European Economic Letters
ISSN 2323-5233
Vol 14, Issue 3 (2024)
http://eelet.org.uk

Reviewing Path of Basel I to Basel III Framework: Through Bibliometric and Content Analysis

Rosy Chauhan
Department of Management Studies, Indian Institute of Technology Roorkee,
Uttarakhand, India
E-mail ID: rchauhan@bm.iitr.ac.in
ORCID ID: https://orcid.org/0000-0003-2393-2516

Anil K. Sharma*
Department of Management Studies, Indian Institute of Technology Roorkee,
Uttarakhand, India
*Corresponding Author E-mail ID: anilsharma@ms.iitr.ac.in
ORCID ID: https://orcid.org/0000-0002-9204-6633

ABSTRACT
The present study aims to synthesize the existing literature on the Basel standards applicable worldwide by thoroughly examining 1723 studies published over the last 26 years between 1997-2022. Using the biblioshiny bibliometric package of R-software, we identify 92 scientific contributions for a detailed content analysis based on their findings and applications. The study finds that there is a need to have uniform standards globally as it helps to prevent the chain effect of financial shocks and ensures the smooth functioning of the economic system. The integrity of the banking system is a critical component of the prudential framework's execution, particularly with regard to capital regulation, which tries to limit bank risk-taking. The study contributes to extending the current literature on Basel norms and highlighting the prominent future potential research avenues in this research area.

Keywords: Banking regulation; Basel accords; Basel I; Basel II; Basel III; Bibliometric; Literature review; R package

JEL classification: G21; G2

INTRODUCTION

Banks are one of the major financial intermediaries and are capable of affecting every aspect of an economy with their operations (Kaur & Kapoor, 2015). As a result, in this fast-changing global financial environment, the stability of the global banking system has become a matter of concern for regulators worldwide. The Basel Committee on Banking Supervision (BCBS) was founded in 1974, shortly after the Bretton Woods International Monetary Policy of fixed exchange rates was abolished. Initially, the Committee on Banking Regulation and Supervisory Practices was founded by a group of ten countries. After getting renamed BCBS, the committee's main goal was to improve global financial stability by increasing regulatory know-how and the effectiveness of banking supervision (BCBS, 2015).

With the introduction of Basel I in 1988, the committee improved its framework to cover market risks in addition to credit risk. Banks can apply an internal model for calculating their market risk capital under the Basel I revised framework, which is subject to quantitative and qualitative requirements (BCBS, 2015a). The notion of risk-weighted assets is primarily based on Basel I, which mandates a minimum core capital ratio of 4% and a minimum capital requirement of 8%. However, due to the shortcomings of Basel I, particularly in relation to the real and credit risk weights, a need to introduce Basel II was felt. Under Basel II, three pillars were introduced: capital requirements, market discipline, and supervisory review. These three pillars were closely interconnected and mutually supporting in safeguarding against operational risk. As in Basel I, there is an obligation to maintain a minimum of 4% core capital to total risk-weighted assets in Basel II as well, however, with a greater emphasis on the securitization process. The main reason for a more severe impact of the global financial crisis were excessive debt and insufficient liquidity, as well as weak governance and risk management (BCBS, 2015b). In addition, there were conflicts of interest in counterparty risk analyzing credit rating firms' assessments. Many banks began the crisis with inadequate capital levels proportional to risk exposure, as seen by several bank collapses and bailout programs (Admati & Hellwig, 2013). According to the Basel Committee on Banking Supervision report (2010a), the BCBS

recommended major measures to increase the financial system's resilience, known as Basel III, in December 2010 in response to the shortcomings shown in Basel II by the crisis. There are significant claims that the Basel reforms will make the financial system safer by reducing bank risk-taking (Kim & Santomero, 1988) and the likelihood of ex-post bank failure (Gambacorta & Mistrulli, 2004). At the same time, we see a lot of worry among policymakers and financial sector participants that the implementation of Basel accords (BA) will cost the banking system and the economy (BCBS, 2010c, IIF, 2011).

Since the financial crisis, the study of the economic trade-off between economic progress and financial stability has grown in popularity. Despite several studies, little is known about the impacts of capital control. On the one hand, there is a widespread agreement that capital regulation could be expensive and limit a bank's ability to lend (Van den Heuvel, 2008), whereas on the other side a well-designed capital regulation could help banks become more stable (Admati & Hellwig, 2013), strengthen market confidence in their solvency, and lower their funding costs (Noss & Toffano, 2016).

According to Fidrmuc and Lind (2020), most Basel III impact studies reveal robust negative consequences with their intensity ranging from weak to strong impact. This is problematic since a solid assessment of the effects of Basel capital requirements is a prerequisite for policy discussions on financial regulations. The expanding number of Basel norms-based research articles has prompted scholars to look for new ways to analyze this vast array of studies effectively. One of such methods is a bibliometric analysis which examines a significant amount of bibliometric data quantitatively. The robustness of this technique lies in its ability to provide reliable quality indicators that are useful for classifying and comparing broad concepts (Devos, 2011). As the body of knowledge expands, it is helpful in understanding what has been accomplished so far and what new future directions and challenges lie ahead. This contributes towards examining a budding research area and aids in the creation of a construct that will guide future research initiatives (Low & MacMillan, 1988). Though we find a number of literature reviews concerning BA, the majority of the reviews focus on the impact, risk management, or bank readiness only.

