

Global Evolution of Research on Corporate Bonds from 1957 to 2023: A Bibliometric Analysis of the Scopus Database

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<p><b>KEYWORDS</b></p> <p>Corporate debt, corporate bonds, network visualization, biblioshiny, VOSviewer. JEL Classification Codes: E44, F34, G10, G15, O16..</p>	<p><b>ABSTRACT</b></p> <p>Corporate bond markets play a crucial role in economic development, financial stability, and economic recovery of nations, especially in the wake of economic crisis. Global organizations, notably the G20, emphasized the key role that corporate bond markets perform in providing long-term funds to corporates. Considering the importance of corporate bond markets, researchers' communities worldwide in the past few decades have made attempts to examine various aspects of corporate bonds in different economic settings. This research article portrays bibliometric analysis of 925 scientific papers published on various facets of corporate bonds and markets available in Scopus database over a period from 1957 to 2023. The analysis of the intellectual structure of selected articles is done by using Biblioshiny application available in Bibliometrix R Package, and VOSviewer. The study is expected to provide a platform to academicians, researchers, governments, policymakers, corporates, and investors to develop insight and move forward with additional exploration on the subject.</p>
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1. BACKGROUND

The corporate bond market is viewed as a crucial component of financial stability, economic growth, and economic recovery, particularly after a crisis (Plummer & Click, 2005). It plays a vital role in economic expansion, corporate performance, reducing information asymmetries, ameliorating risk and mobilizing savings, and exerting corporate governance. (Uddin, Sjo, & Shahbaz, 2013; Vithessonthi, 2014; Zhang, Wang, & Wang, 2012; Samargandi, Ghosh & Fidrmuc, 2014; Peia & Roszbach, 2015). Corporate bond markets serve firms as a vital source of capital finance that enables them to innovate, expand, generate jobs, deliver goods and services that society needs (Rohini & Gigi, 2014).

A strong and active corporate bond market due to decreased information asymmetry offers better instruments for facilitates effective asset management, risk pricing, and strengthens a nation's position on the global capital markets. Yoshitomi and Shirai (2001) also viewed that robust market for corporate bonds serves to reduce the financial industry's volatility while providing businesses with an inexpensive alternative source of funding. Thus, a healthy corporate bond market makes it possible for firms to raise capital at a reasonable cost, lower risk, and reduce reliance on bank funding.

Recently, global organizations, notably the G20, have emphasized the crucial role that securities markets, especially corporate bond markets perform in supplying long-term funds to corporates. Throughout Asia, the primary markets for



corporate bonds have expanded immensely. Some sectors have seen the fastest development owing to quasi-government issuers or issuers who have access to credit guarantees. This could have occurred as a result of investors' restricted access to the data required to accurately evaluate the credit risks associated with other possible issuers (Jacob et al., 2006). Geetima, Krishna & Biswajit (2021) are of the view that without credible auditors, robust regulation, credit rating agencies, and protection of investor mechanisms, the corporate bonds market cannot develop.

Recent scenario indicates that in the most international markets, including the US, the debt market has far larger trading volumes than the stock market, with many buyers and sellers willing to acquire bonds with low credit ratings. The investors now are aiming at significant returns and liquidity (Rohini & Gigi, 2014). This makes it possible for businesses to raise money at various maturities, particularly for infrastructure projects that take a long time to develop. However, in many emerging nations, the corporate bond markets are shallow and fraught with issues. Large and highly rated corporates have had the most access to local bond issuance, which is partly due to investors' risk aversion, investment limits on institutional investors, and an absence of resources for precise risk management and credit pricing.

Despite decades of debate around sovereign bonds and the stock market, research on corporate bonds that primarily participate in the financial market is still in its early stages.

Beyond the fundamentals of corporate bonds, this analysis makes the argument that corporate bond research needs to be evaluated. Furthermore, as per the researchers' knowledge no reviews on issues related to corporate bonds have been published in the last five years. More importantly, no scholar published study on bibliometric analysis on corporate bonds till date. Bibliometric analysis is considered as a very helpful technique to highlight essential bibliometric features and research themes (Donthu et al., 2021a; Donthu et al., 2021b; Donthu et al., 2021c).

The aim of this research is to provide an overview of corporate bonds using a bibliometric analysis technique of the chosen literature. It aims to explore answers to the following research questions.

RQ1: What is the trend in research on intricacies of corporate bonds in terms of research articles published each year?

RQ2: Who are the most leading authors, organizations, and the countries contributing to research on corporate bonds?

RQ3: Which journals contribute the most to research on corporate bonds?

RQ4: What are the major issues and subjects related to corporate bond research intellectual framework published in prestigious journals?

RQ5: What implications does present research have for future work?

To offer a larger and more thorough perspective on the topic, the study also examines the relationships between studies conducted throughout the specified time range. Thus, by providing a thorough review of various aspects of rapidly expanding corporate bonds, this article delivers a valuable contribution to the existing body of literature on corporate bonds. The recognition of the top corporate bond authors, institutions, nations, publications, and topics may be useful for scholars, issuers, investors, and policymakers in developing a better understanding of the corporate bond knowledge structure, planning the financial innovation necessary to accelerate the expansion of corporate financing.

## 2. LITERATURE REVIEW

A well-established corporate bonds market is crucial for a country's economic and financial development. It offers an alternative source of the financing and supports banking system in order to fulfill demands of corporate sector to produce money for the long-term investment (Pradhan et. al., 2015). It is very crucial for the development of issuers, investors, businesses, and governments (ICMA, 2013). This market segment is expected to provide a constant source of money when the stock market is volatile. Additionally, it enables businesses to customize their asset and liabilities profiles in order to lower maturity risk (Amarendra, 2011). According to Thumrongvit et. al., (2013), In the financial system, the market for corporate bonds is the third crucial component. The rise of the share market and the issuance of sovereign government bonds both contribute to economic expansion, whereas impact of the corporate bonds moves from adverse to favorable as the domestic financial system grows and diversifies. Despite these recent significant needs, the corporate bond market continues to face long-standing barriers to development as well as new obstacles to stability.

