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ECONOMIC GROWTH AND FDI EQUITY-DEBT COMPOSITION: A BIBLIOMETRIC INSIGHT

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Abstract:

Foreign direct investment (FDI) is a vital driver of economic growth, but most research only looks at total inflows, ignoring the split between equity and debt. This gap is important because equity and debt react differently to macroeconomic conditions and have different impacts on financial stability and long-term growth. This study uses a bibliometric analysis to examine research on economic growth and FDI equity–debt composition. Using Scopus data (2020–2025) with 1,110 articles, the dataset was cleaned with OpenRefine, analyzed with Scopus Analyzer, and visualized in VOSviewer. Results show a consistent rise in publications, with China, India, Vietnam, Malaysia, and Pakistan as major contributors. Highly cited works focus on sustainability, renewable energy, and green innovation, while the equity–debt aspect remains less explored. Overall, this study maps global research trends, identifies influential contributors, and underscores the need for more in-depth analysis of FDI composition to better understand its role in fostering sustainable economic growth.

Keywords:

Economic Growth, Foreign Direct Investment, FDI Equity, FDI Debt, FDI Components

Introduction

The relationship between economic growth and foreign direct investment (FDI) has been a focal point of economic research for decades. FDI is often seen as a catalyst for economic development, providing not only capital but also technology, management expertise, and access to international markets. However, the composition of FDI, particularly the balance between equity and debt components, can significantly influence its impact on economic growth. This paper aims to explore the intricate dynamics between economic growth and the equity-debt composition of FDI, shedding light on how different forms of FDI contribute to or hinder economic development.

The nexus between FDI and economic growth has been extensively studied, with mixed findings. Some studies suggest a strong positive relationship, indicating that FDI inflows boost economic growth by providing essential capital and technology (Alizadeh et al., 2016; Cicea & Marinescu, 2021; Flora & Agrawal, 2014). For instance, an empirical analysis of D8 countries revealed a positive long-run co-integrating relationship between FDI stock and economic growth, with varying elasticities of GDP with respect to FDI (Alizadeh et al., 2016). Similarly, research on the six highest FDI recipient Asian emerging economies found a long-run relationship between FDI and economic growth, supported by bidirectional causality (Flora & Agrawal, 2014).

However, other studies present a more nuanced picture. An investigation into 37 developing countries found that FDI often has no significant effect on economic growth, and in some cases, economic growth does not necessarily attract FDI (Zakaria, 2009). This suggests that the impact of FDI on economic growth may depend on various factors, including the host country's economic structure, financial market development, and institutional quality (Chila & Rojas-Velásquez, 2024).

The composition of FDI, particularly the balance between equity and debt, also plays a crucial role. Research indicates that countries with higher economic growth rates tend to have larger amounts of equity liabilities, while those with more developed financial markets attract more portfolio equity (Joyce, 2019). This is supported by findings that FDI liabilities, as opposed to debt liabilities, are associated with higher growth rates and fewer financial crises (Joyce, 2018). Moreover, the structure of foreign liabilities, with a greater share of FDI and a lower share of short-term debt, significantly reduces the risk of currency crises (Pour, 2016).

In the context of financial market development, FDI can act as a catalyst for reforms, improving transparency and efficiency. A study focusing on Africa found a bidirectional causality between FDI and financial market development, suggesting that well-functioning financial markets can channel foreign investments more efficiently into productive sectors, thereby enhancing economic growth (Otchere et al., 2016). This interplay between FDI and financial markets underscores the importance of a conducive financial environment for maximizing the benefits of FDI.

