented perspective.

Figure 19 : Conceptual structure Map , Method (MCA).



Note: This figure depicts a conceptual structure map using Multiple Correspondence Analysis (MCA), illustrating the relationships and groupings of key concepts in the dataset.

Beyond descriptive mapping, these findings reveal a critical gap between research output and practical policy implementation. Although climate-related financial risks are increasingly recognized, empirical validation of regulatory responses remains limited. The fragmentation of research clusters suggests that the field still lacks an integrated framework linking macroprudential policy, market behavior, and climate governance. Addressing these conceptual and methodological gaps is essential for advancing from descriptive analyses toward actionable, policy-relevant insights.

c. Limitations and Future research gaps

Among the many limitations of the current study is the lack of longitudinal studies specifically designed to assess the long-term impact of climate risk on financial stability. Such studies could provide insightful information and a better understanding of how climate risk changes over time and affects financial institutions. In addition, research published in non-English journals may provide important information that was missed in this research. Furthermore, limiting the search to terms related to "climate risk" and "financial stability" may result in excluding studies that are relevant but do not explicitly use these terms. This is due to the variable terminology used by authors, such as "environmental risk," "sustainable finance," or "climate-related financial

risks," which may not explicitly refer to these terms. It would be beneficial for future research to consider comparing results from multiple databases, such as Scopus and Web of Science, to ensure comprehensive coverage. It should be noted that Web of Science includes unique features such as the identification of "hot articles" that highlight trending studies, but this functionality is not available in Scopus. Integrating such comparisons could improve the reliability and scope of future literature reviews.

These limitations slow the evolution of the field by preventing the establishment of a unified conceptual model that integrates financial regulation, climate stress testing, and market adaptation mechanisms. Without such integration, policy frameworks remain fragmented, and cross-country learning is constrained.

To overcome these limitations, future research could adopt hybrid bibliometric–econometric models combining network analysis with dynamic panel data to quantify the causal effects of climate risk on financial stability. System dynamics or stock-flow consistent models (as proposed by Dunz et al., 2021) could also be extended to simulate cross-sectoral climate-finance interactions and policy impacts.

Future research should focus on the development of advanced models for predicting climate risks, using a variety of data sets beyond the usual sources such as Scopus. Such models can improve our understanding of how physical and transition risks affect economic stability. There is also a need to explore new ways of integrating climate concerns into risk management, financial policy and portfolio optimization frameworks.

Collaboration between researchers around the world, particularly between developed and developing countries, is essential to address these challenges comprehensively. The governments and international organizations should give adequate funds to encourage cross-border collaboration and support creative research techniques. These undertakings will not only enhance climate risk assessment but also support the development of effective government policies and private plans that meet the complicated risks posed by climate change.

5. Conclusion

This paper demonstrates a steady upward trend in scientific production on climate risk and financial stability, with an annual growth rate of 12.34% with an acceleration in recent years, while 2017 remains the most impactful year. The most influential contributing countries are China, Italy, United States; however, overall collaboration is lacking and highly dependent on geographical proximity. Five principal research clusters were identified: (1) climate stress-testing within the financial system, (2) climate change, monetary policy, and financial stability, (3) integration of climate risk into financial regulation and policies, (4) transparency and accountability, and (5) corporate governance and climate risk. Co-occurrence and co-word analyses confirm that risk assessment, financial system stability, socio-economic consequences, sustainability, and international climate policy dominate the field.

Significant advances have been achieved in the climate change and financial stability nexus; nonetheless, significant gaps remain. A lack of longitudinal studies assessing long-term climate risk impacts, limited cross-country collaboration, and an underexplored role of insurance in managing environmental risks. To address these limitations, the development of robust prediction models, enhanced international cooperation, and greater interdisciplinary engagement is required.

Overall, we achieved the objective of our paper through the bibliometric analysis addressing the climate change and financial stability nexus through the determination of gaps and future routes for academics and policymakers. Against the accelerating climate change, safeguarding financial stability is of paramount concern.