The corporate bonds market is a late growing sector, leading to obstacles on analysing

the role of corporate bonds market in the development Procedure (Chatusripitak & Herring, 2001). According to Goswami & Sharma (2011), the lack of an adequate critical mass in the corporate bonds market and the dependency of Asian economies on the banking system are barriers to the growth of local debt markets. The existence of established equity markets and easy access to bank and corporate funds cause stagnation and hinder the growth of corporate bond markets. Banerji et al. (2012) noted high financing costs as one of the key barriers to the growth of the market for corporate bonds.

These barriers were primarily brought on by ineffective market production, a lack of transparency, and the illiquidity of the debt instrument. It is also besieged by several problems in many developing nations ranging from both the demand and supply sides, crowding out by large public issuance, a narrow investor base, information asymmetry, an illiquid secondary



market, regulatory restrictions on demand, lack of diversity of instruments, high costs of borrowing, unavailability of the repo options, lack of credit enhancement facilities and well-functioning derivatives market, that could absorb default risks (Abraham, Cortina & Schmukler, 2020).

A nation's financial and macroeconomic environment are very essential for the growth of its bonds market. Positive macroeconomic variables and advances in the financial sector encourage market growth (Nair & Thenmozhi, 2012). To better understand how macroeconomic components impact the performance of corporate bonds market, numerous studies have been conducted. These factors are beginning to have an increasingly significant impact on the bond market because a lot of investors now are more interested in broad trends rather than in specific firm fundamentals. In view of Burger & Warnock (2006), policies and legal considerations have a significant impact on market growth; markets will be more developed in nations that prioritize stricter rules, stable inflation rates, and stronger rights for creditors. Similar findings were made by Adelegan & Radzewicz-Bak (2009); they observed a favorable impact of strong legal system and a detrimental impact of low savings on bond markets.

By examining how growth of corporate bonds market affected real GDP of selected 13 advanced economies during 1950-2000, Fink et al. (2003) discovered that the development of bonds market had a considerable effect on the economic activity. Aman et al. (2020) also explored the financial and macroeconomic factors that influence the growth of the bond market. In their most recent research, Sum & Bogonko (2023) examined the short & long-term impacts of the exchange rates, interest rates, government spending, and inflation rates on the performance of corporate bonds. Their results demonstrate a strong inverse link over the long term between interest rates, government spending, and exchange rates and corporate bond performance. In the long term, inflation rates improve the performance of corporate bonds, but in the near term, interest rates, government spending, and currency rates have little effect.

Businesses keep abreast of the macroeconomic environment and policymakers impose rigorous monetary guidelines to improve the performance of corporate bonds. Both researchers and policy makers should work together to foster corporate bonds market development along with economic expansion (Fink, Haiss, & Mantler, 2005; World Bank, 2006).

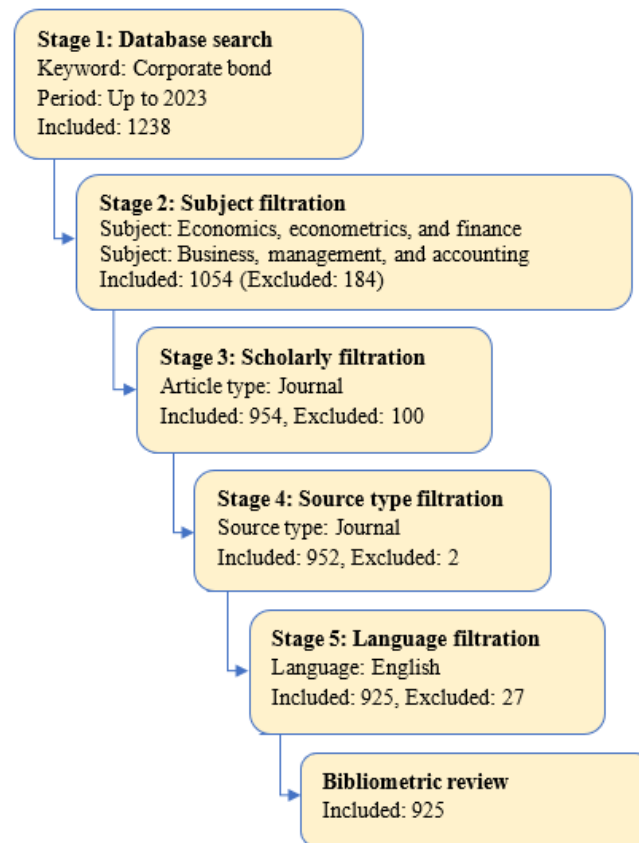
Although selected studies throw some light on problems with the markets for corporate bonds; findings of the studies cannot be generalized because these are conducted in context of a particular nation or region exhibiting notable variations in terms of political, economic, social, technical, institutional, and legal frameworks. In some cases, the findings are inconclusive. There is a noticeable dearth of the studies focusing on intricacies of corporate bond and markets, and the potential direction for future research is also unclear. The present study aims to fill the gap by reviewing recent literature highlighting key themes and suggesting areas for further investigation.

### 3. DATA AND METHODOLOGY

The brief description of methodologies and procedures used to conduct bibliometric analysis is as follows.

#### 3.1 Bibliometric Search

It consists of five stages; viz, database search, subject filtration, scholarly filtration, source type filtration, and language filtration (see Fig. 1). In stage 1: database search, Scopus is chosen because it includes articles that comply with an exacting set of indexing requirements and offers complete bibliometric data for publications that are included in its indexes.



**Figure 1: Bibliometric Review Search and Filtration**

For bibliometric reviews, Scopus is a well-recommended scientific resource (Paul et al., 2021); it is frequently suggested for bibliometric analysis (Donthu et al., 2021). Due to the centrality of the ‘corporate bond’ in the research, this keyword has selected as the primary search term. Data has been limited to year 2023 for practical reasons, such as data availability, and full-year data, as proposed by Donthu et al. (2021). The total number of 1238 articles found after the database search. Stage 2, subject filtration, includes articles on business, management and accounting, and economics, econometrics and finance. These are Scopus-defined subject categories, and relevant to ‘business’, the broad discipline in which corporate bond research is positioned. The criteria set here forth are consistent with those adopted by Donthu et al. (2021), and Paul et al. (2021). Subject filtration excluded 184 articles; thus, 1054 items are considered in the next stage.