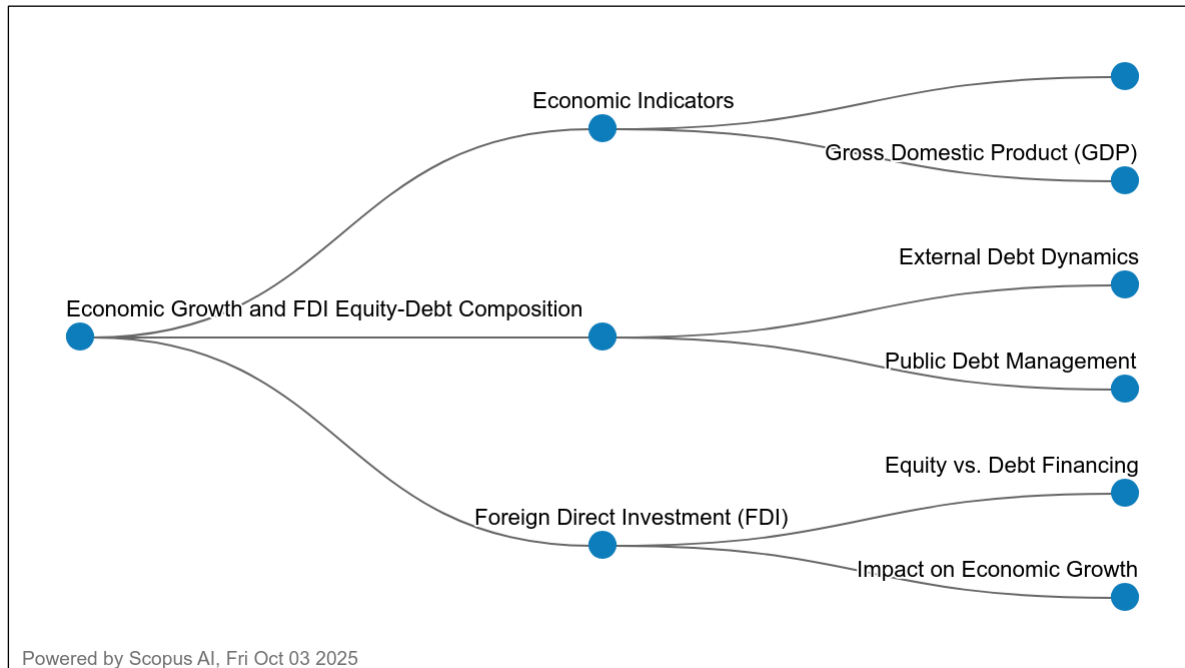


Figure 1: Concept Map of Economic Growth and FDI Equity-Debt Composition

Figure 1 illustrates the conceptual linkages between economic growth and the equity–debt composition of foreign direct investment (FDI), highlighting the multidimensional nature of this relationship. At the center lies the composition of FDI inflows, where the balance between equity and debt connects closely with key economic indicators such as gross domestic product (GDP), external debt dynamics, and public debt management. These associations indicate that the way FDI is structured has implications not only for growth outcomes but also for financial stability and the sustainability of national debt. The map also underscores the importance of examining equity versus debt financing, as each channel responds differently to global and domestic conditions, thereby shaping their relative contributions to economic development. Furthermore, the impact of FDI on economic growth emerges as a distinct but interconnected dimension, reinforcing the idea that composition matters as much as volume in determining long-term outcomes. Overall, the mapping suggests a research field that is evolving from broad examinations of FDI–growth linkages toward a more nuanced exploration of how equity and debt components influence economic trajectories.

The role of external debt in the FDI–growth relationship is also critical. While FDI is generally seen as a non-debt financial resource, its interaction with external debt can influence economic outcomes. For example, in Nigeria, both FDI and external debt were found to positively affect economic growth, although the relationship was complex and influenced by factors such as exchange rates and debt management practices (Akinola & Ohonba, 2024). Similarly, in Pakistan, FDI had a negative effect on economic growth, while remittances and external debt had positive effects, highlighting the diverse impacts of different types of foreign capital inflows (Jawaid & Saleem, 2017).

In conclusion, the relationship between economic growth and FDI equity–debt composition is complex and multifaceted. While equity investments generally promote economic growth, the impact of debt investments can vary depending on the economic context and the management

of borrowed funds. Understanding the dynamics of FDI composition and its interaction with other forms of foreign capital inflows is crucial for policymakers aiming to maximize the benefits of FDI for economic growth.

Research Question

This paper addresses the following research questions to explore trends, themes, and collaborations in FDI and economic growth;

RQ1: What are the publication trends in foreign direct investment (FDI) over time?

RQ2: Which are the ten most cited articles in this field?

RQ3: Which countries rank among the top ten in terms of publication output?

RQ4: What are the most frequently occurring keywords associated with the study?

RQ5: What are co-authorship collaborations structured across countries?

