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Bibliographic analysis on real estate finance literature: A study on articles in Web of Science Core Collection Database

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Abstract

The aim of this study is to make a bibliographic analysis of the articles published between 1993-2022 in the journals indexed in the database Web of Science Core Collection Database on the subject of "Real Estate Finance". Web of Science Core Collection Database was used in the preparation of the data file to be used in the research. 1405 articles included in the research were determined by filtering the search for the term "Real Estate" with the term "finance", "financing" or "financial". 7730 publications were narrowed down to "Citation Topics Meso: Economics", "Web of Science Categories: Business Finance", Document Type: Article" and "Publication Years:1993-2022". The data file obtained by collecting the "full record and cited references" records of these articles was cleaned. Statistical analyses were carried out through R-Based Biblioshiny application. The results of the research indicate that the interest in Real Estate Finance in the literature continues to increase. Leading journals in this field are Journal of Real Estate Finance and Economics, Journal of Property Investment & Finance, and Real Estate Economics; the leading authors were determined to be Liow KH and Ling DC. Within the scope of the study, the current state of the literature on real estate finance was examined and the trends for future research were revealed.

Keywords: Bibliometrics, Real Estate Finance, Biblioshiny, R

JEL Codes: F65, O16, R3

1. Introduction

Real estate has become a global asset class since the 1980s, with Middle Eastern and Japanese institutions investing in UK and US properties and increased its importance in the 1990s with German open-end funds and US worldwide closed-end fund offerings (Goodchild, 2019). The real estate sector is under the influence of many factors, and it is very difficult to predict and make a comprehensive analysis (Yang et al., 2022).

The bibliometric analysis method is a scientific and meaningful method that examines research trends by using bibliographic data on the basis of selected topic (Hahn & Ryu, 2022). The bibliometric analysis method, which has been used mainly in the management of the library collections of journals and as an academic tool for the development of science since the 1980s, aims to evaluate the efficiency and scientific impact of research activities (Gingras, 2014).

Finance is an area where bibliometric studies are frequently applied. Khan et al. (2022) examined 121 bibliometric studies in the field of finance. Although many subjects in the field of finance have been examined in these 121 studies and other studies in the literature, no bibliometric analysis study on real estate finance has been found.

This study aims to reveal the developments and trends in the literature on Real Estate Finance in the last 30 years. For this purpose, the data collected from the Web of Science Core Collection database were examined through the R-Based Biblioshiny application. In the research, it is aimed to reveal the sources, authors, publications, conceptual and intellectual structure, and the relations between them on Real Estate Finance.

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2. Research Methodology

This descriptive study is designed by using bibliographic materials derived from literature. The Web of Science Core Collection Database was used for this study. On 11/01/2022, 22598 results from searches using the search term "real estate" were filtered using the search terms "finance or financing or financial" to reach 7730 publications. The retrieved publications were reduced to 2629 by selecting the filter "Citation Topics Meso: 6.10 Economic". Of these, 1573 publications were found by selecting the Web of Science category "Business Finance" which relates to the research area.

To ensure homogeneity of publications, the number of publications to be used for the study was reduced to 1435 by reducing the filter "Document type: article". Then, 1405 articles from the last thirty years (1993-2022) were selected to be included in the study. The "Full Record and Cited References" information of the selected articles was downloaded, and the database used for the research was created by removing the repetitive and unnecessary keywords from the downloaded file and performing the cleaning process. The created database was subjected to statistical analysis with the Biblioshiny application using the R-based Bibliometrix library.