In stage 3, for scholarly filtration, research articles published in journals only are considered because journal articles are typically assessed on the basis of novelty, which is a crucial criterion to unravel knowledge variety and reveal insights of the highest standard. This criterion is consistent with what Paul et al. (2021) recommend. This process excluded 100 articles; so, 954 articles are included for further analysis in stage 4 which filters articles based on source. This process omitted 2 articles and allowed 952 articles for language filtration (stage 5). For language filtration, only those articles written in English-language are considered, because English is the most common language, and it is not practical to translate reviews with extensive datasets, like bibliometric reviews into other languages. Donthu et al. (2021) also recommend for English-language. This stage excluded 27 items, so bibliometric analysis performed is based on 925 articles only.

### 3.2 Bibliometric Analysis

The analysis is done on 925 articles selected from the bibliometric search of Scopus database. The analysis approach (figure 2) encompasses the patterns of publications (RQ1), leading authors, organizations and countries (RQ2), and journals which contribute the most to research on corporate bonds (RQ3).



Figure 2: Bibliometric review analysis approach

For analyzing co-authorship, citations, top contributors, and publications is performed using VOS viewer (V-1.6.20). The keyword co-occurrence analysis enabled mapping of intellectual framework of corporate bonds (RQ4) and helped to point out implications of study for future research on corporate bonds.

## 4. RESULTS AND DISCUSSION

The first paper on corporate bond retrieved from Scopus database was published in the year 1957, and after filtration of subject, scholars, sources and language, 925 articles published till 2023 are retrieved from Scopus indexed. The bibliometric analysis's findings based on characteristics and research themes of these articles are discussed in the following sections.

### 4.1. Performance Analysis

#### 4.1.1 Research Publication Trend

The publication trend on corporate bonds shown in figure 3 depicts that the research on the subject has progressed very slowly. It got the attention of researchers in 1980 when 5 articles were published on corporate bonds. The number increased to double digits in the mid-1990s and accelerated after 1999. The highest number of research articles (85) were published in 2022; it was 21% more than the articles published in 2021. In 2023 (till August 4), the number of articles published on various aspects of corporate bonds was 61. It shows that the interest of researchers in corporate bonds is growing now at faster pace.

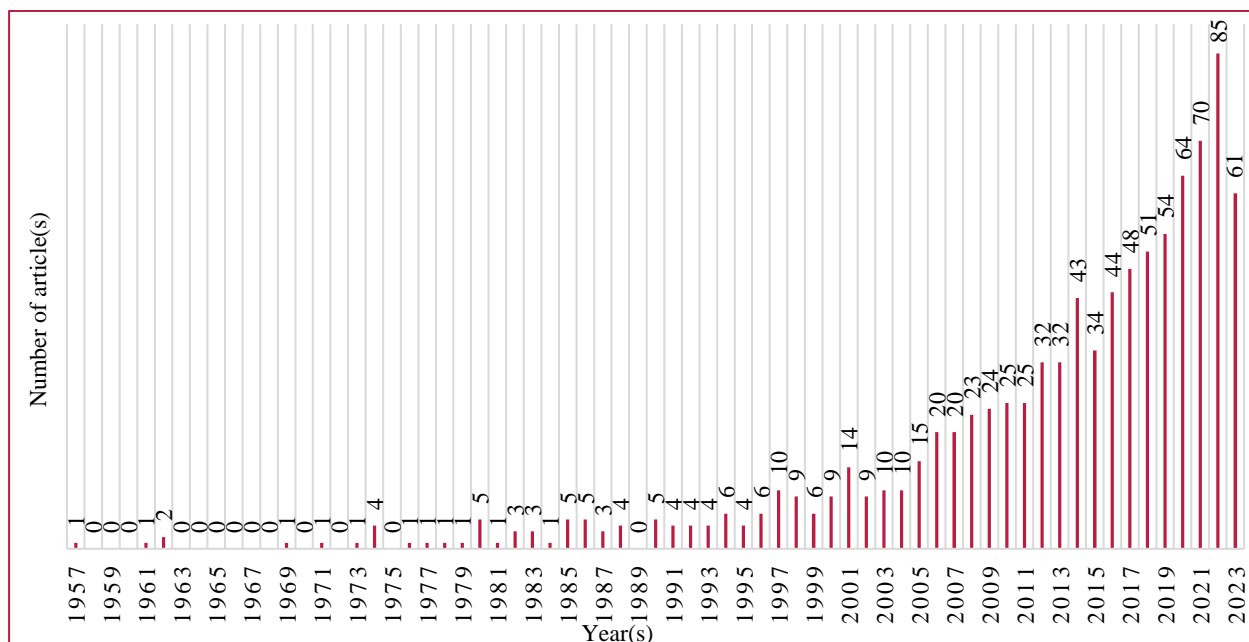


Figure 3: Publication trend of corporate bonds research (1957–2023)



#### 4.1.2 Leading Authors and Institutions

Table 1 depicts top researchers in order along with their and affiliations (institutions) h index (the number that represent both the productivity and impact of a particular scholar), who published scholarly articles on corporate bonds. It shows that WU C from State University of New York (United States) has published highest number (13) of research articles on corporate bonds research with h index of 9, followed by Wang J (9 articles) from City University of Hong Kong (China), and Cebula RJ (8 articles) from George Mason University (US) with h index of 4 and 5 respectively. Rest of the prominent researchers are Jacoby G, Li J, Massa M, Wang H, Wang Y, Xu S, and Zhou X with 6 articles each. However, the most influential author is Wang J from City University of Hong Kong (China) with 608 citations. Collectively, top 10 authors have produced a total of 72 research articles on corporate bonds with 1745 citations.