Methodology

Bibliometric analysis entails the systematic collection, organization, and evaluation of bibliographic data derived from scientific publications (Alves et al., 2021; Assyakur & Rosa, 2022; Verbeek et al., 2002). Beyond descriptive statistics, such as identifying core journals, temporal publication trends, and prolific authors (Wu & Wu, 2017), bibliometrics employs advanced methodologies, including document co-citation and network analyses to uncover structural and intellectual patterns within a research field. Conducting a rigorous literature review, therefore, necessitates a careful and iterative process of keyword selection, literature retrieval, and critical evaluation, ultimately enabling the compilation of a comprehensive bibliography and the generation of robust insights (Fahimnia et al., 2015). In line with this, the present study concentrated on high-impact publications, as they offer valuable perspectives on the theoretical frameworks shaping scholarly discourse. To ensure reliability and accuracy, Scopus was designated as the primary data source (Al-Khoury et al., 2022; di Stefano et al., 2010; Khiste & Paithankar, 2017), owing to its extensive coverage of peer-reviewed academic journals. Consistent with this quality criterion, only journal articles were included in the dataset, while non-refereed sources such as books and lecture notes were excluded (Gu et al., 2019). Publications spanning the period from 2020 to October 2025 were systematically retrieved from Elsevier's Scopus database for subsequent analysis.

Data Search Strategy

The study employed a systematic screening sequence to establish the search terms and retrieval strategy for the bibliometric dataset. The process was initiated by querying the Scopus database using the advanced search string: TITLE-ABS-KEY ("foreign direct investment*" AND "economic* growth" OR (equity OR debt) AND FDI), executed in October 2025 with restrictions applied to publication years after 2019 and before 2026. The details are shown in Table 1. Additional filters were imposed to refine the dataset, including limiting the search to publications in English and narrowing the subject areas exclusively to Economics, Business, and Management. To ensure the reliability of sources, the literature type was confined to journal articles, while conference papers, books, and reviews were excluded. This initial query assembled a comprehensive body of studies addressing the linkages between FDI composition, equity and debt flows, and economic growth. Subsequently, the retrieved results were carefully screened to align with the scope of the research, excluding documents outside the designated subject domains, such as Social Sciences, Environmental Science, Energy, and Engineering, which fall beyond the study's focus. The selection process was finalized by applying consistent

inclusion and exclusion criteria, resulting in a refined dataset comprising 1,110 journal articles. The summary of the criteria selection is shown in Table 2. This final dataset represents a focused and rigorous collection of contemporary academic contributions published between 2020 and 2025, which forms the empirical foundation for the bibliometric analysis of economic growth and FDI equity–debt composition.

Table 1: The Search String in the Field Area

Scopus	TITLE-ABS-KEY ("foreign direct investment*" AND "economic* growth" OR (equity OR debt) AND FDI) AND PUBYEAR > 2019 AND PUBYEAR < 2026 AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SUBJAREA , "ECON") OR LIMIT-TO (SUBJAREA , "BUSI")) AND (LIMIT-TO (DOCTYPE , "ar"))
Access in October 2025	

Table 2: Inclusion and Exclusion Criteria for Literature Selection

Criterion	Inclusion	Exclusion
Language	English	Non-English
Time line	2020 – 2025	< 2020
Literature type	Journal (Article)	Conference, Review, Book,
Subject area	Economics, Business, Management	Social Sciences, Environmental Science, Energy, Engineering

Data Analysis

VOSviewer, developed by Nees Jan van Eck and Ludo Waltman at Leiden University, the Netherlands (van Eck & Waltman, 2010, 2017), has emerged as one of the most widely adopted tools for bibliometric visualization and analysis. Renowned for its intuitive interface and robust analytical capabilities, VOSviewer enables the construction of sophisticated network visualizations, clustering of related items, and the generation of density maps that reveal structural patterns in scientific literature. Its versatility extends to the exploration of co-authorship, co-citation, and keyword co-occurrence networks, offering researchers a comprehensive lens through which to examine and interpret the intellectual and social structure of research domains.

A distinctive strength of VOSviewer lies in its ability to translate complex bibliometric datasets into accessible, visually interpretable maps, thereby facilitating the identification of thematic clusters and emerging trends. By integrating advanced metric computations with customizable visualizations, the software allows scholars to tailor analyses to diverse research questions. Continuous development and updates further ensure that VOSviewer remains at the forefront of bibliometric methodologies, adaptable to a wide range of data sources and research contexts. Collectively, these features establish VOSviewer as an indispensable instrument for academics and practitioners seeking to derive meaningful insights from the ever-expanding body of scientific knowledge.

