SCIENTOMETRIC OVERVIEW OF THE FINANCIAL RESEARCH: AN ANALYSIS OF THE JOURNAL OF FINANCE FROM 1989-2020

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Abstract

The study focuses on 3189 research titles published in the Journal of Finance (JF) during 1989-2020. The main objective of this study is to evaluate the whole collection of scientific works that appeared in the Journal of Finance published by the American Finance Association. The bibliographic and citation data for this study were acquired from the Web of Science (WOS) Core Collection. The study was carried out using scientometric indicators with the support of R-tool and VOS viewer science mapping software. The analysis provides a brief overview of the main factors such as publication evolution, most productive authors, citation structure, author collaboration network, co-citation analysis, most productive countries, and multiple correspondence analysis for keyword plus used in the JF. The journal, on average, published about 99.65 research documents per year. Forty countries contributed to the scientific documents. The United States of America found to be the high performing country in the JF. It was observed that some Asian and European higher education institutions are performing well for the last two years. The first three countries (USA: 3291, UK:263 and Canada: 157) are responsible for 57.7%, the first fifteen countries for 65.9%, and the first 20 countries for 81.5% of the total records 3189. There are 734 authors of single-authored papers found, and they contributed to 947 single-authored documents—a total of 2302 keyword plus identified in the journals.

Keywords: Finance research, Scientometrics, Web of Science, Journal evaluation, Science mapping, VOS viewer.

I. INTRODUCTION

The "Journal of Finance" (JF) is a reputed and high impact journal on the business & finance category of Journal Citation Reports (JCR) with the Impact Factor (IF) of 6.813 that investigates all the major fields of financial research. The journal has received much attention among researchers and academics in the area. Every issue of the journal reaches over ten thousand experts around the world. The frequency of the journal is six times a year; the journal is the official publication of The American Finance Association. The journal was published its first issue in the year of 1946. With the advent of the information era, the journal has progressed with time and a more significant number of submissions globally.

The scientometric study used to assess various scientific literature concepts and provide a systematic and clear view of the published research (Pratheepan & Weerasooriya,2015). In general, the number of research publications and citations plays a vital role in measuring research output, as mentioned by Merigó et al. (2015). In recent years, systematic evaluation of scientific research in a field has received much attention. Scientometrics describes the history and profile of a specific research area to interpret the published research output. Quantitative analysis for evaluating scientific work or measuring journals using some metrics came into practice before thirty years. A study on an accounting journal analysed its growth for 60 years (Heck & Bremser,1986). Allen et al. (1991) critically examined the "Journal of Urban Economics" research profile for 16 years. Findlay, Anne, & Leigh Sparks (2002) discussed European retail journals using bibliometric methods. In addition to these studies, several studies examine journals using newly introduced indicators. A bibliometric analysis using very advanced quantitative methods conducted in the Journal of Management covers 30 years (Van Fleet et al.,2006). Another study by Garcia-Merino et al.(2006) evaluated the research output published in the Technovation journal for the first twenty-five years. Chan, Chang, and Lo (2009) analysed research publications published during 1995-2008 in the European Financial Management Journal. A bibliometric study conducted to examine the word "Uncertainty" in heterodox economic journals (Almeida, Felipe, and Luis Gustavo de Paula,2019). Wang et al.(2020) examined the evolution of the Omega management science journal.

This study analyses the publication behaviour & growth pattern of JF during 1989-2020 with the application of many indicators. The study covered the main factors influencing the journal, leading researchers, universities, and countries. The evaluation uses scientometric indicators and methods. The scientometrics method provides a comprehensive path to the scholarly community for published research in JF by considering the quantitative results acquired from the Web of Science (WoS). However, the literature has no end in most of the research area in general. Due to this reason, evaluation in different topics is a helpful way to take positive interpretation. This study provides some pictures to its audience about the journal and its dynamics. The study considers the growth rate of the journal's research output and citation behaviour, provides an overview for high influential articles in JF and studies the predominant scientists, leading and productive countries, co-citation analysis in JF. In general, the study analyses the results of the bibliometric.