6. References

- Acharya, V. V., Berner, R., Engle, R., Jung, H., Stroebel, J., Zeng, X., & Zhao, Y. (2023). Climate Stress Testing. *Annual Review of Financial Economics, 15*, 291 – 326. doi:10.1146/annurev-financial-110921-101555
- Agliardi, E., & Agliardi, R. (2021). Pricing climate-related risks in the bond market. *Journal of Financial Stability, 54*. doi:10.1016/j.jfs.2021.100868
- Allen, W. A., & Wood, G. (2006). Defining and achieving financial stability. *Journal of financial stability, 2*, 152–172.
- Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of informetrics, 11*, 959–975.
- Aslan, C., Bulut, E., Cepni, O., & Yilmaz, M. H. (2022). Does climate change affect bank lending behavior? *Economics Letters, 220*. doi:10.1016/j.econlet.2022.110859
- Batten, S., Sowerbutts, R., & Tanaka, M. (2016). Let's talk about the weather: the impact of climate change on central banks.
- Bressan, G. M., & Romagnoli, S. (2021). Climate risks and weather derivatives: A copula-based pricing model. *Journal of Financial Stability, 54*. doi:10.1016/j.jfs.2021.100877
- Brief, S. (2022). Task Force on Climate Related Financial Disclosures (TCFD).
- Campiglio, E., Daumas, L., Monnin, P., & von Jagow, A. (2023). Climate-related risks in financial assets. *Journal of Economic Surveys, 37*, 950 – 992. doi:10.1111/joes.12525
- Carney, M. (2015). Breaking the tragedy of the horizon–climate change and financial stability. *Speech given at Lloyd's of London, 29*, 220–230.
- Chabot, M., & Bertrand, J.-L. (2023). Climate risks and financial stability: Evidence from the European financial system. *Journal of Financial Stability, 69*. doi:10.1016/j.jfs.2023.101190
- Chen, S., Huang, F.-W., & Lin, J.-H. (2023). Green technology choices under the cap-and-trade mechanism with insurer green finance in a dragon-king environment. *Energy Economics, 117*. doi:10.1016/j.eneco.2022.106490
- Chenet, H., Ryan-Collins, J., & van Lerven, F. (2021). Finance, climate-change and radical uncertainty: Towards a precautionary approach to financial policy. *Ecological Economics, 183*. doi:10.1016/j.ecolecon.2021.106957
- Conlon, T., Ding, R., Huan, X., & Zhang, Z. (2024). Climate risk and financial stability: evidence from syndicated lending. *European Journal of Finance, 30*, 2001 – 2031. doi:10.1080/1351847X.2024.2343111
- Curcio, D., Gianfrancesco, I., & Vioto, D. (2023). Climate change and financial systemic risk: Evidence from US banks and insurers. *Journal of Financial Stability, 66*. doi:10.1016/j.jfs.2023.101132
- Curcio, D., Gianfrancesco, I., Onorato, G., & Vioto, D. (2024). Do ESG scores affect financial systemic risk? Evidence from European banks and insurers. *Research in International Business and Finance, 69*. doi:10.1016/j.ribaf.2024.102251
- D'Orazio, P. (2022). Mapping the emergence and diffusion of climate-related financial policies: Evidence from a cluster analysis on G20 countries. *International Economics, 169*, 135–147.
- D'Orazio, P., & Thole, S. (2022). Climate-related financial policy index: A composite index to compare the engagement in green financial policymaking at the global level. *Ecological Indicators, 141*. doi:10.1016/j.ecolind.2022.109065
- D'Orazio, P. (2021). Towards a post-pandemic policy framework to manage climate-

related financial risks and resilience. *Climate Policy, 21*, 1368–1382.

