



Review

Exploring the Nexus of migration, financial environments, and sustainability: A bibliometric insight into global research trends

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Abstract: This article focuses on analyzing the relationship between migration, financial stability, and the ability of countries to support sustainable development and inclusive growth. This study is based on a sample of academic articles from the Scopus database, where it was found that the chosen topic, although niche, has become increasingly popular since 2017. The analysis results indicate that most authors who publish papers on this topic mainly focus on other research issues, so their research is only secondary. This leads to a noticeable deficit in systematic research in the field. This article examines the geographical distribution of research in detail, emphasizing that the most active research works are conducted in Europe, China, and the USA. The absence of strong research networks is also indicated, which may affect the development and depth of analysis in this field. The collected data show that the topics of publications change depending on economic, social, and political factors in the international arena. Identifying such dynamics is vital for understanding how changes in the global economy and politics can affect the sustainable development strategies of countries in the context of migration processes and financial sustainability. This study contributes to the understanding of the complex interplay between migration, economic stability, and sustainable development strategies, pointing to the need for further in-depth analyses and interdisciplinary approaches in studying these issues.

Keywords: migration; financial stability; sustainable development; inclusive growth; political influences; bibliometric analysis

JEL Codes: F22, O15, Q01, R23, G01

1. Introduction

In recent years, global development has faced unprecedented challenges at the intersection of migration flows, financial stability, and sustainability objectives. These challenges have intensified with the emergence of the COVID-19 pandemic, escalating geopolitical tensions, energy crises, and climate change impacts, creating a situation where migration patterns, financial systems, and sustainability goals interact and influence one another.

With international migrants reaching 281 million in 2020, or 3.6% of the global population (World Migration Report 2024), migration flows have significant implications for both sending and receiving countries' financial systems and sustainable development trajectories. Large-scale migration movements driven by economic opportunities, political instability, or environmental degradation create shifts in labor markets, remittance flows, and fiscal policies that directly impact financial stability and countries' capacity to pursue sustainable development paths.

Despite the interconnections between these domains, research examining their nexus remains fragmented. While substantial literature exists on migration dynamics, financial stability mechanisms, and sustainable development frameworks independently, systematic analysis of how these elements interact within integrated socio-economic systems is noticeably lacking. This research gap is particularly problematic as policymakers increasingly face decisions that simultaneously affect migration governance, financial resilience, and sustainability outcomes.

Bibliometric analysis serves as an effective method to address this research gap by systematically mapping how academic literature connects these fields. Through analyzing publication trends, networks of scholarly citations, and thematic groupings, this approach reveals predominant theoretical frameworks, new research directions, and underexplored areas in the existing literature. Such analysis provides a comprehensive overview of current knowledge and illuminates how scholarly focus shifts in response to changing global circumstances and policy priorities.

This study aims to systematically analyze the evolution and current state of research examining the nexus between migration, financial environments, and sustainability through bibliometric analysis of Scopus-indexed publications. Specifically, we seek to identify key research clusters and their geographic distribution, trace the temporal evolution of research themes, and assess the development of collaboration networks.

The paper is structured as follows: Section 2 provides a comprehensive literature review examining the theoretical foundations of migration research, socio-economic aspects of migration, financial stability in the context of migration processes, and migration's relationship with sustainable development. Section 3 outlines the methodological approach, including data collection procedures and analytical techniques. Section 4 presents the bibliometric results, while Section 5 discusses their implications for research and policy. Section 6 concludes with key outcomes.

2. Literature review

The interconnections between migration, financial stability, and sustainable development represent a growing field of interdisciplinary research. This section examines diverse theoretical

approaches to understanding these relationships, analyzes the socio-economic implications of migration processes, explores the dynamics between migration and financial stability, and investigates how these factors contribute to sustainable development goals. Special attention is paid to emerging challenges and policy responses in the context of recent global changes.

2.1. Theoretical foundations of migration research

The theoretical understanding of the relationship between migration, financial stability, and sustainable development has experienced substantial transformation over time. From early economically oriented theories of migration to contemporary comprehensive approaches that consider social, environmental, and financial aspects, the theoretical foundation has been enriched with interdisciplinary concepts and models.

The fundamental theoretical framework for understanding migration flows is the push-pull theory (Lee, 1966). It postulates how economic and financial factors may push individuals from countries of origin and attract them to destination countries. However, this theory exhibits limitations as it simplistically explains migration processes as the result of individual decisions without sufficient consideration for structural economic factors, social networks, and institutional roles. Lee's framework was subsequently refined by Piore (1979), who proposed a segmented labor market theory explaining the persistent demand for low-skilled labor in developed countries, and by Massey et al. (1993), who developed the migration network theory, emphasizing that migration constitutes a self-reinforcing social process. The understanding of migration flows is further complemented by the migration systems theory (Mabogunje, 1970), which examines how migration establishes self-sustaining social and economic structures that influence future migration patterns, financial flows, and development trajectories.

The human capital theory (Becker, 1964) and the new economics of labor migration (Stark & Bloom, 1985) offer complementary perspectives on migration decisions and their economic consequences. While human capital theory conceptualizes migration as an individual investment decision, the new economics of labor migration considers it a household strategy for risk diversification and capital accumulation.

Research on international financial flows (Kugler et al., 2018) and Minsky's financial instability hypothesis (1986) elucidate how migration-related remittances may contribute to both stability and instability of financial systems. This dynamic is particularly significant when considering the impact of remittances on developing economies, functioning as both a factor of macroeconomic stability and a potential source of financial vulnerability (Adams & Page, 2005; Warnecke-Berger, 2022).

The concept of sustainable development, delineated in the Brundtland Report (1987) and expanded by Elkington's (1998) Triple Bottom Line approach, provides a framework for understanding the interrelationship between economic, social, and environmental aspects of migration. The environmental migration theory (Hugo, 1996) augments this understanding by examining the mutual influence of environmental changes and migration patterns.

The aforementioned theoretical frameworks demonstrate significant interconnections and complementarities. Social factor research illuminates how push-pull factors operate in practice. At the same time, institutional mechanism studies provide insight into approaches for regulating migration processes to achieve positive long-term economic and social effects. Similarly, the new economics of labor migration is complemented by research on financial flows, elucidating, in particular, the

microeconomic foundations of remittance behavior, which subsequently affects macro-level outcomes of financial stability and development.

2.2. Migration and its socio-economic aspects

Migration constitutes a complex and multifaceted phenomenon that significantly influences the socio-economic fabric of society. It plays a vital role in shaping economic development at both national and regional levels (Kersan-Škabić & Burić, 2022; Kozlovskyi et al., 2024; Tomoiagă & Pop Silaghi, 2023).

The consequences of migration may be both positive and negative, contingent upon the context and conditions under which it occurs. In the context of war and crisis (Burliai et al., 2023; Chervinska et al., 2024; Chugaievska & Wisła, 2023; Kuzior et al., 2023; Voznyak et al., 2023), migration acquires negative characteristics, resulting in human capital loss and diminished economic potential of the country.

The impact of migration on social inequality manifests through the transformation of social structures, access to education, and employment opportunities. This becomes particularly evident in rural regions, where migration may either reduce or exacerbate social disparities (Aliyev et al., 2023; Burlacu et al., 2022; Eshetu et al., 2023; Vasylytsiv et al., 2023) and lead to demographic challenges such as population aging and workforce depletion (Ben Amor, 2023; Karamanis & Kolias, 2022). A systematic review conducted by Obi et al. (2020) indicates that the impact of international migration on rural territories is context-dependent and evolves over time. The initial loss of labor force is subsequently compensated by the positive effects of remittances, which improve the economic status of migrant households. However, it is necessary to expand upon the conclusions of Obi et al. (2020) by considering the negative socio-economic impact of migration, which involves the deformation of family structures and communities. Research by Iosim et al. (2024) demonstrates that labor migration creates complex choices for families, particularly in developing countries. Although the economic opportunities for households may improve, the prolonged absence of parents often negatively affects the social cohesion of families and community resilience.

The process of migrant integration presents significant social challenges, including cultural adaptation, overcoming language barriers, and developing social connections. Research indicates that the success of social integration substantially influences political stability and social cohesion (Gentsoudi, 2023; Yehorova & Drozd, 2024).

Regional analysis of migration processes reveals considerable differences in patterns and consequences of migration for various regions of the world. The European Union has annually received approximately 2 million migrants from outside the EU since 2015. In 2022, the number of people arriving in the EU exceeded 5 million due to the war in Ukraine (Eurostat, 2024). Such a number of migrants and the need to integrate them into society creates a significant burden on the financial system, which in turn requires research into the most effective ways to address this challenge. Thus, considerable migration processes are closely linked to issues of financial stability, particularly in the context of managing monetary flows and ensuring economic resilience.

Migration studies exhibit substantial geographical variations determined by the specifics of regional economies, development levels, historical features, and social structures. In developed countries, migration research often focuses on the impact of migration on the labor market, economic development, migrant integration, and social cohesion (Guzi et al., 2021; Guzi et al., 2023; Leschke & Weiss, 2023).

In developing countries, research more frequently concentrates on remittances as a key socio-economic mechanism that ensures the financial stability of households and contributes to economic development (Wellalage & Locke, 2020; Mafruhah & Istiqomah, 2024). Considerable attention is also devoted to migrant networks and their influence on future migration flows. In this context, the research by Abel et al. (2021) is noteworthy as it elaborates on certain aspects of the study by Massey et al. (1993), which was mentioned above in the context of migration theories.

Regional characteristics also determine the nature of migration processes. For instance, in Latin America, migration research is often associated with the impact of political instability and economic inequality on migration decisions (Colantonio & Fuster, 2009; Ortiz & Vilorio, 2023; Hiskey et al., 2014). In Eastern Europe, including Ukraine, migration studies focus on labor migration to EU countries, its impact on the labor market, and demographic processes (Shymanska et al., 2017). In Asia, significant attention is paid to migration within the region, particularly internal migration from rural to urban areas (Biswas et al., 2019).

Overall, geographical differences in migration studies reflect the specificity of each region and determine key challenges and prospects for developing policies to manage migration processes.

2.3. Financial stability in the context of migration processes

The interrelationship between migration and financial stability is multidirectional and context-dependent (Habib et al., 2023; Hrytsenko et al., 2022; Kharel et al., 2024; Kharabsheh & Gharaibeh, 2023; Kuzmenko et al., 2023; Lapinskaitė & Skvarciany, 2023; Patel et al., 2023). Financial stability, which is essential for sustainable economic development (Gajdosova, 2023), may undergo substantial modifications under the influence of migration flows through various channels, including investment patterns (Kaddouri & Benelbar, 2024; Pozovna et al., 2023; Tung, 2022).

Remittances constitute one of the key mechanisms through which migration affects financial stability. From a macroeconomic perspective, they may produce a dual effect. Research demonstrates their positive impact on economic development through increased domestic consumption and investment (Bardy & Rubens, 2022; Hakobyan et al., 2022). Moreover, remittances may contribute to economic resilience during crises (Radu et al., 2023; Zolkover et al., 2022). However, in small economies, significant remittance flows may generate inflationary pressure and induce structural imbalances.

Increasing attention to environmental challenges necessitates financial systems to support green governance and sustainable practices. Research illustrates that effective green governance and developed green financing systems facilitate better management of environmental risks while maintaining economic stability (Xu and Zhu, 2024). This is particularly significant in the context of financing adaptation to climate change and supporting environmentally sustainable development.

The integration of financial inclusion with green financial instruments establishes a robust foundation for supporting sustainable development while simultaneously ensuring the stability of the financial system in the face of migration challenges. Financial stability and effective management of migration-related financial flows create the foundation for achieving sustainable development goals.

2.4. Migration in the context of sustainable development

Migration may substantially contribute to sustainable development (Melnyk et al., 2019; Singh & Pandey, 2023) through various mechanisms, including enhancement of economic activity and

entrepreneurship development (Koibichuk et al., 2022; Mursalov et al., 2023; Sabary & Ključnikov, 2023). Migrants frequently introduce new ideas, knowledge, and skills that may stimulate the creation of new businesses and innovations.

The interrelationship between migration and sustainable development, particularly the Sustainable Development Goals (SDGs), is multilevel and complex, as demonstrated by the research of Piper and Datta (2024). The authors illustrate that despite the declaration to “leave no one behind” within the framework of the 2030 Agenda, migration issues remain insufficiently integrated into many aspects of the SDGs. The impact of migration on sustainable development manifests through several key mechanisms, including poverty and inequality reduction through remittances and economic opportunities (SDGs 1 and 10), improvement of education quality through the circulation of knowledge and skills (SDG 4), creation of opportunities for decent work and inclusive economic growth (SDG 8), and development of sustainable cities and communities through infrastructure enhancement and urban practices (SDG 11). The researchers emphasize the application of an intersectional approach to understanding mobility caused by crises and climate change, enabling the assessment of complex interrelationships between migration and sustainable development at local, regional, and global levels (Piper & Datta, 2024).