3. Results

3.1. General Overview

1405 articles published between 1993-2022 in the Web of Science Core Collection Database were included in this study. These articles were written by 2203 authors in total. While 179 articles had a single author, the average number of co-authors per article was determined as 2.52. There is international co-author collaboration in 29.32% of the articles. 2901 keywords and 30700 references were used by the authors. The average number of citations per publication is 14.44.
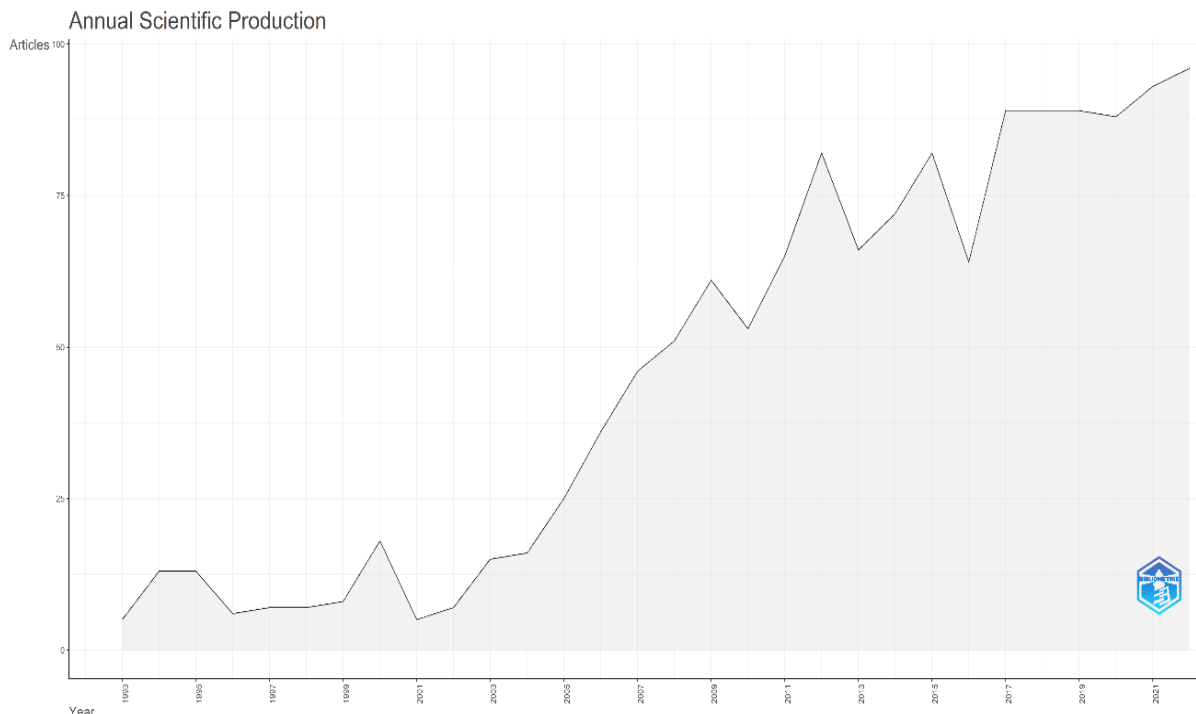

Figure 1. Annual Scientific Production

In the publications on Real Estate Finance, it is noteworthy that the annual production tends to increase continuously with slight and negligible decreases in years 1996, 2001, 2010, 2013, 2016 and 2020. Especially the rapid increase between 2001 and 2009 is remarkable. The average publication annual growth rate is 10.73%.

Sankey diagrams have been used for many years in different fields of science, especially engineering (Schmidt, 2008). The result of the Three-Field Plot analysis made by selecting authors, affiliations, and keywords, twenty from each, can be seen in the Sankey Diagram in Figure 2. Results indicate the interrelationship between the most active 20 authors in the middle column, the most important 18 affiliations in the left column and the most frequently used 19 keywords in the right column. The size of the rectangles seen in each column in the figure is related to the size of the relationship with the other columns.
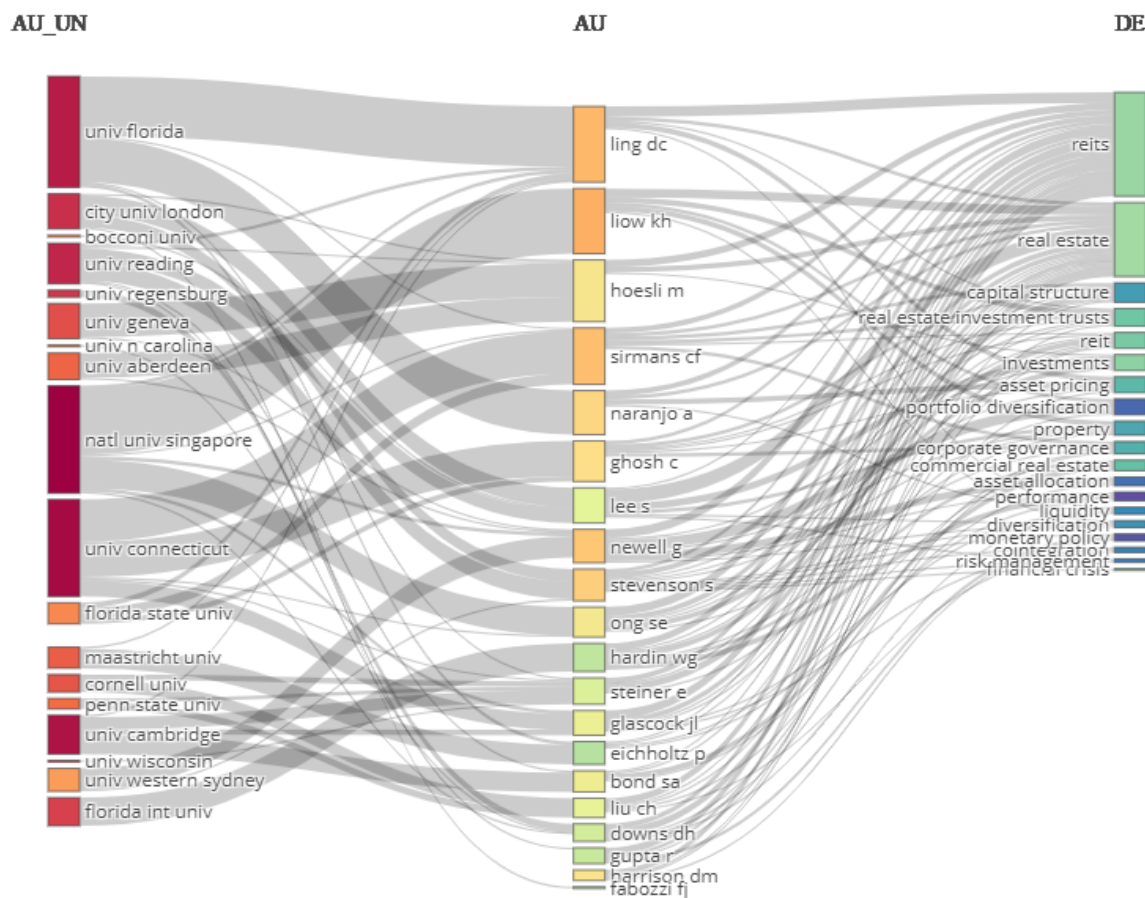