- Dafermos, Y., Nikolaidi, M., & Galanis, G. (2018). Climate change, financial stability and monetary policy. *Ecological Economics, 152*, 219–234.
- Daumas, L. (2024). Financial stability, stranded assets and the low-carbon transition – A critical review of the theoretical and applied literatures. *Journal of Economic Surveys, 38*, 601 – 716. doi:10.1111/joes.12551
- DeMenno, M. B. (2023). Environmental sustainability and financial stability: can macroprudential stress testing measure and mitigate climate-related systemic financial risk? *Journal of Banking Regulation, 24*, 445 – 473. doi:10.1057/s41261-022-00207-2
- Dietz, S., Bowen, A., Dixon, C., & Gradwell, P. (2016). 'Climate value at risk'of global financial assets. *Nature Climate Change, 6*, 676–679.
- Dikau, S., & Volz, U. (2021). Central bank mandates, sustainability objectives and the promotion of green finance. *Ecological Economics, 184*, 107022.
- Diluiso, F., Annicchiarico, B., Kalkuhl, M., & Minx, J. C. (2021). Climate actions and macro-financial stability: The role of central banks. *Journal of Environmental Economics and Management, 110*, 102548.
- Dunz, N., Hrast Essenfelder, A., Mazzocchetti, A., Monasterolo, I., & Raberto, M. (2023). Compounding COVID-19 and climate risks: The interplay of banks' lending and government's policy in the shock recovery. *Journal of Banking and Finance, 152*. doi:10.1016/j.jbankfin.2021.106306
- Dunz, N., Naqvi, A., & Monasterolo, I. (2021). Climate sentiments, transition risk, and financial stability in a stock-flow consistent model. *Journal of Financial Stability, 54*, 100872.
- Durrani, A., Rosmin, M., & Volz, U. (2020). The role of central banks in scaling up sustainable finance–what do monetary authorities in the Asia-Pacific region think? *Journal of sustainable finance & investment, 10*, 92–112.
- ECB, P. (2020). Guide on Climate-Related and Environmental Risks, Supervisory Expectations Relating to Risk Management and Disclosure. *Guide on climate-related and environmental risks. Supervisory expectations relating to risk management and disclosure*.
- Economides, G., & Xepapadeas, A. (2018). *Monetary policy under climate change*. Tech. rep., CESifo Working Paper.
- Ellegaard, O., & Wallin, J. A. (2015). The bibliometric analysis of scholarly production: How great is the impact? *Scientometrics, 105*, 1809–1831.
- Fabris, N. (2020). Financial stability and climate change. *Journal of Central Banking Theory and Practice, 9*, 27 – 43. doi:10.2478/jcbtp-2020-0034
- Faiella, I., Lavecchia, L., Michelangeli, V., & Mistretta, A. (2022). A climate stress test on the financial vulnerability of Italian households and firms. *Journal of Policy Modeling, 44*, 396 – 417. doi:10.1016/j.jpolmod.2021.11.001
- Fan, Q., & Gao, W. (2024). Climate risk and financial stability: The mediating effect of green credit. *Finance Research Letters, 65*. doi:10.1016/j.frl.2024.105558
- Gan, K., Li, R., & Zhou, Q. (2024). Climate transition risk, environmental news coverage, and stock price crash risk. *International Review of Financial Analysis, 96*. doi:10.1016/j.irfa.2024.103657
- Garcia-Villegas, S., & Martorell, E. (2024). Climate transition risk and the role of bank capital requirements. *Economic Modelling, 135*. doi:10.1016/j.econmod.2024.106724
- Gu, R., Guo, J., Huang, Y., & Wu, X. (2023). Impact of the EU carbon border adjustment mechanism on economic growth and resources supply in the BASIC

countries. *Resources Policy, 85*, 104034.

- Gupta, B., Cheng, R., & Rajan, R. S. (2024). Climate risks: nexus between green financial policies and fiscal space. *Applied Economics Letters, 31*, 1656 – 1660. doi:10.1080/13504851.2023.2205092
- Heo, Y. (2024). Climate Change, Bank Fragility, and Systemic Risk. *Review of Corporate Finance, 4*, 127 – 150. doi:10.1561/114.00000062
- Jung, H., & Song, C.-K. (2023). Managerial perspectives on climate change and stock price crash risk. *Finance Research Letters, 51*. doi:10.1016/j.frl.2022.103410
- Karydas, C., & Xepapadeas, A. (2022). Climate change financial risks: Implications for asset pricing and interest rates. *Journal of Financial Stability, 63*. doi:10.1016/j.jfs.2022.101061
- Kiley, M. T. (2024). Growth at risk from climate change. *Economic Inquiry, 62*, 1134 – 1151. doi:10.1111/ecin.13206
- Krueger, P., Sautner, Z., & Starks, L. T. (2020). The importance of climate risks for institutional investors. *The Review of financial studies, 33*, 1067–1111.
- Le, A.-T., Tran, T. P., & Mishra, A. V. (2023). Climate risk and bank stability: International evidence. *Journal of Multinational Financial Management, 70-71*. doi:10.1016/j.mulfin.2023.100824
- Li, N. (2023). Measuring the combining effects of financial stability and climate risk for green economic recovery. *Economic Change and Restructuring, 56*, 1225 – 1241. doi:10.1007/s10644-022-09466-5
- Lin, B., & Wu, N. (2023). Climate risk disclosure and stock price crash risk: The case of China. *International Review of Economics and Finance, 83*, 21 – 34. doi:10.1016/j.iref.2022.08.007
- Liu, Z., He, S., Men, W., & Sun, H. (2024). Impact of climate risk on financial stability: Cross-country evidence. *International Review of Financial Analysis, 92*. doi:10.1016/j.irfa.2024.103096
- Lupu, I., & Criste, A. (2023). Climate Change in the Discourse of Central Banks. Influence on Financial Stability at the European Level. *Studies in Business and Economics, 18*, 235 – 246. doi:10.2478/sbe-2023-0034
- Monasterolo, I. (2020). Climate change and the financial system. *Annual Review of Resource Economics, 12*, 299–320.
- Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of Web of Science and Scopus: a comparative analysis. *Scientometrics, 106*, 213–228.
- Naseer, M. M., Guo, Y., Bagh, T., & Zhu, X. (2024). Sustainable investments in volatile times: Nexus of climate change risk, ESG practices, and market volatility. *International Review of Financial Analysis, 95*. doi:10.1016/j.irfa.2024.103492
- Nehrebecka, N. (2021). Climate risk with particular emphasis on the relationship with credit-risk Assessment: What we learn from Poland. *Energies, 14*, 8070.
- Ojea-Ferreiro, J., Reboredo, J. C., & Ugolini, A. (2024). Systemic risk effects of climate transition on financial stability. *International Review of Financial Analysis, 96*. doi:10.1016/j.irfa.2024.103722
- Reinders, H. J., Schoenmaker, D., & van Dijk, M. (2023). A finance approach to climate stress testing. *Journal of International Money and Finance, 131*. doi:10.1016/j.jimonfin.2022.102797
- Roncoroni, A., Battiston, S., Escobar-Farfán, L. O., & Martinez-Jaramillo, S. (2021). Climate risk and financial stability in the network of banks and investment funds. *Journal of Financial Stability, 54*. doi:10.1016/j.jfs.2021.100870