Climate change has emerged as one of the significant drivers of contemporary migration processes. Particularly vulnerable are territories with specific geographical and ecological conditions—highlands, arid regions, and islands (Favretto & Stringer, 2024). The interrelationship between climate impacts and migration creates complex challenges for sustainable development, including threats to food security, water supply, and ecosystem preservation. Such environmentally induced migration processes may lead to cascading socio-economic consequences, including exacerbation of inequality and the creation of new transboundary challenges.

An important aspect of this interrelationship is energy poverty, which, in the context of low-carbon energy transition, acquires a multidimensional character. As noted by Streimikiene and Kyriakopoulos (2023), energy poverty is most pronounced in households. It is exacerbated by global challenges, such as the COVID-19 pandemic and geopolitical conflicts, leading to rising energy prices. These factors can stimulate migration processes from regions where energy supply problems are particularly acute to more energy-stable territories.

In response to these challenges, energy communities are forming, which, as Kyriakopoulos (2022) points out, play a decisive role in the transition to sustainable development and the use of renewable energy sources. They ensure environmental sustainability, reduction of greenhouse gas emissions, increased energy efficiency, and reduced environmental pollution, which can influence migration decisions. Low-carbon energy technologies implemented in the context of sustainable energy systems form both technological and social tools for strategic energy planning (Kyriakopoulos, 2021), which can help reduce migration pressure caused by environmental factors.

The relationship between migration and inclusive growth manifests primarily through its impact on income inequality (Bartkute et al., 2023; Kot & Paradowski, 2022; Lyeonov et al., 2021; Tung & Bentzen, 2022; Vasylieva et al., 2023; Wildowicz-Szumarska, 2022). The nature of this impact is significantly dependent on the effectiveness of migration policies and institutional frameworks that determine the opportunities for economic integration of migrants. Migration may influence political stability and social cohesion (Gentsoudi, 2023; Yehorova & Drozd, 2024), leading to various social risks, including cultural conflicts, identity issues, and discrimination (Firstová & Vysochyna, 2024; Kuzior et al., 2020; Pozovna et al., 2023).

3. Materials and Methods

3.1. Data collection

The data for this bibliometric analysis was collected from the Scopus database, which provides comprehensive coverage of a wide range of peer-reviewed journals that contribute significantly to scholarly literature. The search was designed to capture articles addressing the interplay between migration, financial environments, inclusive growth, and sustainability. The search query was structured as follows:

Migration keywords: Articles were searched for variations of migration-related terms in the title, abstract, or keywords. It included “migration”, “immigrants”, and “emigration”, as well as terms specifying types of migration such as “transnational”, “international”, and “internal”.

Financial environment keywords: The query included a broad spectrum of terms related to financial environments, such as “financial environment”, “financial systems”, “economic impact”, “financial inclusion”, and “economic policy”, among others. This search component was designed to retrieve documents discussing financial aspects in the context of migration.

Sustainability and inclusive growth keywords: To encompass the broad areas of sustainability and inclusive growth and their overlap with the other themes, this part of the query was expanded to search the entire text of the documents, ensuring that even articles where these terms appear outside the abstract or keywords were included. This section included terms such as “inclusive development”, “sustainable development”, “sustainability”, “social inclusion”, “environmental sustainability”, “inclusive growth”, “sustainable development goals”, “SDGs”, and “Agenda 2030”.

While our search strategy was designed to be comprehensive, we recognize that some relevant studies might use alternative terminology or address these issues indirectly. The expansion of sustainability and inclusive growth terms to search the entire text of documents (rather than just titles, abstracts, and keywords) was specifically implemented to capture publications that engage with these concepts substantively but may not foreground them in their metadata. Additionally, by including a broad spectrum of terms related to financial environments, we attempted to capture the complex bidirectional relationships between migration processes, financial systems, and sustainability objectives, recognizing that these domains influence each other in multiple ways.

3.2. Inclusion criteria

To refine the search and ensure the relevance and quality of the data, we applied several filters (Table 1). As a result, the search query was formed as follows:

(TITLE-ABS-KEY (“migrat*” OR “immigrat*” OR “emigrat*” OR “transnational migrat*” OR “international migrat*” OR “internal migrat*”) AND TITLE-ABS-KEY (“financial environment*” OR “financial system*” OR “economic impact*” OR “financial inclusion*” OR “financial polic*” OR “economic environment*” OR “monetary environment*” OR “economic polic*” OR “macroeconomic instabilit*” OR “economic crisi*” OR “financial crisi*” OR “macroeconomic shock*” OR “economic downturn*” OR “recession*”) AND ALL (“inclusive development*” OR “sustainable development*” OR “sustainability” OR “social inclusion*” OR “economic sustainability*” OR “environmental sustainability*” OR “inclusive growth” OR “sustainable development” OR “sustainable development goals” OR “SDGs” OR “Agenda 2030”)) AND (LIMIT-TO (SRCTYPE, “j”)) AND (LIMIT-TO

(PUBSTAGE, “final”)) AND (LIMIT-TO (DOCTYPE, “ar”)) AND (LIMIT-TO (LANGUAGE, “English”)).

Table 1. Research filters.

Search category	Limitations
Document type	Limited to articles (DOCTYPE, “ar”) to focus on formal scholarly research.
Publication stage	Only articles in their final form were included (PUBSTAGE, “final”), excluding early access, in-press, or provisional versions, to ensure the data reflects peer-reviewed and completed work.
Source type	Limited to journal articles (SRCTYPE, “j”), excluding conference papers, book chapters, and other less rigorous document types.
Language	Limited to articles published in English (LANGUAGE, “English”), to maintain consistency in language for analytical purposes and due to the broader accessibility of English language publications in international academia.

3.3. Data analysis

The retrieved articles were analyzed to map out the distribution of publications over time, identify the core journals contributing to these topics, and examine the citation networks. The primary focus was on identifying major themes, emerging trends, and the geographical distribution of the research. Advanced bibliometric techniques, including co-citation and co-authorship analysis, were employed to explore the structure and dynamics of the scholarly network using the bibliometric software Bibliometrix based on the programming language R.

3.4. Methodological limitations

This study acknowledges several methodological limitations inherent in bibliometric analysis. First, by restricting our search to the Scopus database, we may exclude relevant studies published in journals not indexed in Scopus, particularly those from developing countries or published in languages other than English. This limitation may introduce geographical and linguistic biases in our results, potentially underrepresenting research from non-English speaking regions.

Second, our choice of keywords, while comprehensive, may not capture all relevant studies, especially those that address the intersection of migration, financial environments, and sustainability indirectly or using alternative terminology.

Third, bibliometric analysis primarily focuses on quantitative aspects of academic publications, such as citation counts and publication patterns, which may not fully reflect the quality, impact, or theoretical depth of the research. Citation metrics can be influenced by factors unrelated to research quality, such as the popularity of certain topics or self-citation practices.

Despite these limitations, bibliometric analysis provides valuable insights into research trends and patterns that would be difficult to obtain through other methods. To mitigate these limitations, we employed a comprehensive search strategy to ensure a robust analysis of the available literature.

4. Results

According to the criteria described in the methodology section and the search query to the Scopus database formed on their basis, a set of bibliometric data was obtained, which was subject to analysis

in this article, to find out how much attention researchers pay to the issue of the connection between migration and financial stability of regions and countries that are under the influence of both emigration and immigration processes. This relationship must be analyzed in the context of its significance for the country's ability (to increase or decrease its capacity) to maintain a course of sustainable development and inclusive growth. Such a course requires financial support and sometimes runs into economic rationalism associated with the desire to obtain short-term economic benefits by ignoring the long-term benefits for society.

As a result of the search activity, the bibliometric data dataset analyzed is described in Table 2.

Table 2. Dataset of analyzed bibliometric data.

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	1990–2024
Sources (journals, books, etc.)	396
Documents	568
Annual growth rate %	8.87
Document average age	6.73
Average citations per doc	20.81
References	32,119
DOCUMENT CONTENTS	
Keywords plus (ID)	2484
Author's keywords (DE)	2018
AUTHORS	
Authors	1680
Authors of single-authored docs	131
AUTHORS COLLABORATION	
Single-authored docs	135
Co-authors per doc	3.13
International co-authorships %	28.17
DOCUMENT TYPES	
Article	568

The time interval was not limited. The sample included all articles that met the selection criteria, regardless of when they were published. Thus, the time range of the study was 1990–2024, allowing the analysis of trends and shifts in research focus or methodology over time.

The number of sources was 396. A substantial number of sources suggests a diverse set of publication venues that could be interdisciplinary or spread across different fields. The total number of documents was 568, but it should be noted that such a number of publications were made public over more than thirty years. The annual growth rate was 8.87%. Almost 1700 authors published research results in this field. This shows a large community of researchers contributing to the field, which is beneficial for advancing knowledge and collaboration. At the same time, 131 authors have published single-authored documents.

4.1. Publication profile: Analyzing journals and periodicals in the fields of migration, financial stability, and sustainable development

There was a general upward trend in the number of articles published annually. This indicates an increased interest in studying the importance of migration processes for financial and macroeconomic

stability and the ability of the economy to maintain a course for sustainable development and the formation of an increasingly inclusive economy. Data on the number of publications are shown in Figure 1. The rapid increase in the number of scientific articles from 2016 shows that the issue of migration has become one that requires immediate action because it affects the economy of both countries where there is an outflow of population and those that accept migrants, sometimes in a larger number than what allows their adaptation to the social and economic life of the country without negative consequences. In the European Union alone, since 2015, more than 2 million migrants from outside the EU have arrived yearly (except for 2020, when the number of migrants was 1.92 million). In 2022, the number of people coming into the EU was more than 5 million because of the war in Ukraine (Eurostat, 2024).

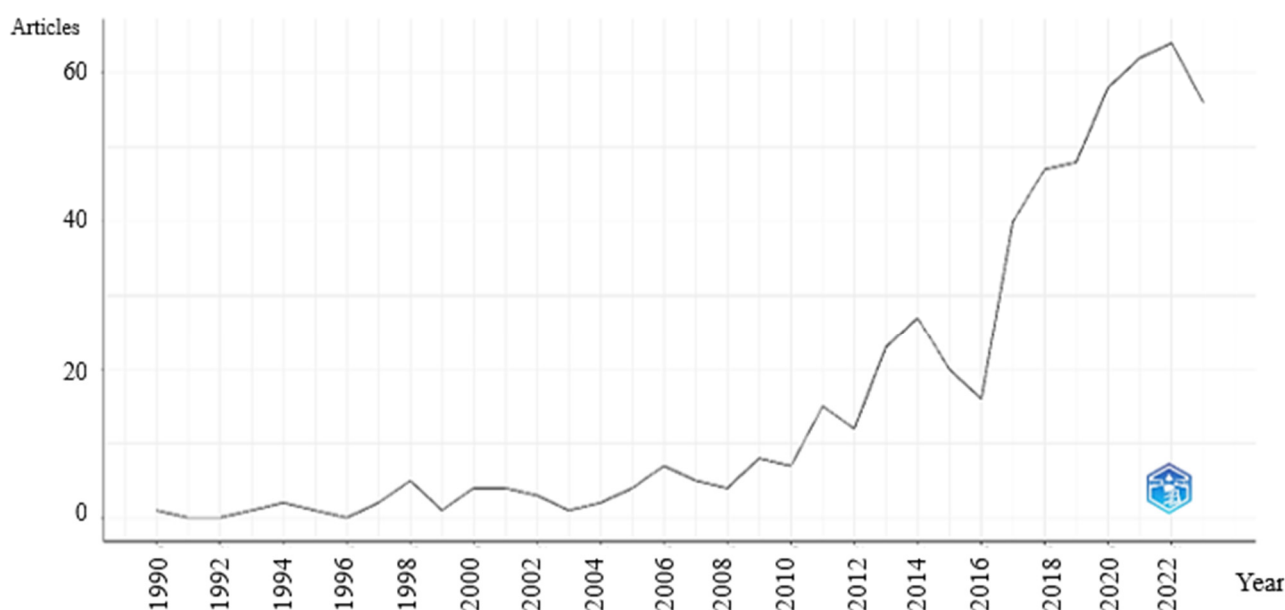


Figure 1. Dynamics of publications in the Scopus database for the period from 1990 to 2023.