However, certain essential features of the BA's progress and enhancement have still not been covered in prior literature reviews. The current study attempts to fill these gaps and adds to the existing BA literature by conducting an in-depth examination of BA publications published in peer-reviewed journals from 1997 through 2022. According to the paper's main goal, we use a huge bibliometric corpus and a mix of co-citation analysis for tracking the past, bibliographic coupling for the present, and co-word analysis for the future to provide a comprehensive overview of BA's research field past, present, and future (Donthu et al., 2021). Furthermore, the aforementioned methodologies are utilized to determine the papers for thorough content analysis in order to gain a clear understanding of the standards' past, present, and future. Through our investigation, we are attempting to address the following research questions:

RQ1. What are the most significant journals, authors, geographical locations, emerging topics, and publishing patterns in BA?
RQ2: How has the BA developed over time?
RQ3 What are the current research clusters that are revealing the most recent breakthroughs in BA field research?
RQ4: What could be the most important future study directions in BA research?

A thorough screening of the articles' abstracts is done after removing duplicate and irrelevant articles. A total of 1723 articles were analyzed using bibliometric citation analysis from the ISI Web of Science (WoS) and Scopus databases. Bibliometric citation analysis was used to address RQ1. RQ2 was addressed using co-citation analysis. RQ3 makes use of a bibliographic coupling. A review of the existing BA literature was undertaken using co-word analysis to identify gaps and suggest future research directions.

Citation mapping combined with content analysis will give researchers a comprehensive evolutionary perspective on how BA has advanced as a field of study, how major research articles have been conceptualized and evolved, and which potential research avenues have the most influence. A knowledge-synthesizing approach will be used to develop future study directions. This research makes numerous contributions. To begin with, this is the first BA-related, comprehensive bibliometric study to identify important research themes and trends based on citation networking and content analysis of the most-cited BA research articles. Second, this study is one of the few that has enlarged the scope of

bibliometric citation analysis by presenting a multi-dimensional BA conceptual framework. Furthermore, the research indicates current research themes. Finally, this study provides future research avenues.

Methods

Bibliometric analysis

A quantitative methodology for examining the philosophical underpinnings of a scientific subject of research is bibliometric analysis (Garifield, 1979). According to Culnan et al. (1990), the bibliometric approach is founded on the idea that citations are a trustworthy reflection of the impact of numerous published articles or scholars in any area of research. The current study is retrospective in nature and depends on the bibliometric examination of secondary sources. This type of analysis offers researchers with information that may be useful to evaluate studies (Rey-Marti et al., 2016). The steps used in the current study were as follows: The Basel regulations are introduced, databases are selected, research criteria are altered, retrieved material is classified, and data is examined.

Choice of database

The ISI Web of Science (WoS) and Elsevier's Scopus databases are used for the selection of articles due to their extensive coverage of published articles. The comparison of the WoS and Scopus in terms of conducting bibliometric analysis does not imply that one is better than the other (Sanchez et al., 2017). It is preferable to use both because one complements the other (Mongeon & Paul-Hus, 2016).
Since the earliest scientific publication about the BA was in 1997, this study examines papers from 1997 through January 2022. In both the databases, the broad search phrases were "Basel*" AND (Bank OR Banks OR Banking). TITLE-ABS-KEY (basel* AND (bank OR banks OR banking)) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "re")) AND (LIMIT-TO (SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "BUSI")) AND (LIMIT-TO (LANGUAGE, "English")). To improve the transparency of reporting our findings, we conducted a systematic review using the Preferred reporting items for systematic reviews and meta-analysis guidelines (Moher et al., 2009). Figure 1 presents the methodology followed for the selection of papers.

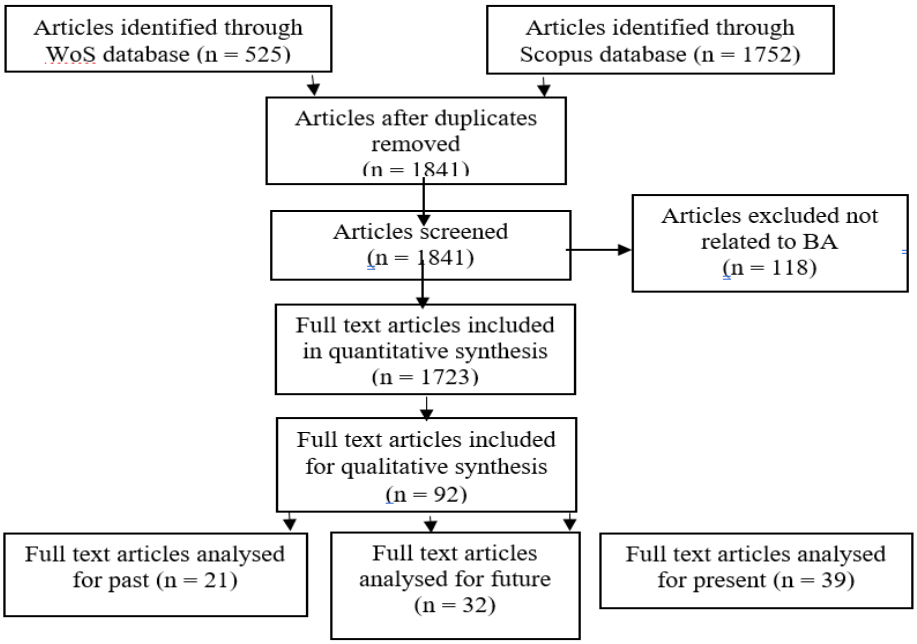

Figure 1 Research methodology

Codification process

A text files containing information about authors, document title, publication name (or source), cited references, abstract, document type, publication year, publisher, times cited, authors' keywords, and keywords associated with the database was

extracted from both the databases after the search was completed. After that, RStudio was used to merge the two files and delete the duplicates.