Figure 2. Three-Field Plot

3.2. Journals

1405 articles included in the research on Real Estate Finance were published in 170 different sources. The widest source of publication on the subject is the Journal of Real Estate Finance and Economics with 326 articles. Journal of Property Investment & Finance comes in second place with 200 articles and Real Estate Economics comes in third with 113 articles. The table below shows the local impact of the leading journals according to the Hirsch index.
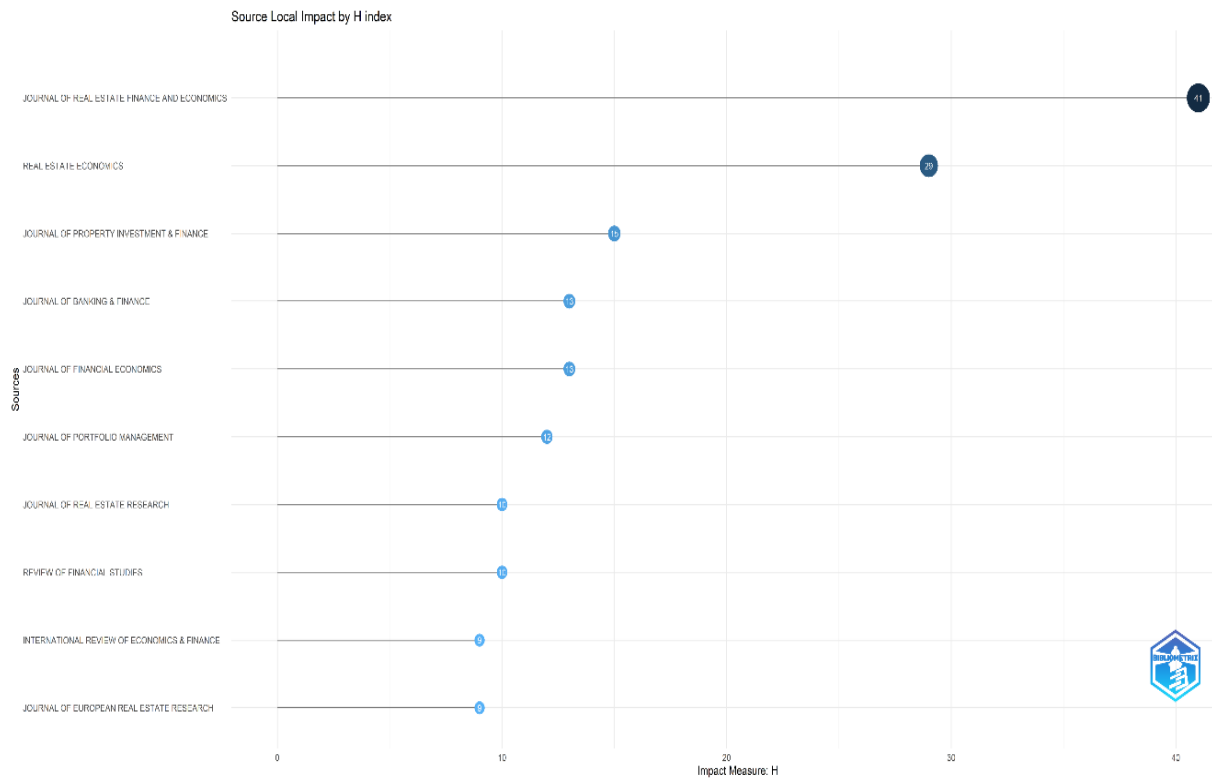
Figure 3. Source Local Impact

H index which developed by Hirsch (2005) indicates the largest number h such that at least h articles in that publication were cited at least h times each (WOS, 2022). According to the Figure 3, Journal of Real Estate Finance and Economics is the most effective journal with a 41 H-Index value. It is followed by Real Estate Economics (H=29) and Journal of Property Investment & Finance (H=15).

3.3. Authors

Liow K.H. with 36 articles is the author with the most articles on Real Estate Finance. He is followed by Ling D.C. who has written 26 articles and Sirmans C.F. with 21 articles. The most cited author with 329 citations is Ling D.C. and Naranjo A with 250 citations followed by Sirmans CF. The second most published writer Ling D.C. has written a total of six articles within the last two years followed by the most published author Liow K.H who has written four articles in the last two years. The third most published author Sirmans's last article dates to 2014. The most active authors on the topic are listed as Liow K.H. (H=15), Ling D.C. (H=14) and Sirmans C.F. (H=13).