**Table 1: Leading authors on corporate bonds research**

4	S. No.	5	Authors	6	Affiliation	7	No. of Articles	8	h Index
9	1	10	WU C	11	State University of New York	12	13	13	9
14	2	15	Wang J	16	City University of Hong Kong	17	9	18	4
19	3	20	Cebula Rj	21	George Mason University	22	8	23	5
24	4	25	Jacoby G	26	University of Manitoba	27	6	28	5
29	5	30	Li J	31	Chinese Academy of Social Science	32	6	33	3
34	6	35	Massa M	36	INSEAD, France	37	6	38	4
39	7	40	Wang H	41	Zhongnan University of Economics and Law	42	6	43	3
44	8	45	Wang Y	46	Shanghai University of Finance and Economics	47	6	48	3
49	9	50	Xu S	51	South China Normal University	52	6	53	5
54	10	55	Zhou X	56	Rutgers University	57	6	58	4

Source: Own compilation using *Biblioshiny in bibliometrix on R*

#### 4.1.3 Leading Countries

The distribution of research publications country-wise (figure 4, table 2) shows that research articles on corporate bonds have been published by authors from 65 different nations. The highest number (734) of research articles on corporate bonds (79.35% of total) are published in United States, followed by China (222 articles, 24%), United Kingdom (155 articles, 16.75%), Germany (117 articles, 12.64%), and Canada (90 articles, 9.72% of total).



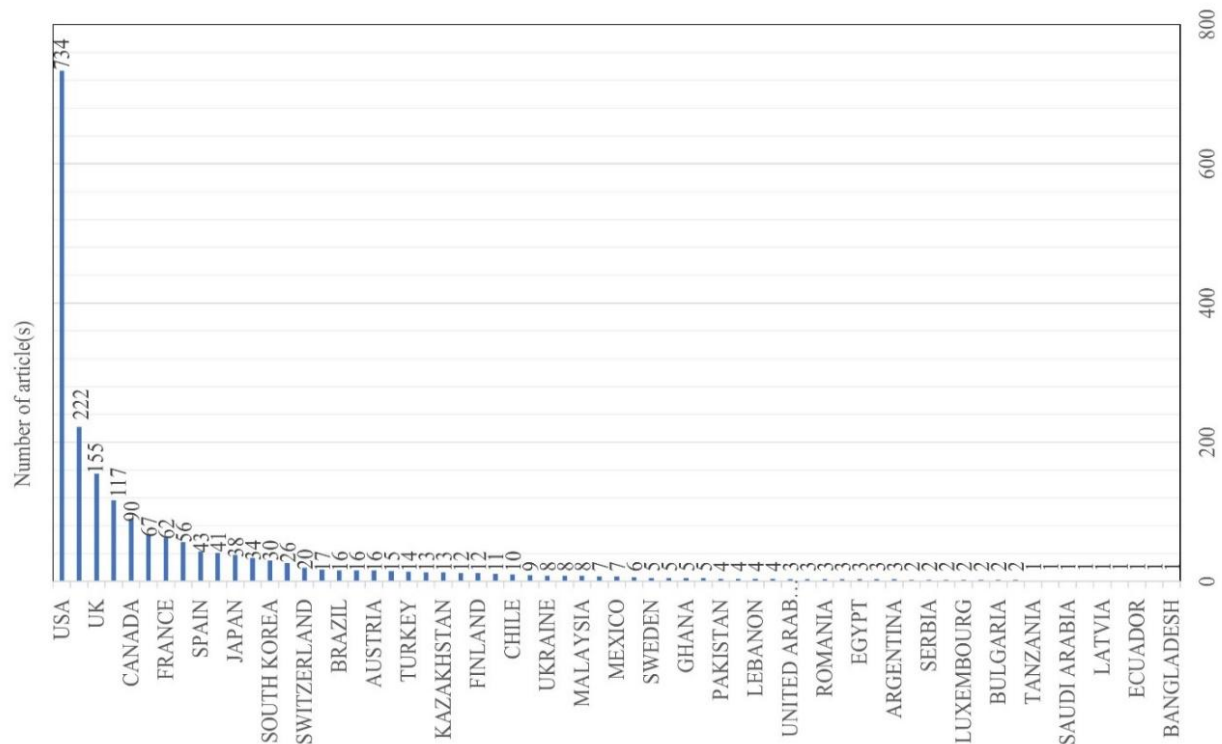


Figure 4: Leading countries in corporate bonds research publications

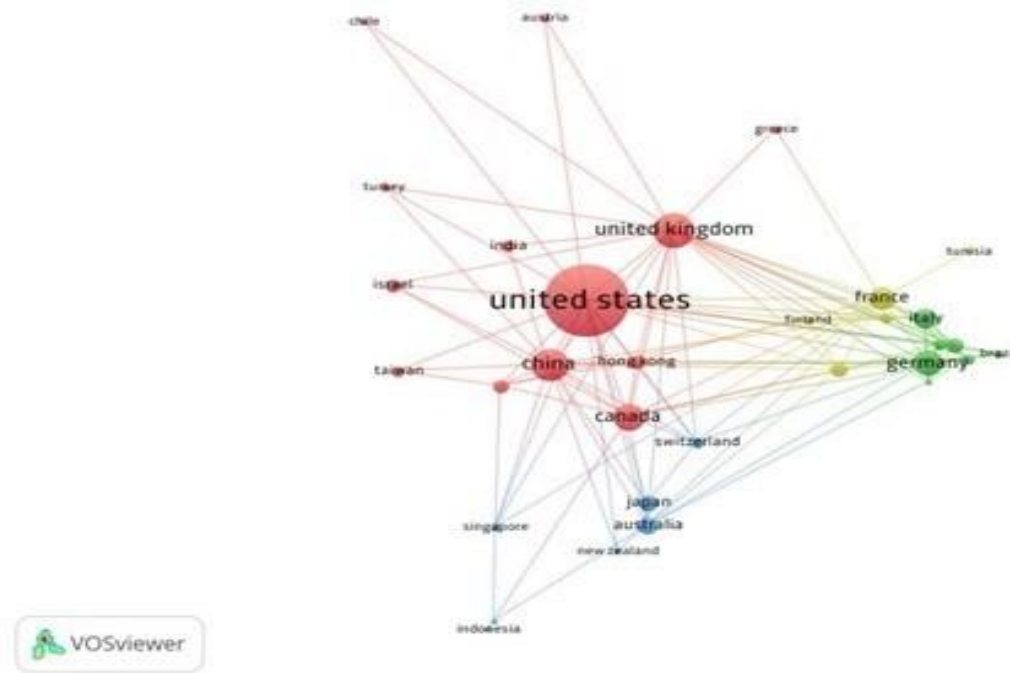
Table 2: Leading countries in corporate bonds research publications

59	S. No.	60	Country	61	Frequency
62	1	63	United States of America (USA)	64	734
65	2	66	China	67	222
68	3	69	United Kingdom (UK)	70	155
71	4	72	Germany	73	117
74	5	75	Canada	76	90
77	6	78	Italy	79	67
80	7	81	France	82	62
83	8	84	Australia	85	56
86	9	87	Spain	88	43
89	10	90	Netherlands	91	41

Source: Author's compilation using Biblioshiny in bibliometrix on R

#### 4.1.4 Leading Countries Collaborations

The network of countries collaborations for research on corporate bonds research identified through VOS viewer network visualization (figure 5) indicates four leading clusters.