Figure 2 shows the dynamics of citations of scientific publications that were published in the period from 1990 to 2023. Excluding the anomalies of 1997 and 2010, the graph shows variability in the average citations but does not display a clear upward or downward trend over time. It indicates that the average influence or recognition of the scientific work in this dataset has not significantly increased or decreased over the years. Regarding the anomalies shown in the graph, two scientific papers were published in 1997. The study by Ball (1997) carefully examined the circulation of labor due to migration and the response of the state to changes in the labor market. The study by Primavera (1997) studied the impact of the socio-economic systemic effects of sectoral changes and only tangentially considered the issue of migration. With many citations, the last article caused an anomaly on the graph, which should not be paid attention to in this bibliometric analysis. In 2010, a similar anomaly was caused by the influential publication de Haas (2010), which supported the public debate on the connection between migration and economic development, where the author analyzed “paradigm shifts in social and development theory”.

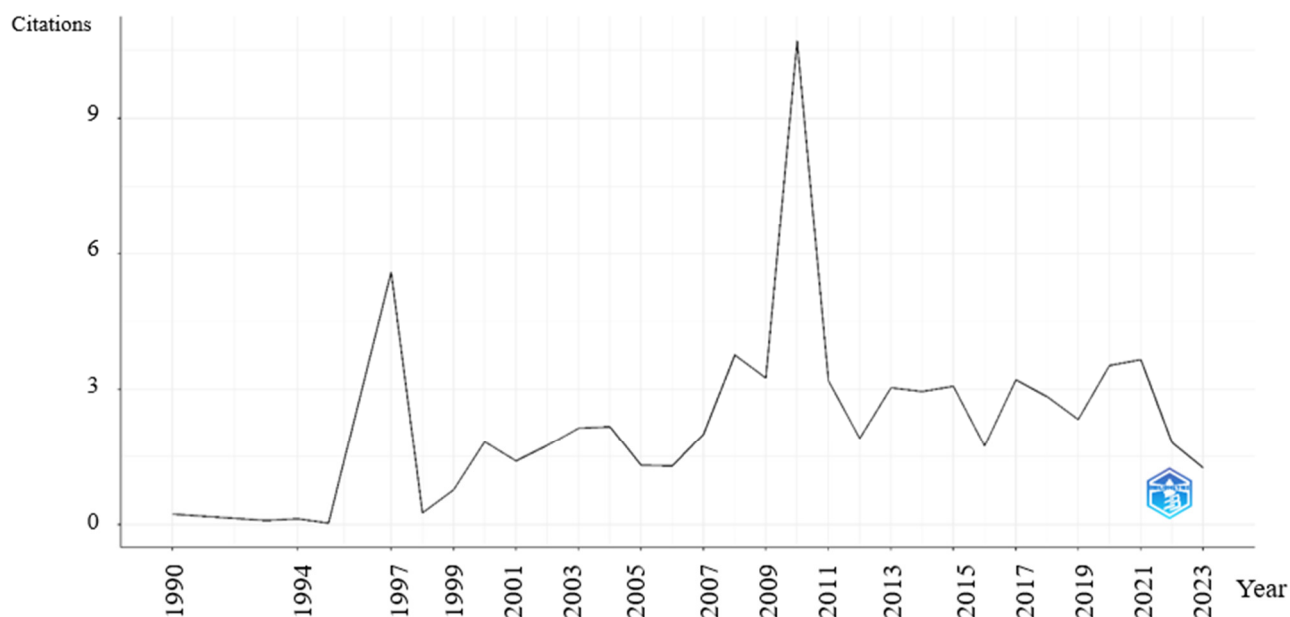


Figure 2. Dynamics of citations for the period from 1990 to 2023.

Of the 396 academic journals that published research at the intersection of finance, migration, sustainable development, and inclusive growth, some are more influential than others, as they host more publications on the topic. The most significant journals in this scientific field as of April 2024 are shown in Figure 3.

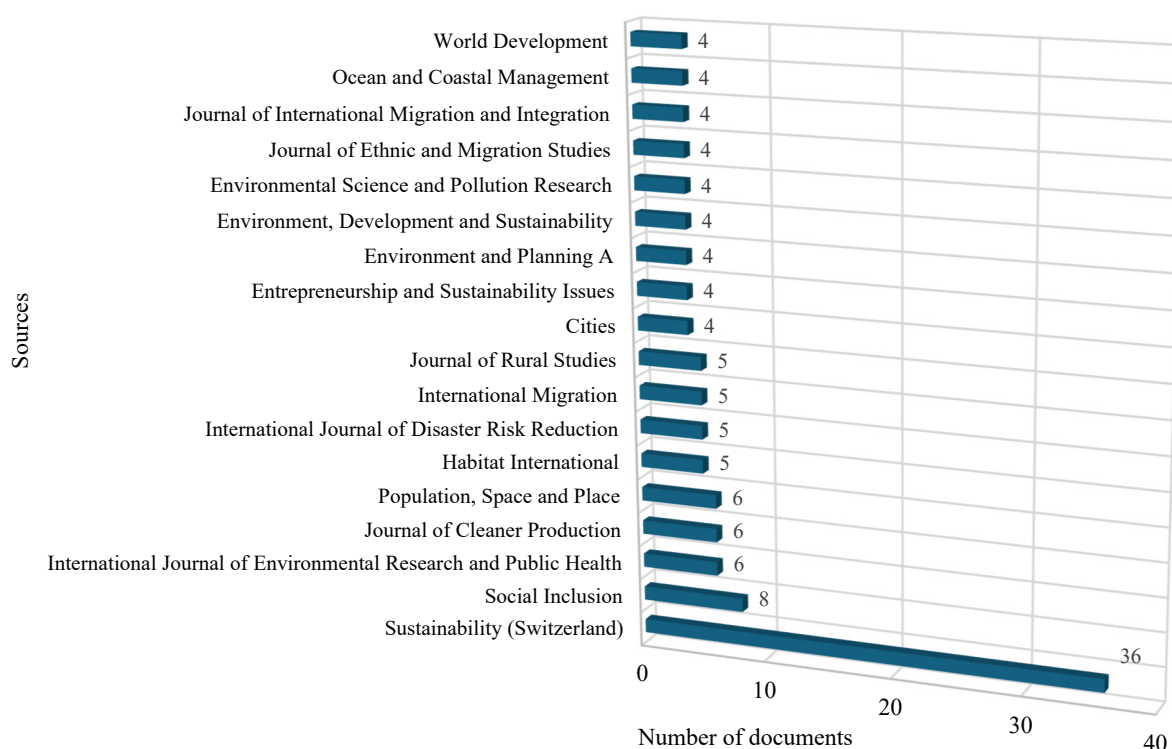


Figure 3. The most relevant journals publishing research at the intersection of finance, migration, sustainable development, and inclusive growth.

According to the data in Figure 3, the undisputed leadership in the number of published scientific articles belongs to the publication *Sustainability*. The list of journals with five or more published articles is extremely limited. This list includes *Social Inclusion*, *International Journal of Environmental Research and Public Health*, *Journal of Cleaner Production*, *Population, Space and Place*, *Habitat International*, *International Journal of Disaster Risk Reduction*, *International Migration*, and *Journal of Rural Studies*.

The dynamics of publication of articles in the most relevant scientific journals are heterogeneous. Figure 4 shows the sources' productivity from 2011 to 2023. Before that, there were no thematic publications in these publications.

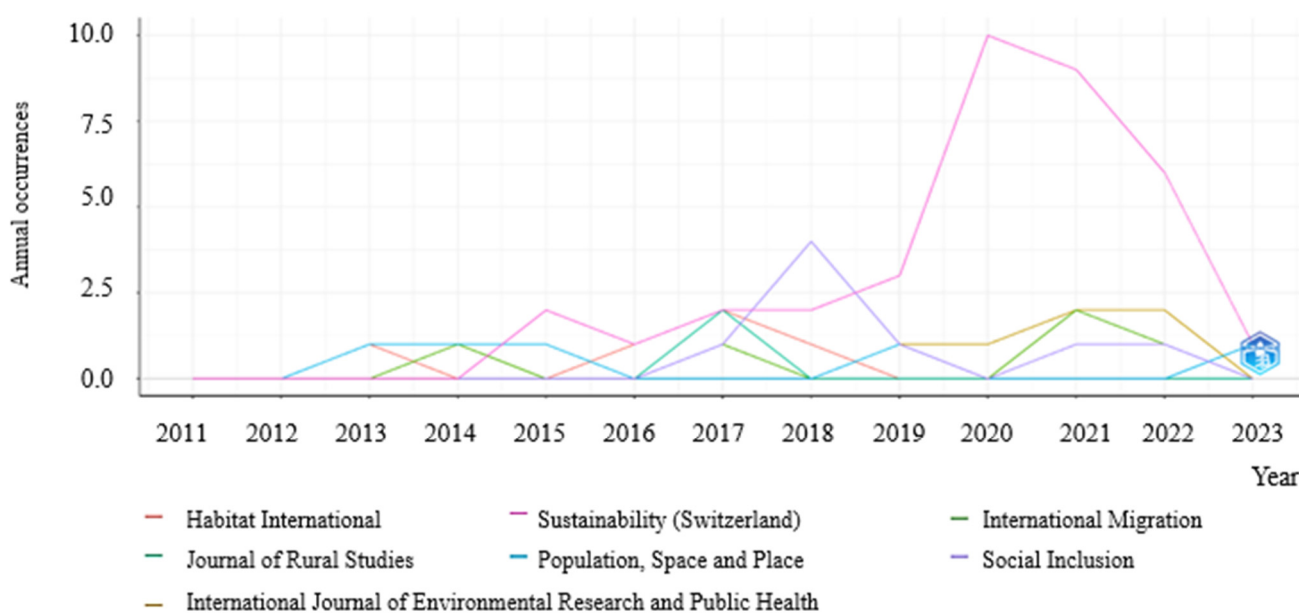


Figure 4. Sources' production from 2011 to 2023.

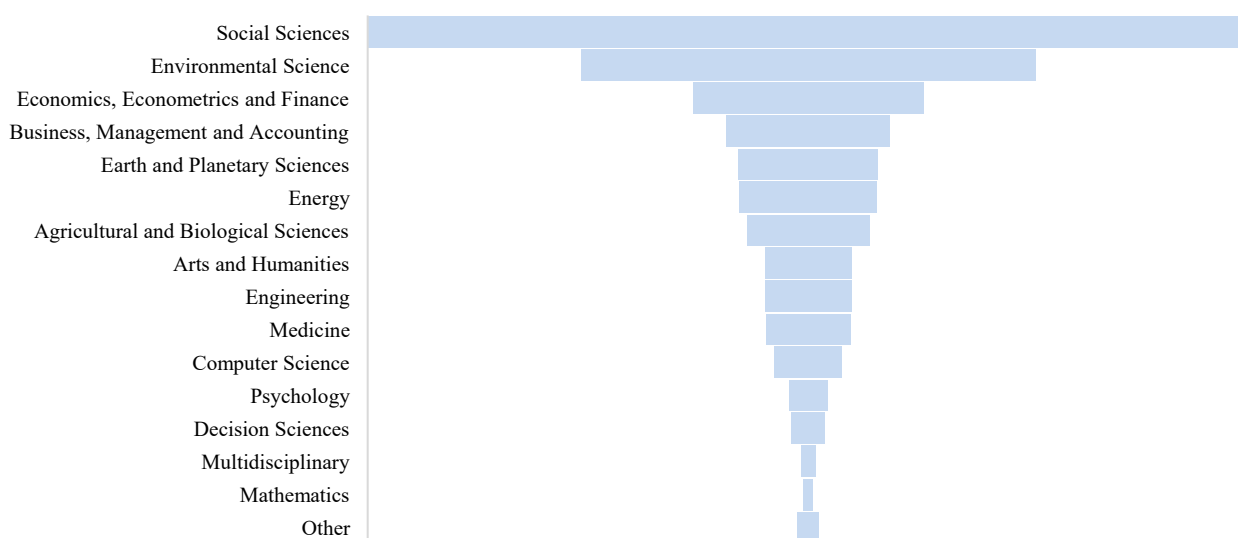


Figure 5. Distribution of scientific articles by subject area.

Since the specified journals have several subject areas, it is advisable to pay attention to which are the most represented. Figure 5 shows that most articles on the subject investigated in this work belong to social sciences, environmental science, economics, econometrics, and finance, representing 34%, 18%, and 9% of the total publications, respectively.

The Bibliometrix toolkit divided journals into three zones according to Bradford's law. Table 3 presents the publications in Zone 1 (sometimes called Zone A). They form the core of publications with the largest representation of published research on the topic under study. In this case, Zone 1 has a significant list of journals, which can be explained by the large number of journals (396).

Table 3. Core sources by Bradford's law (Zone 1).