Lotka's Law (1926) shows the inverse proportion between the number of authors and the number of articles they have written, and as can be seen in Figure 4, the articles written on Real Estate Finance are also distributed in accordance with Lotka's Law.
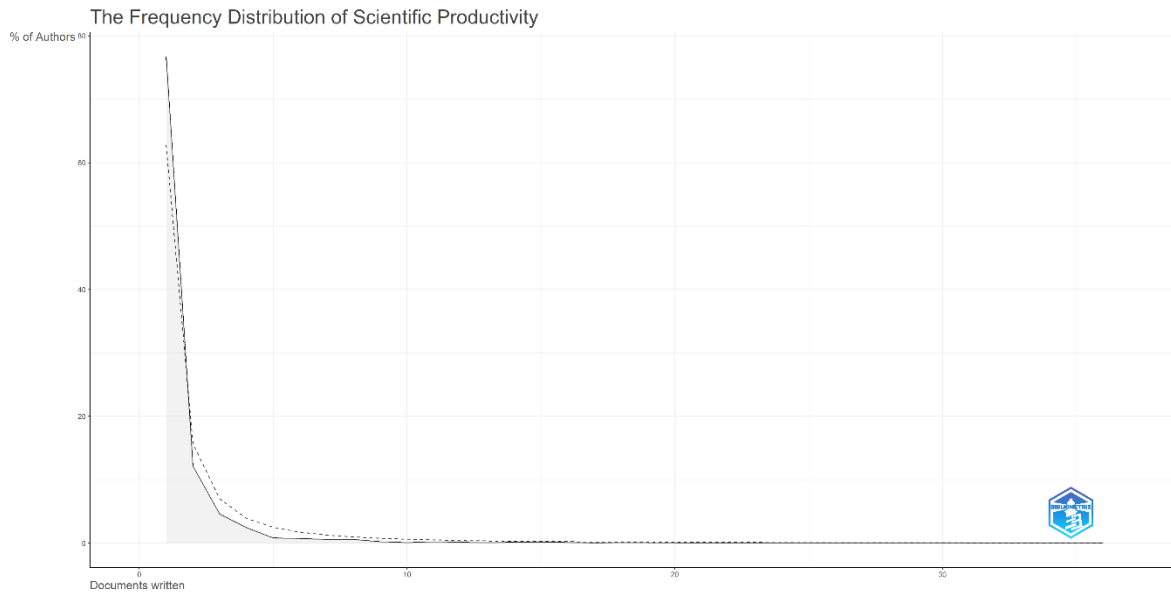
Figure 4. Author Productivity Through Lotka's Law

Another important issue that needs to be examined bibliometrically is the number of publications by country. The countries with the highest number of publications in the field respectively listed as USA with 437 single country production (SCP) and 97 multiple country production (MCP), United Kingdom (SCP=74, MCP=59), China (SCP=82, MCP=40) and Australia (SCP=65, MCP=28). Although Germany (SCP=53, MCP=17) is in the fifth place, Singapore which is in the 6th place is ahead of Germany in terms of MCP (26).

Figure 5. Corresponding Author's Country (First 25 Country)

3.4. Documents

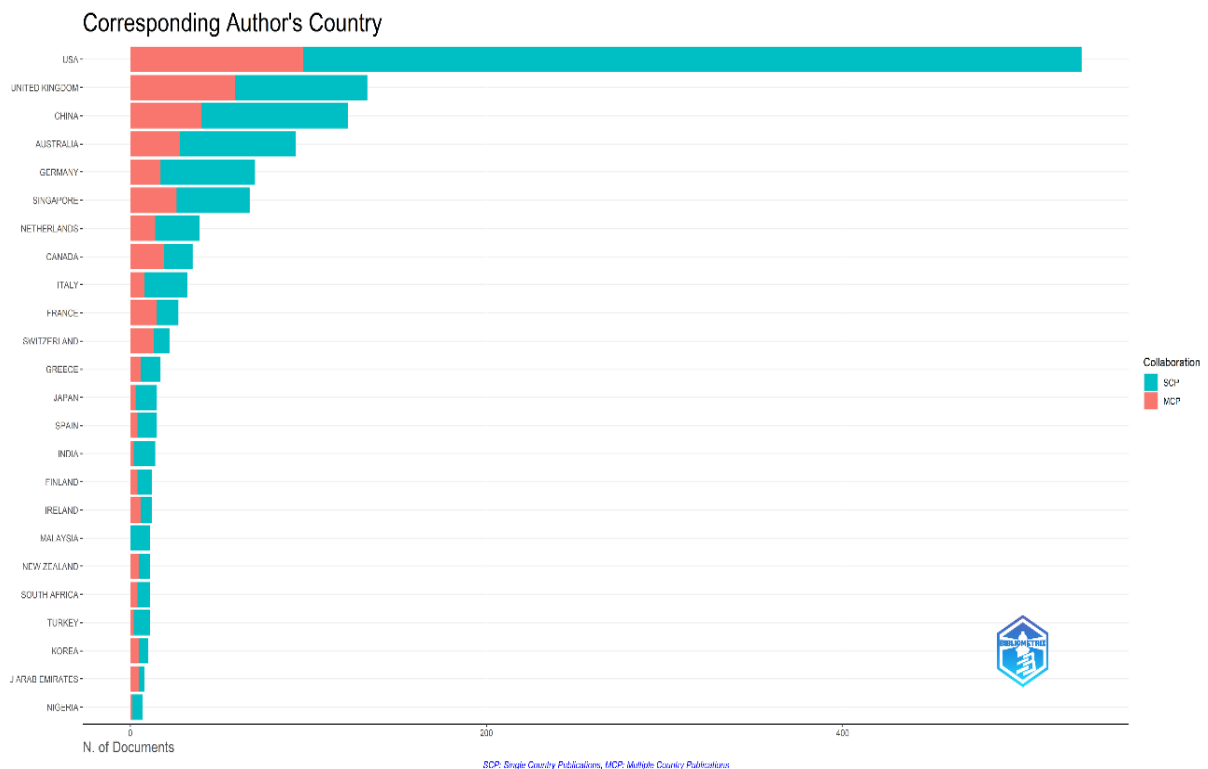Within the scope of the research, 1405 articles were examined. The most cited of these articles was "How do house prices affect consumption? Evidence from micro data" by Campbell & Cocco (2007) which is cited 432 times. Among the 1405 articles reviewed, the most locally cited source was the article by Fama & French (1993) titled "Common risk factors in the returns on stocks and bonds", which was cited 122 times. The earliest referenced publication is "Wealth of Nations" written by Adam Smith (1776).