The dataset, encompassing publication year, title, author names, journal source, citation counts, and keywords in PlainText format, was extracted from the Scopus database for the period spanning 2020 to October 2025. The data were subsequently processed using VOSviewer (version 1.6.20), a software specifically designed for bibliometric mapping and clustering. By employing VOS clustering and visualization techniques, the software facilitated the generation of bibliometric maps that reveal structural patterns within the dataset. Serving as an alternative to Multidimensional Scaling (MDS), VOSviewer situates items within a low-dimensional space such that the spatial distance between any two items directly reflects their degree of relatedness or similarity (van Eck & Waltman, 2010). While conceptually similar to MDS (Appio et al., 2014), VOSviewer diverges in its normalization procedure: rather than relying on similarity metrics such as cosine or Jaccard indices, VOS employs the association strength (AS_{ij}) as a more suitable normalization method, calculated as follows (Van Eck & Waltman, 2007):

$$AS_{ij} = \frac{C_{ij}}{w_i w_j}$$

which is the association strength defined as being proportional to the ratio between the observed frequency of co-occurrences of items i and j and the expected frequency of their co-occurrence under the assumption of statistical independence (Van Eck & Waltman, 2007).

Finding and Discussions

This section presents and discusses the main findings of the bibliometric analysis conducted on the relationship between economic growth and the equity–debt composition of foreign direct investment (FDI). The results are organized according to the research questions outlined earlier, focusing on publication trends, citation performance, country contributions, keyword co-occurrences, and patterns of international collaboration. Each subsection interprets the statistical outputs and visual maps generated by Scopus Analyzer and VOSviewer, supported by descriptive analysis to highlight important developments and patterns within the field.

What Are The Publication Trends In Foreign Direct Investment (FDI) Over Time?

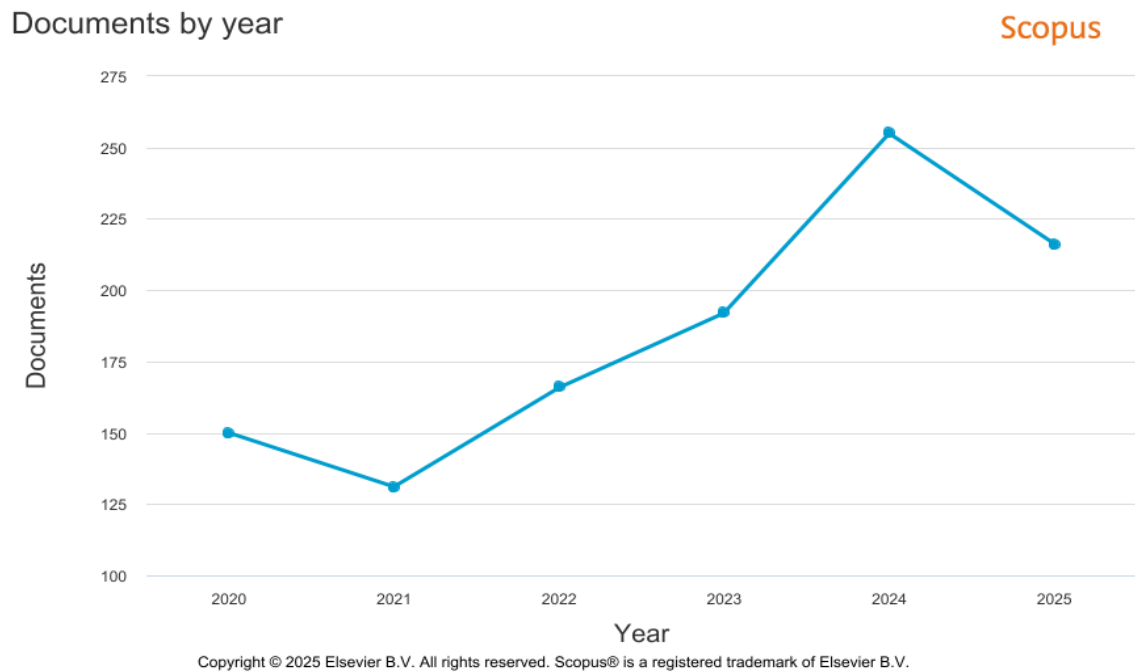


Figure 2: Number of Documents Based on Year of Publication

The publication trend from 2020 to 2025 shows a steady upward pattern in research on Economic Growth and FDI Equity–Debt Composition, indicating increasing scholarly interest in this area. Starting with 150 documents in 2020, the number of studies fluctuated at first, dipping slightly in 2021 (131), then picking up again with steady growth in later years. The sharp increases in 2022 (166) and 2023 (192) highlight renewed focus on the relationship between FDI structure and economic performance, likely influenced by post-pandemic recovery efforts and debates about capital inflows as drivers of growth. By 2024, publications reached a peak at 255, emphasizing the topic's importance in both academic and policy discussions, before slightly decreasing to 216 in 2025.