**Figure 5: Country collaboration network diagram on corporate bond research, VOS viewer output**

Among these, United States is at the center of international country collaborations with the United Kingdom, Canada, China, India, Hong Kong, Chile, Greece, Israel, Austria, South Korea, Taiwan, and Turkey.

Germany is the second key contributor primarily to European centric country collaboration with Italy, Denmark, Sweden, Spain, Belgium, and Brazil. France, Finland, Netherlands, Russian federation and Tunisia formed third cluster, and Australia, Japan, Switzerland, Singapore, New Zealand, and Indonesia constitute fourth cluster of collaborative research on corporate bonds.

#### 4.1.5 Leading Institutions

Among leading institutions (table 3) contributing to research on corporate bonds is Hunan University, the most prolific university in the discipline is Hunan University in China, which has published 14 articles. London Business School in the United Kingdom and New York University in the United States have each published 13 articles. Concordia University, Canada and Zhejiang University of Finance and Economics, China have published 12 articles each, Cornell University and Jacksonville University both from United States published 11 and 10 research articles respectively. Federal Reserve Board (United States), Shanghai University of Finance and Economics (China), and University of Manitoba (Canada) have 9 research articles on corporate bonds published at their credit.

**Table 3. Leading institutions in corporate bonds research publications**

92 S. No.	93 Institution	94 Country	95 No. of Article
96 1	97 Hunan University	98 China	99 14
100 2	101 London Business School	102 United Kingdom	103 13
104 3	105 New York University	106 United States	107 13
108 4	109 Concordia University	110 Canada	111 12
112 5	113 Zhejiang University of Finance and Economics	114 China	115 12
116 6	117 Cornell University	118 United States	119 11
120 7	121 Jacksonville University	122 United States	123 10
124 8	125 Federal Reserve Board	126 United States	127 9





128 9	129 Shanghai University of Finance and Economics	130 China	131 9
132 10	133 University of Manitoba	134 Canada	135 9

Source: Author's compilation using Biblioshiny in bibliometrix on R

#### 4.1.6 Leading Journals

The study finds that the corpus of 925 research articles on corporate bonds are published across 294 journals, and 273 (29.51%) research articles are published in the top 11 journals. These journals contributed 15 or more research articles on corporate bonds (table 4). The most prolific (top two) journals, Journal of Banking and Finance, and Journal of Financial Economics have published 55 and 51 research articles respectively, followed by Journal of Financial and Quantitative Analysis, Journal of Fixed Income, and Journal of Finance with 25, 23 and 19 publications respectively.

Table 4 also shows ranking of journal quality as per Australian Business Deans Council (ABDC) Journal Ranking List 2022 and Association of Business Schools (ABS) Journal Quality Guide 2021. It indicates highest ranking (ABDC A\* and ABS 4\*) for Journal of Financial Economics, Journal of Finance, The Journal of Finance, Management Science, and Review of Financial Studies, followed by Journal of Financial and Quantitative Analysis and Journal of Banking and Finance. Amazingly, among top 11 journals, Review of Financial Studies has least number of articles on corporate bonds, it is among to five journals in terms of journal quality, and Journal of Banking and Finance, which has maximum number of publications, occupies seventh rank in terms of quality.

**Table 4. Leading journals in corporate bonds research publications**

136 S. No.	137 Journal title	138 Rank		139 No. of Article
		140 ABDC	141 ABS	
142 1	143 Journal of Banking and Finance	144 A*	145 3	146 55
147 2	148 Journal of Financial Economics	149 A*	150 4*	151 51
152 3	153 Journal of Financial and Quantitative Analysis	154 A*	155 4	156 25
157 4	158 Journal of Fixed Income	159 A	160 2	161 23
162 5	163 Journal of Finance	164 A*	165 4*	166 19
167 6	168 The Journal of Finance	169 A*	170 4*	171 18
172 7	173 Finance Research Letters	174 A	175 2	176 18
177 8	178 Management Science	179 A*	180 4*	181 17
182 9	183 European Journal of Finance	184 A	185 3	186 16
187 10	188 Quarterly Review of Economics and Finance	189 B	190 2	191 16
192 11	193 Review of Financial Studies	194 A*	195 4*	196 15

Source: Author's compilation using Biblioshiny in bibliometrix on R

## 4.2 Science Mapping

### 4.2.1 Keyword Co-occurrence

The "co-occurrence" of keyword pairs in the review documents is examined using a text-mining approach called keyword co-occurrence analysis, also known as co-word analysis. It is predicated on the idea that terms that commonly occur together in the same review documents are related. Analyzing co-occurrence and keyword research helps identify issues that researchers constantly worked on. According to [Comerio & Strozzi \(2019\)](#), an author's keywords effectively convey the article's content. The co-occurrence of keywords supports in the creation of a comprehension of the intellectual structure of a domain ([Donthu, Kumar, Mukherjee, et al., 2021](#); [Ding, Chowdhury, & Foo, 2001](#)).

In this study, applying a criterion of at least five thresholds, keyword co-occurrence analysis is done using keywords from selected 925 research articles on corporate bonds in VOS viewer. Table 5 shows authors keyword co-occurrence along with link strength on corporate bond research. Corporate bond, being the core subject of analysis, is the most frequently used keyword (n=193) in selected research articles. The second most often used keyword is credit risk (n=55), followed by



liquidity (n=44), credit spreads (n=37), bonds (n=26), default risk (n=24), and liquidity risk (n=15). It suggests that corporate bonds research is mostly centered on the issues related to financial risks.