Authors' Keywords Cloud on Real Estate Finance can be seen in Figure 6. This visual representation visualizes words frequently used by the authors as keywords, using a conspicuous font and dimensions to rank (Abafe et al., 2022). The most frequently used keyword in 1405 articles included in the research is "Real Estate", which was used 198 times. Among the 1405 articles included in the research, the most frequently used keyword is "Real Estate", which is used 198 times. REIT, REITs, Real Estate Investment Trust, Real Estate Investment Trusts, Real Estate Investment Trusts (REIT), Real Estate Investment Trust (REIT) keywords symbolizing the same concept are used 258 times in total and these concepts stand out among other keywords. This is an indicator that the most researched subject in the studies in the field of real estate finance is the "Real Estate Investment Trust". The keywords "Investment" (37 times), "Financial Crisis" (36 times) and "Commercial Real Estate" (31 times) indicate other frequently searched topics.

Figure 6. Word Cloud

One of the most important data available through bibliometric analysis is research trends. On the other hand, Figure 7 shows the prominent issues according to the years. With the pandemic experienced all over the world, the keyword Covid-19 has become the leading trending topic in 1405 articles included in the research. Covid-19 is followed by "risk adjusted performance" and "efficiency". "Panel data" analysis, which has come to the fore as a statistical method in recent years, is one of the prominent trend topics.
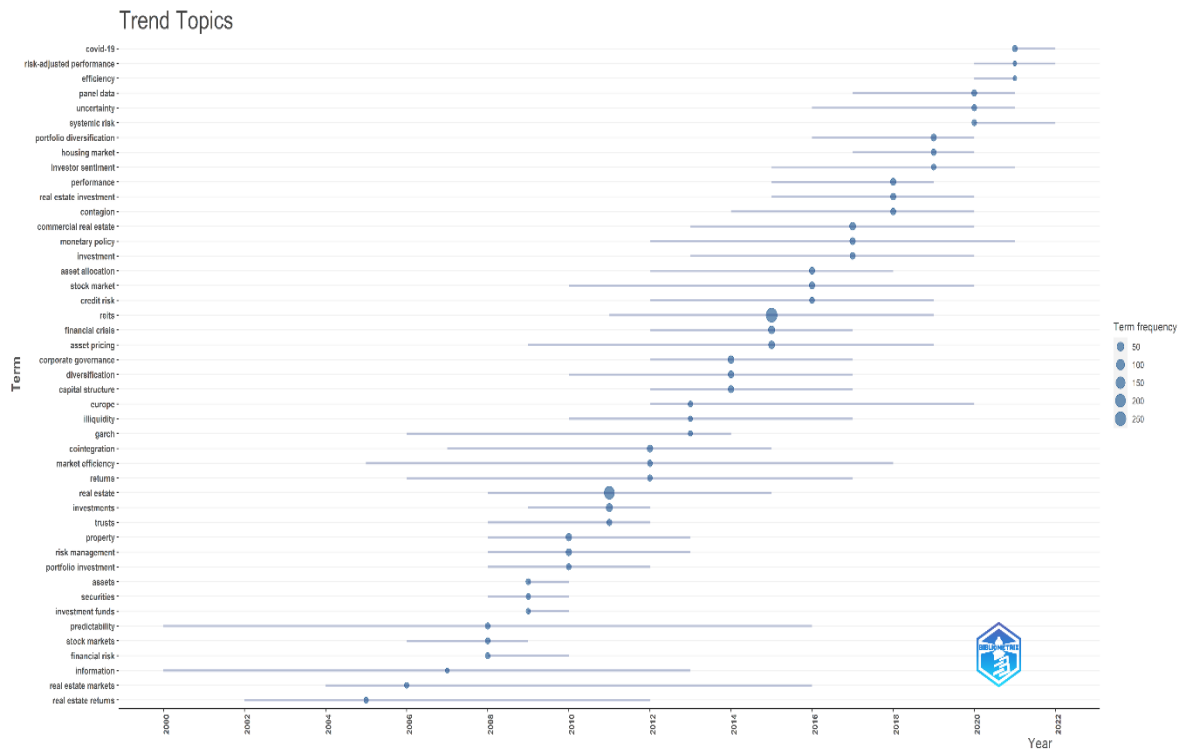
Figure 7. Trending Topics