Several factors explain this pattern. The decline in 2021 likely resulted from the global disruption caused by the COVID-19 pandemic, which temporarily slowed research output across many fields. However, as economies reopened and governments introduced stimulus measures and foreign investment strategies, scholars revisited issues related to FDI composition and economic growth, leading to the surge observed from 2022 onward. The peak in 2024 aligns with increased global discussions on sustainable development, debt management, and the role of equity versus debt financing in promoting resilient growth, which probably drove more academic publications. The slight decline in 2025 may be due to publication cycles, ongoing review processes, or natural stabilization following the earlier research surge. Overall, the trend highlights how external shocks and policy debates influence the pace of academic output, with FDI equity–debt dynamics becoming more prominent in response to global economic challenges.

*Which Are the Ten Most Cited Articles in This Field?***Table 3: Most Cited Articles on FDI and Economic Growth**

No.	Authors	Year	Source title	Cited by
1	Simplice & Odhiambo (2020)	2020	Telecommunications Policy	204
2	Xie et al. (2020)	2020	Journal of Cleaner Production	178
3	Wang et al. (2021)	2021	Energy Economics	176
4	Sun et al. (2023)	2023	Resources Policy	166
5	Saidi et al. (2020)	2020	Transportation Research Part A: Policy and Practice	146
6	Iqbal et al. (2023)	2023	Environment, Development and Sustainability	145
7	Caglar (2020)	2020	Journal of Cleaner Production	145
8	Adedoyin et al. (2020)	2020	Technological Forecasting and Social Change	140
9	Quang et al. (2023)	2023	Economic Change and Restructuring	136
10	Canh et al. (2020)	2020	Resources Policy	136

According to Table 3, the top ten most cited articles from 2020 to 2023 demonstrate that the literature on FDI, economic growth, and related themes is strongly shaped by sustainability, environmental outcomes, and technological change. The most cited article by Simplice & Odhiambo (2020), with 204 citations, emphasizes the role of FDI and information technology in driving growth in Sub-Saharan Africa, highlighting how regional perspectives continue to attract scholarly attention. Other highly cited works, such as Xie et al. (2020) and Wang et al. (2021), with 178 and 176 citations respectively, focus on the relationship between FDI and CO₂ emissions, reflecting the growing importance of environmental concerns within the broader discourse on investment and development. Similarly, Sun et al. (2023), with 166 citations, underline the rising prominence of green innovation and sustainability, suggesting a shift in research interest towards aligning investment flows with sustainable growth objectives.

The global policy context can explain this trend. The increasing urgency of climate change debates, post-Paris Agreement commitments, and the COVID-19 pandemic's push for a green recovery have driven scholars to examine FDI through the lenses of renewable energy, logistics, and Industry 4.0 technologies, as seen in the works of Adedoyin et al. (2020), Iqbal et al. (2023) and Saidi et al. (2020). The inclusion of Southeast Asia-focused research such as Quang et al. (2023) further demonstrates the growing recognition of emerging markets as key laboratories for studying green recovery strategies. Interestingly, while these influential studies

broaden the scope of FDI research, they largely overlook the equity–debt composition of FDI inflows, leaving a notable gap in the literature. This gap reinforces the originality of focusing on FDI composition, as it remains an underexplored dimension despite its critical implications for financial stability, debt sustainability, and long-term economic growth.

While the most cited articles show strong scholarly interest in the relationship between FDI, economic growth, and sustainability, none of these influential studies explicitly examine the composition of FDI in terms of equity versus debt. Instead, the literature primarily focuses on environmental outcomes, renewable energy, logistics, and technological change as mediating factors. This highlights a significant gap, as the structure of FDI inflows, whether equity-based or debt-driven, has distinct implications for financial stability, debt sustainability, and long-term growth paths. Addressing this gap is essential because equity and debt respond differently to macroeconomic conditions and global shocks, yet they remain underexplored in current bibliometric and empirical research. Therefore, this study makes a unique contribution by mapping the research landscape through the lens of FDI composition, offering new insights into how the equity–debt dimension of investment influences debates on economic growth.

Which Countries Rank Among The Top Ten In Terms Of Publication Output?