II. METHODOLOGY

This paper analysed the research output published in JF during 1989 and 2020 based on the Web of Science (WOS) Multidisciplinary database. WOS is one of the main citation databases for evaluating research contributions. The WoS includes over fifteen thousand sources and 60,000,000 scientific documents. Scientific documents and journals included in the WOS have a world reputation and considered the highest quality in term of their impact and standard. However, alternative citation databases exist globally. Some well known and recognised are Scopus, Google Scholar, Pubmed etc. Scientometrics studies apply several methods & materials. The most popular and recognised practices are frequency and impact based on output and citation, respectively. Hirsch (2005) suggested the h-index to measure the scientist's performance as a single measuring mechanism to cover both publication and citation. From a general point of view, the performance of the h-index produces constructive reflections. But, few occasions found a weakness in evaluating researchers and their performance due to some different characteristics. The research literature offers many other indicators, including the g-index (Egghe, 2006) and the hg-index (Alonso, Cabrerizo, Herrera-Viedma, & Herrera, 2009). There are arguments regarding which indicator better describes a scientist's outcome (Podsakoff et al., 2008). In

general, research productivity has a perfect relationship with the performance of scientists. In contrast, the citations received by a scientist reflecting in his/her influence on the research team.

The scientometric indicators are most significant in this study in providing a comprehensive, evidence-based profile for research output published in JF. Usually, the method ranks scholarly materials based on the output, impact and h-index. The statistical figures enable authors to measure the dynamics and impact. The ratio (citation/output) assess the reflections of each paper. The research output and citation threshold (Merigo, GilLafuente, & Yager, 2015) allows identifying the number of research output with a certain impact level. In this study, VOSviewer® and R-tool for bibliometrics are used to conduct this study for analysis.
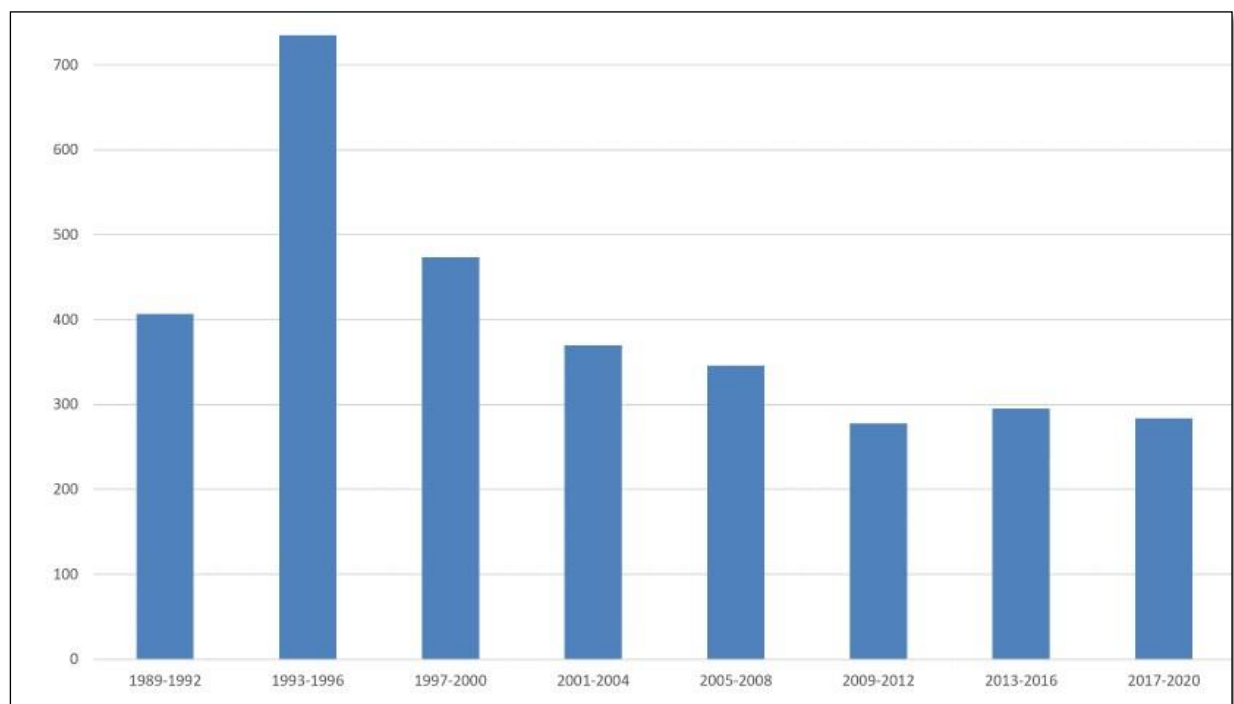
Publications and citations