3.5. Conceptual Structure

Within the scope of the bibliometric method, analyzes should also be made regarding the conceptual structure. Two of these analyzes can be listed as co-occurrence network analysis and thematic map. Figure 8 shows the co-occurrence network visualized with the 30 most frequently used keywords based on the authors' keywords. In the Co-Occurrence Network, the distance between the nodes indicates the strength of the relationship, while the thickness of the link between the two keywords indicates the co-occurrence density (Handoko, 2020). The two main clusters that stand out in the figure appear to have formed in the keywords "real estate" and "REITs".
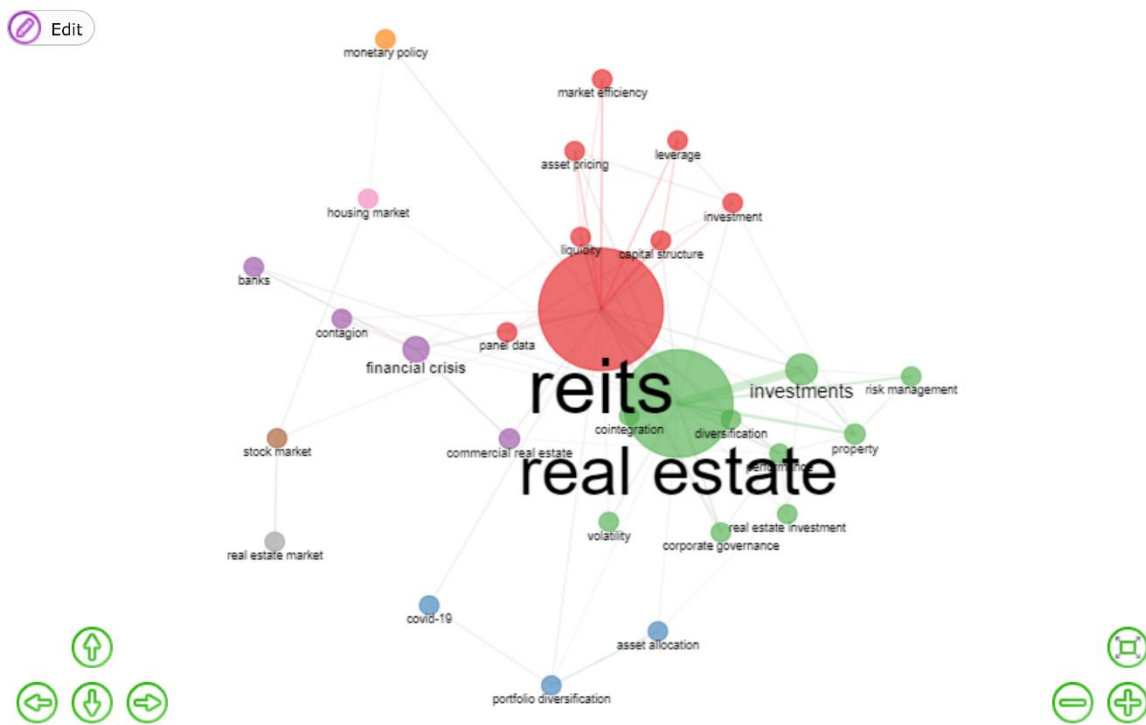
Figure 8. Co-Occurrence Network

Thematic maps, divide the important themes within the research as basic, emerging, or declining, and niche in order to form an integrated system (Nasir et al., 2020). In Figure 9, eight clusters can be observed on the thematic map. Niche clusters are seen in the upper left corner. These are clusters that are high in terms of development degree (density) and low in terms of relevance degree (centrality). The first cluster includes event study, the second cluster includes fair value and IFRS, and the third cluster includes credit risk, systematic risk, and financial stability. These three clusters represent niche areas of study in real estate finance.

