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Investment Patterns in Diverse Economies: A Bibliometric Study of Global Transformations

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Abstract: *This paper presents a bibliometric analysis examining investment patterns in diverse economies and their relationship with global financial transformations. The study spans from 1964 to 2024, utilising data from the Web of Science (WoS) and analysed with R Studio and CiteSpace to identify trends and shifts in academic focus on investment strategies. A dataset of 1595 articles from 554 sources was processed, revealing key trends and shifts in investment patterns across different regions. The research highlights a notable rise in academic interest since 2015, with an 8.46% annual growth rate in publications. Methodologically, thematic evolution and network visualisation techniques were used to track collaboration patterns and emerging topics. For instance, 40.94% of the articles involved international co-authorship, emphasising global interest in investment dynamics. The study reveals critical insights into foreign direct investment (FDI) trends, particularly in developing and transitional economies, and how various global financial events influence investment behaviours. The average citation rate of 2.7 per article further underscores the significance of this field. The analysis confirms that investment patterns are crucial to understanding global economic transformations, providing a foundation for policymakers to craft economic strategies aimed at promoting balanced and sustained investment growth.*

Keywords: economic growth, economic development, diverse economies, bibliometric analysis, citespace, r studio.
JEL Classification: C55, F21, F63, Q01.

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INTRODUCTION

The course of economic growth and development is significantly influenced by investment patterns, especially across a range of economies, from developed to emerging markets. Public and private capital allocation affects financial stability, encourages innovation, and changes the fundamental makeup of economies (Marconi & Upper, 2017). Investment decisions, including foreign direct investment (FDI) and venture capital flows, play a pivotal role in shaping economic trajectories. These decisions are critical in developing and transitioning economies, where strategic investments can promote long-term growth and competitiveness (Lestari et al., 2022). Given the rapid transformations in global financial systems, understanding investment patterns is essential for addressing current economic challenges and achieving sustainable development.

Recent global events, such as the COVID-19 pandemic and financial crises, have highlighted the importance of well-informed investment strategies. These events underscore the need for a deeper understanding of how capital flows influence productivity, innovation, and labour markets (Elhassan, 2021; Wen et al., 2022; Ayadi & Ben Said, 2023). Countries that effectively attract and allocate investment are better positioned to adopt new technologies, foster entrepreneurship, and maintain economic resilience (Cooke, 2021). Furthermore, in diversified economies, differences in investment strategies can either accelerate or impede economic growth, making it crucial to analyse the relationship between financial investments and broader economic transformations (Lee & Vu, 2020; Ahmad et al., 2021).

To better understand how investment patterns in various economies relate to global financial transitions, this research will look at major trends, cooperative networks, and the contribution of FDI to economic growth. Using the CiteSpace and R Studio Biblioshiny tools, the paper assesses the corpus of current literature, enabling the thematic evolution and visualisation of scientific articles.

There are three main goals for the study. Initially, the aim is to examine the distribution of investment flows among various economic domains and geographical areas, with a specific emphasis on venture capital and foreign direct investment. Second, the study will evaluate the effects of global financial events on capital allocation and investment patterns, with a focus on developing nations. Finally, the study will investigate how financial changes have co-evolved and how this has affected sustainable development and long-term economic competitiveness.

1. To meet the goals and issues mentioned previously, the current study investigated the following research questions:
2. What distinguishing features and tendencies can be identified in the corpus of current research on investment trends and global financial transformations?
3. Which nations and institutions exert the greatest influence on the conversation surrounding financial investments?
4. What themes and new directions are the focus of the literature on financial transitions?
5. How do research themes evolve over time, and how are they interconnected?
6. What are the patterns of global collaboration and network centrality in the research domain?

This study offers a strong foundation for comprehending the function of investments in varied economies through bibliometric analysis. The insights offered will be helpful to academics, investors, and governments who want to support financial stability and economic growth in different areas. To ensure balanced and sustainable growth, the study provides vital information on how to better match investment strategies with changes in the global economy.

LITERATURE REVIEW

The relationship between financial investments and economic development has been thoroughly studied in both theoretical and empirical research, with an emphasis on topics like infrastructure, technology, and industrial capacity. Several studies demonstrate that investments in infrastructure, particularly in fields such as electricity, telecommunications, and transportation, boost entrepreneurship, productivity, and innovation – all of which improve economic performance (Sikandar et al., 2021; Hao et al., 2023; Tsaurai, 2023). As multinational companies frequently look for advanced and effective logistics, energy, and communication systems in host nations, infrastructure development also plays a vital role in attracting FDI (Becker et al.,

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2020). Prioritising infrastructure development and technology advancements helps economies attract foreign investment and promotes innovation and sustainable growth (Wendlassida Miningou & Tapsoba, 2017; Wang et al., 2021).

Additionally, studies have demonstrated that by making strategic investments in technology advancement and infrastructure, which support fair growth and long-term development, economic disparity can be reduced (Mehmood, 2021). Furthermore, evidence points to the importance of these investments in promoting economic growth, especially in emerging nations (Lenkei et al., 2018). Investments in automation, digital infrastructure, and innovation capacity have become crucial for sectors to keep up with technological advancements as the Fourth Industrial Revolution gains traction (Garzón Artacho et al., 2020; Li, 2022; World Economic Forum, 2024).

A long-standing issue in economic research has been the analysis of investment patterns in various economies, with an emphasis on how capital allocation affects economic development and growth. The importance of capital accumulation in boosting economic production was highlighted by early theories of investment, including the Solow-Swan model and the Harrod-Domar growth model (Pistunov & Udovytska, 2021; Tőkés, 2022; Ritenour, 2023). As international financial systems developed, researchers started looking into how investments were allocated across different economic sectors, such as industry, infrastructure, and education (Du et al., 2022). A large portion of the investment debate was dominated during the 20th century by the emphasis on industrial growth in emerging nations (UNCTAD, 2024). However, when knowledge economies emerged in the late 20th and early 21st centuries, the significance of human capital as a vital source of innovation and economic competitiveness became increasingly apparent (Rooney, 2005; Prasetyo & Kistanti, 2020; Saleh et al., 2020).

Globalisation and technological advancements have led to a rise in FDI and venture capital flows, diversifying investment destinations, particularly in developing economies (UNCTAD, 2024). This shift reflects a broader understanding that fostering economic growth requires not only physical capital but also investments in human capital. The historical trajectory of investment research demonstrates the evolving relationship between capital allocation and economic institutions, highlighting the increasing importance of human capital in strengthening economic resilience in a competitive global market.

Bibliometric analysis has gained traction as a valuable method for tracking research trends and identifying key collaborations within a given field. Techniques such as co-citation analysis, co-authorship networks, and keyword mapping are frequently applied in studies of financial investment to uncover critical relationships and thematic evolution (Vijay Kumar & Senthil Kumar, 2023). For example, Al-Nimer et al. (2022) and Nazzal et al. (2023) utilised bibliometric approaches to trace the development of FDI research, revealing its connections to economic development and human capital formation. Scholars have studied the effects of investment flows on technical innovation, industrial growth, and macroeconomic stability in recent decades. The increasing intricacy of worldwide finance has prompted a review of investment approaches not only in conventional domains like industry and infrastructure but also in more dynamic fields like technology and clean energy (Hotelling, 2021). Bibliometric studies have gained popularity as a means of trend analysis in this discipline, offering a quantitative understanding of the evolution of research subjects over time and highlighting influential figures in the discussion of investment flows and economic growth (Bekisz et al., 2023). In a nutshell, the literature reveals a strong interdependence between financial investment flows and the development of human capital, as nations increasingly rely on human capital to drive economic competitiveness. The application of bibliometric techniques has illuminated significant trends, key collaborations, and emerging research areas. This study extends these insights by examining investment patterns across a range of economies, with a specific focus on financial investment and global economic transformations.

METHODOLOGY

Data Description

The Social Science Citation Index (SSCI), Science Citation Index Expanded (SCIE), Emerging Sources Citation Index (ESCI), and Arts & Humanities Citation Index (A&HCI) from the Web of Science Core

ISSN (online) 2521-1242; ISSN (print) – 2521-1250

Collection (WOSCC) served as the study's main data sources. These indices provide thorough coverage of the scientific literature in a range of fields, making precise and thorough bibliometric analysis possible.

There were gathered and examined 1,595 publications that were published between 1964 and 2024. 3,573 authors contributed to these publications, demonstrating a wide variety of viewpoints within the field of study. To guarantee accessibility and reproducibility of results, only open access articles were included in the "Article" and "Review Article" document categories that were chosen for this investigation in the full open access.

The search strategy employed the following query to capture relevant literature:

("investment pattern" OR "investment trend*" OR "investment strategy" OR "capital flow*" OR "financial investment*" OR "foreign direct investment" OR "FDI" OR "economic investment" OR "private investment*" OR "public investment*")*

AND

("diverse econom" OR "developing econom*" OR "emerging market*" OR "transition econom*" OR "advanced econom*" OR "low-income econom*" OR "middle-income econom*" OR "high-income econom*" OR "global econom*" OR "regional econom*")*

This extensive search query was created to capture research at the nexus of changing geopolitical landscapes, different economies, and investment trends.

Tools and Software Used

The principal platform for data analysis was R Studio. Bibliometric analysis, specifically, data processing, statistical analysis, and visualisation was done using the Bibliometrix program. R Studio made it easier to clean and arrange the dataset, which made it possible to handle bibliographic data and produce descriptive statistics quickly. Factorial analysis and network visualisation are examples of advanced analytical methods that were used to find patterns and relationships in the data. To investigate the intellectual structure of the study field, scientometric analysis was performed using CiteSpace software. Citation analysis, building co-citation networks, and identifying important keywords and new trends were made possible by CiteSpace. We were able to chart the development of research subjects over time and pinpoint important papers and authors who have made significant contributions to the field by using CiteSpace.

Utilising both R Studio and CiteSpace, the study took advantage of each tool's advantages. Comprehensive quantitative analysis and visualisation were made easier by R Studio's strong statistical and graphical features. An extensive examination of the development of the research field was made possible by CiteSpace's interactive visualisation of temporal trends and intellectual networks.

Data processing involved several steps to ensure the integrity and reliability of the analysis (Table 1).