Figure 1: Publication growth in Journal of Finance

As indicated in Figure 1, the growth rate of research publications in the JF shows an uptrend during 1989-1996, as reflected in the first and second window. The study revealed that the growth rate went to its peak in 1993 with a count of 203. The growth rate dramatically drops from 1997-2020 except for some fluctuation during 2013-2016.

The annual growth rate is 0.61%. The average number of publication was 99.65 during the study period. At the beginning of the second window, the research productivity suddenly increased with a record of 203 publications. As indicated in figure 1, publication growth dropped after 1997. In recent years, the annual number of publications has been more than 60 and the highest number found in 2003 with 97 research papers.

Figure 2 describes the number of citations received by the Journal of Finance for its published literature in each specific year. It shows that JF has received 123 average citations per document. In contrast, the JF received 6.613 average citations per year per document for all the publication during 1989-2020. More citations occurred during 1999–2015, covering 72% of the full citation count for the JF. Further, the findings revealed that the citations per year on average is 3001, which is during 999–2015. Based on the accepted fact that earlier publications to be automatically cited more time. Figure 2 explains the quantum of research outputs above a certain impact threshold in terms of citations, which identifies the frequency

of research output with an acceptable level of influence. The year 2000 found to be the highly influential period based on the citations received. It is noted that there is a possibility of changing the citation trend in years for the publications as some papers need a particular time to reach their peak in receiving citations. The study also revealed that 1.9% of research papers have more than 100 citations each, while 77.50% of the documents have at least a single citation.
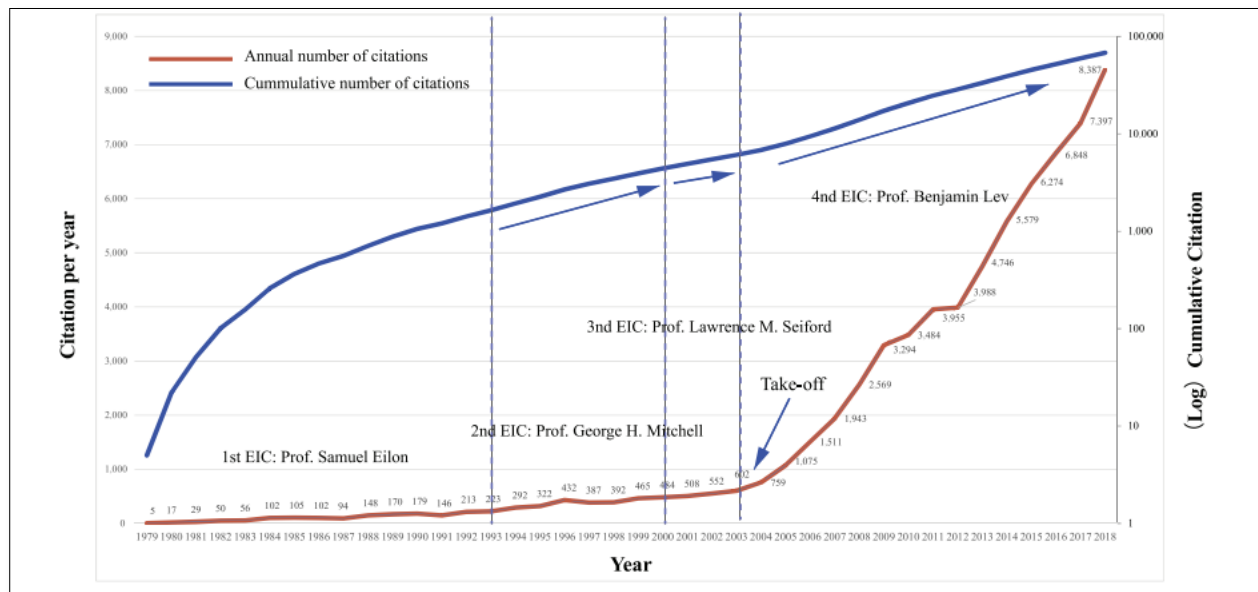