At the bottom left of the figure, there are emerging/declining themes. Real estate investment is the only cluster formed in this section. Motor themes are located at the top right of the figure. Motor themes symbolize high topics in terms of both density and centrality. The additional cluster included in this context is the cluster containing the keywords financial crisis, commercial real estate and cointegration. At the bottom right of the figure, there are basic themes that are high in terms of centrality and low in terms of density. The first one is asset allocation, portfolio diversification and Covid-19 cluster, the second one is real estate investments and property cluster, and the last one is REITs, asset pricing and corporate governance cluster.
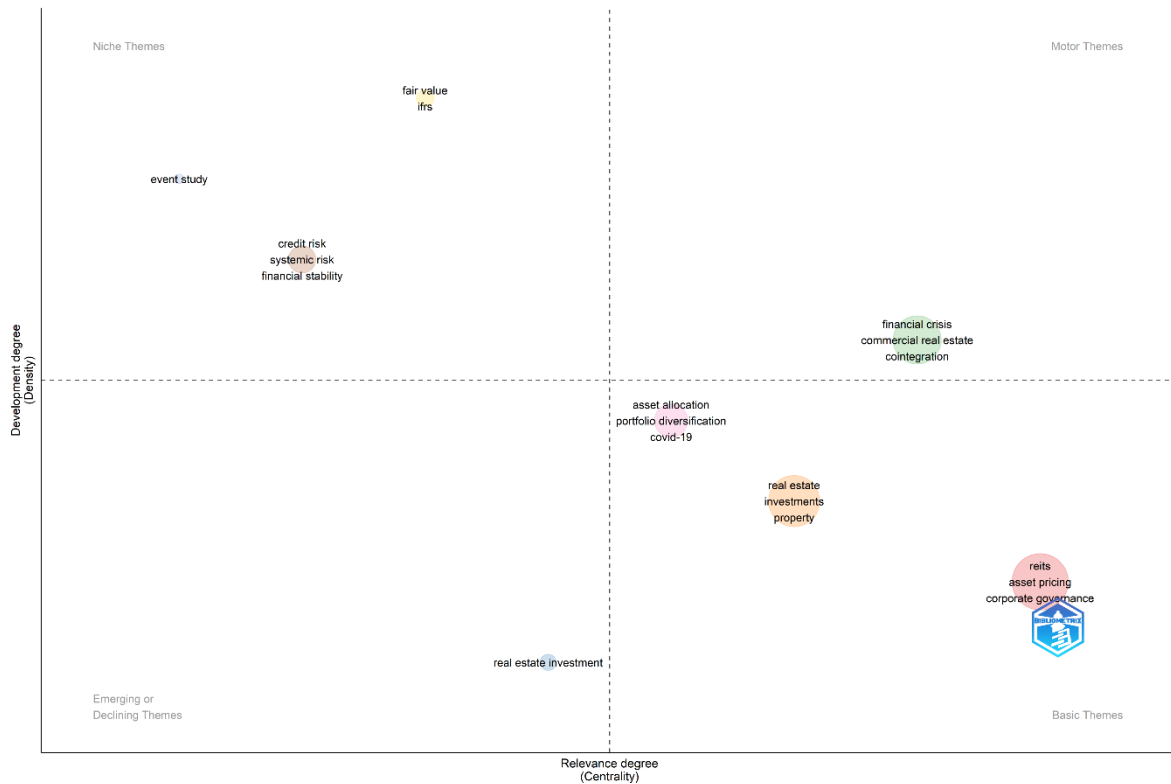
Figure 9. Thematic Map

3.6. Social Structure

Through Bibliographic analysis, it becomes convenient to effectively visualize co-authors' collaboration maps. In Figure 10, global collaboration among authors in the field of real estate finance can be seen on a world map.
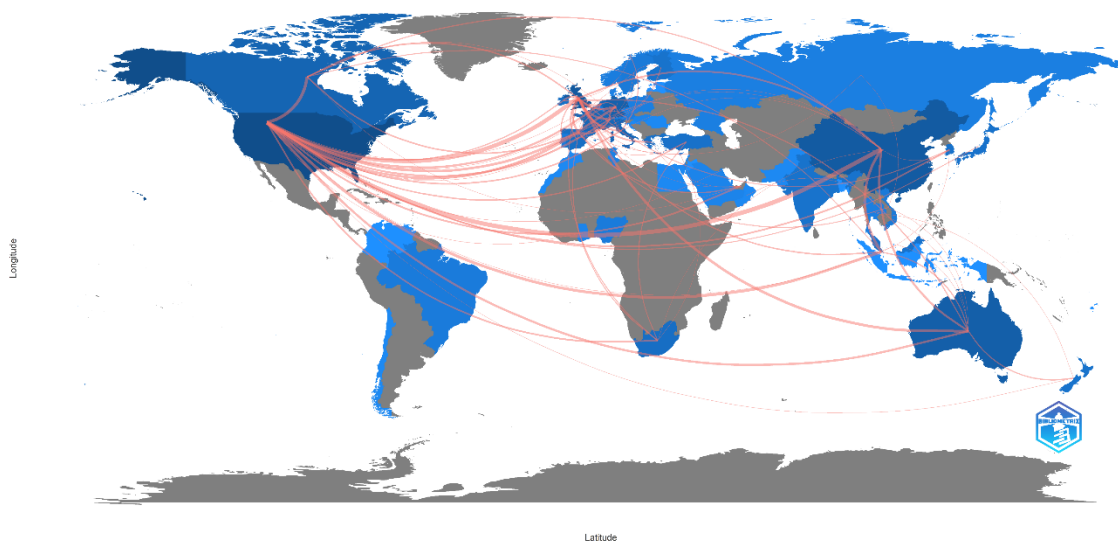