Sources	Rank	Freq	cumFreq	Zone
<i>Sustainability</i> (Switzerland)	1	36	36	Zone 1
<i>Social Inclusion</i>	2	8	44	Zone 1
<i>International Journal of Environmental Research and Public Health</i>	3	6	50	Zone 1
<i>Habitat International</i>	4	5	55	Zone 1
<i>International Migration</i>	5	5	60	Zone 1
<i>Journal of Rural Studies</i>	6	5	65	Zone 1
<i>Population, Space and Place</i>	7	5	70	Zone 1
<i>Entrepreneurship and Sustainability Issues</i>	8	4	74	Zone 1
<i>Environment And Planning A</i>	9	4	78	Zone 1
<i>Environment, Development and Sustainability</i>	10	4	82	Zone 1
<i>Environmental Science and Pollution Research</i>	11	4	86	Zone 1
<i>International Journal of Disaster Risk Reduction</i>	12	4	90	Zone 1
<i>Journal of Ethnic and Migration Studies</i>	13	4	94	Zone 1
<i>Journal of International Migration and Integration</i>	14	4	98	Zone 1
<i>Ocean and Coastal Management</i>	15	4	102	Zone 1
<i>Agricultural and Resource Economics, Amfiteatru Economic, Cities, Environmental Research Letters, Frontiers in Public Health, International Journal for Equity in Health, Journal of Cleaner Production, Journal of Refugee Studies, Land, Land Use Policy, Latin American Perspectives, Science of the Total Environment, Socio-economic Planning Sciences, Sustainable Development, Urban Planning, Urban Studies, World Development</i>	16–32	3	153	Zone 1
<i>Agricultural Systems, Applied Spatial Analysis and Policy, Asia Pacific Viewpoint, Asian and Pacific Migration Journal, Climatic Change, Data, Ecological Economics, Ecological Indicators, Economic Annals-Xxi, Economic Change and Restructuring, Economic Research-Ekonomska Istrazivanja, Empirica, Empirical Economics, Energy Policy</i>	33–46	2	181	Zone 1

One of the most important indicators for understanding the importance of scientific journals in terms of contribution to a specific subject area is the sources' local impact (Table 4). This indicator consists of a combination of indicators. The main bibliometric indicators used for this purpose are as follows:

- h _index: This indicates the number of articles (h) of a publication that has received at least h citations each.
- g _index: Similar to the h -index but designed to improve upon it by giving more weight to highly cited articles. It suggests a cumulative impact of an author's or journal's articles.
- m _index: This is calculated as the h -index divided by the number of years since the author's or journal's first published paper. It aims to normalize the h -index over time, providing an annual impact rate.
- TC (total citations): This represents the total number of citations that articles from the publication have received.

- NP (number of publications): The number of articles published in the source during the timespan considered.
- PY_start (publication year start): The first year in the dataset from which the publication contributed articles to this field.

Table 4. Sources' local impact at the intersection of finance, migration, sustainable development, and inclusive growth (Top 15 sources).

Element	h index	g index	m index	TC	NP	PY_start
<i>Sustainability</i> (Switzerland)	12	21	1.2	524	36	2015
<i>Habitat International</i>	5	5	0.417	373	5	2013
<i>Journal of Rural Studies</i>	5	5	0.417	267	5	2013
<i>Social Inclusion</i>	5	7	0.625	62	8	2017
<i>Entrepreneurship and Sustainability Issues</i>	4	4	0.571	61	4	2018
<i>Population, Space and Place</i>	4	5	0.333	192	5	2013
<i>Environment and Planning A</i>	3	4	0.107	109	4	1997
<i>Environment, Development and Sustainability</i>	3	4	0.231	112	4	2012
<i>Environmental Science and Pollution Research</i>	3	4	0.6	46	4	2020
<i>International Journal of Environmental Research and Public Health</i>	3	5	0.5	27	6	2019
<i>International Migration</i>	3	5	0.273	97	5	2014
<i>Journal of Ethnic and Migration Studies</i>	3	4	0.375	41	4	2017
<i>Journal of International Migration And Integration</i>	3	4	0.5	24	4	2019
<i>Land Use Policy</i>	3	3	0.25	99	3	2013
<i>Latin American Perspectives</i>	3	3	0.176	72	3	2008

After identifying the most relevant and influential scientific journals that make scientific contributions to the study of the relationship between migration, financial environment, and the ability of countries to maintain a course for sustainable development and inclusive growth due to migration impacts and economic changes (shocks), the next step in the analysis is a study of institutions and research networks working in this field.

4.2. Investigating the contributors: A detailed look at authors in the fields of migration, financial stability, and sustainable development

The study of journals that published research on the connection between the financial environment, migration processes, and the issues of sustainable development and inclusive growth is important. Still, the more important question is who conducts such research and creates research networks to contribute to further progress in solving complex and interconnected economic and social problems.

Figure 6 brings together three dimensions of information, shedding light on this question. The information in this figure refers to 1) research institutions and universities where researchers of this issue work, 2) the countries that represent these states, and 3) keywords that can be used to identify the specifics of the research being conducted.

Applying the deductive method and continuing the bibliometric analysis of scientific productivity and trends turns from the geography of research to scientific institutions and authors, narrowing the focus to specific topics and publications.

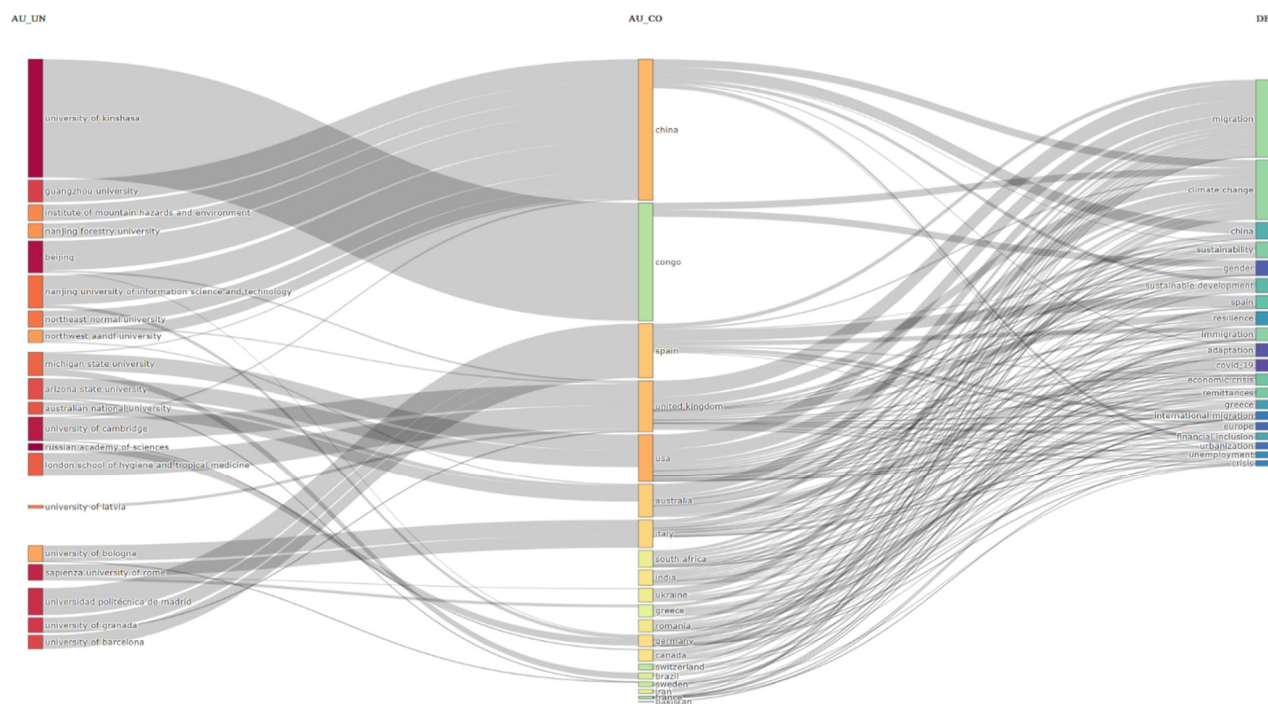


Figure 6. The dimension research institutions, countries, and keywords.

Considering the number of publications as a measure of attention in scientific circles to a particular problem, we note that scientific research is carried out by scientists from different parts of the world, and the geographical coverage is extensive. Figure 7 shows the dynamics of the publishing activity of the most productive countries, which include Australia, the People's Republic of China, Spain, the United Kingdom, and the United States, for the entire period of publication activity.

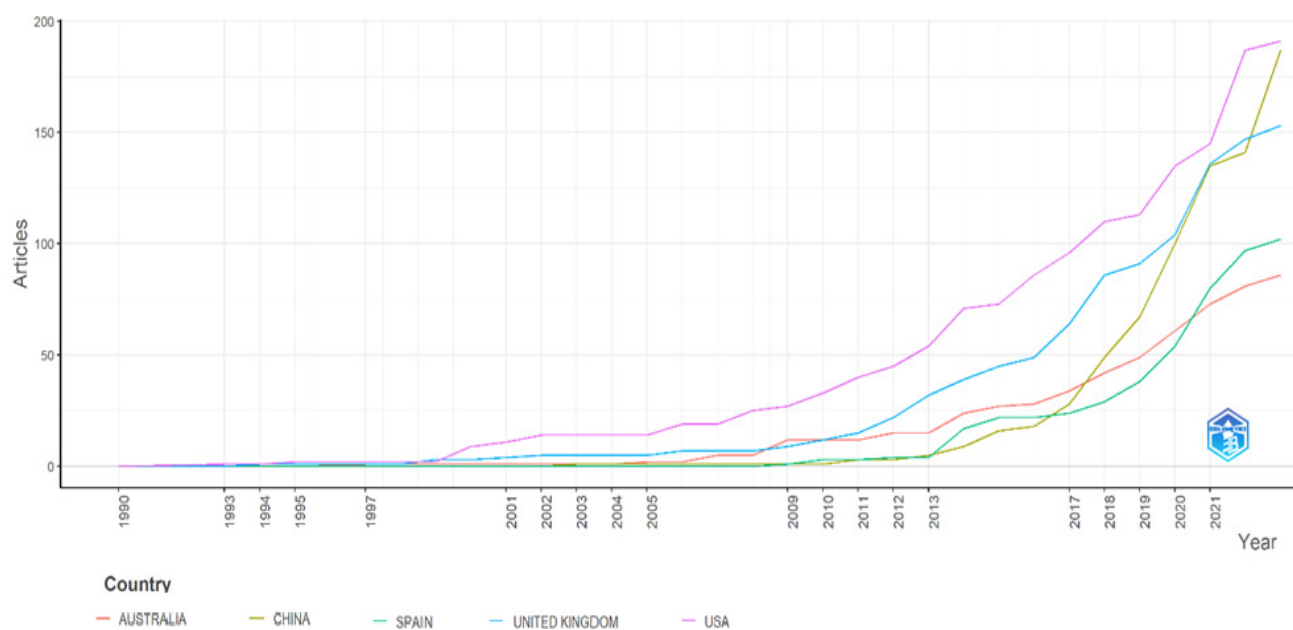


Figure 7. Country production over time from 1990 to 2023.

It is worth noting that before 2000, all countries showed a low level of publications, which indicates that this research topic was irrelevant or did not have significant research interest. Since the early 2000s, there has been a steady increase in publications, which may reflect the growing relevance of the topics of sustainable development and inclusive growth. Since 2010, a particular increase in publications has been observed in China and the USA. It can be assumed that this growth in publishing by scientists from China is stimulated by China's desire to lead in the production of green technologies, which is closely related to sustainable development. At the same time, subsidizing Chinese industry in the field of green technologies requires finding long-term and efficient financial models. Accordingly, this creates a demand for interdisciplinary and comprehensive research. Great Britain and Australia also show steady growth.

The same countries appear in the top 10 countries with the most cited studies (Table 5). Along with them, India, Italy, Germany, and South Africa occupy the leading positions in the total number of citations.

Indicators of average citations per scientific article differ. Hong Kong (now a special administrative region of the People's Republic of China), Norway, and Australia occupy the first places in this ranking.

The predominant subject of publications by scientists from different countries partially indicates the presence of actual problems that researchers are trying to solve. This assumption is somewhat conditional regarding scientific research by international groups of scientists. In this case, the issue may be more universal or not as closely related to the scientific co-authors' country of origin as expected. Determining the dominant topic is difficult if there is a significant number of publications by scientists of a certain country because a substantial range of scientific problems can be studied. Therefore, it is advisable to conduct the thematic analysis by considering the leading scientific institutes that contribute to the science research field and reviewing the most significant publications.

Table 5. Most cited countries.