Figure 2 : Cumulative and annual number of citations.

Active & influential authors in JF

Many authors from different countries and institutions globally publish in the Journal of Finance during the study period. Table 1 describes the 20 predominant scientists based on the research output published in the JF. In addition to this, few more yardsticks are also given to provide additional insights about the authors. For example, the h-index, g-index, m-index and citations received by authors also appear in the table based on their performance. A total of 3250 authors contributed to produce all the publications in JF. All these authors have appeared as indicated in the table.

Table 1: Active & Influential authors in Journal of Finance

Author	h_index	g_index	m_index	TC #	NP ##
TITMAN S	23	33	0.71875	8725	33
LONGSTAFF FA	15	23	0.46875	3141	23
SHLEIFER A	20	22	0.625	24192	22
MICHAELY R	13	18	0.419354839	2237	18
STULZ RM	13	18	0.419354839	2804	18
JAGANNATHAN R	11	17	0.34375	5438	17
STEIN JC	16	17	0.5	6704	17
GOETZMANN WN	9	16	0.321428571	1514	16
MAKSIMOVIC V	12	16	0.375	3091	16
FAMA EF	15	15	0.483870968	13119	15
VISWANATHAN S	12	15	0.428571429	1480	15
FRENCH KR	14	14	0.482758621	11166	14
GRINBLATT M	10	14	0.3125	3409	14
HIRSHLEIFER D	8	14	0.266666667	4561	14

KAPLAN SN	9	14	0.310344828	2197	14
LAKONISHOK J	12	14	0.387096774	5047	14
CAMPBELL JY	10	13	0.344827586	3614	13
GRAHAM JR	10	13	0.384615385	2001	13
HARVEY CR	9	13	0.3	3236	13
HONG H	12	13	0.545454545	3625	13

TC# Total Citation   *NP## Number of Publications*

The most productive countries in JF

The Journal of Finance is a world reputed journal that published research papers from more than 40 countries. Table 2 represents the ten high performing countries in the Journal of Finance. The United States of Amerika is the predominant one with 2264 publications in JF, followed by Canada and the United Kingdom with 123 and 115 records, respectively. It is reasonable to consider that the USA found to be the high performing nations as the JF originated there. The Canada and UK placed the positions second and third respectively with almost similar output. China is only the country that seems among the Asian region in the top ten. The citation levels indicate that the USA has recorded the majority of the journal's leading papers.

Table: 2 The most productive and influential countries

Country	Articles	Freq	SCP	MCP	MCP_Ratio
USA	2264	0.812052	1370	894	0.395
CANADA	123	0.044118	59	64	0.52
UNITED KINGDOM	115	0.041248	46	69	0.6
FRANCE	50	0.017934	25	25	0.5
NETHERLANDS	32	0.011478	17	15	0.469
CHINA	22	0.007891	7	15	0.682
ITALY	17	0.006098	7	10	0.588
SWEDEN	17	0.006098	4	13	0.765
AUSTRALIA	16	0.005739	9	7	0.438
ISRAEL	16	0.005739	5	11	0.688

Author Collaboration Network Analysis

The collaborative network profile is one of the well-known structure in scientific mapping and analysis. It is describing the collaborative research patterns. In this part, the co-authorship network is analysed. It is an effective way to measure the connections and linkages among authors. Figure.3 displays a normalised collaboration network among authors with a minimum threshold of two research publications in JF, where the nodes represent the researcher. The links represent co-authorship relations between researchers. There are 393 nodes and 555 edges identified. The research groups are divided into 33 research communities. Different colours in Fig.3 illustrate all 33 groups. The largest node is Shleifer, a from Harward University, USA. The second-largest node is Titman, S from the University of Texas.