**Table 5: Leading authors keyword from keyword co-occurrence in corporate bonds research**

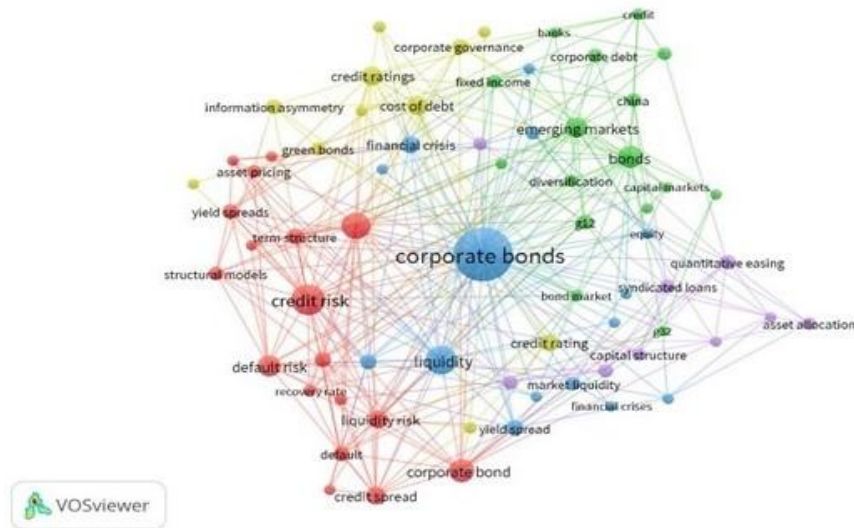
197 Keyword	198 O c c	199 T L S	200 Keyword	201 O c c	202 T L S
203 Corporate bonds	204 1 9 3	205 2 2 5	206 Covid-19	207 7	208 9
209 Credit risk	210 5 5	211 6 6	212 Diversification	213 7	214 1 1
215 Liquidity	216 4 4	217 6 7	218 Event study	219 7	220 1 0
221 Credit spreads	222 3 7	223 4 8	224 Fixed income	225 7	226 1 5
227 Corporate bond	228 2 9	229 2 8	230 Monetary policy	231 7	232 8
233 Bonds	234 2 6	235 3 0	236 Bond market	237 6	238 1 1
239 Default risk	240 2 4	241 2 9	242 Bond yield spreads	243 6	244 2
245 Emerging markets	246 2 1	247 3 4	248 Bond yields	249 6	250 3
251 Credit ratings	252 1 9	253 2 7	254 Credit	255 6	256 9
257 Cost of debt	258 1 8	259 2 4	260 Rating agencies	261 6	262 8
263 Credit spread	264 1 6	265 2 7	266 Recovery rate	267 6	268 1 1
269 Liquidity risk	270 1 5	271 2 6	272 Risk premium	273 6	274 7
275 Credit rating	276 1 3	277 1 0	278 Banks	279 5	280 7
281 Financial crisis	282 1 3	283 1 7	284 Bond spreads	285 5	286 8
287 Term structure	288 1 2	289 2 0	290 Capital markets	291 5	292 6
293 Yield spread	294 1 2	295 2 0	296 Climate change	297 5	298 2
299 Corporate governance	300 1 1	301 1 1	302 Corporate bond market	303 5	304 2
305 Default	306 1 1	307 2 1	308 Corporate bond returns	309 5	310 7
311 Bond pricing	312 1	313 1	314 Corp. social responsibility	315 5	316 8



	0	4			
317 Credit default swaps	318 1 0	319 2 1	320 Credit derivatives	321 5	322 1 2
323 G12	324 1 0	325 1 4	326 Debt financing	327 5	328 4
329 Information asymmetry	330 1 0	331 8	332 Equity	333 5	334 1 2
335 Quantitative easing	336 1 0	337 1 3	338 Financial crises	339 5	340 2
341 Yield spreads	342 1 0	343 1 4	344 G32	345 5	346 8
347 Corporate debt	348 9	349 8	350 Global financial crisis	351 5	352 1 0
353 Market liquidity	354 9	355 8	356 Government bonds	357 5	358 8
359 China	360 8	361 1 3	362 High-yield bonds	363 5	364 8
365 Green bonds	366 8	367 5	368 Institutional investors	369 5	370 9
371 Investment	372 8	373 7	374 Interest rate risk	375 5	376 9
377 Structural models	378 8	379 1 5	380 Liquidity premium	381 5	382 9
383 Syndicated loans	384 8	385 1 5	386 Macroeconomic variables	387 5	388 1
389 Unconventional monetary policy	390 8	391 9	392 Market efficiency	393 5	394 4
395 Asset allocation	396 7	397 6	398 Mutual funds	399 5	400 5
401 Asset pricing	402 7	403 9	404 Regulation	405 5	406 6
407 Capital structure	408 7	409 1 0	410	411	412

Source: VOS viewer - Total link strength (TLS) reported in co-occurrences (Occ) of keywords

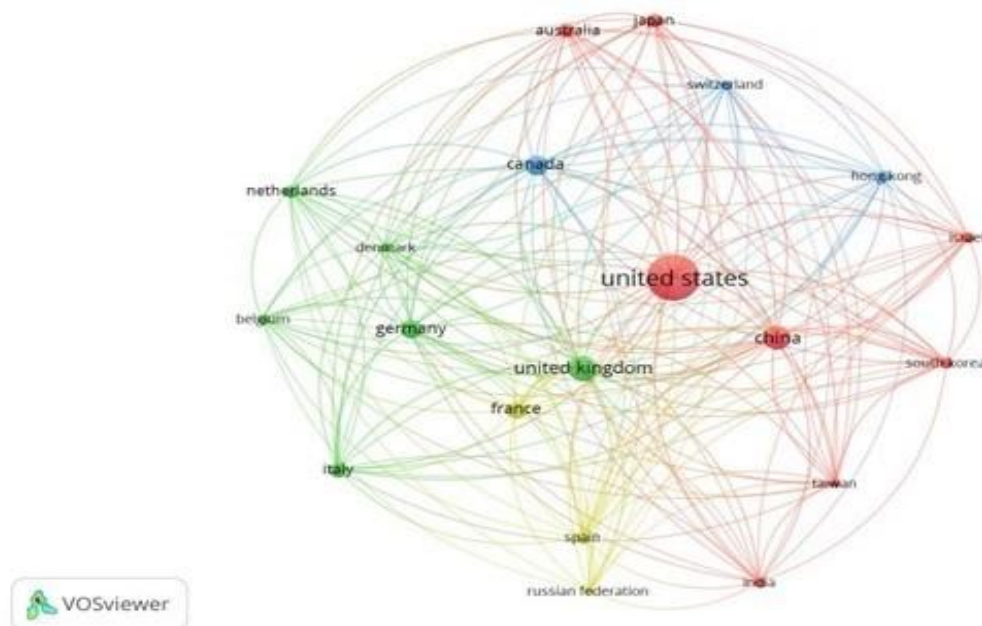
In table 5, liquidity (n=44) is the third and leading nodes in the network, indicating its relative significance in the study of corporate bonds. Liquidity, risks, spreads, and credit rating seem to be the primary goals for researchers in this area and the emerging theme into corporate bonds market. These by far are the most popular issues in corporate bonds research. These keyword combinations imply that scholars have demonstrated a resounding interest in the problem of costs of debt (n=18), yields spreads (12), default (n=11), information asymmetry (n=10), bond pricing (n=10), and credit default swaps (n=10). This finding also suggests that other macroeconomic variables have received less attention in research on corporate bonds. The size of circles in figure 6 denote authors keywords that appeared most frequently in the literature.