Indicators

The current study will employ quantity indicators to assess a researcher's, institution's, or journal's productivity in terms of the number of publications, as defined by Cadavid et al. (2012). These quality indicators reflect the rate with which a paper, author, or journal is acknowledged in other papers, whereas structural indicators highlight the connection between publications. Co-citation analysis, bibliographic coupling, and co-word analysis are suggested by Donthu et al. (2021) for examining the field's past, bibliographic coupling for monitoring the current and co-word analysis for recommending future research prospects.

Software

The bibliometric analysis is complicated since it involves numerous processes and mapping software tools, many of which are only available under license fees (Guler et al., 2016). The fact that few academics and practitioners are capable of evaluating literature and identifying evidence-based practices exacerbates the problem (Briner & Denyer, 2012). The method's time-consuming nature limits bibliometric analysis possibilities and potential, especially for researchers who lack fundamental programming skills. We use biblioshiny, an R-based tool that follows a typical bibliometric technique, in this study. It's quite extendable and comes with a large range of statistical features (Matloff, 2011).

R is a statistical programming language that is both object-oriented and functional. It is open software, which implies that it is well-supported by the user community, many of whom are well-known statisticians. The biblioshiny is written in R, therefore it can be quickly enhanced and can be coupled with other statistical R tools, which makes it flexible. It is so useful in a field like bibliometrics, which is always changing (Aria & Cuccurullo, 2017).

We employ a co-citation analysis to evaluate the history of the BA, as recommended by Donthu et al. (2021). To understand BA's past and learn about what has already been done in BA studies and what weaknesses have been discovered in the previous edition of the standard, we examine 24 papers retrieved through co-citation network analysis. For reviewing the current BA scenario, the bibliographic coupling is used, with documents serving as the unit of analysis, coupling assessed by references, impact evaluated by local citation score, and cluster labelled by author's keywords. We got 39 unique articles by setting citation scores of five and up. A co-word analysis is conducted to identify the direction of future studies. According to Abbasi et al. (2012), a node's betweenness centrality is a far stronger predictor of new entrants' preference attachment than its degree of closeness centrality. So, from each of the clusters, we chose the keywords with the highest betweenness and then searched for those keywords in the dataset, limiting the number to those with a citation score of fifty or above. Finally, we have 32 publications that represent the future of research. This research includes the content analysis of 92 articles in total but few articles are present in more than one timeframe because of that same article was reviewed from a different perspective. Therefore, the unique number of articles reviewed in the study are 74.

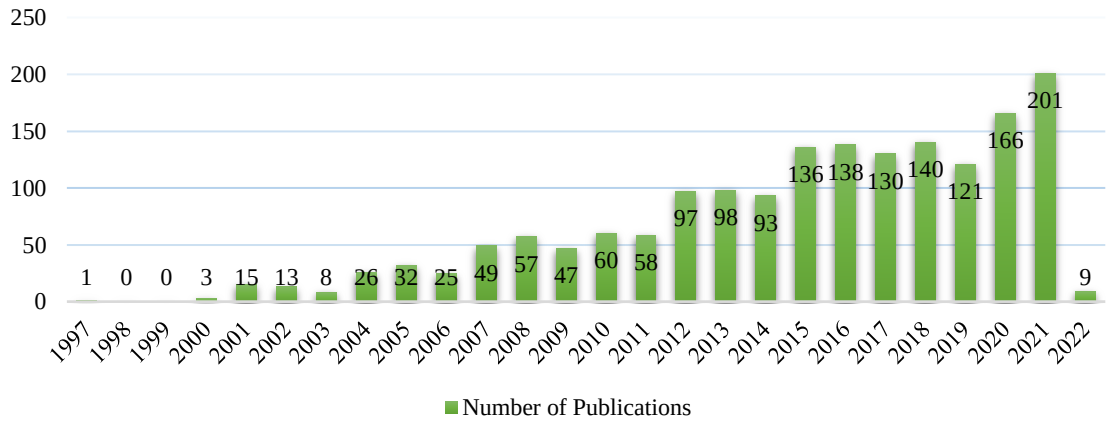

Figure 2. Trend of publications from 1997 - 2022

Results and discussion

Descriptive analysis

Figure 2 provides an overview of the number of publications related to BA from 1997 to January 2022. Over the years, the average growth rate of the articles was 28.49 percent; nevertheless, the growth rate was erratic. The collapse of the financial system was linked to a rise in the number of publications, which was primarily due to developed countries. Meanwhile, the number of studies for developing countries expanded fast in the recent past, which suggests that developing countries are beginning to devote their attention to the research in this subject. Table 1 shows the top ten most cited papers out of the total number of literature on the subject, which totaled 20,361 citations in 1723 publications.