Figure 3: Author collaboration network analysis
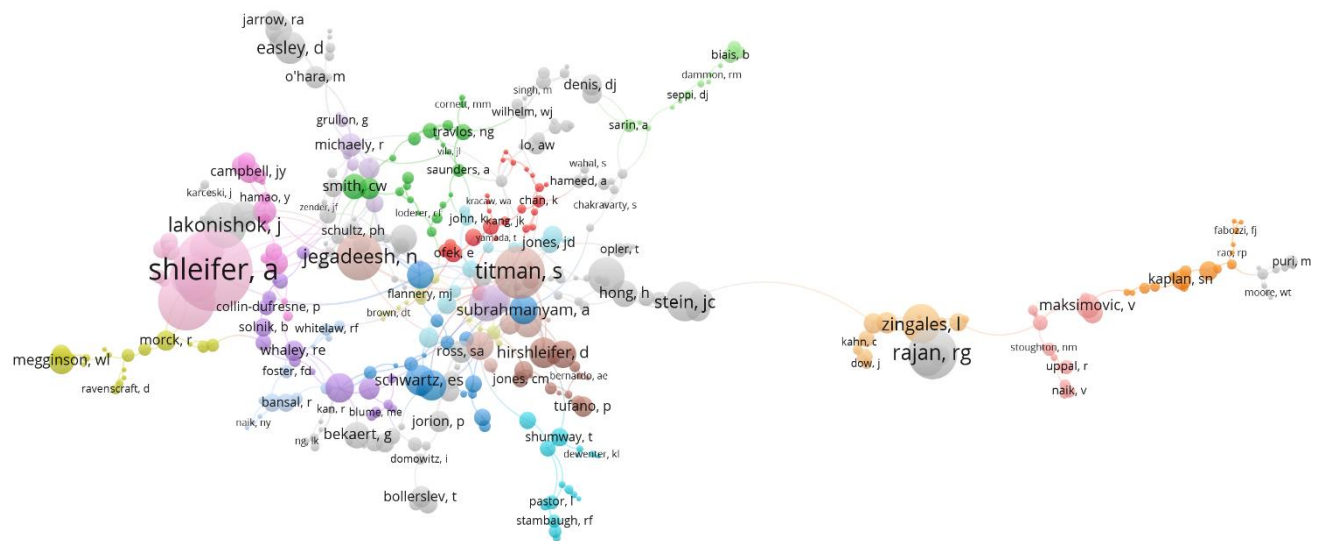
Journal co-citation network

Figure 4 describes the co-citation network created by the VOS viewer for the JF. The network represents the links and structure between the JF and the journals which have connections through citations. The general prediction of the co-citation network is that the most cited two journals are co-cited, the stronger is their linkage. The 3189 papers have 41819 cited reference materials, which are from 13,826 sources. To explain the prime feature of the JF co-citation linkage, each journal should have ten and above citations. The journal co-citation network of the Journal of Finance is shown in Fig.4. Of the 13826 cited sources, 411 journals met the threshold. It indicates that the Journal of Finance is at the core of Fig. 4 and has perfect connections with other journals. The Journal of Financial Economics found as the most influential journal with 12695 citations, 416692 total link strengths.