- Safiullin, M. R., Savelichev, M. V., Elshin, L. A., & Moiseev, V. O. (2020). Increasing stability of economy through supply chain management and the circular economy. *International Journal of Supply Chain Management, 9*, 721 – 725. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85089965064&partnerID=40&md5=fe8db75d5feec1cda61e06b3af23c4aa
- Schellhorn, C. (2020). Financial system stability, the timing of climate change action and the federal reserve. *Journal of Central Banking Theory and Practice, 9*, 45 – 59. doi:10.2478/jcbtp-2020-0035
- Sevillano, J., & Gonzalez, L. (2018). The risk of climate change for financial markets and institutions: challenges, measures adopted and international initiatives. *Bank of Spain, Financial Stability Review*.
- Small, H. (1973). Co-citation in the scientific literature: A new measure of the relationship between two documents. *Journal of the American Society for information Science, 24*, 265–269.
- Song, X., & Fang, T. (2023). Temperature shocks and bank systemic risk: Evidence from China. *Finance Research Letters, 51*. doi:10.1016/j.frl.2022.103447
- Van Eck, N., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *scientometrics, 84*, 523–538.
- Vaze, P., Meng, A., & Giuliani, D. (2019). Greening the financial system. *Climate Bonds Initiative: London, UK*.
- Vermeulen, R., Schets, E., Lohuis, M., Kölbl, B., Jansen, D.-J., & Heeringa, W. (2021). The heat is on: A framework for measuring financial stress under disruptive energy transition scenarios. *Ecological Economics, 190*. doi:10.1016/j.ecolecon.2021.107205
- Vollmer, U. (2022). Central Bank Policies and Climate Change. Where Do We Stand? *Credit and Capital Markets–Kredit und Kapital*, 381–411.
- Wu, G. S., & Wan, W. T. (2023). What drives the cross-border spillover of climate transition risks? Evidence from global stock markets. *International Review of Economics and Finance, 85*, 432 – 447. doi:10.1016/j.iref.2023.01.027
- Yang, S., Li, S., & Pan, Z. (2023). Climate transition risk of financial institutions: measurement and response. *Applied Economics Letters, 30*, 2439 – 2449. doi:10.1080/13504851.2022.2097630
- Zhang, X., Zhang, S., & Lu, L. (2022). The banking instability and climate change: Evidence from China. *Energy Economics, 106*. doi:10.1016/j.eneco.2021.105787
- Zhu, J., & Liu, W. (2020). A tale of two databases: the use of Web of Science and Scopus in academic papers. *Scientometrics, 123*, 321–335.
- Zupic, I., & Čater, T. (2015). Bibliometric methods in management and organization. *Organizational research methods, 18*, 429–472.