Figure 10. Collaboration Worldmap

4. Discussion

4.1. Key Results

In this study, bibliometric analysis of 1405 articles written in the field of real estate finance and published in 170 sources, covering the period 1993-2022, was carried out using the R-based Biblioshiny software. These articles were written by 2203 authors and 179 were single authored. The average number of co-authors per article is 2.52, and 29.32% of articles have international collaboration between authors. The annual growth rate of 10.73 indicates that the interest in this field is in an increasing trend.

Prominent journals in the field are Journal of Real Estate Finance and Economics, Journal of Property Investment & Finance and Real Estate Economics. The most influential authors in the field were identified as Liow KH, Ling DC and Sirmans CF. The most cited publications came from the USA, China, and the UK. In terms of the number of authors, the same three countries share the first places.

The most used keywords by the authors are Real Estate Investment Trusts (Reits), Real Estate, Investments and Financial Crisis. With the effect of the pandemic, the most trend topic in recent years has been Covid-19. It is followed by Risk-Adjusted Performance, Efficiency and Panel Data. In subsequent studies, it is considered that comparisons between publications in different databases or research on the basis of journals can be made.

4.2. Limitations

This study has several limitations which can be categorized into two groups. The first group consists of data used and the latter is of the research method used. The most important limitation of the database is that only the Web of Science Core Collection database was used in the study. The search terms used, time range, publication type and other filters used while preparing the data file constitute other constraints related to the database. The limitations of the research method are related to the fact that the research was carried out with the Biblioshiny software using the R-based Bibliometrix library. Within the scope of the research, only the methods offered by the software in question were used.

References

Abafe, E. A., Bahta, Y. T., & Jordaan, H. (2022). Exploring biblioshiny for historical assessment of global research on sustainable use of water in agriculture. *Sustainability, 14*(17), 10651. doi: 10.3390/su141710651

Campbell, J. Y., & Cocco, J. F. (2007). How do house prices affect consumption? Evidence from micro data. *Journal of Monetary Economics, 54(3*), 591-621. doi: 10.1016/j.jmoneco.2005.10.016

Fama, E. F., & French, K. R. (1993). Common risk factors in the returns on stocks and bonds. *Journal of Financial Economics, 33*(1), 3-56. doi: 10.1016/0304-405x(93)90023-5

Gingras, Y. (2014). *Bibliometrics and research evaluation: Uses and abuses*. London: The MIT Press.

Goodchild, R., & D'Archy, E. (2019). *An international overview of real estate markets: Similarities and differences*. In: Mac Gregor, B. D., Schulz, R. & Green, R. K. Routledge Companion to Real Estate Investment. New York: Routledge; p. 11.

Hahn, S., & Ryu, Y. M. (2022). Trends in research on clinical reasoning in nursing over the past 20 years: A bibliometric analysis. *Science Editing, 9*(2), 112-119. doi: 10.6087/kcse.276

Handoko, L. H. (2020). Bibliometric analysis and visualization of Islamic economics and finance articles indexed in Scopus by Indonesian authors. *Science Editing, 7*(2), 169-176. doi: 10.6087/kcse.213

Hirsch, J. E. (2005). An index to quantify an individual's scientific research output. *Proceedings of the National Academy of Sciences, 102*(46), 16569-16572.

Khan, A., Goodell, J. W., Hassan, M. K., & Paltrinieri, A. (2022). A bibliometric review of finance bibliometric papers. *Finance Research Letters, 47*, Part A:102520. doi: 10.1016/j.frl.2021.102520

Lotka, A. J. (1926). The frequency distribution of scientific productivity. *Journal of the Washington Academy of Sciences, 16*(12), 317-323.

Nasir, A., Shaukat, K., Hameed, I. A., Luo, S., Alam, T. M., & Iqbal, F. (2020). A bibliometric analysis of Corona Pandemic in social sciences: A review of influential aspects and conceptual structure. *IEEE Access, 8*, 133377-133402. doi: 10.1109/access.2020.3008733

Schmidt, M. (2008). The Sankey Diagram in energy and material flow management. *Journal of Industrial Ecology, 12*, 82-94. doi: 10.1111/j.1530-9290.2008.00004.x

Smith, A. (1776). *Wealth of Nations*. London: W. Strahan and T. Cadell.

Web of Science. (2022). *H-index information [Internet]; 2022 [cited 2022 Nov 01].* Available from: https://support.clarivate.com/ScientificandAcademicResearch/s/article/Web-of-Science-h-index-information?language=en_US.

Yang, C. H., Lee, B., & Lin, Y. D. (2022). Effect of money supply, population, and rent on real estate: A clustering analysis in Taiwan. *Mathematics, 10*(7), 1155. doi: 10.3390/math10071155

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