Country	Total citations	Country	Total citations
United Kingdom	892	Australia	371
China	779	Spain	289
USA	659	Hong Kong	250
India	417	Germany	234
Italy	397	South Africa	131
Country	Average article citations	Country	Average article citations
Hong Kong	62,50	Netherlands	27,80
Norway	39,30	Ecuador	27,50
Australia	37,10	France	25,20
India	29,80	Poland	25,00
United Kingdom	27,90	Malaysia	24,00

Figure 8 shows the institutions and universities with the most publications on migration, financial, and macroeconomic environments related to sustainable development and opportunities for inclusive growth: Chinese Academy of Sciences, Sapienza University, Humboldt-Universität, University of St. Andrews, Universitat Autònoma de Barcelona, University of Chinese Academy of Sciences, The World Bank, Universitat de Barcelona, Australian National University, and University of British Columbia.

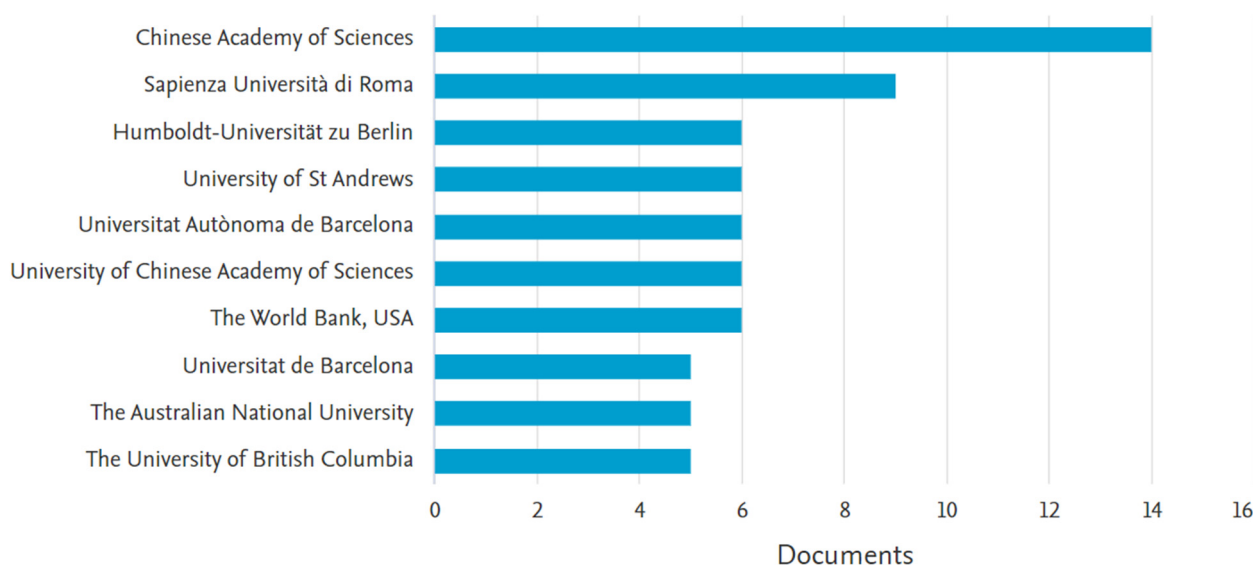


Figure 8. Universities and research institutions with the largest number of thematic publications.

The focus of research by scientists from the Chinese Academy of Sciences is mainly on the issues of internal migration from rural areas to cities under the influence of urbanization and the consequences of such displacement. The most cited publications (Xu et al., 2017; Mohabir et al., 2017) are devoted to the question of the consequences of internal migration.

Among the research interests of scientists from Sapienza University, it is worth highlighting two that are most clearly expressed. First, urbanization and demographic changes. This topic is developed in detail by Carlucci et al. (2017) and Rontos et al. (2023). Second, migration and socio-economic inequalities. This line of research is presented in Ciommi et al. (2023) and Gallo & Staniscia (2017). Scientists from the University of St. Andrews, in addition to studying migration and labor dynamics (Findlay & McCollum, 2013; McCollum et al., 2017), also cooperate with representatives of other research institutions to investigate the impact of migration on the economic crisis (Palomares-Linares & van Ham, 2020; Sabater & Graham, 2019). Researchers from Barcelona pay attention to the impact of migration on the economic situation and vice versa (Patxot et al., 2015).

Researchers from Humboldt-Universität develop research cooperation and focus not only on issues of migration and its socio-economic impact but also on investigating climate change and environmental impacts; in particular, how climate change is influencing environmental dynamics and decision-making (Yalew et al., 2018; Bisaro et al., 2021).

Figure 9 provides data on the mutual citations of authors, along with scientific results in this area. These data help highlight connections between scientists and share scientific results that contribute to further progress in scientific research.

Figure 10 shows the main mutual citation networks of scientists. The analysis of these network data predictably indicates that the citation network will not allow for identifying groups of scholars who interact in researching the connection between migration and the financial environment, sustainable development, and inclusive growth.

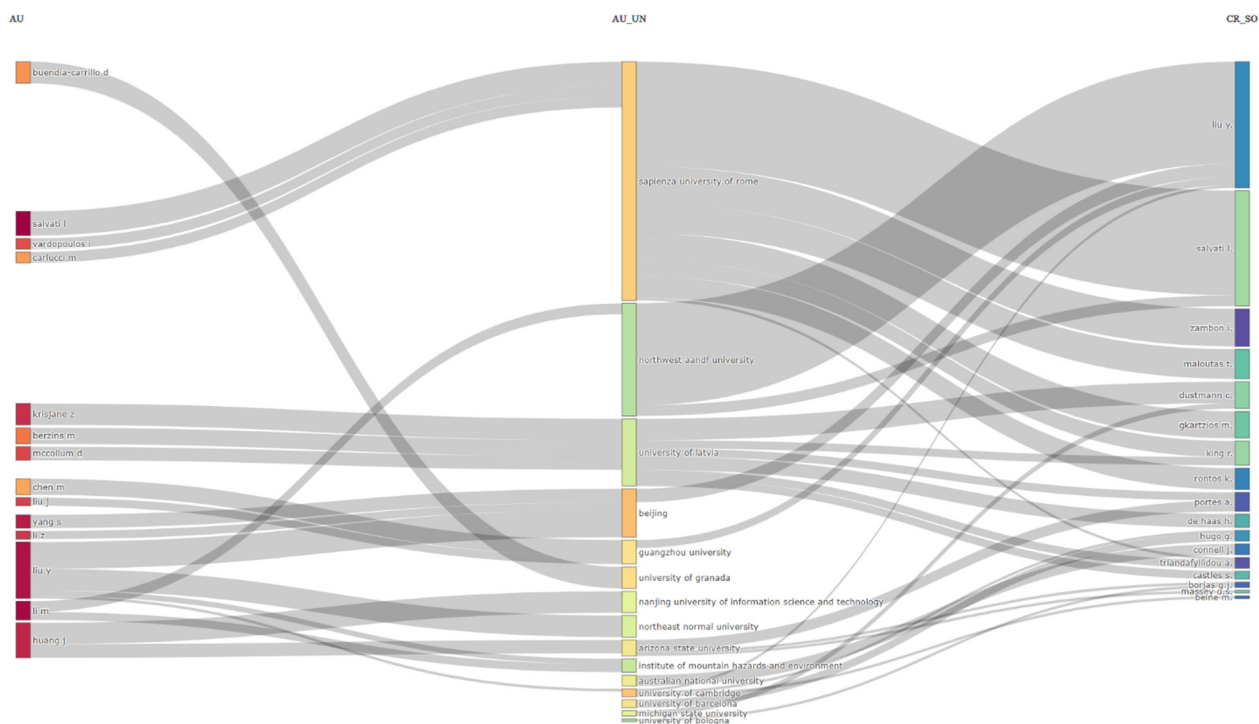


Figure 9. Dimension: authors, affiliation, and citations.

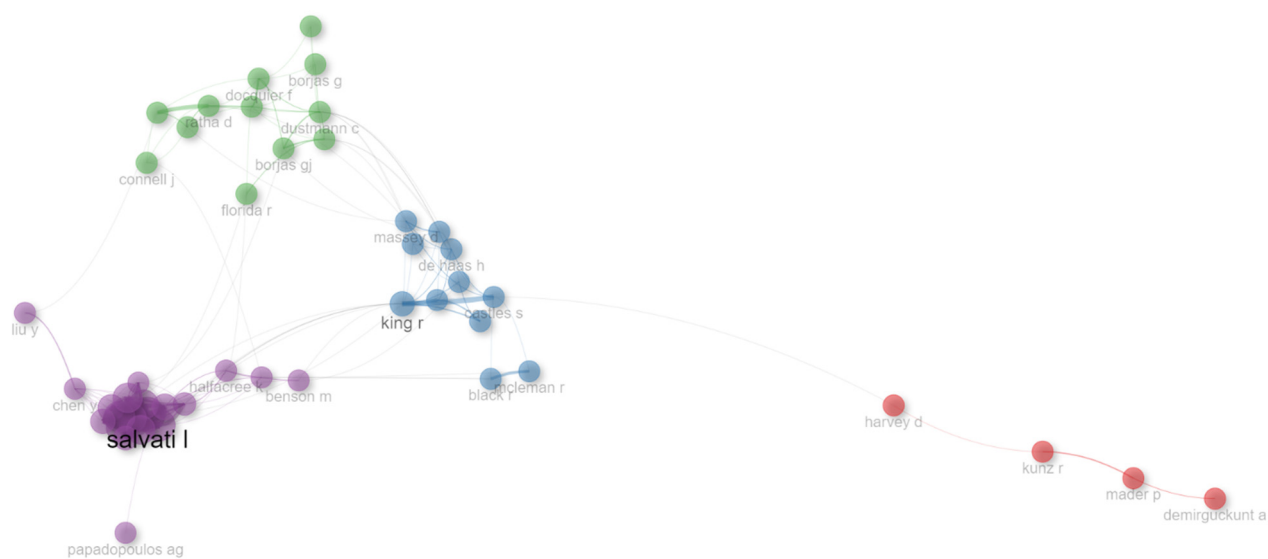


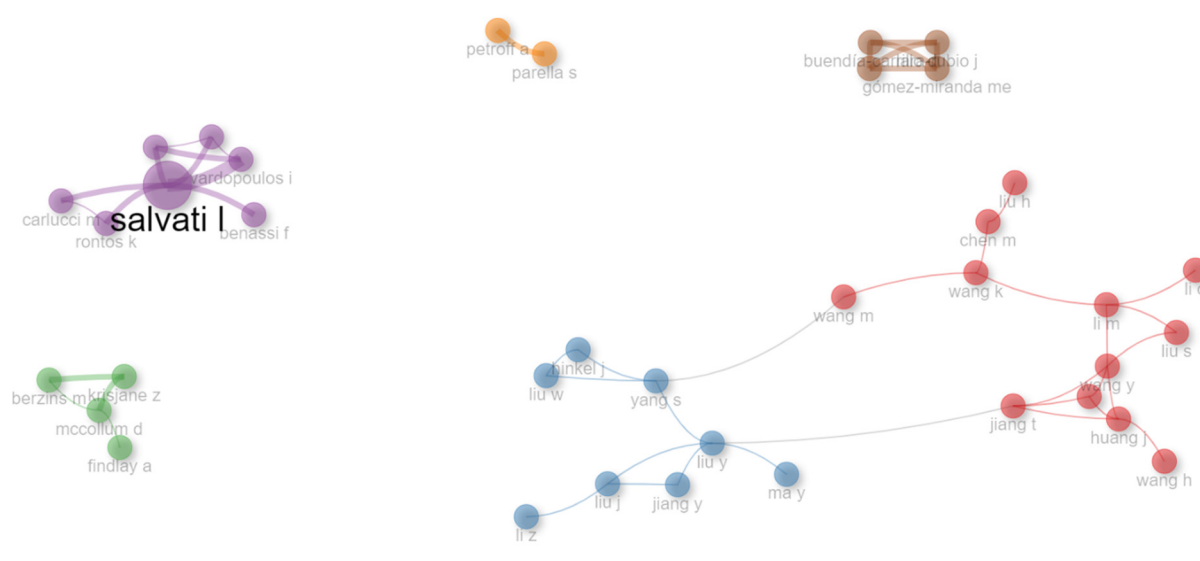
Figure 10. Co-citation network.

After all, this field is a niche, and many authors only sporadically carried out such studies, probably for a deeper analysis within the framework of studies related to one or more components of the topic studied in this work. This confirms the validity of Lotka's law for this case (Table 6). Lotka's law is a statistical law that states that the number of authors who publish a certain number of scientific works is inversely proportional to the square of this number, which reflects the uneven productivity among researchers.

Table 6. Author productivity through Lotka's law.

Documents written	N. of authors	Proportion of authors
1	1545	0.961
2	52	0.032
3	7	0.004
4	1	0.001
6	2	0.001
13	1	0.001

Accordingly, it will be more appropriate to study the cooperation of scientists who are co-authors of scientific publications. Data on research networks is shown in Figure 11.