Figure 4: Journal co-citation network
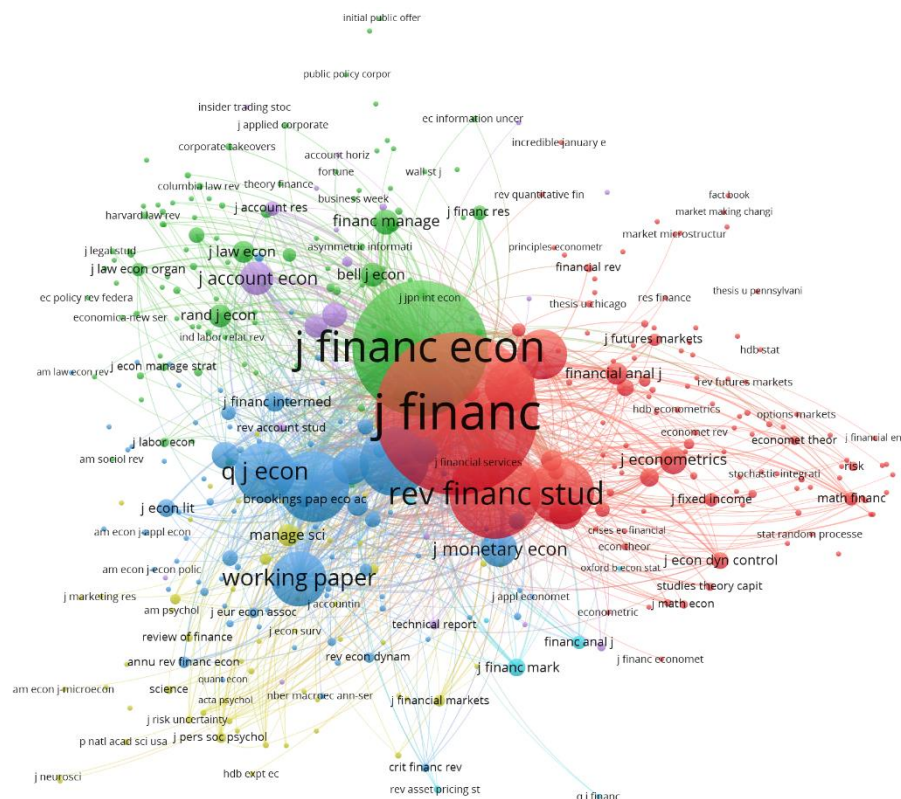
Multiple Correspondence Analysis for keyword Plus

In Fig. 5, multiple correspondence analysis (MCA) used to map the keyword plus used in the Journal of Finance. The MCA plots a full graphical map while considering the similarities of the distribution of the words used in its reflection. Naturally, the more such terms are parallel and similar in the network map, the better they will be represented. Research in the JF characterised by key terminologies of "stock prices", "asset prices", "consumption", "volatility", "equilibrium", and "stock returns", liquidity. Besides, there is other interesting attention found related to "growth", "equity", "investment", "impact", and "choice". Finally, blue words represent interest rates and term structure related to financial research. In this landscape, important words appear in this concentration, like "agency costs", "firm", "compensation", and "corporate governance."