Table 1. Methods of Data Processing

Data Processing Methods	
Data Cleaning and Normalisation	Duplicate records were removed, and inconsistencies in author names, affiliations, and keywords were standardised. This process was essential for accurate co-authorship and collaboration analyses.
Data Transformation	Bibliographic data were converted into formats compatible with R Studio and CiteSpace, facilitating seamless integration between software tools.
Descriptive Statistical Analysis	Key metrics such as the number of publications per year, citation counts, and authorship patterns were calculated to provide an overview of the research landscape.
Network Analysis	Co-authorship, co-citation, and keyword co-occurrence networks were constructed to visualise collaboration patterns and thematic relationships.

Source: developed by authors.

Approach to Data Analysis

The need to quantitatively assess a vast body of literature on investment patterns and diverse economies motivated the adoption of bibliometric and scientometric approaches. Bibliometric analysis provides objective metrics of research output and impact, while network analysis uncovers the structural relationships between authors, institutions, and research themes, revealing collaborative dynamics and thematic development.

To ensure comprehensive coverage across multiple disciplines, data were sourced from various indices within the Web of Science (WoS) Core Collection. This multidisciplinary approach was essential given the cross-cutting nature of the research topic, which spans economics, finance, and global development studies. The study aimed to offer an in-depth understanding of how investment patterns shape, and are shaped by, global financial transformations across varied economies. A systematic analysis of this data, using advanced analytical tools, enabled the identification of significant trends, collaborative networks, and emerging themes.

RESULTS

An examination of the relationship between different stages of economic development and financial strategies is necessary to comprehend how investment patterns change across different economies. The results show that increasing human capital is essential to increasing economic competitiveness and productivity. When education is taken out of the analysis, the emphasis changes, highlighting the role that financial flows and FDI have in promoting economic growth in various geographical areas.

Upon analysing the data displayed in Figure 1, the primary attributes of the study universe spanning the years 1964 through 2024 become evident. 1,595 papers published in 554 distinct venues, including conferences and scholarly publications, were included in the sample. The abundance of references suggests that the subject of investment patterns in various economies is one that is well-established in the academic literature and continues to pique scholars' curiosity.

In the field of study, authors are crucial. The sample has 3,573 writers, which suggests that there are a sizable number of scholars working on the subject. The average number of co-authors for a paper is 2.7, which suggests that researchers collaborate at a high level. Furthermore, 40.94% of the papers had co-authors from other countries, demonstrating the international scope of research on investment. Notably, only 272 authors wrote articles by themselves, confirming once more how primarily collaborative effort is in this field of study.

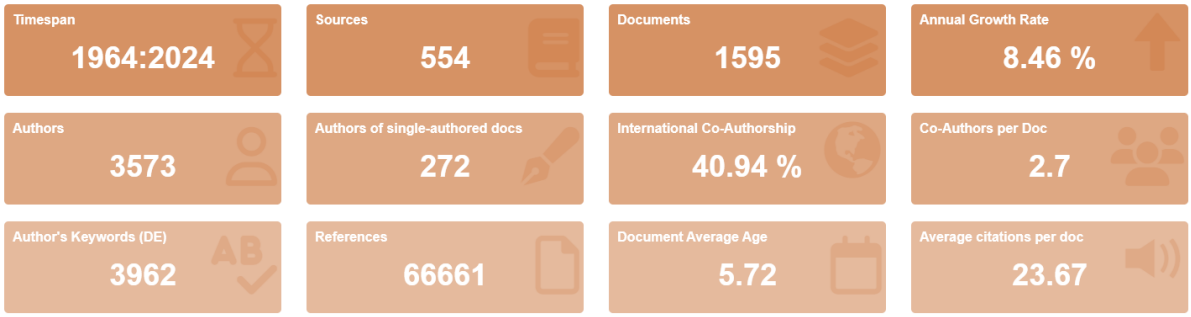

Figure 1. Main Information of the dataset

Source: developed by the authors (based on the WoS database using Biblioshiny App).

There has been a noticeable increase in research activity during the time, as seen by the average yearly growth of publications, which is 8.46%. The growing interest in the relationship between global financial developments and educational processes is probably the cause of this expansion. The rise in publications can also be a sign of the topic's importance to the policy and academic sectors. Interesting insights can also be obtained from keyword and citation data. 3,962 keywords were used in the sample, which reflects the variety of study topics, and the range of concerns covered in the field. The large base of 66,661 references suggests that the study in the sample is grounded on a substantial body of prior research and has a solid scientific foundation. Apart from these metrics, it is noteworthy that the average age of the articles is 5.72 years, indicating the recent nature of most publications and the applicability of the results to current policy and academic discussions. The study's papers are actively used by other researchers and have a substantial impact on the academic environment, as evidenced by the average number of citations per publication of 23.67. All things considered, the dataset that is being provided shows the highly collaborative and dynamic nature of the area of study on investment trends across many nations. International collaboration and active citation are crucial, highlighting the topic's significance for comprehending changes in global finance and education.

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The information shown in Figures 2a and 2b paints a complex picture of the relationship between the increasing amount of research on investment patterns in various economies and the varying influence of citations. This disparity could indicate that cross-disciplinary research is needed to increase the domain's influence in larger scholarly and policy conversations, or it could point to a lag in academic acknowledgement.

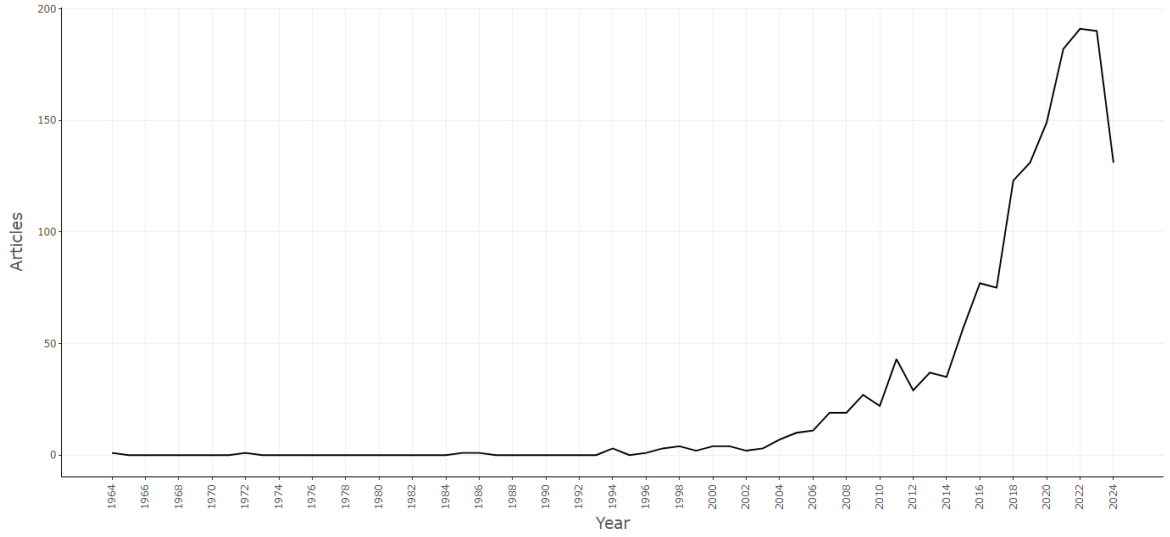

Figure 2a. Annual Scientific Production

Source: developed by the authors (based on the WoS database using Biblioshiny App).

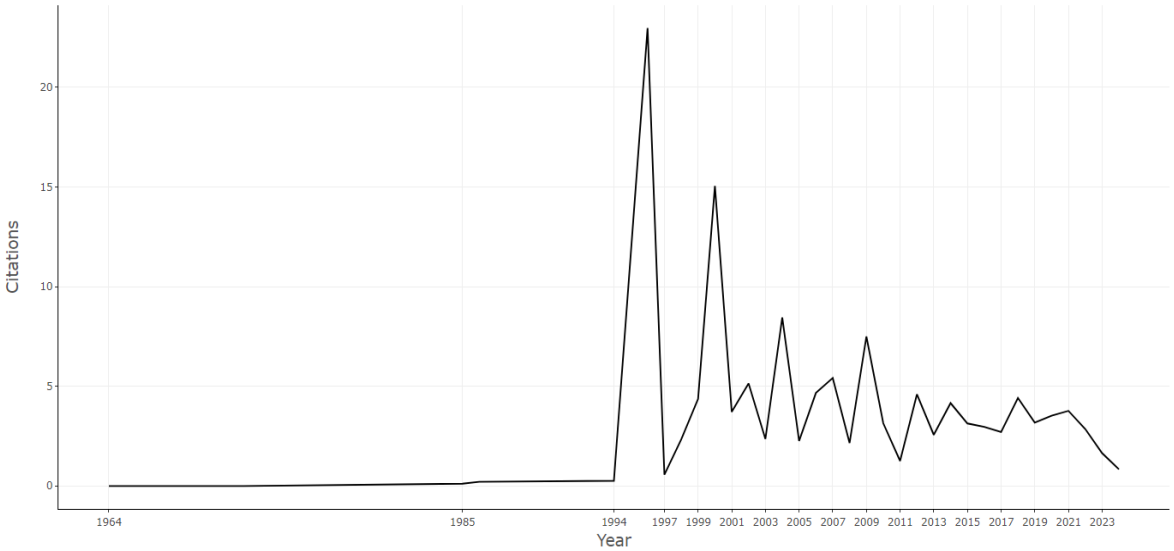

Figure 2b. Average Citations Per Year

Source: developed by the authors (based on the WoS database using Biblioshiny App).

From 1964 to 2024, the number of articles published about investment patterns in various economies increased, as seen in Figure 2a. From 1964 to 2006, the data shows that the amount of scientific production was relatively low and steady, with fewer than 10 publications produced annually. However, there has been a discernible increase in publications since 2014, and this trend would continue until 2022 when there would be a peak of over 150 papers. This substantial increase suggests that interest in the subject is rising, most likely because of the growing focus on the changes in global finance and education. Possible reasons for the modest fall in 2023 include changes in research priorities or insufficient data collected for the year. All things considered; the pattern indicates that investment patterns in various economies have emerged as a crucial area of study in recent times.

Figure 2b highlights significant changes in the influence and recognition of articles over time by displaying variations in the average annual number of citations. The significant peak around 1997 suggests

that, around this time, research on investments gained prominence or significance. This might be linked to significant shifts in the world economy, such as the Asian financial crisis of 1997, which sparked curiosity about capital flows, FDI, and economic reforms (Hong & Shin, 2019).

After 2004, there appears to have been a gradual fall in citations, indicating that although publications on investment themes are still published, their overall importance is diminishing. The reason for this could be that fewer publications are now the focus of ongoing studies due to the diversification of recent research on subjects like capital flows and foreign direct investment. The moderate number of citations by 2023 may point to a shift in the focus of study towards more recent and emerging issues, including digital economy or sustainability.