Table 1. Publications with the most citations from 1997 to 2022

Title	Author(s)	Journal	Year	TC
A risk-factor model foundation for ratings-based bank capital rules	Gordy	Journal of Financial Intermediation	2003	1344
Modeling credit risk for SMEs: evidence from the US market	Altman & Sabato	ABACUS	2007	938
Emerging problems with the Basel Capital Accord: Regulatory capital arbitrage and related issues	Jones	Journal of Banking & Finance	2000	757
Bank provisioning behaviour and procyclicality	Bikker & Metzemakers	Journal of International Financial Markets, Institutions and Money	2005	717
The bank lending channel: lessons from the crisis	Gambacorta & Marques-Ibanez	Economic Policy	2011	581
Theories of bank behavior under capital regulation	VanHoose	Journal of Banking and Finance	2007	547
Recent developments in consumer credit risk assessment	Crook, Edelman, & Thomas	European Journal of Operational Research	2007	542
Does macro-prudential regulation leak? Evidence from a UK policy experiment	Aiyar, Calomiris, & Wieladek	Journal of Money, Credit and Banking	2014	525
The cyclical behaviour of European bank capital buffers	Jokipii & Milne	Journal of Banking &Finance	2008	523
The impact of banking regulations on banks' cost and profit efficiency: Cross-country evidence	Pasiouras, Tanna, & Zopounidis	International Review of Financial Analysis	2009	455

Source: Biblioshiny - Own Elaboration.

The geographical distribution of the participating studies is depicted in Figure 3. During the study period, a total of 85 countries contributed to BA research, with 17 countries having 50 or more publications. The United States has the highest

European Economic Letters
ISSN 2323-5233
Vol 14, Issue 3 (2024)
http://eelet.org.uk

concentration of writers (334 studies), followed by the United Kingdom (281 studies), Italy (168 studies), and Germany (151 studies). Varied shades of blue in Figure 3 reflect different levels of productivity, with the darkest blue signifying the highest level of productivity and the grey shade indicating no articles from the region.

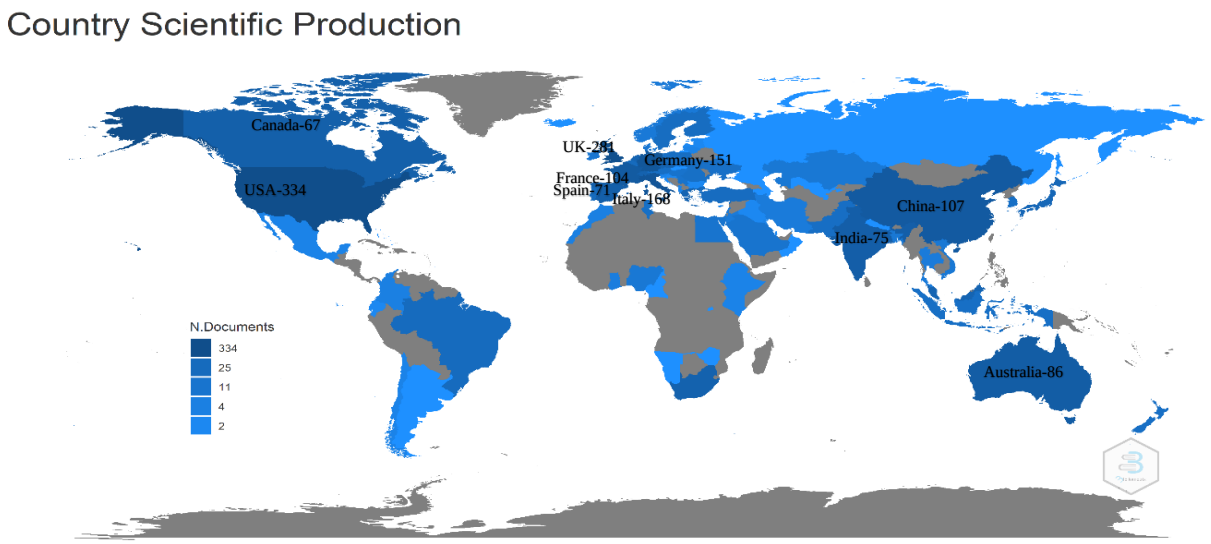

Figure 3. Geographical distribution of publications from 1997-2022

In Figure 4, the frequency of the number of publications communicated by writers and the times their works are mentioned by others is studied to determine their productivity. The size of the node is related to the number of articles written by the author. Therefore, the larger the node, the more articles the author has written. The darker the node's color, the more widely referenced the paper is. According to the findings, Van Vuuren, G. has the most publications (12), with a total of 22 citations and an average citation score of 1.833. Baesens, B., and Thomas, L. C., on the other hand, have been cited 344 times over the course of the study. Out of all the important authors in the area, S. Moudud-Ul-Huq has published the most papers in a single year.