**Figure 11.** Collaboration network.

According to Figure 11, which shows the results of the definition of research networks using the bibliometric toolkit Bibliometrix, it can be argued that there are several research networks. The most influential network is formed around Luca Salvati's research and dissemination activity. He is the author of 13 scientific articles that study the dynamics of urbanization (Salvati, 2016, 2020), including the growth and decline of urban areas and the impact of economic crises on urbanization processes (Salvati, 2018, 2020). This research network also includes one of the most relevant authors (Table 7), Ioannis Vardopoulos from Harokopio University of Athens, who also works on socio-economic changes due to migration processes (Ciommi et al., 2023; Vinci, 2023).

These scientists' research is supplemented by the scientific results of Federico Benassi (Benassi & Salvati, 2019, 2021), Kostas Rontos (Carlucci et al., 2017; Rontos et al., 2023), and their co-authors, which make significant contributions to the study of migration processes, their structure, causes, and consequences, creating a thorough scientific basis for making management decisions regarding the improvement of migration, financial, and social policy. At the same time, it should be noted that scientists from this research network do not pay much attention to the connection of migration and its social and economic consequences with sustainable development.

Table 7. Most relevant authors.

Authors	Articles	Articles fractionalized
Salvati L.	13	6.68
Li M.	6	1.43
Liu Y.	6	0.97
Yang S.	4	0.85
McCollum D.	3	1.00
Wang K.	3	0.83
Krisjane Z.	3	0.75
Vardopoulos I.	3	0.73
Huang J.	3	0.54
Li Z.	3	0.54
Liu J.	3	0.54

Another research network of scholars collaborating on the intersection of finance, migration, sustainable development, and inclusive growth includes Allan Mackay Findlay and David McCollum from the School of Geography and Sustainable Development at the University of St. Andrews and researchers Zaiga Krisjane and Maris Berzins from the University of Latvia. Researchers studied the relationship between crises and migration (McCollum et al., 2013, 2017; Findlay et al., 2013). Unlike the previous research network, these scholars pay much more attention to the relationship between sustainable development, migration, and economic crises. This research and emphasis are found in the research papers of Lara-Rubio et al. (2022) and Buendía-Carrillo et al. (2020). In Figure 11, the authors of these publications are recognized as a separate research network. However, for such a conclusion, it is necessary to wait for further publications by the authors in this direction to ensure that it is about a network of researchers working together in this direction. A similar situation is with the cooperation between the authors Fierro et al. (2022) and Parella & Petroff (2019), where they explore narrow questions related to the topic of bibliometric analysis in this paper.

The international research network (marked in blue in Figure 11) is much wider and thoroughly examines issues of sustainable development and improving governance in this area. In particular, researchers focus on identifying threats from climate change and natural disasters and integrated risk responses (Bisaro et al., 2021; Fang et al., 2017).

Another research network (marked in red in Figure 11) focuses on a wide range of research, most of which aims to help the People's Republic of China to make effective use of available resources to support a sustainable development course and manage migration processes (Zhang et al., 2023).

It is worth paying attention to when the most productive and influential scientists conducted their research to better understand research networks. Based on published scientific articles, Figure 12 shows the time and duration of scientists' research work.

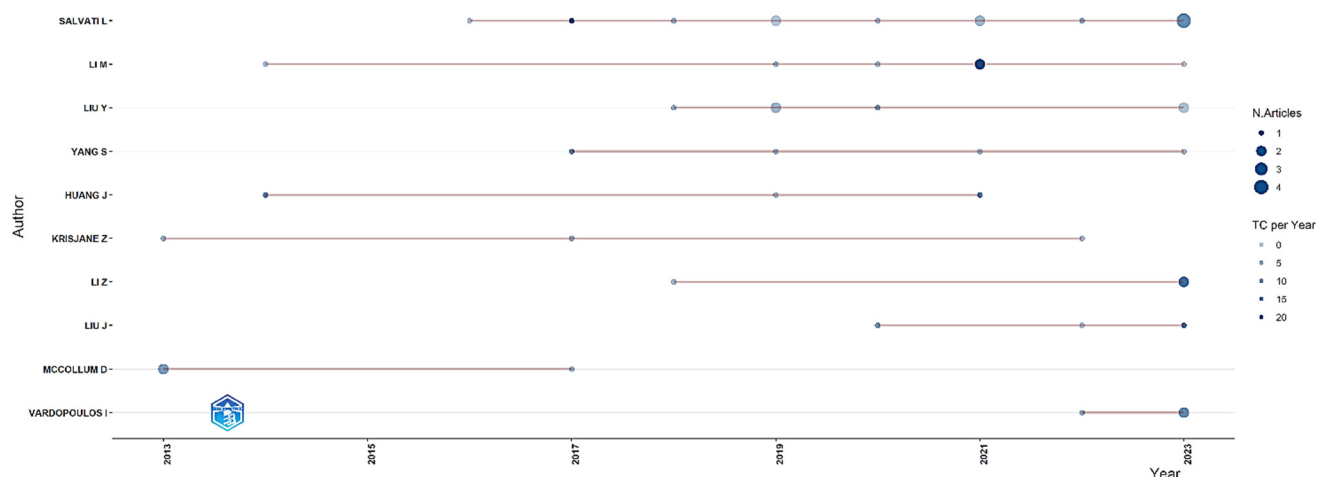


Figure 12. Researchers' production over time.

4.3. Thematic orientations: Analyzing subject focus in research on migration, financial stability, and sustainable development

The thematic analysis below is based on the study of a set of keywords. This approach gathers a comprehensive picture of research work and the relevance of certain issues. Also, it contributes to a deeper understanding of the world's economic, social, and environmental changes.

Based on the keywords (Figure 13), it can be concluded that some of the most discussed topics in scientific research are “climate change”, “economic impact”, “sustainability”, and “migration”. The large font of these terms indicates their importance and frequent mention in scientific literature.

Researchers constantly focus on climate change due to its global impacts on the environment, economy, and society. Studies of economic impact are often related to the analysis of the consequences of economic crises, problems of financial systems, the labor market, and migration. It also includes studying the economic impact of climate change, especially in the context of sustainable development. The concept of sustainability reflects an interest in developing economic and social strategies that would balance meeting the needs of the present without harming the opportunities of future generations. Analyzing migration flows often involves examining the causes and consequences of people's movements, including employment, international crises, political change, and natural disasters.

The interrelationships between these key themes indicate that they are part of a broader multidisciplinary debate spanning economics, ecology, sociology, and political science. The interrelationships between these topics create a powerful basis for understanding the complexity of global challenges and developing effective strategies for future socio-economic development.

Less frequently mentioned keywords also play an important role in comprehensively understanding the researched topics. Among such issues are “financial crisis”, “biodiversity”, “human perception”, “decision-making”, and “education and urbanization”.

The study of financial crises shows the connection between global economic instabilities and broader studies of economic impact and sustainable development. Biodiversity is an important aspect of environmental research, being interconnected with climate change and important for sustainable development strategies. Human perception and decision-making are key sociological and psychological research factors influencing political and individual responses to economic, climate, and

societal changes. Education and urbanization indicate the importance of analyzing demographic changes and their impact on the development of society, as well as the importance of educational initiatives in the context of global challenges.



Figure 13. Visualization of keywords in scientific research at the intersection of finance, migration, sustainable development, and inclusive growth.

Thematic diversity emphasizes the need for a multidisciplinary approach in research at the intersection of finance, migration, sustainable development, and inclusive growth. It is worth noting that the term “inclusive growth” is surprisingly rare in the selected studies, but keywords that are components of the concept of inclusive growth are frequent.

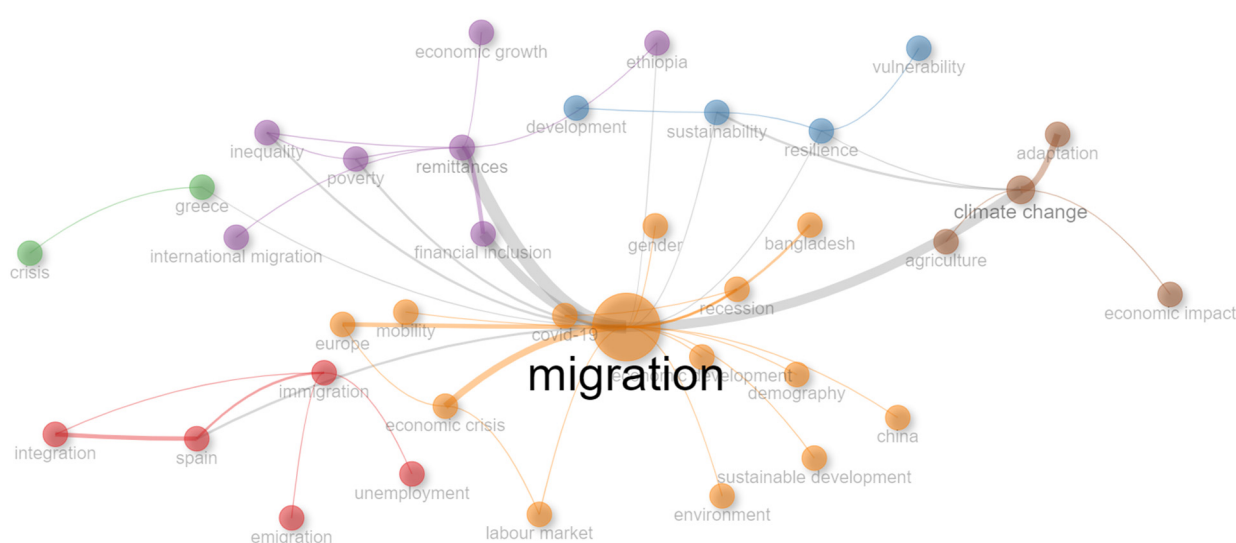


Figure 14. Co-occurrence network.

The co-occurrence network depicted in Figure 14 enhances the comprehensive understanding of the research topic. Certain proper nouns are retained within this figure and are typically excluded in such analyses. Nevertheless, retaining these proper nouns is recommended in the context of geographic and research network analyses. This approach facilitates a more nuanced depiction of the research landscape, offering an enriched perspective on the interrelations and contextual specifics of the topic under investigation. The co-occurrence network depicted in Figure 14 centers on migration as the principal node, illustrating its interconnectedness with various socio-economic and environmental factors.

The main core of publications is studying migration and its connection with economic phenomena, particularly financial and economic crises and economic recession. However, it is not for nothing that migration processes have attracted the attention of scientists for a long time. This shows that the consequences of migration are significant for the economic situation in the countries affected by it and are capable of causing significant social changes. Figure 14 shows more specific directions of scientific research. In particular, it shows many studies of the impact of migration on the labor market, employment, and unemployment, as well as schemes for integrating migrants into the country's economy and society. This topic is linked by another thematic block related to inclusive growth by studying poverty and problems with economic and social inequality and financial inclusion. Typical keywords that characterize these studies are “inequality”, “poverty”, and “crisis”. A significant part of research focusing on sustainable development and the possibilities of implementing consistent policies in this direction focuses on how changes in financial and economic realities due to significant migration processes and crisis phenomena affect sustainable development prospects. Typical keywords that characterize these studies are “sustainable development”, “resilience”, and “adaptation”. Accordingly, economic and financial capacity changes need to be studied regarding their impact on climate policy implementation and adaptation to existing conditions.

The co-occurrence network complexity, with connections spanning economic, environmental, political, and social themes, underscores the interdisciplinary nature of migration studies. It highlights how migration is a multifaceted phenomenon that requires understanding from multiple perspectives.

Overall, this co-occurrence network effectively maps out the diverse and interconnected themes that define migration research, emphasizing this field's multidimensional challenges and considerations.

Figure 15 shows the change in research topics from 1990 to 2023. This research time was divided into four smaller periods, namely 1990–2000, 2001–2010, 2011–2019, and 2020–2023. It is necessary to explain why such a time distribution is appropriate. The first of the identified periods, from 1990 to 2000, was characterized by a significant global reorganization of markets after the collapse of the Soviet Union. This time saw the expansion of world trade and the integration of capital markets. At the same time, this period also captures the Asian crisis (1997) and a period of financial instability that led to increased migration.