The variations depicted in Figures 2a and 2b may result from a variety of factors that influence publication citations and research output.

1. *Changing the focus of research*. Due to globalisation and the expansion of emerging markets, research on investment patterns may have been most popular in the early 2000s, particularly when it came to emerging economies (European Central Bank, 2018). Nevertheless, the scientific community's interests might have shifted in the years that followed, which could have caused a brief drop in publications and citations.
2. *A rise in the number of publications following 2015*. The abrupt rise in publications following 2015 (as seen in Figure 2a) is attributable to the increasing interest in the subject of global financial transitions and how they relate to education. This can be explained by the effects of international economic crises, changes in policy, or structural changes in the global economy, which spurred researchers to aggressively investigate novel investment strategies (Kose et al., 2020).
3. *How citations change over time*. Recent publications typically contain fewer citations because it takes longer for other authors to cite them. This explains why, despite an increase in papers, the citation rate has decreased recently (as seen in Figure 2b). The impact of articles published in the 2020s on the academic community will eventually become more apparent, even though they may not be generally appreciated now.
4. *Originality and calibre of research*. The rise in basic research at this time, which had a big influence on the academic community, is what led to the high number of citations in 2004. Even if there were more publications in the ensuing years, some of the articles could not have had as original of an idea, which had an impact on their citation counts. Other scientists may be less interested if research is repeated or if novel methodologies are not used.
5. *Heightened rivalry in the educational setting*. A general rise in publications on a variety of themes in recent years may result in a decline in the average citation rate of individual studies (Colyvas et al., 2022). Researchers' focus may be divided among more papers due to the rise in publications on the topic of global economic change, which lowers the number of citations for any particular publication.

Thus, a variety of external economic reasons, shifts in academic interest, and the highly competitive academic environment can all be linked to variations in publication activity and citation rates. The progression of important research subjects in economic and educational growth is shown in Figure 3 throughout a number of time periods, including 1964–2009, 2010–2015, 2016–2019, 2020-2023, and anticipated themes for 2024–2024.

The graphic illustrates how some topics develop or shift in significance throughout time while others stay important:

1964–2009: the study landscape was dominated by subjects related to economic development, foreign direct investment, and capital flows. The emphasis on conventional economic theories and the function of capital in propelling growth in emerging markets are reflected in these fundamental issues.

2010–2015: This time period represents the start of the diversity of study subjects. The significance of emerging markets, crises, and absorptive capacity increased, suggesting a shift in focus towards comprehending how economies adjust to external shocks and how various locations, including China and Africa, contribute to patterns of global investment.

2016–2019: There has been a noticeable increase in the scope of study topics, with a focus on growth, capital flows, and foreign direct investment, as well as the inclusion of new themes like fiscal policy, limitations, and business cycles in the conversation. This indicates a rising interest in comprehending the structural difficulties that modern, globalised economies face.

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2020–2023: This most recent period continues to emphasise capital flows, economic development, and foreign direct investment, but it also adds additional important subjects like corporate governance and competitiveness. These changes most likely reflect growing worries about how economies maintain their competitiveness in a global economy that is becoming more integrated and changing quickly, with sustainability and governance playing major roles.

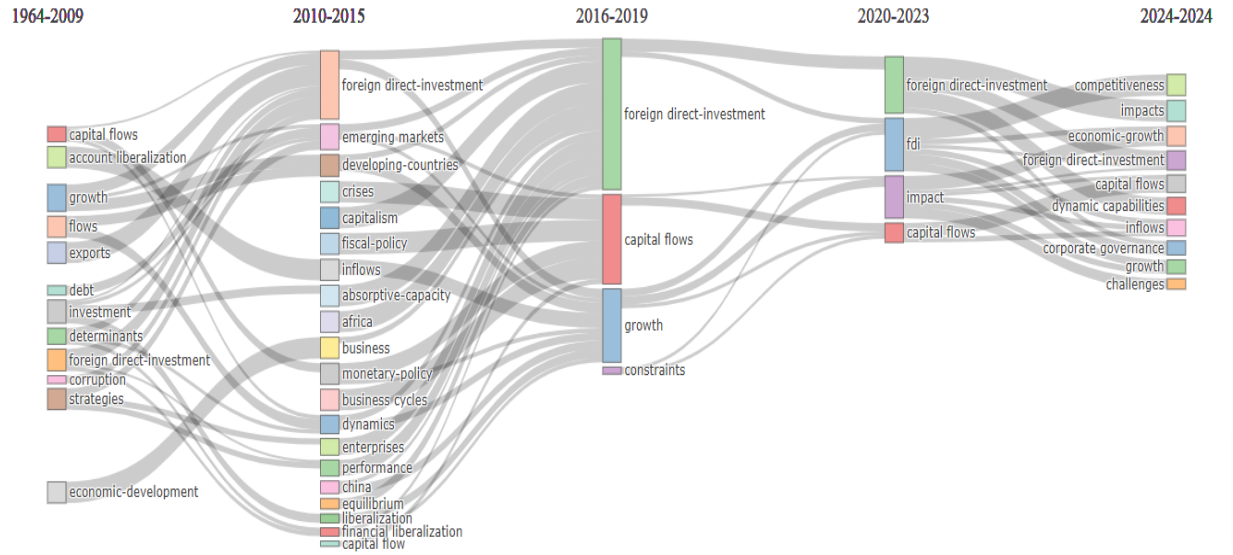

Figure 3. Thematic Evolution

Source: developed by the authors (based on the WoS database using Biblioshiny App).

2024–2024: The themes for this time frame indicate that competition and governance will remain important, but they also hint at new difficulties including growth limits and dynamic capabilities. Future worries about economic resilience in the face of technological developments and global upheavals are likely to be reflected in these themes.

The two visualisations in Figures 4a and 4b provide insights into global research networks and thematic trends by illustrating the relationships between nations, affiliations, and research themes in bibliometric studies. With the use of these Three-Field Plots, we can see the dynamic links between different countries, academic institutions, and important research keywords, which reveals important trends in international scientific research. Here:

– Figure 4a: Affiliations (AU_UN) - Countries (AU_CO) - Author's Keywords (DE);

– Figure 4b: Keywords Plus (ID) - Countries (AU_CO) - Author's Keywords (DE).

The two visualisations, which display the relationships between nations, organisations, and thematic areas of scientific publications, are based on information from the Web of Science (WoS) database.

Figure 4a links keywords (DE), affiliations (AU_UN), and countries (AU_CO). The nations indicated on the left are significant producers of scientific literature. The leading countries in terms of research production are the United States, China, and the United Kingdom. The University of London, the National Bureau of Economic Research, and the University of Leeds are just a few of the prominent research institutions and universities featured in the middle part. These organisations have a substantial impact on a variety of sectors, including capital flows, foreign direct investment (FDI), and economic growth. The topic focus of this research is reflected by the prominent placement of keywords such as "globalisation," "emerging markets," "capital flows," and "foreign direct investment" on the right. The connections between these organisations imply that certain nations, like the USA and the UK, have robust institutional networks that cooperate globally on important economic issues. Institutions such as the IMF and the University of London, for example, are associated with major themes in international economic policy, like foreign direct investment and capital controls, demonstrating their impact on the discourse around these subjects.

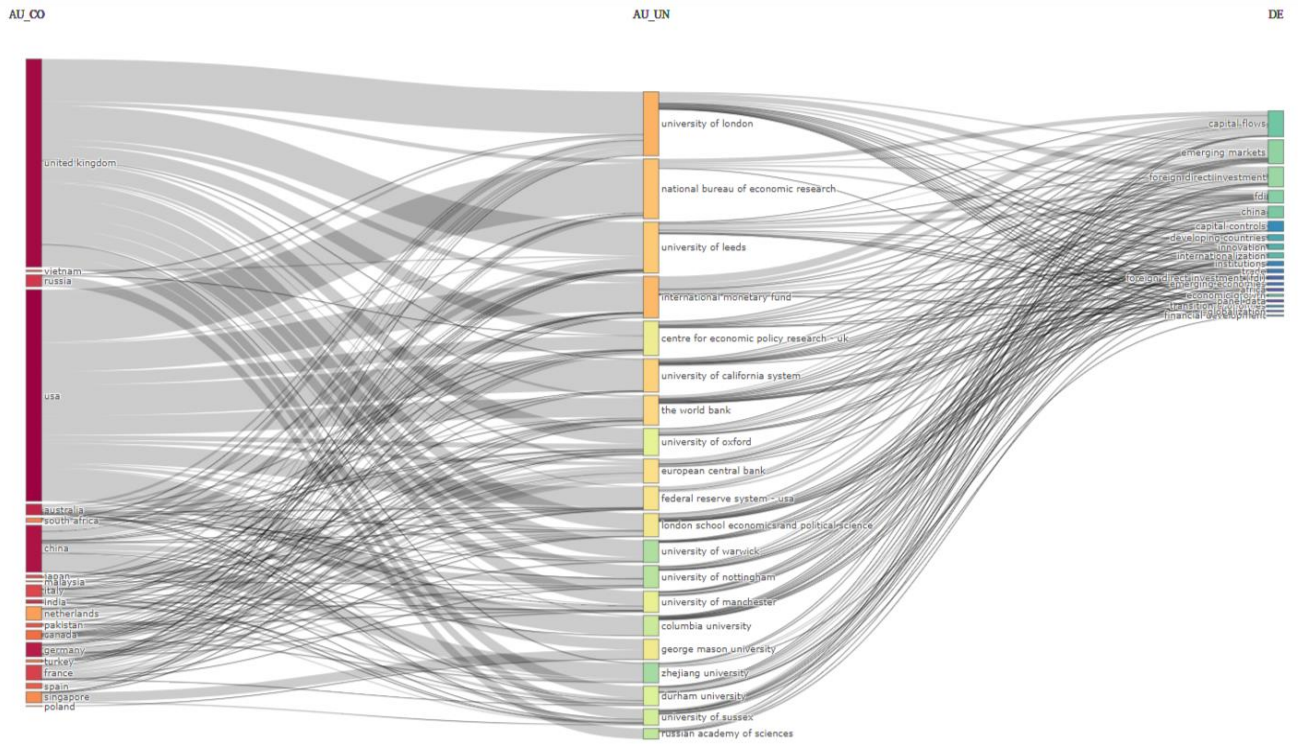

Figure 4a. Three-Field Plot (countries – affiliations – keywords)

Source: developed by the authors (based on the WoS database using Biblioshiny App).