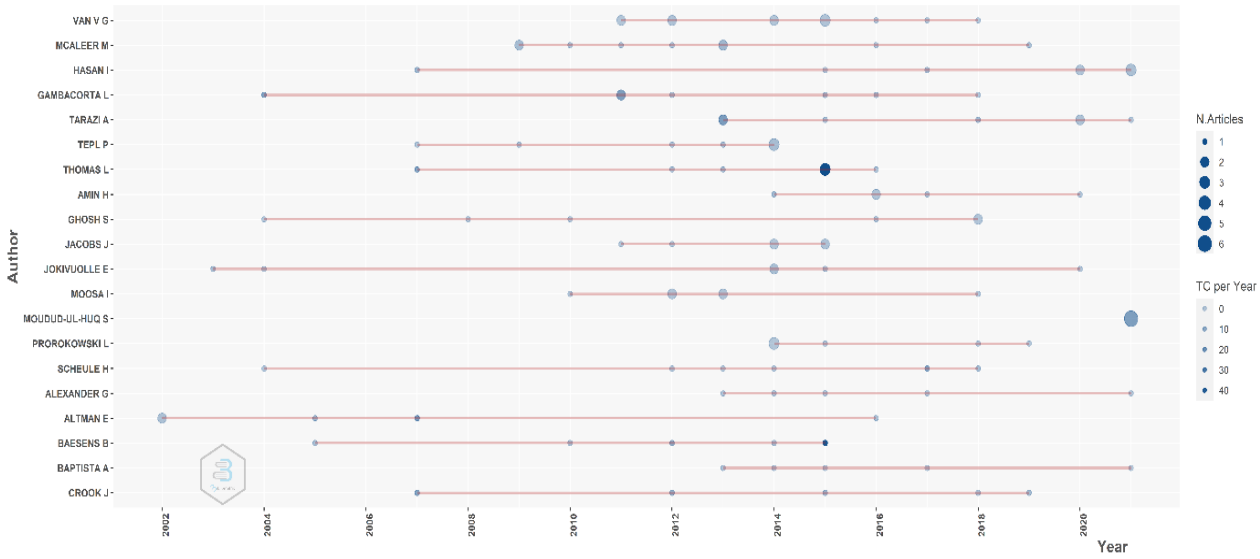

Figure 4. Top-Authors' Production over 1997-2022

European Economic Letters
ISSN 2323-5233
Vol 14, Issue 3 (2024)
http://eelet.org.uk

Figure 5 shows the 20 most significant peer-reviewed publications, which comprises approximately 33.84% of all the journals publishing BA research in the subject of business and management over the last 26 years. In 506 journals, a total of 1723 articles were published. Journal of Banking and Finance, Journal of Financial Regulation and Compliance, Journal of Banking Regulation, Journal of Financial Stability, and Banks and Bank System are among the top journals in the field as shown in Table 2. The percentage of articles in the top five most prominent journals is low, accounting for only 16.14 percent of all publications, indicating a wide range of essential journals and more prospects with a broad interest in this field's study.

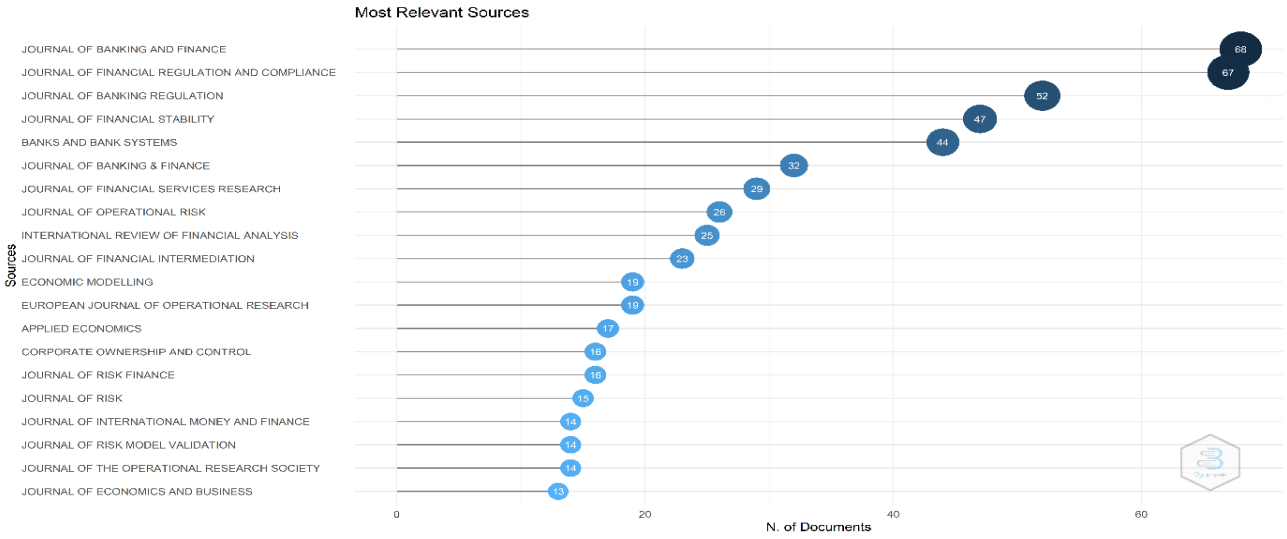

Figure 5. Most influential journals

Table 2. The most impactful publications from 1997 to 2022.

Journal	TP	WTP (%)	TC
Journal of Banking and Finance	68	3.95	2383 (1)
Journal of Financial Regulation and Compliance	67	3.89	354 (8)
Journal of Banking Regulation	52	3.02	235 (10)
Journal of Financial Stability	47	2.73	757 (6)
Banks and Bank Systems	44	2.55	78 (18)
Journal of Banking & Finance	32	1.86	1122 (3)
Journal of Financial Services Research	29	1.68	771 (5)
Journal of Operational Risk	26	1.51	92 (17)
International Review of Financial Analysis	25	1.45	551 (7)
Journal of Financial Intermediation	23	1.33	1464 (2)
Economic Modelling	19	1.1	155 (13)
European Journal of Operational Research	19	1.1	872 (4)
Applied Economics	17	0.99	93 (15 =)
Corporate Ownership and Control	16	0.93	23 (20)
Journal of Risk Finance	16	0.93	134 (14)
Journal of Risk	15	0.87	14 (21)
Journal of International Money and Finance	14	0.81	244 (9)
Journal of Risk Model Validation	14	0.81	26 (19)
Journal of the Operational Research Society	14	0.81	192 (12)
Journal of Economics and Business	13	0.75	228 (11)
Journal of International Financial Markets Institutions & Money	13	0.75	93 (15=)

Note: TP stands for total publications; WTP (percent) is for weighted total publications; TC stands for total citations. The number of parentheses denotes the journal ranks for times cited. Source: Biblioshiny – Own Elaboration.