**Figure 6: Keyword co-occurrence network diagram on corporate bond research, VOS viewer output**

### 4.2.2 Bibliography Coupling

Bibliography coupling helps to understand the connections between citing publications of current or periodic evolution of a research study's themes domain (Weinberg, 1974). The bibliographical coupling of research on corporate bonds (figure 7) shows United States in the center, which means authors affiliated to US have strongest couplings out of all the bibliographic couples on various dimensions of research on corporate bonds, followed by United Kingdom (UK), Canada, and China. Coupling threshold set for analysis purpose is at least 10 documents and 100 citations.



**Figure 7: Bibliography coupling network diagram on corporate bond research, VOS viewer output**

The bibliographic relation of top authors and sources (figure 8 and 9), indicate strong link strength of Bali T.G., Subrahmanyam A., and Wen Q followed by Bai J. and Bali T.G in the same domain of corporate bonds. Journal of financial economics got higher citation of coupled documents followed by journal of finance, and journal of banking finance. However, a higher number of documents are published in the journal of banking and finance followed by journal of financial economics.



Figure 8: Bibliography relation of the top authors

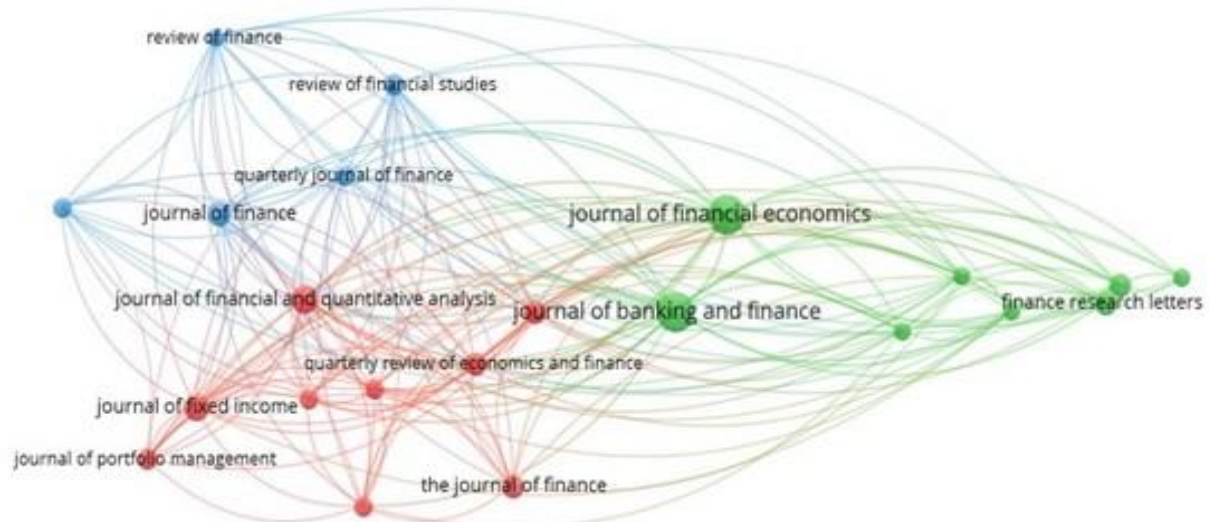


Figure 9: Bibliography relation of top source

#### 4.2.3 Citation analysis

**Global Citations:** According to [Baker, Pandey, Kumar, and Halder \(2020\)](#), global citations are the total number of citations that are received without any sorting (for example, by discipline). Table 6 (figure 10) shows top 10 global citations on corporate bond research.