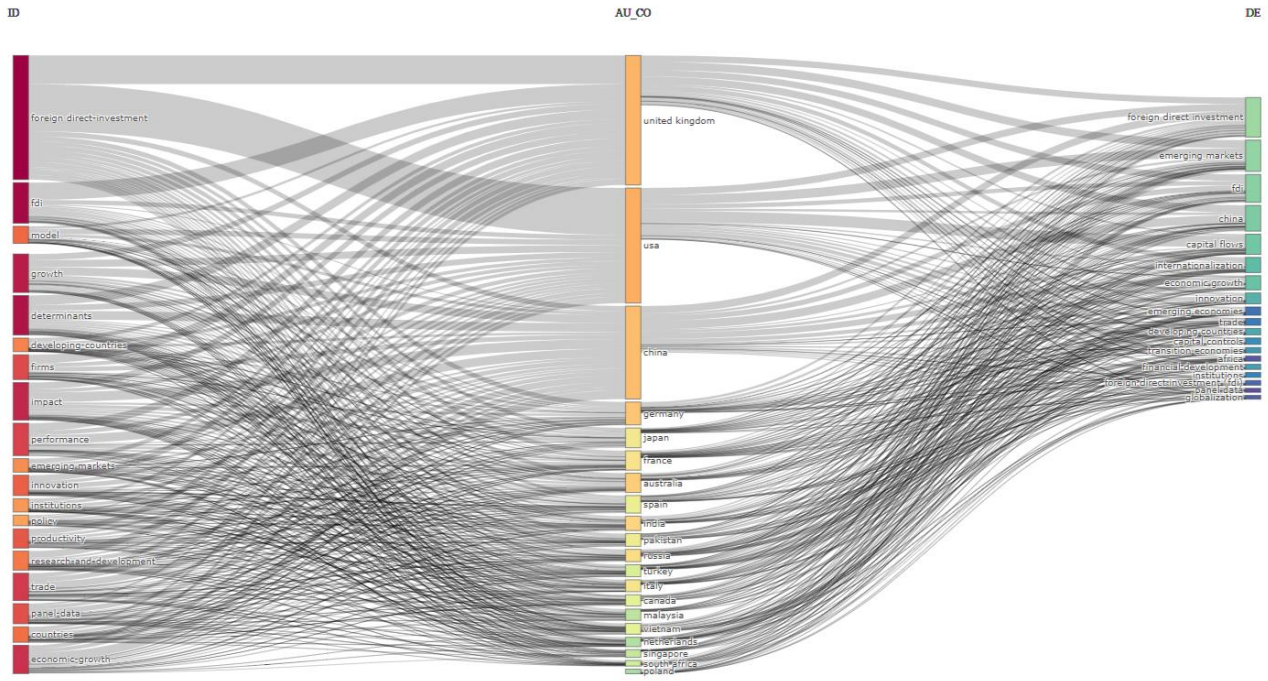

Figure 4b. Three-Field Plot (keywords plus – countries – author`s keywords)

Source: developed by the authors (based on the WoS database using Biblioshiny App).

Similar relationships are shown in Figure 4b, where author's keywords (DE) are on the right and keywords plus (ID) are on the left. Extensive use of keywords like "foreign direct investment," "growth," "trade," and "innovation" indicates the topical focus of researchers. The major contributors, China, the United States, and the United Kingdom, continue to loom large in the centre. These countries are intimately linked to themes such as innovation and economic growth, indicating the importance of their research goals in shaping global markets and economic policy. Discussions on macroeconomic development revolve around

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international organisations, as seen by the keywords "economic growth," "FDI," and "globalisation" associated with organisations such as the World Bank.

These numbers emphasise China's significant contribution, which is indicative of the country's quickly expanding research portfolio and rising levels of international cooperation, particularly in fields pertaining to investment and economic growth (Aldieri et al., 2018; Lee & Haupt, 2019). In a similar vein, the United States and the United Kingdom exhibit robust institutional ties to a range of economic issues, especially through influential universities and think tanks that actively influence international economic discourse. The significance of major international institutions like the World Bank, IMF, and Oxford as well as the London School of Economics in supporting studies on capital flows, emerging economies, and foreign direct investment is further shown by these graphics.

Research on economics and investment is concentrated in a small number of powerful countries and institutions, indicating a growing centralisation of knowledge creation in these fields as other subjects like innovation and sustainable development gain traction. This probably reflects more general issues facing the world economy, notably the post-pandemic recovery and the shift to sustainable growth strategies. Moreover, the existence of varied establishments in Europe, North America, and Asia indicates a significant degree of global cooperation towards tackling these global issues. China, the UK, and the USA dominate these rankings, indicating their influence on research production and agenda-setting in the areas of globalisation, sustainability, and economic growth.

Bradford's Law, a bibliometric principle which indicates that a small number of journals publish the majority of papers on a given topic while a larger number of journals publish only a few, is clearly illustrated by the graph in Figure 5, which shows the core sources for the topic of investment patterns in diverse economies. This graph helps identify the key sources that play a crucial role in disseminating knowledge in this field. On the vertical axis, the number of articles published in each source is presented, while the horizontal axis ranks journals by the number of articles they have contributed to the selected topic.

In the central portion of the graph, the core sources are highlighted. Among them, the Journal of International Business Studies emerges as the leading source, with the highest number of publications — around 60 articles — compared to other journals. This is followed by Sustainability and the Journal of International Economics, which also contribute significantly to the core but with fewer articles than the leader. After these major journals, the number of publications in each subsequent source drops sharply, which aligns with the distribution pattern described by Bradford's Law.

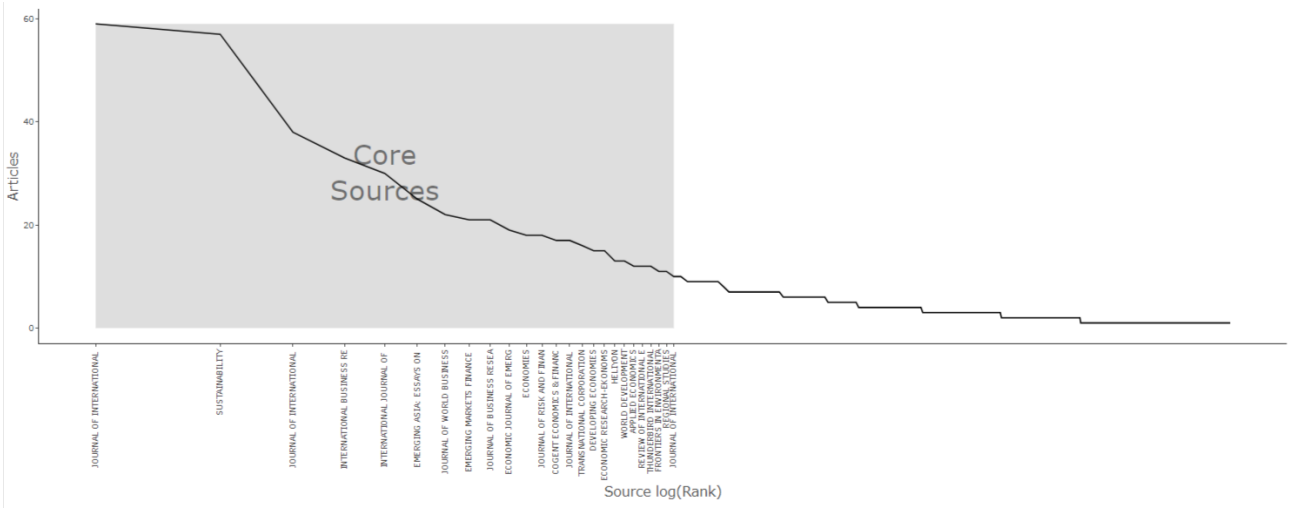

Figure 5. Core Sources by Bradford's Law

Source: developed by the authors (based on the WoS database using Biblioshiny App).

The graph further reveals a long tail, showing that many other journals, such as the European Journal of International Management and Economics of Innovation and New Technology, contribute a much smaller number of articles on the topic. This suggests that while most of the research output is concentrated in a few

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key sources, there is still a broad range of specialised and niche journals that contribute to the literature, albeit to a lesser extent.

This concentration of publications in a small number of highly influential journals, particularly the Journal of International Business Studies, underscores the dominance of these sources in shaping discussions on investment patterns and global transformations. At the same time, the presence of many other sources suggests a diverse range of research interests and directions within the broader field. This bibliometric insight helps highlight both the major contributors to the academic conversation and the specialised outlets that offer unique perspectives on the topic.

Key bibliometric variables, including H-index, G-index, M-index, total citations (TC), number of publications (NP), and the start year of publications (PY_START), are displayed in Table 2, which displays the local impact of chosen journals. These measures are useful for assessing the impact and output of journals in the research community, especially when it comes to business, developing markets, and international finance.

Table 2. Sources' Local Impact

Source	h_index	g_index	m_index	TC	NP	PY_start
Journal Of International Money And Finance	25	44	0.962	1975	59	1999
Journal Of International Economics	24	38	0.828	3993	38	1996
International Business Review	20	31	1.667	1007	33	2013
Journal Of World Business	17	22	1.063	1692	22	2009
Sustainability	15	25	1.500	727	57	2015
Journal Of Business Research	12	21	1.091	661	21	2014
Journal Of International Management	11	17	0.733	425	17	2010
World Development	11	13	0.407	748	13	1998
Emerging Markets Finance and Trade	10	20	0.455	409	21	2003
International Journal of Emerging Markets	10	16	1.000	302	30	2015

Source: developed by the authors (based on the WoS database).

With the highest H-index of 25, the Journal of International Money and Finance stands out and suggests that it contains a significant number of highly referenced publications. Its G-index of 44, which highlights the distribution of citations overall, highlights the journal's extensive reach across all its articles' citations. Since the journal began making significant contributions in 1999, it has received 1,975 total citations from 59 pieces.

The Journal of International Economics, with a G-index of 38 and an H-index of 24, trails closely behind. Its 3,993 total citations, however, are much higher, attributable to the journal's renown and the papers it has published since 1996. Despite having a somewhat lower H-index, its higher citation counts indicate that it has had a significant impact on worldwide economic studies.

The Journal of World Business and International Business Review are two other excellent newer periodicals. The former has accumulated almost 1,000 citations with 33 papers and a comparatively high M-index of 1.667, showing a strong citation effect every year since 2013. Similarly, since 2009, the Journal of World Business has had a significant impact on the business area as evidenced by its H-index of 17 and 1,692 citations.