Figure 6 shows the most commonly used author keywords. Keyword analysis has been suggested as a useful approach for identifying research hotspots and future study areas. The writers' keywords were chosen because they reflect the topics discussed and the authors' preferences in the articles (Wang et a et al., 2017). The five most commonly used keywords are "credit risk," "banks," "risk management," "regulatory," and "banking," in addition to the keywords "basel iii" and "basel ii."

Figure 6. Keywords cloud 1997-2022

Content analysis

Past of BA

The co-citation network analysis diagram depicts the three clusters of articles based on the Louvain algorithm approach in Figure 7. The Louvain algorithm is a hierarchical clustering technique that successively integrates communities into a single node and runs the modularity grouping on the condensed graphs. We identified 21 papers by running the co-citation network command in R to review the past of the BA. Rime (2001) investigates the impact of risk-based capital on Swiss commercial banks and its magnitude. They discovered that while statutory capital forced banks to increase their capital, the amount of risk they were willing to assume remained the same.

Jokipii and Milne (2008) review the European Union's member countries, with a sample of 468 banks analyzed over an eight-year period (1997 to 2004). The study's goal is to investigate the relationship between capital buffers and European banks' economic cycles. And what's the fundamental driving force behind this relationship, whether it is influenced by the size of the bank, the country where the bank is located, or the type of bank? What is the impact of different types of benefits and cost factors on bank capital buffers? They discovered a negative relationship between GDP growth and capital buffers. The countries that joined in 2004 are moving in the same direction as the global economy. In addition, large banks' commercial and savings bank capital buffers fluctuate in the opposite direction of the cycle. While the economy is in a downturn, small and cooperative banks, on the other hand, move in lockstep with the cycle.

Blum (1999) uses a dynamic model to study how the capital adequacy ratio affects bank risk-taking. They arrived at the conclusion that a high capital requirement will encourage banks to take more risks, making stocks more valuable in the future. If the cost of equity grows in the future, the easiest method to resist is to keep your equity level high. Jones (2000) aimed to learn about capital arbitrage and the challenges that occur as a result of the BA on arbitrage. He discovered, arbitrage reduces the efficiency of prudential controls. At the same time, securitization is the best approach to achieve regulatory capital arbitrage. It is advised that bank capital standards be properly worded in accordance with the bank's true economic risk so that there are no regulatory gaps that allow huge banks to arbitrage.

European Economic Letters
ISSN 2323-5233
Vol 14, Issue 3 (2024)
http://eelet.org.uk

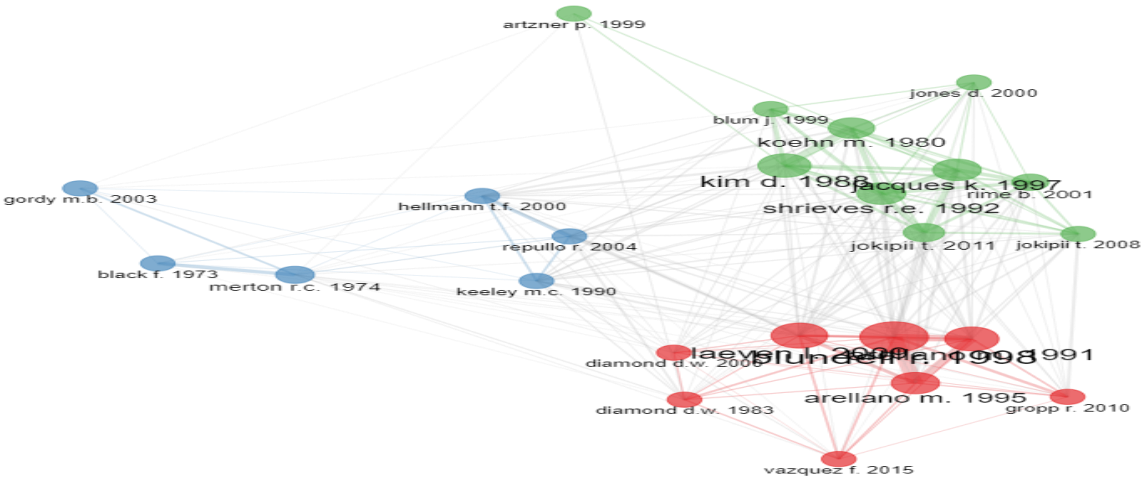

Figure 7. Co-citation network (Past)

Gordy (2003) investigated whether the violation of any empirical premise renders a capital regulation erroneous and ineffective. The study's response to the question is that it is dependent on the application area and debt market knowledge. The study by Repullo (2004) is aimed at clarifying how the capital requirement and the deposit ceiling rate affect risk diversification by banks in a highly competitive environment. They discovered that both metrics are capable of stopping banks from accepting excessive risk, based on certain assumptions made by the author for the model applied in the study.