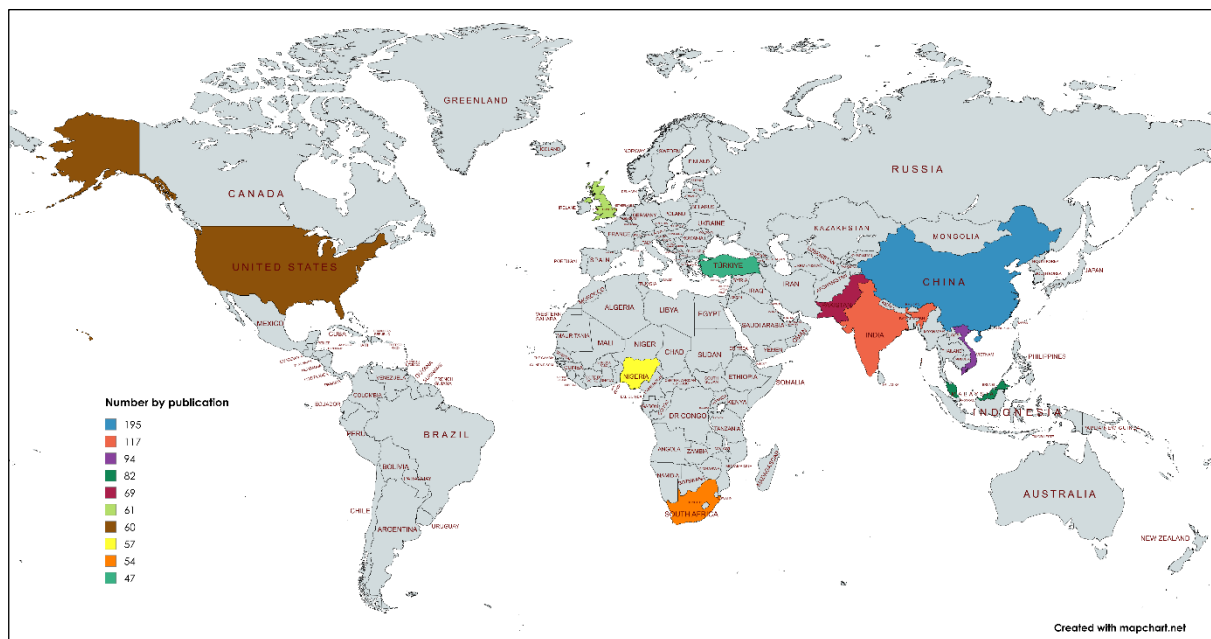


Figure 3: Top 10 Countries Based on Number of Publications in the Field Area

The distribution of publications by country shown in Figure 3 demonstrates that research on economic growth and FDI equity–debt composition is primarily led by emerging and developing economies. China ranks first with 195 publications, followed by India (117) and Vietnam (94), while Malaysia (82) and Pakistan (69) also show strong participation. This trend reflects the increasing importance of FDI in shaping growth paths in Asia, where countries actively engage in attracting and managing foreign capital flows. These economies are also highly responsive to changes in equity and debt financing, making them key areas for research. The notable performance of Southeast Asian nations like Vietnam and Malaysia highlights the region's growing role as an investment hub within the global economy, especially during the post-pandemic recovery.

The presence of countries such as the United Kingdom (61) and the United States (60) in the top ten suggests that advanced economies remain active contributors to this literature. However, their focus is often more on policy frameworks, outward FDI, and comparative analyses rather than solely domestic inflows. Meanwhile, Nigeria (57) and South Africa (54) represent Africa's growing scholarly engagement with FDI-related research, underlining concerns about external debt management and the role of investment in driving sustainable development. Turkey (47), positioned at the crossroads of Europe and Asia, also demonstrates active participation, reflecting its dual experience as both a capital importer and exporter. Overall, the trend indicates that countries with dynamic FDI inflows and pressing development challenges are producing the bulk of research, as these contexts provide rich empirical settings to explore the complex linkages between equity–debt composition and economic growth.

What Are The Most Frequently Occurring Keywords Associated With The Study?