Another notable journal is Sustainability, which has an H-index of 15, but it also performs well in other respects. Notably, it has the most publications since 2015 – 57 – in this table. Its G-index of 25 indicates a wide citation distribution, and its M-index of 1.500 indicates a steady annual impact, with a total of 727 citations.

Other noteworthy entries include the Journal of International Management, which has a slightly lower H-index of 11 but still reflects a specialised niche in the management domain, and the Journal of Business

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Research, which has an H-index of 12 and 661 citations since 2014, demonstrating its importance in business research.

Lastly, there is a lengthier publication history for World Development and Emerging Markets Finance and Trade. Though their M-index values are lower, suggesting a slower annual citation rate, they have substantial citation counts (748 and 409, respectively), especially in fields pertaining to emerging markets and international development.

In conclusion, citation metrics show that journals like the Journal of International Money and Finance and the Journal of International Economics lead the field, but journals like Sustainability and International Business Review are becoming more and more influential, particularly when it comes to more recent topics like emerging markets and sustainability. The dissemination of research on international business and economic transitions is greatly aided by these periodicals.

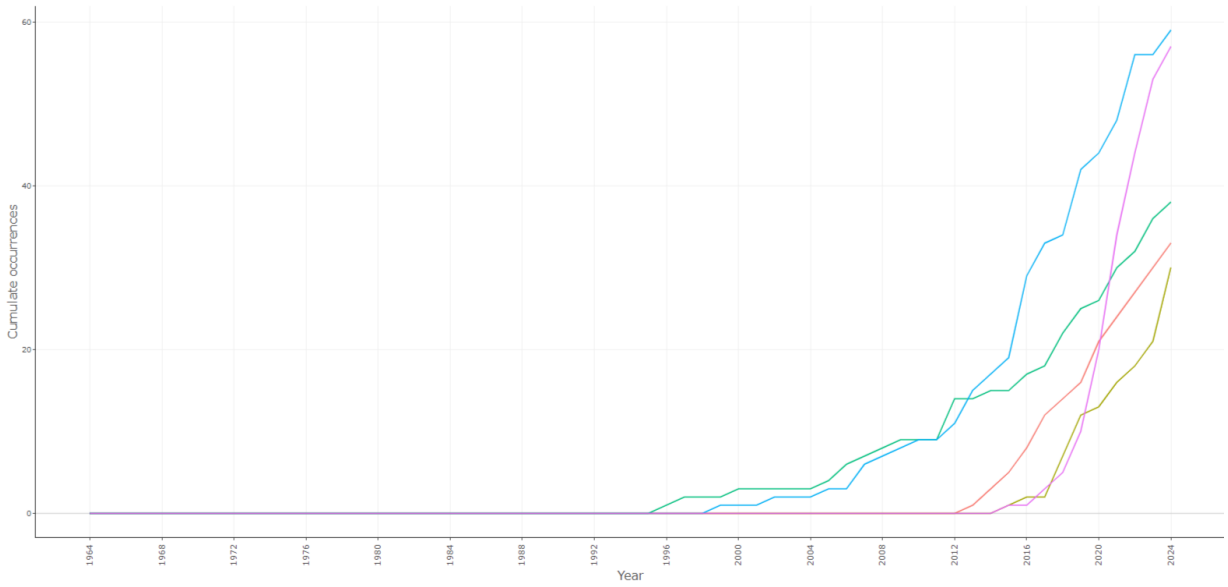

Figure 6. Sources' Production over Time

Source: developed by the authors (based on the WoS database using Biblioshiny App).

Based on information taken from the Web of Science (WoS) database, Figure 6 shows the total output of five academic journals over the period of 1964 to 2024. The years are shown on the x-axis, while the total number of occurrences (publications or citations) is shown on the y-axis. A distinct coloured line represents each journal, emphasising their individual paths in academic output.

The production activity in the Journal of International Money and Finance (blue line) is first visible in 1999 and continues to rise steadily until the early 2000s. The journal enters a phase of modest development by 2010, and it keeps growing, reaching a peak of 59 occurrences by 2024.

In 2015, Sustainability (purple line) makes a modest initial appearance. But starting in 2019, the journal's output soars, showing the highest increasing tendency of any journal. Sustainability has increased dramatically by 2024, with 57 occurrences, which is consistent with its rising popularity in academic studies. The Journal of International Economics (green line) began publication earlier, in 1996, and has grown steadily and consistently ever since. It grows steadily but more slowly than Sustainability and the Journal of International Money and Finance, reaching 38 instances by 2024.

Only after 2013 does the International Business Review (red line) start to exhibit significant activity. Its output increases gradually, especially after 2015, and reaches 33 instances by 2024, demonstrating its increasing importance in the area of global commerce. A similar late-start pattern can be seen in the International Journal of Emerging Markets (yellow line), which started publishing around 2015. Even though it produces fewer articles than other journals, it grows steadily and will reach 30 by 2024, a sign of growing interest in studying emerging markets.

All things considered, the chart shows how these journals have changed over time, with a noticeable spike in publishing activity beginning about 2015. With its sharp rise since 2019, sustainability stands out and is indicative of a growing interest among academics in sustainability-related topics. The other publications likewise exhibit consistent growth, demonstrating the continued importance of business, emerging markets, and international economics in scholarly inquiry.

Foreign direct investment	479
FDI	181
Determinants	165
Growth	165
Impact	160
Economic growth	126
Trade	124
Performance	121
Firms	92
Panel-data	87
Keywords Plus (ID)	

Foreign direct investment	197
Emerging markets	130
FDI	129
China	92
Capital flows	85
Economic growth	76
Internationalization	53
Innovation	31
Developing countries	28
Financial development	28
Author's Keywords (DE)	

Figure 7. Most Frequent Words

Source: developed by the authors (based on the WoS database using Biblioshiny App).

Two wordclouds that illustrate the most used terms in scholarly works about economic growth and foreign direct investment (FDI) are shown in Figure 7. While author-specified keywords (Author's Keywords) are displayed in the right wordcloud, terms automatically produced from the Web of Science database (Keywords Plus) are reflected in the left wordcloud. The corresponding frequencies of the top terms are provided beneath the wordclouds.

The most common keyword in the Keywords Plus section, "foreign direct investment," occurs 479 times, suggesting that this idea is important to the studied literature. "FDI" comes in second place with 181 occurrences, followed closely by "determinants" and "growth," both with 165 references. This means that investigating the causes and consequences of FDI on economic growth is likely to be the main emphasis of the research. The terms "trade" (124), "economic growth" (126), and "impact" (160) are also noteworthy, emphasising the relationship between FDI, trade, and economic success. Interestingly, "panel data" (87) also comes up a lot, which is indicative of the standard methodology applied in these investigations.

On the right side, in the Author's Keywords section, "foreign direct investment" (197) again tops the list, highlighting its importance from the authors' perspectives. Other commonly used phrases are "China" (92), "FDI" (129), and "emerging markets" (130), indicating a strong emphasis on FDI in the context of emerging markets, with China being a key study topic. The terms "economic growth" (76) and "capital flows" (85) also crop up a lot, suggesting that research on the connection between FDI, capital mobility, and economic performance is common. Other areas of interest are reflected in terms like "internationalisation" (53) and "innovation" (31) which specifically deal with how businesses innovate and expand abroad.

The two groups have a lot in common when it comes to word frequencies; they both concentrate on important topics like commerce, economic growth, and foreign direct investment. However, as can be seen from terms like "China" and "emerging markets," the author's keywords also highlight geographical and regional characteristics, highlighting the significance of context in FDI-related research. Both words

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emphasise foreign direct investment (FDI) as a critical component of understanding economic development, with different approaches emphasising performance, drivers, and the involvement of enterprises.

Based on the frequency of terms used in publications that were taken from the Web of Science database, Figure 8 displays a trend analysis of research themes throughout time. The length of a research topic is represented by each line, and the number of publications in a given year is shown by the size of the bubbles.

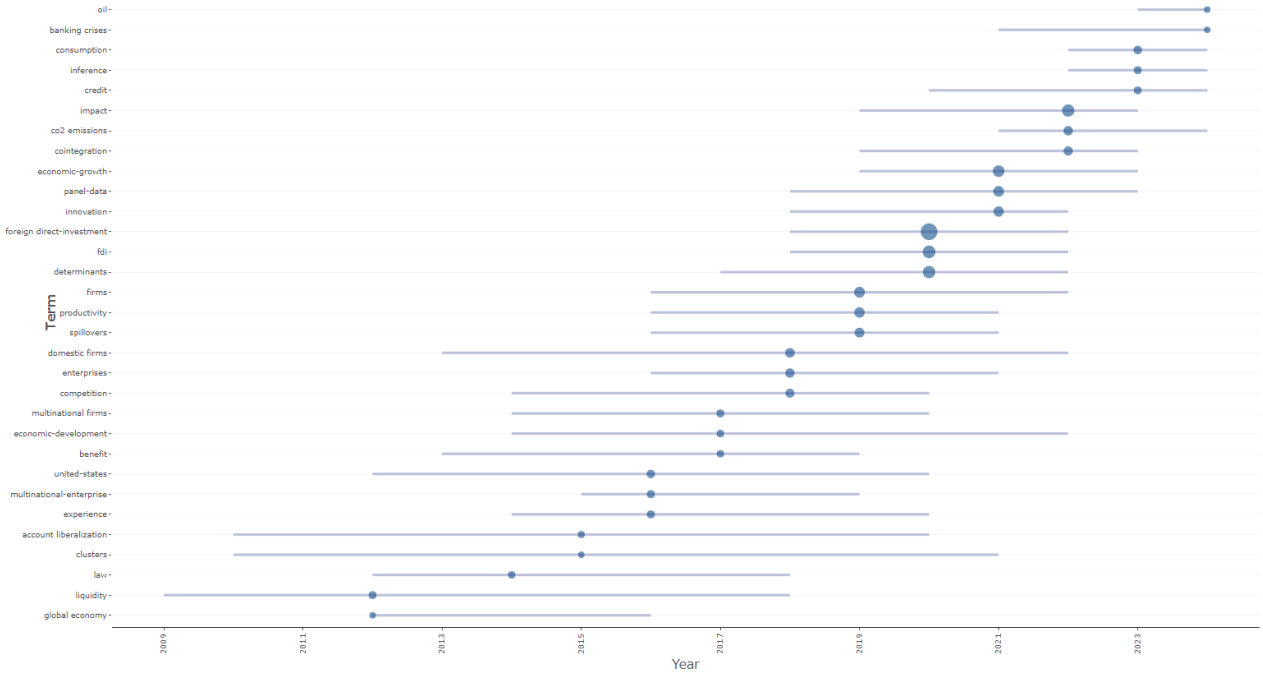

Figure 8. Trend Topics

Source: developed by the authors (based on the WoS database using Biblioshiny App).