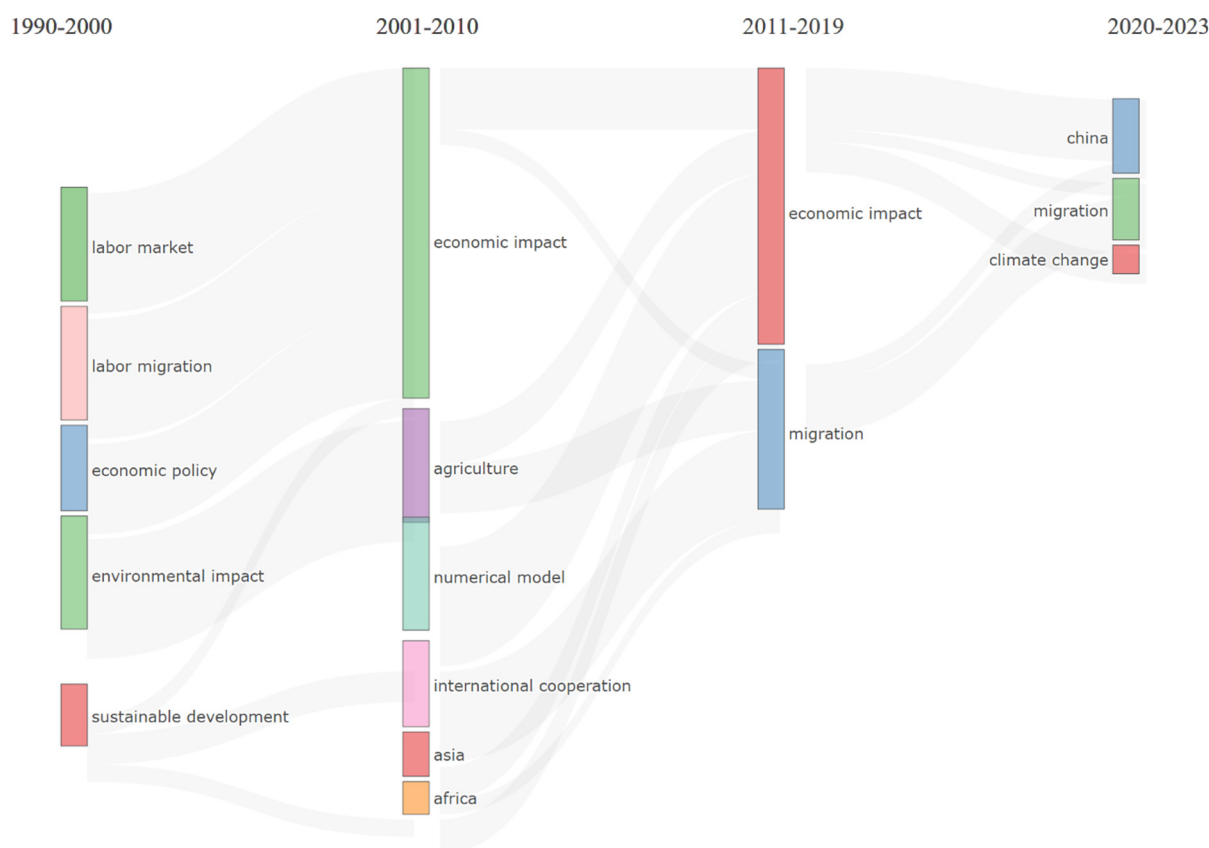


Figure 15. Thematic evolution.

The period from 2001 to 2010 includes the economic integration processes of the European Union due to the introduction of the euro. The same period covers the global crisis of 2007–2008 and the decline in migration post-crisis due to economic recession and rising unemployment. The two periods described above include several years after the crisis since this article is a bibliometric study; accordingly, processes that took place in real life, such as crises, were studied both during the immediate development of events and after their completion, when it became possible to track the consequences.

The third period, from 2011 to 2019, was characterized by economic recovery after the financial crisis and a growing focus on sustainable development. The UN Sustainable Development Goals (2015) were adopted as a global reference point for further growth. At the same time, there was an increase in international migration flows due to economic, political, and environmental factors.

The latest period, from 2020 to 2023, is characterized by some significant upheavals, including the global pandemic, which significantly affected financial markets, migration, and economic stability, worsening social inequality and geopolitical conflicts, which led to new challenges in ensuring inclusive growth and energy—a crisis that prompts faster investment in clean energy.

According to Figure 15, during the 1990s, a key area of research was labor migration and approaches to adapting economic policy to maximize its positive effects. Later, this research direction grew into a broader concept of economic impact, which allows a systematic look at the causes and

consequences of labor and other types of migration and brings a whole layer of issues that were not investigated before. At the same time, a significant amount of research has been directed at studying climate change and approaches to sustainable development. However, sustainable development at that time had not yet received considerable attention in scientific research. These studies were weakly related to the financial sector and migration.

In the second stage, in addition to expanding the horizons of the study of economic factors related to migration, it is worth noting the shift in the research topic from sustainable development and climate change toward solving practical problems, particularly in agriculture. The subject of regional studies has also become more pronounced. In addition, the complexity of the relationships between economic policy, the financial environment, the growing importance of migration in a globalized world, and the increased attention to the need to spread sustainable development practices and deepen the inclusiveness of economic growth led to the emergence of some methodological studies that substantiated the feasibility of a systemic approach to further development taking into account current and future interests. There is a growing interest in economic impact, which can reflect the effects of global economic integration and crises.

During the third phase, much of the research is focused on economic impact, which indicates a continuing interest in studying the economic consequences of migration. Migration remains a key element of research, reflecting the ongoing importance of this phenomenon.

Global upheavals such as COVID-19 and the energy crisis due to the disruption of supply chains following Russia's military aggression against Ukraine have brought climate change into the spotlight, particularly through a new wave of interest in renewable energy. This shift is evident in major policy initiatives such as the European Union's REPowerEU plan, launched in May 2022, aimed specifically at reducing dependence on Russian fossil fuels while accelerating the green transition. Similarly, the United States Inflation Reduction Act of 2022 represents the largest climate investment in US history, allocating \$369 billion for climate and clean energy initiatives. It is a direct response to both economic recovery needs and energy security concerns. These policy developments demonstrate how geopolitical crises have catalyzed institutional commitment to renewable energy, not merely as an environmental priority but as a matter of economic and national security.

A significant amount of research was carried out by Chinese researchers who solved problems relevant to China. Analysis of research networks also confirms the activity of scientists from the People's Republic of China in the field of urbanization and internal migration, finding a balance between rural and urban development and the impact of these processes on economic growth and financial stability.

At the end of the bibliometric analysis, it is advisable to pay attention to the most cited articles on the subject under study (Table 8).

De Haas (2010) analyzed historical changes in the debate on the link between migration and development, using new theoretical approaches to justify the diversity of the impact of migration, challenging the traditional opposition between pessimistic and optimistic views and emphasizing the importance of structural constraints and the role of the state in shaping conditions for the positive effects of migration. Carlucci et al. (2017) analyzed the features of urban development in Southern European countries, focusing on identifying homogeneous and diverse patterns of urbanization without industrialization and its impact on the dynamics of the development of large and medium-sized cities in the context of population changes and economic crises. The question of urbanization is at the heart

of a study by Seto (2011), where the authors analyzed the critical social and political drivers of migration to urban centers.

Table 8. Most globally cited documents.

Paper	Total citations	TC per year	Normalized TC
de Haas, H. (2010)	971	64.73	6.05
Stanke, C., Kerac, M., Prudhomme, C., Medlock, J., & Murray, V. (2013)	270	22.50	7.40
Catrinescu, N., Leon-Ledesma, M., Piracha, M., & Quillin, B. (2009)	270	16.88	5.19
Primavera, J. H. (1997)	270	9.64	1.73
Udmale, P., Ichikawa, Y., Manandhar, S., Ishidaira, H., & Kiem, A. S. (2014)	225	20.45	6.94
van Barneveld, K., Quinlan, M., Kriesler, P., et al. (2020)	183	36.60	10.37
Carlucci, M., Grigoriadis, E., Rontos, K., et al. (2017)	170	21.25	6.62
Cheng, Q., & Chang, N.-B. (2011)	166	11.86	3.72
Seto, K. C. (2011)	164	11.71	3.68
Ghosh, S., & Kanjilal, K. (2014)	137	12.45	4.23

Ghosh & Kanjilal (2014) analyzed the long-run relationships between energy consumption, urbanization, and economic activity and pointed to unidirectional causality from energy consumption to economic activity and from the latter to urbanization, suggesting policy recommendations that would take into account the consequences of rapid urbanization for sustainable development. A study by van Barneveld et al. (2020) also aimed to improve policies. The researchers analyzed the global economic and market consequences of the COVID-19 pandemic, criticized neoliberal approaches to globalization and labor market regulation, and called for international dialogue to develop new strategies for exiting the crisis.

Catrinescu et al. (2009) analyzed the impact of international migrants' remittances on sustainable economic development, pointing to mixed research results due to omitted variables, particularly the quality of political and financial institutions of the recipient country that influence long-term economic growth.

The study by Stanke et al. (2013) is an example of a publication that contributes to the topic analyzed in this bibliometric analysis but is indirectly related to sustainable development, migration, and economic impacts. Researchers examined the relationship between droughts and human health, looking at drought's direct and indirect effects on health. Among other things, the authors determined how social and economic conditions can increase the consequences of natural disasters. A similar study was conducted by Udmale et al. (2014).

5. Discussion

The results of the bibliometric analysis indicate that the study of the relationship between finance, migration, sustainable development, and inclusive growth is still a niche area. It can be assumed that it will continue to be so in the context of interrelationships. Even at the stage of forming the dataset, which included a small number of articles following the specified criteria, it was possible to assume that only a few publications would focus on the relationship between the mentioned phenomena. The selection criteria were constructed to cover the maximum number of publications related to the subject under study. Accordingly, among the 568 articles in the dataset, some were only tangentially related to the relationship between migration, the financial sector, and the ability to maintain a course for sustainable development and inclusive growth. In these papers, scientists studied individual

components of complex problems highlighted during this bibliometric analysis. A significant number of publications, which were devoted separately to the issues of migration, sustainable development, the state and prospects of the financial environment, and inclusive growth, were not included in the analysis because their authors did not attempt to study the complex system of relationships between these concepts, focusing on its individual elements.

5.1. Trends and implications of migration research

The centrality of migration as the principal node in the co-occurrence network (Figure 14) reflects our specific search criteria, which aimed at investigating the intersection of migration research with financial stability and sustainable development. It is important to note that this connection between migration and economic crises or financial instability in our dataset is not coincidental but rather a deliberate focus of our search strategy. We specifically sought studies that explored how countries affected by migration processes maintain their course toward sustainable development and inclusive growth in the context of changing financial environments.

Therefore, while our analysis suggests strong connections between migration and economic phenomena, particularly financial crises and recession, in our dataset, we cannot extrapolate these findings to migration research broadly. Studies of migration that do not meet our specific criteria may focus on entirely different aspects unrelated to financial or economic challenges.

The bibliometric evidence reveals a clear evolution in migration research over the past three decades. Earlier publications from the 1990s primarily focused on labor market dynamics and economic policy adaptation, as shown in Figure 15. This focus has gradually expanded toward more comprehensive analyses that consider complex socio-economic impacts.

Within our dataset, studies examining the relationship between economic conditions and migration processes are particularly notable. Findlay & McCollum (2013) examined the employer's side of migration dynamics, analyzing how labor recruitment and employment practices in the UK's rural agribusiness sector adapted from periods of EU accession to economic recession. Their typology of recruitment practices illuminates the institutional mechanisms that structure migrant labor channels in response to shifting economic conditions. Building on this institutional perspective, McCollum et al. (2017) provided valuable insights into how economic downturns reshape migration patterns, introducing the concept of "crisis migrants" as a distinct cohort emerging during the Great Recession in Latvia. Their research demonstrates how changing economic circumstances not only affect migration volumes but also transform migrant characteristics and mobility processes.

The geographical distribution of migration research (with centers in Europe, China, and the United States, as evidenced by publication volumes shown in Figure 7) reflects not only regional priorities but also distinct migration challenges faced by these regions.

Research from major European countries such as the United Kingdom, Spain, Germany, and Italy, which together form a significant portion of publications in our dataset, often focuses on cross-border migration flows and their economic impacts, with studies like Kersan-Škabić & Burić (2022) quantifying how migration affects income levels in both emigrant and immigrant countries within Europe, reflecting the continent's experience with both intra-EU mobility and external migration flows. In contrast, Chinese research, which has shown the most dramatic growth since 2010 (Figure 7), predominantly examines internal rural–urban migration dynamics, with studies like Xu et al. (2017) investigating how rural labor migration affects household land use arrangements in mountainous

regions, and Mohabir et al. (2017), which explored the intentions of “floating migrants” to either stay in urban centers or return to rural areas during economic fluctuations, addressing the unique challenges of managing the world’s largest internal migration phenomenon. American research frequently bridges these approaches, examining both domestic mobility and international migration impacts. These regional variations underscore how local contexts and policy priorities shape research agendas and methodological approaches.

Citation patterns further illustrate these regional emphases, with the United Kingdom receiving an average of 27.9 citations per article, while other European countries like Norway (39.3), Netherlands (27.8), and France (25.2) also show strong citation impacts compared to China’s growing body of work (Table 5). Such citation differential suggests that while European migration research has established foundational frameworks, emerging research centers are gaining influence by addressing previously understudied aspects of migration–financial interactions.