Figure 5 : Multiple Correspondence analysis for keyword plus
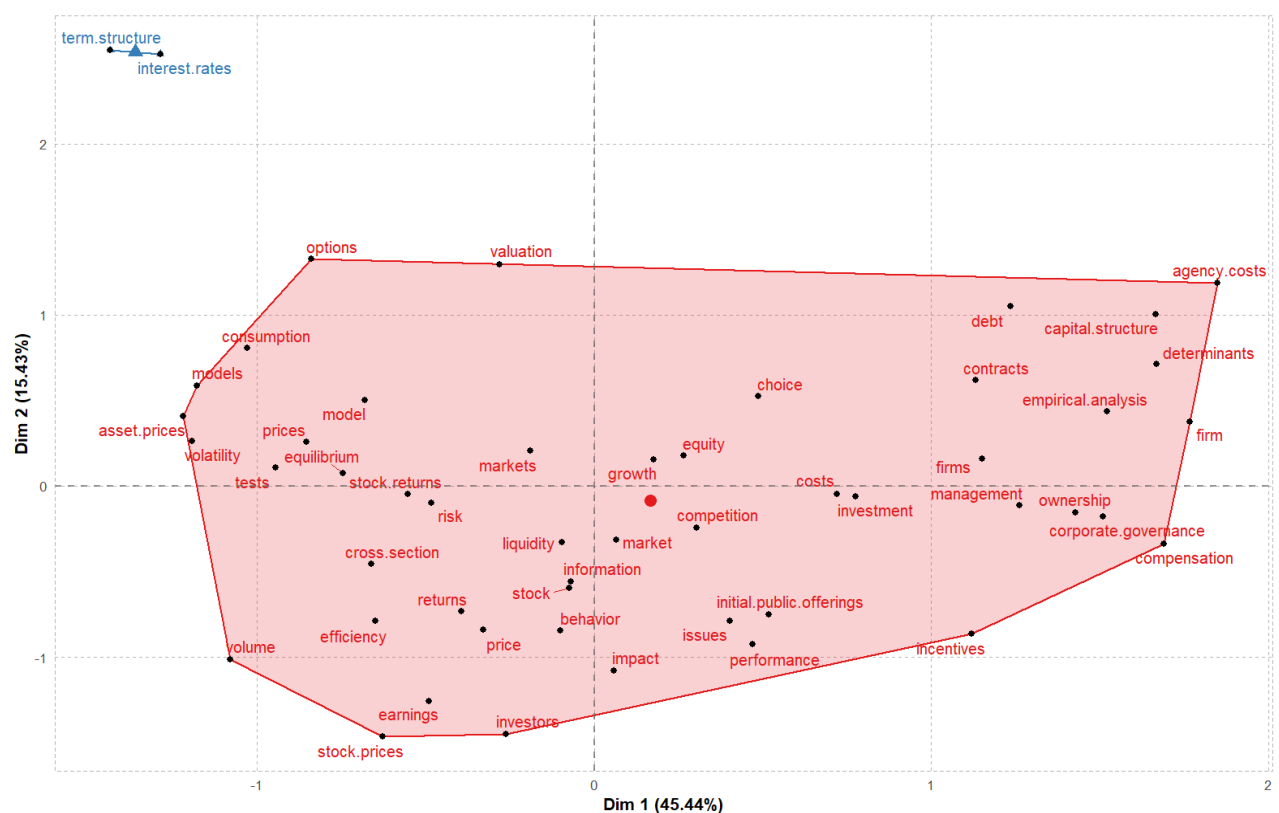
III. CONCLUSIONS

This study is based on the bibliographic and citation data retrieved from the Web of Science database and provides a clear picture of JF using scientometric indicators. JF publishes research in finance and business development, although it strongly focuses on international business management. Research publications published in the JF have received significant attention from the research community in the field. The United States of America is the high performing nation in JF. Most predominant institutions and researchers have mainly contributed to the USA for its high performance in R&D. Among the journals in the management & business category, the JF has a high reputation and diversity (Podsakoff et al., 2008). The USA is the most prolific and influential in research output in the JF compared to other countries. Other highly productive countries, including Australia, Canada, and the United Kingdom, are very far from their performance based on the publication. European countries have a leading role in the field in general but needs to become a predominant contributor in the JF. Except for China, Asian countries

found to be poor contributors compared to other management & business category journals in which their position is almost good. Anyway, the study revealed that the developing nations are still far away in their performance. There is a sign that some Asian countries move forward towards increasing publication efficiency for the last 05 years. Expect that developing countries will perform well to increase the publication efficiency in the JF.

Although the paper provides a comprehensive depiction of the JF with many insights, it has some weaknesses as finance research includes interdisciplinary research in business and management. This natural feature will influence a particular research area in business research with high recognition. Nevertheless, these areas tend to obtain several citations when performing the scientometric evaluation. The study's objective is to assess the growth and characteristics of the JF. This study provides each affiliation of the article with one component as Web of Science usually does. Hence, a study with more authors receives a higher result because of collaboration. For example, five works with five scientists provide five components for each of the scientists producing a total output of fifteen. In general, this part does not seem to fetch substantial deviations from the results; therefore, collaboration is a highly positive component. Finally, the latest study obtains great attention and results because it is easier to influence the scientific community today than earlier. The highly cited papers revealed that most of the papers found at the beginning of the twenties and the nineties. Although academics and researchers should focus on these limitations, in general, this scientometric analysis recognises the most significant trends reflecting in the Journal of Finance (JF).

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