Figure 8 shows how, between 2009 and 2024, scholarly attention has changed on a number of concepts pertaining to FDI, economic growth, and related subjects. The terms are listed on the Y-axis, while the time period is shown on the X-axis. The frequency and temporal distribution of each term's scholarly usage are shown in the table below, along with significant turning points in the rise of particular subjects in scholarly inquiry.

Interestingly, some subjects have been relevant for a long time, while others have only lately come into focus. Words like "liquidity" started to surface in 2009 and continued to be used consistently until 2018. Comparably, the terms "global economy" and "law" started to gain popularity in 2012, and during the next few years, more research on these topics was published. Other terms that gained traction in research up until 2020 and 2021, respectively, were "clusters" and "account liberalisation," which began to receive increasing attention in 2010.

After 2014, a number of subjects attracted more attention. For instance, "multinational enterprises" and "multinational firms" begin to garner attention in 2015 and peaked in significance in approximately 2020. This shows that academics are paying more and more attention to how multinational firms function in the global economy and how they affect foreign direct investment and economic growth.

Subjects such as "enterprises," "competition," and "spillovers," which are associated with productivity and company success, have garnered more attention since 2016, reaching a peak around 2021. These patterns point to a rising interest in learning how businesses, especially multinational corporations, use competitive dynamics and productivity increases to fuel economic growth.

Interest in the word "foreign direct investment" (FDI) and its synonyms ("FDI," "determinants," and "economic growth") increased significantly starting in 2018 and peaked in 2022. This time frame probably reflects heightened awareness around the world of FDI's role in promoting economic growth and recovery, especially in emerging nations. The rise in other themes such as "impact" and "innovation" during this time

also suggests a strong scholarly focus on the broader implications of FDI on economic resilience, business performance, and innovation.

More recently, words like "banking crises," "consumption," and "CO2 emissions" have come to represent new fields of study related to pressing global issues like unstable economies and environmental sustainability. Through 2024, "CO2 emissions" and "consumption" are anticipated to garner even greater attention, indicating increased concerns about resource management and climate change.

To summarise, Figure 8 shows the evolution of the scholarly concentration on FDI, economic growth, and related themes across time. While certain themes have always been interesting, others have come to light in reaction to issues with the environment, technology, and global economic shifts. The dynamic character of the global economy and the academic community's response to these problems are reflected in these trends, which offer insightful information about the evolving priorities in economics and social sciences research.

The results of a factor analysis of the main topics discovered in academic publications about global economic development are displayed in Figure 9. Topic clusters are represented by the two-dimensional graph, which also emphasises the relationships between the major concepts. Each circle represents a different topic, and the X-axis (Dim 1) and Y-axis (Dim 2) reflect the main reasons causing the variance in the data. Each circle's size corresponds to the topic's importance in the academic literature.

The analysis reveals several important clusters. The terms "multinational enterprises," "innovation," and "research and development" are displayed on the right-hand side, signifying their significance in a study on corporate strategies and the expansion of international commerce. Research on global financial and economic strategies heavily relies on these subjects. Themes like "financial development" and "co2 emissions" are grouped on the left, indicating that these subjects are more specialised and frequently have to do with financial market research and environmental sustainability.

A few oddities are also visible. As an illustration, the cluster "time series" is located far from the other clusters, suggesting a more specialised concentration and fewer connections to other important subjects. Furthermore, the close proximity of "capital flows" and "flows" highlights their essential position in studies of international financial flows and market integration, reflecting the growing significance of globalisation and cross-border financial activity.

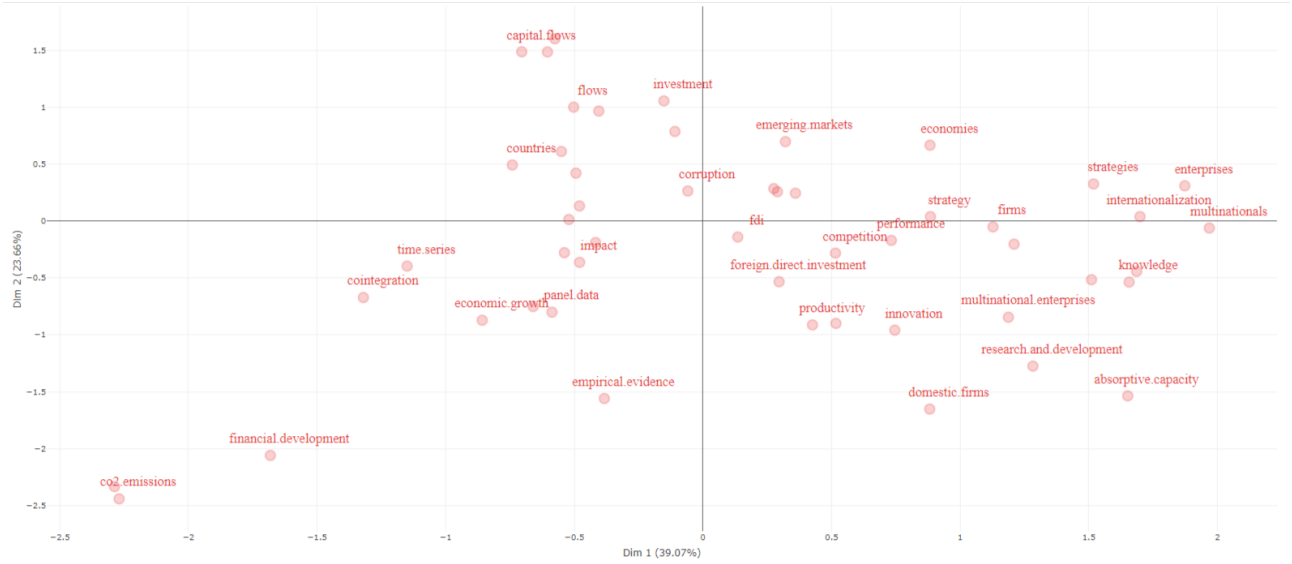

Figure 9. Factorial Analysis

Source: developed by the authors (based on the WoS database using Biblioshiny App).

A subject dendrogram that shows the hierarchical relationships between themes in scientific publications is shown in Figure 10. The diagram's branches depict the relationships between themes at various levels of generality, illustrating their structural makeup. Subjects like "financial development" and "CO2 emissions" are displayed as separate clusters on the left, denoting their significance in talks about global finance and sustainability. The subjects related to firm performance, innovation, and multinational firms are

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grouped together on the right, with an emphasis on how these themes relate to strategies for economic development and international business.

The hierarchical structure also shows how closely innovation and multinational enterprises are related, highlighting the part these businesses play in propelling economic progress on a worldwide scale. The key positioning of subjects like competition and foreign direct investment (FDI) also suggests that these issues have a big influence on globalisation and international market strategies.

Even while "co2 emissions" has been becoming more and more relevant in light of sustainability concerns, its location towards the lower-left corner of Figure 9 and its peripheral position in the dendrogram may represent its narrower focus in the context of global financial integration. As the globe grows more interconnected, scholarly attention to globalisation, transnational firms, and cross-border economic tactics may increase, as suggested by the strong clustering of issues around capital flows and multinational enterprises. These visual aids offer insightful perspectives into the composition and development of important research domains, emphasising the connections among international financial operations, economic growth, and sustainability issues. They enable us to recognise significant patterns in academic literature and their consequences for comprehending the dynamic nature of the world economy.

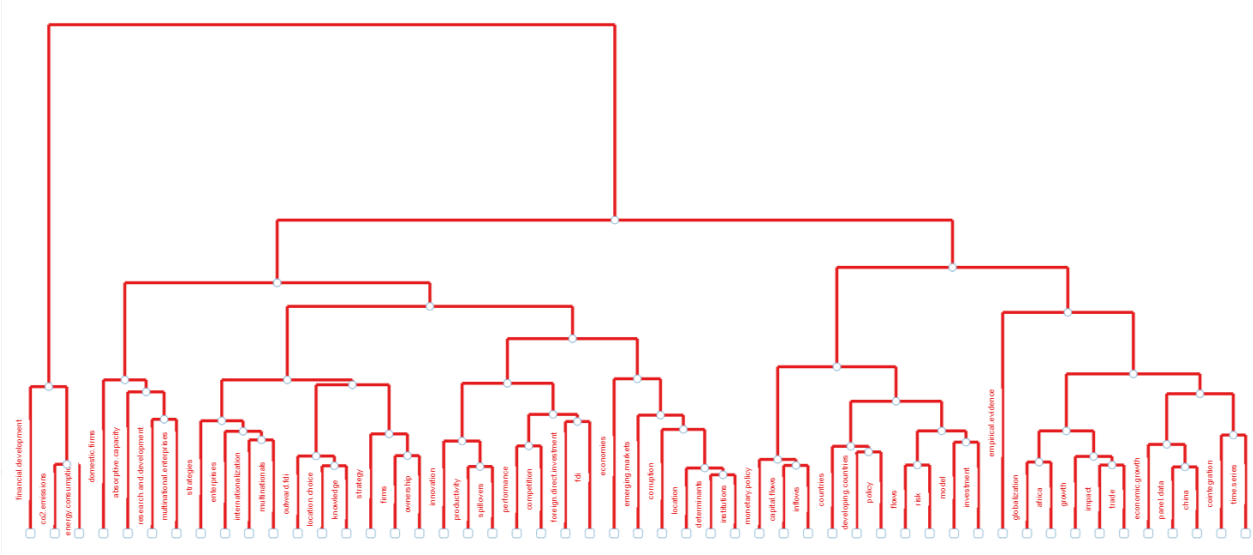

Figure 10. Topic dendrogram

Source: developed by the authors (based on the WoS database using Biblioshiny App).

The number of academic works classified by the countries of origin of the associated authors is shown in Figure 11. In order to show the level of international collaboration, it further divides these publications into Single Country Publications (SCP) and Multiple Country Publications (MCP). The percentages of contributions and the amounts of MCP and SCP for each nation are displayed in the table.

With 285 articles or 17.9% of all publications, the United States (USA) leads the world in this regard. International partnerships account for a sizable portion of this total (MCP 44.9%). China comes in second with 224 articles (14.0%), but with 41.5% of its publications being MCP, it exhibits rather less international collaboration. In addition, the UK is a major contributor to international research, with 223 articles (14.0%) and the highest percentage of internationally co-authored papers (MCP 54.7%) of all countries.