According to Jokipii and Milne (2011), the amount of the buffer has a significant impact on how banks adjust their capital and risk from 1986 to 2008. Banks approaching the minimum capital requirement, in contrast to well-capitalized banks, show a negative relationship between capital adjustments and risk. Furthermore, small banks shift their capital more quickly than larger banks. Diamond and Rajan (2000) developed a bank capital model in which the assets and liabilities sides of the bank's balance sheet shift invisibly at the same time. It has been found that bank capital affects the stability of banks, their capacity to refinance at reduced rates, and their ability to collect payments from customers on time.

Arellano and Bover (1995) presented the Hausman-Taylor(HT) generalized method of moments (GMM) formulation with an unrestricted covariance matrix to deduce the information required for these models. In the analysis of Hellmann et al. (2000), the deposit rate decision is taken into account in addition to capital requirements. According to the study's conclusions, unregulated deposit rates erode a bank's worth, capital requirements are costly. Ceiling rates help to keep capital requirements in check, minimizing the overall cost of meeting them. According to the Diamond (1991) study, borrowers with mid-range credit ratings requested bank loans more frequently than borrowers with lower credit ratings. During situations of high borrowing costs or low-profit margins, high-credit-rated borrowers prefer to borrow from banks, whereas low-credit-rated borrowers prefer to borrow directly without being monitored. Keeley (1990) investigated whether fierce competition causes bank charter values to fall, causing banks to increase default risk by increasing asset risk and reducing capital. Empirical evidence backs up this hypothesis.

Koehn and Santomero (1980) study portfolio responsiveness to capital requirements by investigating the impact of capital ratio requirements on commercial bank portfolio behavior but found inconclusive evidence for the sector as a whole and intra-industry variation of the probability of default increases unambiguously. The findings of Kim and Santomero (1988) study are that (a) using simple capital ratios in regulation is an inefficient method of reducing banks' insolvency burden; (b) risk-based capital plans are explicitly derived as a solution to capital ratio regulation problems; (c) risk weights are asset composition constraints that alter banking firms' portfolio choice. The study by Arellano and Bond (1991) proposes specification tests that can be used when GMM is used to estimate a dynamic model using panel data, and it investigates the performance characteristics of these techniques using both simulated and real data is used by many studies related to BA. According to Mairesse and Hall (1996), the use of GMM estimators that utilize first differences to remove unaccounted organization effects and use lagged variables to compensate for synchronization in the first-differenced equations has

produced highly disappointing results. Blundell and Bond (2000) investigate if the above-mentioned problem exists in the production function and whether the altered GMM provides more accurate results in this setting. Gropp and Heider (2010) investigate whether regulatory capital is a key predictor of bank capital structure using European and US commercial banks. The authors came to the conclusion that capital above the minimum capital requirement did not account for bank capital fluctuations. The capital composition of a bank is unaffected by deposit insurance. Almost all banks set their capital in the same way that non-financial firms set their capital.

The Basel III framework for structural liquidity and leverage is endorsed by Vazquez and Federico (2015), who suggests that the two are complementary. Laeven and Levine (2009) evaluate hypotheses related to bank risk-taking, ownership structures, and national bank laws using empirical data. The wealthier proprietors, according to the author, are significantly more ready to take chances. Institutional ownership has a significant impact on the deposit insurance, regulatory capital, and risk-taking limits of banks. According to the findings of Jacques and Nigro (1997), risk-based capital requirements have resulted in a significant increase in capital and a decrease in portfolio risk for well-capitalized banks. Shrieves and Dahl (1992) look into whether there is a two-way relationship between bank capital and risk-taking by banks, especially in undercapitalized institutions. The author observed a favorable relationship between the two. During the research period, regulatory capital was insufficient for undercapitalized banks.

Present of BA

The studies examining the current popular topics in BA are shown in Figure 8. Thirty-nine papers were obtained using the bibliographic coupling function of biblioshiny. With the use of the spreadsheet file of biblioshiny to make the visuals more obvious, Figure 8 was made in Microsoft Excel. Demirgüç-Kunt and Detragiache (2011) examine whether bank financial soundness is related to adherence to the BA for effective banking supervision. In research of 3,000 institutions from 86 countries, the author found no link between adherence to BA and lesser risk-taking by banks, as measured by Altman's Z-score. According to Chiuri et al. (2002), capital adequacy ratio enforcement has a negative impact on credit. The outcomes of the study support the theory for emerging countries, particularly for banks with lesser capital. In addition, the financial crisis is having a more detrimental impact on emerging countries. Foreign-owned banks, on the other hand, are partially shielded from the negative consequences. Chiuri et al. (2002) recommended enabling foreign participation in small banks as a result.