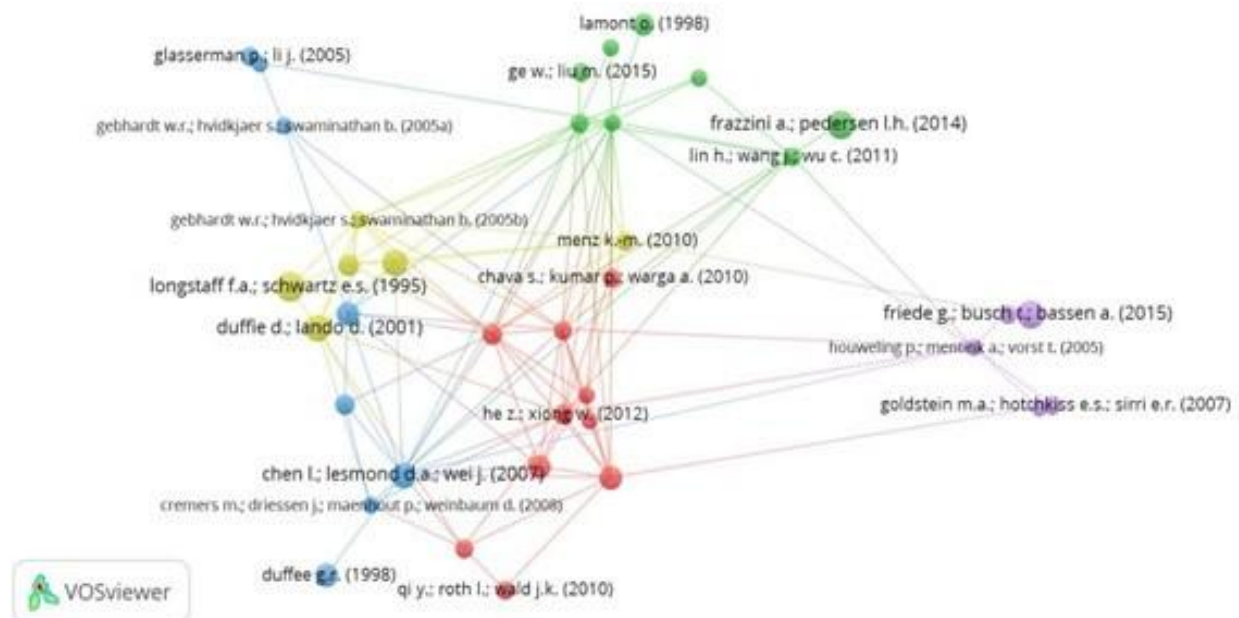


Figure 10: Most cited papers on corporate bonds based on global citation

As per table, the research titled “The pricing of options and corporate liabilities” has received the most global citations ( $n = 14716$ ), followed by “A simple approach to valuing risky fixed and floating rate debt” ( $n = 1030$ ), and “ESG and financial performance: aggregated evidence from more than 2000 empirical studies” ( $n = 850$ ). Amazingly, the article titles on corporate bonds seem to be a secondary topic in the majority of the articles listed in table 6.



**Table 6: Most cited research papers on corporate bonds (Global citations)**

413 Rank	414 Authors	415 Paper title	416 Year	417 Citations
418 1	419 Black F & Scholes M	420 The pricing of options and corporate liabilities	421 1973	422 14716
423 2	424 Longstaff FA & Schwartz ES	425 A simple approach to valuing risky fixed and floating rate debt	426 1995	427 1030
428 3	429 Friede G, Busch T & Bassen A	430 ESG and financial performance: aggregated evidence from more than 2000 empirical studies	431 2015	432 850
433 4	434 Frazzini A & Pedersen LH	435 Betting against beta	436 2014	437 785
438 5	439 Elton EJ, Gruber MJ, Agrawal D & Mann C	440 Explaining the rate spread on corporate bonds	441 2001	442 678
443 6	444 Duffie D & Lando D	445 Term structure of credit spreads with incomplete accounting information	446 2001	447 565
448 7	449 Chen L, Lesmond DA & Wei J.	450 Corporate yield spreads and bond liquidity	451 2007	452 474
453 8	454 Krishnamurthy A & Vissing Jorgensen A	455 The effects of quantitative easing on interest: channels and implications for policy	456 2011	457 446
458 9	459 Edwards AK, Harris LE & Piwowar MS	460 Corporate bond market transaction costs and transparency	461 2007	462 364
463 10	464 Bao J, Pan J & Wang J	465 The illiquidity of corporate bonds	466 2011	467 363

Source: Global citations on corporate bond research, Scopus database

Local citations can be used to evaluate a publication's impact and influence in the field because they are a measure of the quantity of citations obtained from publications inside the review corpus (Baker et al., 2020; Donthu et al., 2021). Based on 925 articles on corporate bonds research retrieved from Scopus database, the article titled "On the pricing of corporate debt: The risk structure of interest rates" is found most cited (n = 53), followed by "The illiquidity of corporate bonds" (n = 32), and "Corporate yield spreads and bond liquidity" and "Corporate bond liquidity before and after the onset of the subprime crisis" (n = 28 each). Notably, corporate bond is the main topic in the majority of articles in local citations list (table 7).

**Table 7: Most cited research papers on corporate bonds (Local citations)**

468 Rank	469 Authors	470 Paper title	471 Year	472 Citations
473 1	474 Merton RC	475 On the pricing of corporate debt: The risk structure of interest rates	476 1974	477 53
478 2	479 Bao J, Pan J & Wang J	480 The illiquidity of corporate bonds	481 2011	482 32
483 3	484 Chen I, Lesmond DA & Wei J	485 Corporate yield spreads and bond liquidity	486 2007	487 28
488 4	489 Dick-Nielsen J, Feldhutter P, Lando D	490 Corporate bond liquidity before and after the onset of the subprime crisis	491 2012	492 28





493 5	494 Black F & Scholes M	495 The pricing of options and corporate liabilities	496 197 3	497 25
498 6	499 Amihud Y	500 Illiquidity and stock returns: cross-section and time-series effects	501 200 2	502 23
503 7	504 Collin-Dufresne P, Goldstein RS & Martin JS	505 The determinants of credit spread changes	506 200 1	507 22
508 8	509 Dick-Nielsen J	510 Liquidity biases in trace	511 200 1	512 22
513 9	514 Elton EJ, Gruber M.J., Agrawal D & Mann C	515 Explaining the rate spread on corporate bonds	516 200 9	517 21
518 10	519 Fama EF & French KR	520 Common risk factors in the returns on the stocks and bonds	521 199 3	522 21

Source: Local citations on corporate bond research, Scopus database

## 5. CONCLUSION

In nutshell, despite their significance for finance and the economy, corporate bonds are not often discussed in academic literature. The bibliometric analysis based on 925 high-quality research articles extracted from Scopus database divulge bibliometric characteristics and spectrum of research on corporate bonds and generated new lines to deepen investigation on various intricacies of corporate bonds. The study found that during the review period the research publications on corporate bonds in various journals have changed over time in terms of their focus, authors, institutions, journals, and nations; and developed countries, like US, UK, Canada, and China have been the focal point of literature on corporate bonds. This is because these countries have assimilated corporate bonds as one of the good options for alternative sources of businesses financing. The literature on the subject is scant in emerging markets, which points gap in literature and need for research on corporate bonds in emerging markets including India. Findings from the science mapping and keyword co-occurrence highlight the topics and themes. Liquidity, assorted risks, spreads, and yields are the major themes of the corporate bond literature, while some macroeconomic variables, for example, interest rate, exchange rate, inflation, and tax system, received less attention from the researchers. This indicates that future research should pay attention to these variables.

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