Australia contributes 41 articles (2.6%) and Russia 43 articles (2.7%), both of which demonstrate notable activity. However, Australia exhibits a larger propensity for international cooperation, with 58.5% of its articles being MCP, whilst Russia has a noticeably low percentage of international collaboration, with only 14.0% of its papers being MCP. Other significant contributions are made by India, Germany, Spain, and Japan. While India's percentage of international collaboration is substantially lower — only 6.1% of its articles are MCP – and indicates a strong emphasis on indigenous research, Spain and Japan have small amounts of international collaboration (MCP at 25.6% and 25.0%, respectively).

High percentages of MCP (65.4% and 58.5%, respectively) in nations like France and Australia stand out and indicate a strong participation in global research networks. In the meantime, countries with modest

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levels of MCP, including South Africa, Vietnam, and Turkey, demonstrate a balance between national research and international cooperation.

To summarise, Figure 11 illustrates the worldwide distribution of scholarly production, showcasing the mix of substantial international collaboration and robust domestic research output in top research nations such as the UK, China, and the USA. The level of international cooperation, however, differs greatly between nations; some, like Russia and India, place a great emphasis on domestic research, while others, like France and Australia, show a strong inclination towards international research alliances.

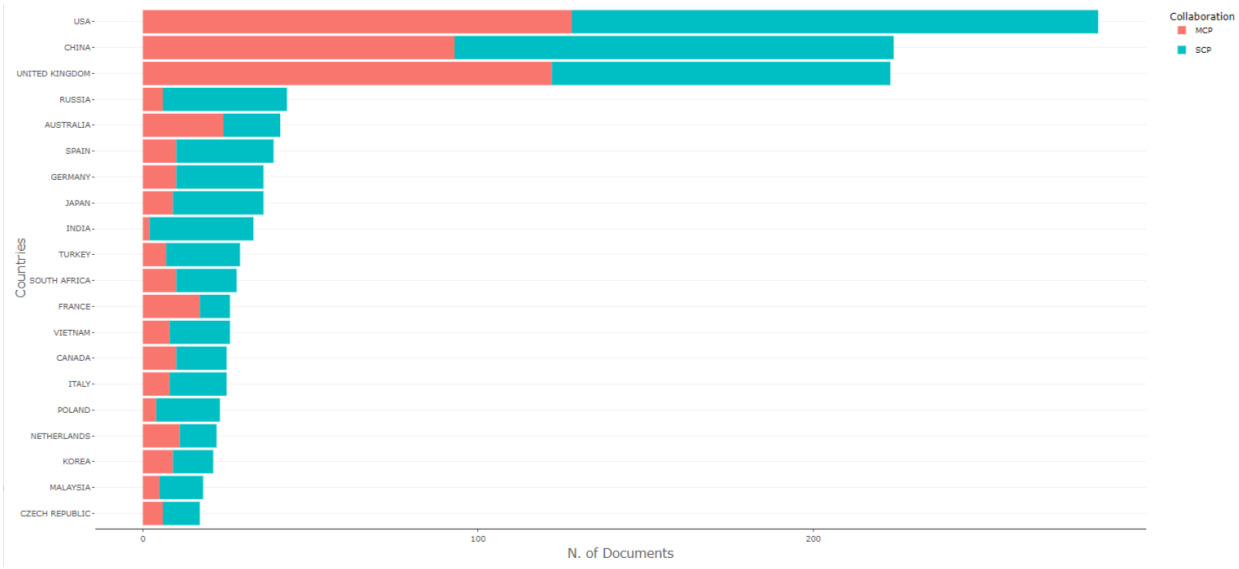

Figure 11. Corresponding Author's Countries

Source: developed by the authors (based on the WoS database using Biblioshiny App).

The United States (purple), China (yellow), the United Kingdom (blue), and Germany (green) are the four top research-producing nations represented in Figure 12, which shows the trends in scholarly article production from 1986 to 2024. Each nation's total number of articles generated over time is displayed, highlighting notable growth trends, especially after 2010.

The data indicates that article production for all countries remained relatively low and stable up until around 1999. Starting in the early 2000s, there is a noticeable upward trend in academic output across the board, with China showing the most dramatic increase. China's article production began to take off around 2013, accelerating rapidly after 2020. By 2024, China is projected to reach over 560 publications, making it the fastest growing and one of the most prolific nations in academic production. This growth reflects China's significant investment in higher education, research, and scientific innovation, especially in disciplines such as technology, engineering, and environmental sciences.

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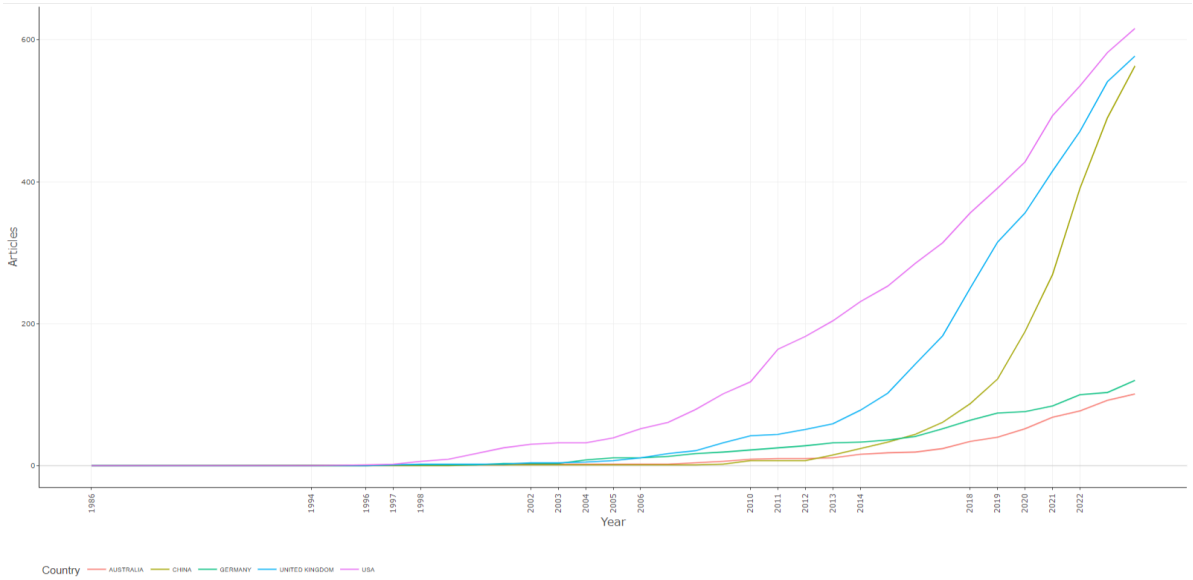

Figure 12. Countries' Production over Time

Source: developed by the authors (based on the WoS database using Biblioshiny App).

Compared to China, the USA, which has always been a leader in research output, has a slower but more stable growth trajectory. Even though the United States is expected to produce 616 pieces by 2024, up from 79 in 2008, this expansion is not expected to occur as quickly as China's.

Both Germany and the United Kingdom have had tremendous growth, especially after 2015. It is anticipated that Germany will create about 120 articles in 2024, while the UK will produce over 570 pieces by the same year. Both nations show consistent growth, which is indicative of their ongoing focus on economics, technology, and the natural sciences research and development. Though robust, their growth is not as rapid as China's. The data pertaining to the year 2020 and beyond also suggests the influence of the COVID-19 pandemic, which most certainly played a role in the increase in worldwide academic production, particularly in the domains of public health, economics, and environmental sciences. All nations have shown a noticeable rise in publications during this time, indicating a worldwide academic reaction to the pandemic's issues.

Overall, Figure 12 demonstrates that although research production is increasing in all nations, China's development is very notable. Its rise in scholarly output, particularly after 2020, highlights its growing stature as a world leader in science and research. Even if they are expanding more slowly than China, conventional research superpowers like the USA, the UK, and Germany are nonetheless making significant contributions.

ISSN (online) – 2521-1242; ISSN (print) – 2521-1250

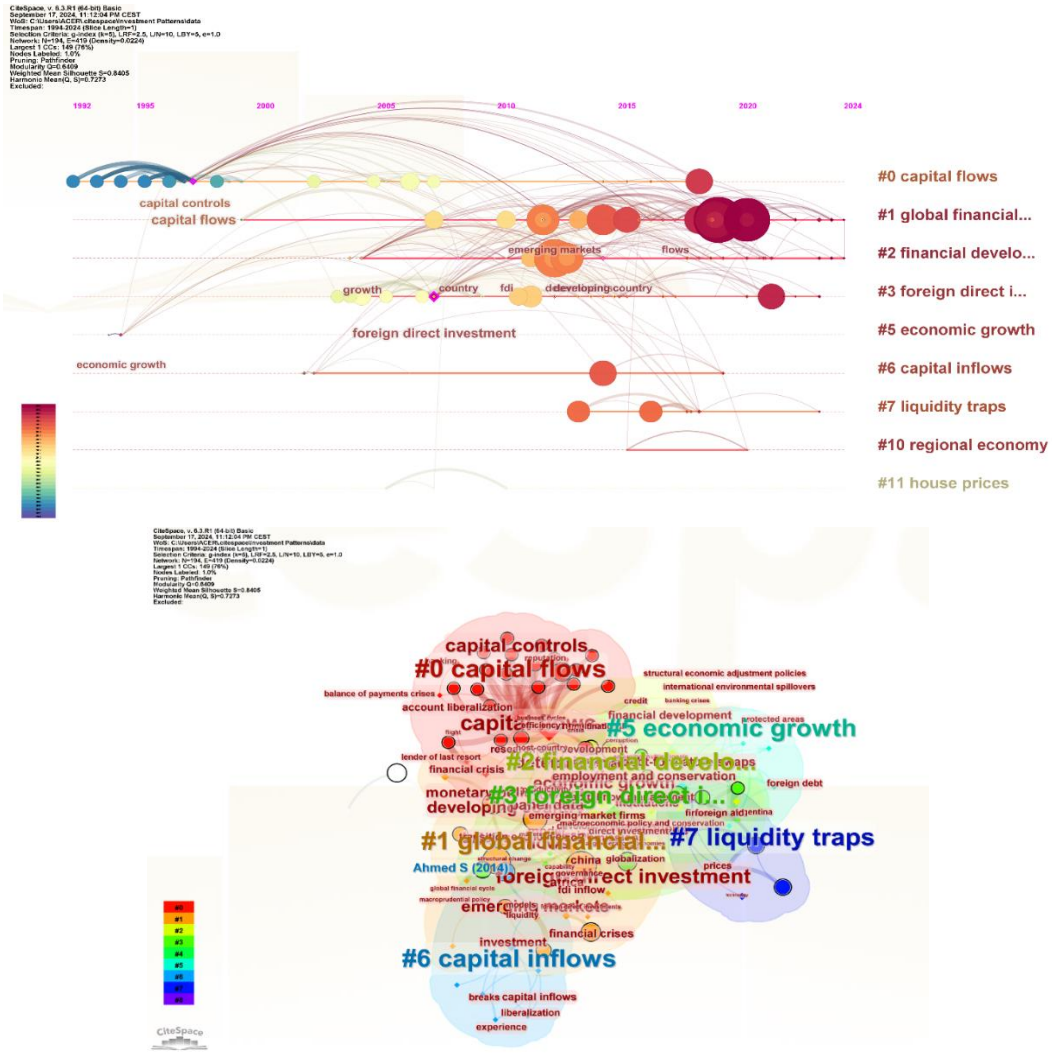

Figure 13. An overview of the network

Source: developed by the authors (based on the WOS database using CiteSpace App).