The thematic evolution observed in Figure 15 demonstrates a significant shift from narrow labor migration studies in the 1990s toward more systematic analyses of economic impact and socio-economic consequences by the 2020s. This conceptual expansion corresponds with de Haas’s (2010) examination of theoretical transitions in migration research, which advocates transcending reductive frameworks in favor of more complex interpretations of migration’s interrelationship with broader development dynamics. This evolution reflects a growing recognition of migration as a multidimensional phenomenon with profound implications for both origin and destination countries’ sustainable development trajectories.

5.2. *Financial environment and economic stability research*

Our bibliometric analysis reveals significant evolution in research addressing the financial dimensions of migration. Unlike earlier studies that treated migration and financial stability as separate domains, contemporary research increasingly recognizes their complex bidirectional relationship. This shift reflects broader theoretical developments that challenge compartmentalized approaches to socioeconomic phenomena.

The prominence of terms like “economic impact”, “financial crisis”, and “recession” in our keyword analysis (Figure 13) indicates that researchers now approach migration as both influenced by and influencing financial environments. This perspective is particularly evident in research after global crises, where studies began examining how economic downturns reshape migration patterns while simultaneously analyzing how migration flows affect financial resilience during crises.

Studies by Lara-Rubio et al. (2022) and Buendía-Carrillo et al. (2020) examined how demographic factors, including immigration patterns, affect financial risks and the sustainability of local governments. Their research identified that female immigration specifically emerges as a significant risk factor for municipal default, with varying impacts depending on the population size of municipalities. These studies represent an evolution from broader financial analyses toward more nuanced investigations that incorporate migration-related variables into financial risk assessment models. While not exclusively focused on migration, they demonstrate a growing recognition of migration’s role in local government financial stability, particularly in contexts of rural depopulation and changing demographic structures.

Institutional factors mediating the relationship between migration and financial stability remain an understudied area, though our analysis reveals a growing interest in this topic. Wellalage & Locke

(2020) examined the impact of remittances on financial inclusion, specifically among refugees, proposing an enhanced methodology for measuring financial inclusion through six metrics derived from G20 proposals. Their research identified a significant methodological shortcoming in previous studies, as traditional indicators of financial inclusion, when applied to refugees with limited access to formal financial services, may introduce systematic bias. This important methodological observation highlights a problematic aspect of research at the intersection of migration and financial stability—the mismatch between standardized indicators and the specific circumstances of different migrant types. Such methodological challenges likely affect other studies of the relationship between migration and financial systems, necessitating the development of more adaptive analytical approaches in this field. Future research should focus on developing financial inclusion and stability indicators specific to particular migrant groups, accounting for both formal and informal financial practices.

Our analysis identifies a gap in research examining how financial mechanisms intersect with migration in the context of environmental challenges. Emerging literature in green finance, such as the paper by Xu & Zhu (2022), explores how financial policies can support environmental objectives but rarely addresses migration implications specifically. This compartmentalized approach represents a missed opportunity to understand how financial instruments might simultaneously address both climate adaptation and migration management. Our bibliometric analysis reveals that most financial studies treat migration as an exogenous factor rather than an integral component of financial system dynamics. This conceptual limitation hinders the development of innovative financial mechanisms designed to address migration-related challenges, particularly in regions experiencing climate vulnerability. The financial dimensions of climate-induced migration—including investment requirements for both sending and receiving regions, insurance mechanisms for climate risks, and financing for adaptation strategies—remain severely understudied. Future research in financial economics should incorporate migration variables more systematically into models examining sustainable finance and green investment, recognizing that effective financial systems must account for demographic mobility as a fundamental aspect of economic resilience.

5.3. Sustainability and inclusive growth perspectives

The bibliometric analysis reveals a temporal shift in research priorities connecting migration with sustainability and inclusive growth. While pre-2011 studies rarely addressed these interconnections explicitly, subsequent years have witnessed a growth in publications examining how migration dynamics influence and are influenced by sustainability objectives. This temporal pattern coincides with the formulation of the Sustainable Development Goals, suggesting that policy frameworks have significantly shaped research agendas.

The co-occurrence analysis demonstrates that terms related to “sustainable development”, “resilience”, and “adaptation” now form distinct clusters within migration research networks. This pattern indicates an emerging paradigm shift from treating migration primarily as an economic or demographic phenomenon toward recognizing its multidimensional implications for sustainable development. However, our analysis also reveals significant conceptual fragmentation within this research domain.

Our analysis identifies a conceptual gap in connecting migration dynamics with broader sustainability transitions. While some studies have begun exploring the relationship between migration and economic development, they rarely integrate this into comprehensive sustainability frameworks.

Kozlovskiy et al. (2024) conducted a correlation-regression analysis examining the relationship between net migration volumes and GDP levels across European countries, demonstrating that increased migration positively impacts economic growth in countries like Poland. However, their approach treats migration primarily as an economic variable influencing GDP without considering its broader interactions with social equity and environmental sustainability dimensions. Similarly, broader discussions of sustainable development strategies, such as those presented by Melnyk et al. (2019) in their analysis of approaches to reducing inequalities in the context of Sustainable Development Goals, rarely position migration as a central component of sustainability frameworks. These works exemplify a prevalent trend wherein research acknowledges migration's economic impacts but fails to incorporate migration dynamics into holistic models of sustainable development systematically. This represents a critical missed opportunity, as migration patterns affect multiple dimensions of sustainability simultaneously, including labor markets, social cohesion, resource distribution, and environmental pressures. Future research should explicitly incorporate migration variables into multidimensional sustainability models, recognizing migration as an integral component of sustainable development pathways rather than merely an exogenous economic factor.

A notable methodological gap emerges in research addressing inclusive growth dimensions of migration. While studies examining inequality metrics, such as the work by Kot & Paradowski (2022), have made significant advances in quantifying distributional effects across 55 countries, their analytical frameworks rarely incorporate migration variables or distinguish between migrant and non-migrant populations in welfare assessments. This represents a critical limitation, as inequality dynamics may differ substantially between these groups. Similarly, research on sustainability transformation in financial institutions, exemplified by Lapinskaitė & Skvarciany (2023), explores how environmental, social, and governance factors convert into institutional value but typically overlooks how migration patterns might influence these sustainability metrics or institutional adaptations. These methodological approaches reveal broader limitations in the field—namely, the tendency to employ static frameworks that inadequately capture the dynamic aspects of migrant integration into host economies. Such limitations are particularly problematic for understanding inclusive growth, which inherently involves temporal dimensions of economic participation and social inclusion. Future research should develop more dynamic analytical approaches that can track migrant integration trajectories over time and their relationship with broader patterns of economic inclusion and sustainability transformation.

The growing attention to climate-related mobility, as evidenced in studies like Bisaro et al. (2021) and Favretto & Stringer (2024), represents perhaps the most promising area of integration between migration and sustainability research. Bisaro et al. (2021) categorized various global climate-related decisions and specifically recognized international migration as a key area requiring multilateral policy responses. Similarly, Favretto & Stringer (2024) found that human migration is a common outcome of climate change across highlands, drylands, and island regions, highlighting its significance for climate adaptation planning. However, despite recognizing migration as an important factor in climate adaptation, these studies often remain confined within disciplinary boundaries. Bisaro et al. (2021) focused on developing climate services from a risk management perspective, while Favretto & Stringer (2024) approached the problem primarily from the position of vulnerable ecosystem analysis. Such disciplinary fragmentation limits the potential for developing comprehensive policy approaches that would simultaneously address climate-induced human mobility and sustainable development in an

integrated manner. Further interdisciplinary research is needed to combine expertise from migration studies, climatology, development economics, and natural resource management.

5.4. Research gaps and future directions

Despite growing interest in integrated approaches, our analysis reveals significant gaps in research that systematically examines the nexus between migration, financial environments, and sustainability. The complex interrelationships between these domains demand more comprehensive analytical frameworks than are currently available in the literature. Our bibliometric analysis suggests that researchers typically focus on bilateral relationships (migration and financial stability or migration and sustainability) without adequately addressing the trilateral interactions among all three dimensions.

The fragmentation of research networks identified in our analysis suggests limited cross-disciplinary collaboration, potentially constraining theoretical and methodological innovation. The significant proportion of single-authored publications (131 authors) and the scarcity of researchers with three or more publications on this topic (only 11 researchers) indicate that this research area remains a niche field without well-established collaborative networks. This fragmentation appears to limit the development of comprehensive frameworks that could inform integrated policy approaches.

Our bibliometric data reveals three primary geographical centers of research activity: Europe (particularly Italy, Germany, and the United Kingdom), the United States, and China. These regional research clusters appear to reflect differing migration challenges and priorities. European research frequently addresses cross-border migration flows, integration challenges, and their economic impacts in the context of EU policies. Chinese research often focuses on internal rural–urban migration dynamics and their implications for economic development and urbanization processes. American research tends to examine broader global migration patterns and their economic consequences.

The temporal analysis of publication trends suggests that global events may influence research intensity in this field. The noticeable increase in publications from 2016 onward coincides with significant migration events in Europe and subsequent policy responses. More recently, our data indicates that publication volume has increased further, possibly responding to the economic and migration disruptions associated with the COVID-19 pandemic and geopolitical tensions, including those stemming from Russia's military actions in Ukraine. These events appear to stimulate scholarly interest in understanding how migration patterns interact with financial stability and sustainability objectives during periods of crisis.

Looking forward, our analysis suggests several promising research directions. First, there is a need for integrated methodological frameworks that simultaneously analyze migration, financial stability, and sustainability dimensions rather than treating them as separate domains. Second, extended temporal studies could potentially provide insights into the evolving relationships between migration patterns, financial system development, and sustainability transitions. This aspect appears underexplored in the current literature. Third, comparative studies across different regions could help identify how institutional contexts mediate the relationships between migration, financial systems, and sustainability outcomes. Finally, research exploring how digital technologies might facilitate migrant financial inclusion while contributing to sustainable development goals represents a potentially valuable area for future inquiry.

These research gaps and future directions emerge directly from our bibliometric analysis, which reveals both the growing interest in this interdisciplinary field and the significant conceptual and methodological limitations that currently constrain its development.

6. Conclusions

The bibliometric analysis reveals that research at the intersection of migration, financial environments, and sustainability remains a niche field characterized by fragmented efforts rather than systematic inquiry. Despite this fragmentation, publications have increased significantly since 2017, reflecting growing recognition of these interconnected challenges in academic discourse.

Our analysis identified three geographic centers of research excellence (Europe, China, and the United States), each emphasizing distinct aspects of the migration–finance–sustainability nexus. European research predominantly focuses on cross-border migration and integration challenges; Chinese studies examine internal rural–urban migration dynamics, while American research bridges these approaches with broader global perspectives.

Research networks remain underdeveloped, with most publications representing isolated studies rather than coordinated research programs. This is evidenced by the significant proportion of single-authored papers and the scarcity of researchers with substantial publication records in this area. This fragmentation limits theoretical innovation and the development of integrated analytical frameworks.

Thematically, research has evolved from narrow studies of labor migration in the 1990s to more comprehensive analyses of economic impacts by the 2020s. Recent research increasingly recognizes migration’s multidimensional implications for sustainability, though conceptual integration remains limited. Climate-related mobility is emerging as a promising area of integration between migration and sustainability research.

Contemporary global challenges (the COVID-19 pandemic, geopolitical conflicts, and climate change) have stimulated new research examining how migration patterns interact with financial systems and sustainability objectives during periods of crisis. Future research should focus on developing integrated methodological frameworks that simultaneously analyze migration, financial stability, and sustainability dimensions to provide a more comprehensive understanding of their complex interactions.

Despite limitations in scope and methodology, this study offers valuable insights into the evolution and current state of research on migration, financial environments, and sustainability. The results highlight the need for more interdisciplinary collaboration and systematic approaches to address these interconnected global challenges.

Author contributions

Conceptualization, SL, IV, LS and YB; Methodology, LS, IV and YB; Investigation and Data curation, LS and IV; Writing - original draft, IV and LS; Writing - review & editing, SL, LS, IV and YB; Visualization, LS and IV; Validation, SL, LS; Supervision, SL and YB; Project administration, SL and YB. All authors have read and agreed to the published version of the manuscript.

Use of AI tools declaration

The authors declare that they have used Generative-AI tools during the preparation of this manuscript. Specifically, Claude 3.7 Sonnet (Anthropic) was used to assist with text structuring, editing, and ensuring quality translation into English. Additionally, Grammarly was used to check grammar and enhance language. The authors reviewed, verified, and took full responsibility for all content in the final manuscript.

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Conflict of interest

All authors declare no conflicts of interest in this paper.

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