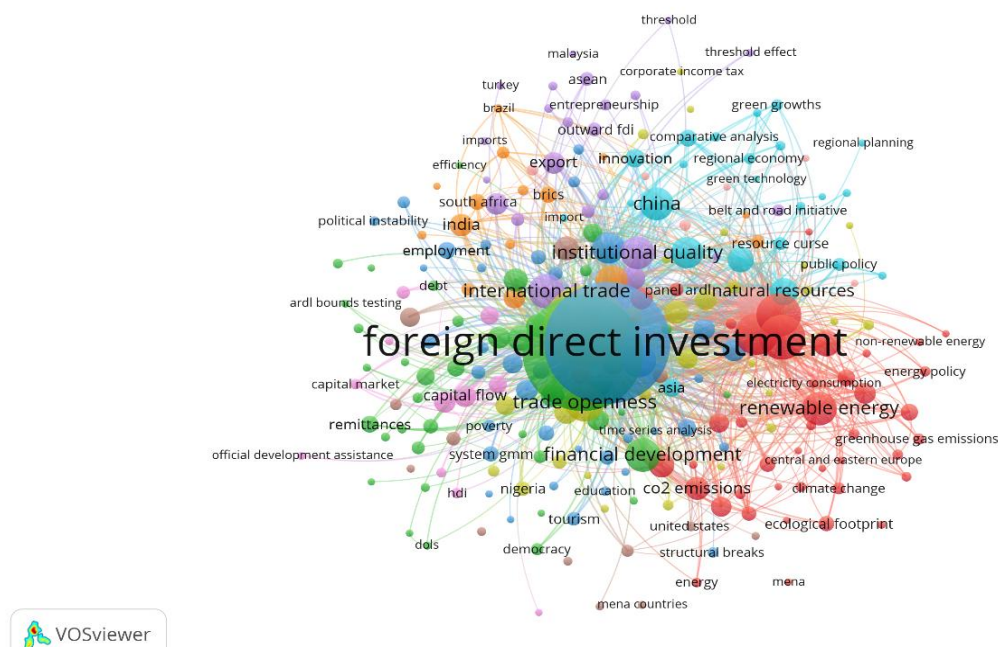


Figure 4: Network Visualization of Keyword Co-Occurrence in The Literature on FDI And Economic Growth (2020–2025)

The co-occurrence analysis of author keywords is a bibliometric technique that maps the relationships among frequently used terms to identify dominant themes, research clusters, and conceptual linkages in a field. In this study, VOSviewer was used to generate the keyword network map by applying the full counting method, with a minimum threshold of five keyword occurrences. Out of 1,691 total keywords, 249 met this threshold, and a minimum cluster size of five was imposed, resulting in the generation of ten clusters. Each cluster groups together closely associated keywords, revealing the intellectual structure of the literature and highlighting how different research themes connect.

The results show that foreign direct investment (610 occurrences, link strength 2,948) and economic growth (564 occurrences, link strength 2,762) are the central nodes, reinforcing their role as the core pillars of the field. Other strong linkages include sustainability-oriented terms such as environmental economics, renewable energy, and sustainable development, which

indicates that much of the recent literature frames FDI not only in terms of growth but also in relation to environmental and developmental challenges. The prominence of terms such as trade openness, international trade, financial development, and institutional quality further demonstrates that macroeconomic stability, governance, and integration into global markets are recurring dimensions of the discourse.

These findings contribute to the body of knowledge by demonstrating that research on FDI has evolved beyond traditional growth models into a multidisciplinary space encompassing sustainability, climate change, and institutional quality. The clustering reveals a shift in emphasis towards how the structure of investment flows interacts with broader developmental goals. Notably, while “FDI” and “economic growth” dominate, the limited presence of terms explicitly related to equity and debt composition suggests an underexplored niche. This underscores the originality of focusing on FDI composition in bibliometric research, as it has the potential to fill a significant gap and expand the understanding of how different forms of capital flows contribute to growth and long-term stability.

What Are Co-Authorship Collaborations Structured Across Countries?