An overview of the network analysis carried out on the academic literature pertaining to capital flows, financial development, and related subjects is given in Figure 13. The graphic displays a number of interconnected nodes that stand in for several study theme clusters. Important subjects, including "capital controls," "capital flows," "foreign direct investment," and "economic growth" are emphasised.

The links between the nodes represent citation relationships, and each node represents a distinct topic or publication. The gradual colour change represents the chronological dimension; lighter colours correspond to more recent releases, while darker tones correspond to older works. Larger nodes are displayed for the most important clusters, like Cluster #0 (capital flows), which denotes their significance and frequency of reference in the network.

The significance of emerging markets as a recurrent topic is a noteworthy pattern that appears in all clusters, especially in Clusters #0, #1, and #2. Citations to emerging markets in the context of capital flows, investment strategies, and economic growth are common, indicating that a large body of literature focusses on the unique opportunities and problems these economies confront. For example, Cluster #1 (70 citations) looks at financial flows, global financial cycles, and investment funds—all of which are important to comprehending the global dynamics of emerging market economies.

Additionally, the study reveals that two important areas of focus are regional economic growth (Cluster #5) and financial development (Cluster #1). The aforementioned themes emphasise the need for a more comprehensive analysis of the ways in which financial markets and policies impact economic stability, namely via mechanisms such as liquidity traps, policy coordination, and international spillovers (Cluster #6).

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In conclusion, this network analysis shows how different fields of study connect to global finance and economics. Academic discourse revolves around fundamental themes like capital flows, economic growth, and foreign direct investment. New research expands on these themes to investigate more specialised problems, including policy coordination, sustainability, and developing market dynamics.

Table 3. Clusters and Related Terms

Cluster	Ranked Terms
#0: capital flows; financial crisis; global saving glut; interest rates; asset-backed securities | capital controls; emerging markets; macroprudential policy; policy rules; monetary policy shocks	capital; flows; international; crisis; credit controls; policy; emerging; macroprudential; motivations
#1: emerging markets; investment funds; financial flows; random forest; to-gdp gap | capital flows; global financial cycle; exchange rates; pull factors; bank lending	capital; flows; financial; global; cycle markets; emerging; investment; funds; macroprudential
#2: foreign direct investment; emerging markets; determinants; latin-america; equity flows | income inequality; transition economies; foreign direct investments; bilateral trade ties; risk assessment	foreign; direct; investment; flows; emerging capital; development; financial; market; inclusion
#3: foreign direct investment; emerging markets; foreign portfolio investment; uncertainty; dependency | transition economies; multinational enterprises; eastern europe; agglomeration economies; regional productivity growth	multinational; innovation; institutional; internationalization; environment central; europe; spillovers; enterprises; eastern
#4: economic growth; international trade strategy; foreign direct investment; investment management; spillover effects | capital flows; for-nature swaps; foreign debt; foreign aid; protected areas	conservation; debt; capital; swaps; protected investment; determinants; management; strategy; direct
#5: capital flows; capital subsidies; capital controls; borrowing constraints; regional economic growth | breaks; investment; experience; liberalization; capital inflows	shocks; supply; identification; rate; price spatial; government; model; semiparametric; debt
#6: international spillovers; liquidity traps; capital flows; policy coordination; capital flow management | financial amplification; externality pricing kernel; macro-prudential regulation; capital controls; financial crises	policy; monetary; traps; flows; international financial; crises; kernel; amplification; regulation
#7: regional economy; factor flow; industrial diffusion; state support; panel data | mobile phone; mass person flow; inter-regional capital flow; inter-firm transaction; state support	effects; external; panel; spatial; support mobile; phone; person; transaction; inter-regional
#8: monetary policy; house prices; capital flow; industrial; countries; rich	monetary policy; house prices; capital flow; industrial; countries; rich

Source: developed by the authors (based on the Scopus database using CiteSpace App).

Lastly, the figure's temporal component illustrates how some research fields have changed over time. Newer studies, which are represented by brighter colours, show a continued interest in economic policy frameworks and sustainability in relation to international capital movements and financial integration. This pattern implies that current research is shifting towards tackling issues of the modern world, like resource management, climate change, and sustainable economic growth.

Finally, the network visualisation offers a comprehensive and integrated picture of the evolution of academic study on capital flows, financial development, and economic growth. While more recent fields of study, like sustainability and developing market dynamics, are gaining interest, older ones, like capital flows and foreign direct investment, continue to be important components of the conversation. This indicates how economic research is changing.

To sum up, this network analysis offers a useful perspective on the evolution of interconnected research on sustainability, human capital, financial systems, and economic development. Although the concept of economic growth remains essential, the figure illustrates how the discipline has expanded, embracing a wide range of issues that address both sector-specific and global challenges, indicating a dynamic and ever-evolving research landscape.

CONCLUSIONS

This bibliometric analysis gives an extensive survey of the literature on investment patterns in various economies and their connection to global financial developments. The study illustrates important patterns, topic shifts, and the changing scholarly interest in global capital flows, foreign direct investment (FDI), and economic growth by analysing a big dataset covering the years 1999 to 2024.

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The importance of capital flows and foreign direct investment (FDI) in promoting economic growth and global competitiveness, particularly in emerging and transitional economies, is one of the main conclusions. The data analysis reveals a significant increase in research on these subjects since 2015, suggesting a rising focus on comprehending how broader movements in the global economy both shape and are shaped by investment patterns.

The most important issue, according to the network visualisation study, is capital flows (Cluster #0), which is strongly related to research on capital controls, financial crises, and macroeconomic policy. This emphasises how crucial it is to control capital movement, particularly in light of the financial instability that exists in emerging nations. Foreign direct investment (FDI) is a crucial cluster that emphasises the significance of FDI as a driving force behind productivity, market integration, and economic development. Cluster #3 focuses on the causes and consequences of FDI in emerging nations.

A recurrent subject in several clusters is emerging markets, highlighting their influence on international investment strategy. Studies in clusters like financial development (Cluster #1) and economic growth (Cluster #5) highlight the relationship between regional policy frameworks and international capital movements, suggesting that a lot of research is concentrated on the potential and problems these economies bring.

Furthermore, the analysis demonstrates that more recent fields of study — like sustainability and climate change are gaining popularity, especially when it comes to capital flows and financial development. The increased interest in sustainable investment techniques that tackle modern global issues like resource management and environmental resilience is reflected in these developments.

The temporal study reveals how some themes – like liquidity and global financial cycles – rose to prominence at particular times, while other themes – like economic liberalisation and multinational corporations – have gained increasing significance recently (Ballouk et al., 2024; Miranda-Agrippino & Rey, 2020). This progression implies that scholarly investigations into investment behaviours are adapting quickly to changes in the international financial environment.

Several recommendations for practitioners and policymakers in the fields of economics and investment can be made considering the findings:

– *Encouraging capital investment strategies:* The public and private sectors ought to give top priority to calculated bets on important infrastructure and industry projects that support long-term, steady economic growth. This entails concentrating on industries like manufacturing, energy, and technology, which are essential for enhancing long-term development and national competitiveness.

– *Strengthening international cooperation:* The report emphasises how crucial global cooperation is to economic growth. In order to enhance creative approaches to resource management, financial stability, and investment strategies, policymakers should support international alliances, exchange best practices, and foster knowledge exchange.

– *Integration of economic and educational policies:* It's critical that changes to education are implemented concurrently with changes to economic policy. To ensure balanced and long-term investment in both areas, policymakers should combine programs to encourage education and skill development with long-term economic growth initiatives.

In order to wrap up, our bibliometric analysis sheds light on how research on investment patterns is changing and emphasises the role that capital flows, foreign direct investment, and economic expansion play in influencing the changes in the global financial system. The dominance of emerging markets and the increasing emphasis on sustainability indicate that classic economic concerns and contemporary global issues are being addressed more and more in investment research. Policymakers, investors, and researchers aiming to comprehend the intricacies of global finance and enhance investment tactics in a world undergoing swift changes will benefit greatly from these discoveries.

Discussion and limitations

There are several limitations to the study that could influence how the results are interpreted. First of all, it can be challenging to perform more thorough comparison assessments due to differences in the

availability of data on economic and educational investment among nations and regions. The study's breadth may have been constrained by certain missing or incomplete data.

One methodological constraint is to the selection of papers solely from Web of Science (WoS) databases, potentially leading to the exclusion of other significant sources of data. It is also important to consider the limitations of the bibliometric techniques employed in the study, which include a reliance on publicly available citation metrics and challenges in assessing the contextual significance of publications.

Author Contributions

Conceptualisation: A. A., A. L., O. Y.; methodology: A. A., O. Y., K. B.-D.; software: O. Y., K. B.-D.; validation: O. Y., O. C. K. B.-D.; formal analysis: A. L., O. Y., N. A.; investigation: A. A., O. Y., N. A., O. C.; data curation: O. Y., O. C. K. B.-D.; writing - original draft preparation: A. A., A. L., O. Y., N. A., O. C.; writing - review and editing: A. A., A. L., O. Y., N. A., O. C.; supervision: A. A., O. Y., K. B.-D.

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Not applicable.

Conflicts of Interest

Authors declare no conflict of interest.

Informed Consent Statement

Not applicable.

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