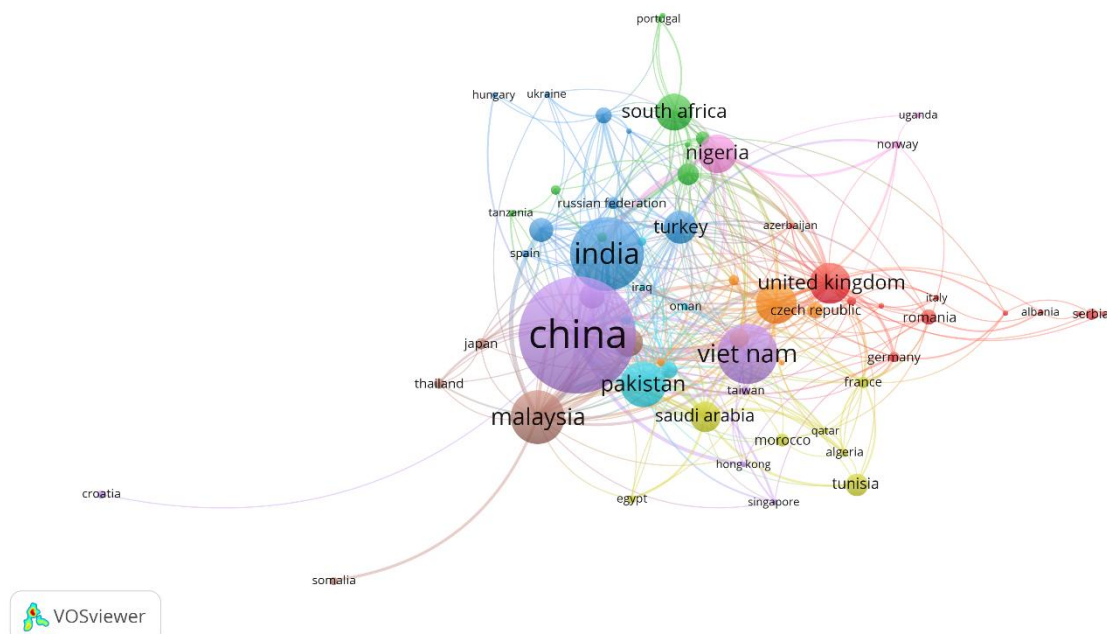


Figure 5: Network Visualization of International Co-Authorship by Countries in the Literature on FDI and Economic Growth (2020–2025)

The co-occurrence co-authorship by countries analysis is a bibliometric technique that maps collaboration patterns across nations, showing how researchers from different countries co-publish within a specific field. Using VOSviewer, the full counting method was applied with a minimum threshold of five documents per country. Out of 106 countries identified, 64 met this threshold. By setting a minimum cluster size of five, nine distinct clusters of collaboration were generated. The size of each node represents the number of documents produced by a country. At the same time, the link strength illustrates the intensity of co-authorship connections with other countries, thereby revealing both productivity and international research linkages.

The findings show that China dominates the field with 196 publications and 3,746 citations, reflecting its significant role in driving research on FDI and economic growth. Strong contributions also come from India (117 documents), Vietnam (93), Malaysia (82), and Pakistan (69), underscoring Asia's central position in this research area. The United Kingdom and the United States, although producing fewer documents (61 each), demonstrate high citation counts and international linkages, reflecting their influence through methodological contributions and cross-country comparative studies. Emerging economies such as Nigeria, South Africa, and Saudi Arabia also appear as active participants, signalling an increasing diversification of the global research network beyond traditional Western hubs.

These results contribute to the body of knowledge by highlighting that international collaboration is no longer confined to developed countries but is increasingly being shaped by developing and emerging economies, where FDI inflows and growth challenges are most critical. The formation of nine clusters suggests the existence of regional and thematic alliances, where countries with shared economic contexts and policy concerns collaborate more closely. This evolving network demonstrates the globalization of academic inquiry, while also highlighting the opportunity for deeper engagement in underrepresented regions, particularly in Africa and parts of the Middle East, to enhance the global dialogue on FDI composition and its growth implications.

Conclusion

This bibliometric study mapped the intellectual and collaborative landscape of research on economic growth and the equity–debt composition of foreign direct investment (FDI). Focusing on publication trends, most-cited articles, country contributions, keyword patterns, and co-authorship networks, the analysis revealed a steady rise in research output from 2020 to 2025, with a marked surge in 2022 and 2023, reflecting post-pandemic interest in capital inflows and investment structures. The most-cited works centered on sustainability, carbon emissions, renewable energy, and green innovation, showing that FDI is increasingly examined beyond its growth effects to include environmental and developmental dimensions. China, India, Vietnam, Malaysia, and Pakistan emerged as leading contributors, while the United Kingdom and the United States maintained influence through highly cited publications and collaborations. Keyword mapping identified “foreign direct investment” and “economic growth” as dominant themes; however, explicit references to equity and debt composition remain limited, revealing a critical research gap that this study highlights. Co-authorship analysis further indicated growing collaboration among developing and emerging economies, reflecting shared challenges and policy priorities. Overall, the study contributes by clarifying global research trends, identifying thematic and geographical patterns, and emphasizing the need to examine FDI composition as a determinant of financial stability, sustainable growth, and long-term development.

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