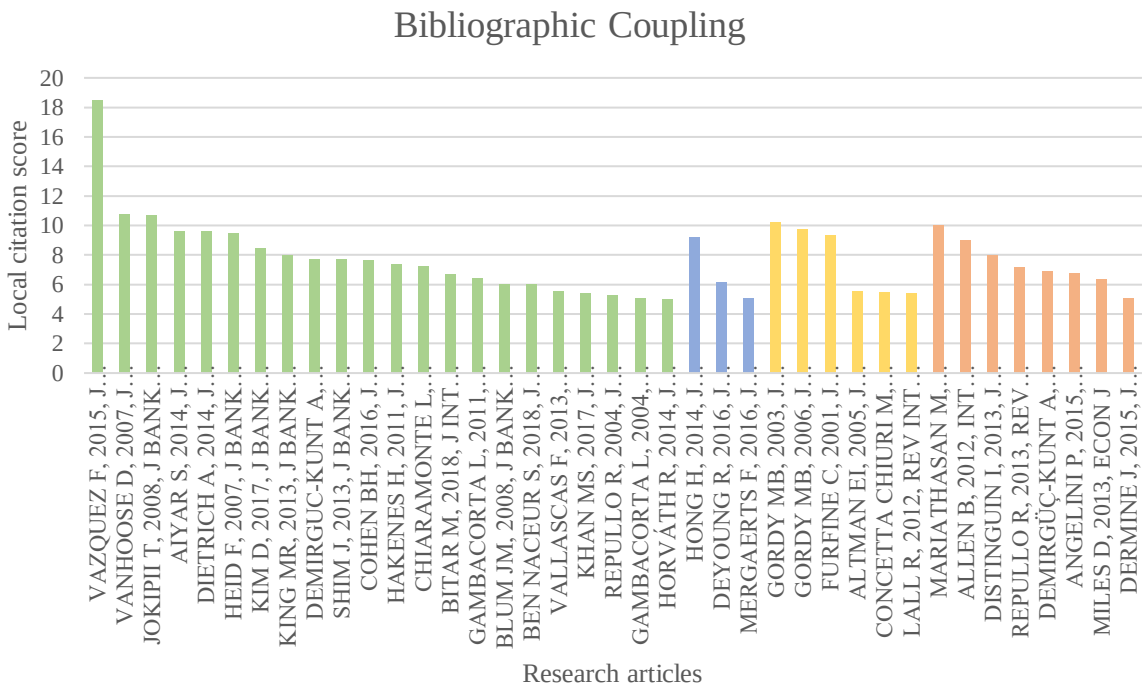

Figure 8. Documents bibliographic coupling

VanHoose (2007) assesses studies of the impact of capital restrictions on a nation's banking sector. One set of studies predicts that the immediate effect of capital requirements expected to have a decrease in overall lending and corresponding rise in market loan rates, along with a shift from lending towards owning alternative assets. Capital regulations, on the other hand, has the long-term effect of improved capital ratios, which may or may not be accompanied by an increase in overall lending. Based on these perspectives, they've arrived at the conclusion that Basel II isn't as robust as it should be. Heid (2007) studies the capital-inspired lending cycle's macroeconomic consequences and pro-cyclical influence. According to the author, the capital buffer is essential for assessing the effects of capital requirements on bank lending. A capital cushion reduces the impact of tighter capital. Even if banks have a strong capital cushion, macroeconomic changes have a significant impact on lending. On the other hand, pro-cyclical effects on macroeconomic fluctuations would vary by country.

The periodic behavior of capital buffers varies greatly depending on the type of bank, the size of the bank, and the country in which the bank is located, according to Jokipii and Milne (2008). Leverage ratio restrictions, according to Blum (2008), may be necessary to compensate supervisors' limited ability to detect and discipline dishonest organizations. The choice between an internal rating-based strategy and a standardized method, according to Hakenes and Schnabel (2011), gives larger banks an advantage over smaller banks, driving smaller banks to take high risks and resulting in overall excessive risk-taking. The Basel III countercyclical capital requirement, according to Shim (2013), will aid the economy during slowdowns. Furthermore, there is a negative relationship between the business cycle and the risk of a bank default. Banks produce more liquidity by lowering their regulatory capital, according to Distinguin et al. (2013). The findings of the study support the implementation of Basel III's minimum capital requirements, albeit additional clarity on how to define and analyze liquidity is needed in the standard. According to Dietrich et al. (2014), the majority of banks are unable to maintain the Net Stability Funding Ratio (NSFR). Another conclusion is that banks with lower NSFRs are unable to leverage the cost savings from lower funding costs into increased profitability.

Dermine (2015) discovered that a reduced Basel III framework should incorporate a liquidity risk component in capital regulation. Credit risk spread and/or a decreased likelihood of loan failure increases the risk of a bank run, resulting in a reduction in Basel III regulatory capital. Vazquez and Federico's (2015) findings support the anticipated Basel III structural liquidity and leverage constraints but suggest that the latter should be emphasized, especially for systemically large institutions. Following the financial crisis, Cohen and Scatigna (2016) investigate the actions taken by banks to fulfill the Basel III capital ratio. Retained earnings, according to the report, help most countries improve their capital ratios. Dividend payouts were lowered in developed economies, while banks in emerging countries relied on high incomes and asset turnover.

Banks aggressively monitor their core deposit quantities more than their lending levels, according to DeYoung and Jang (2016). Banks with lower financing liquidity risk, as indicated by higher deposit ratios, take on greater risk, according to Khan et al. (2017). A reduction in banks' financing liquidity risk increases bank risk, as seen by larger risk-weighted assets, stronger liquidity creation, and lower Z-scores. The data imply, however, that while a bank's funding liquidity risk is low, its size and capital buffers usually preclude it from taking on further risk. Kim and Sohn (2017) claim that bank capital has a significant positive impact on lending only when major banks have sufficient liquid assets. Bank capital and deposit rate ceilings, according to Repullo (2004), are useful in preventing banks from taking excessive risks. The findings of Gambacorta and Mistrulli (2004) show that bank capital matters in the transmission of different types of loan shocks due to regulatory capital constraints and defects in the market for bank fund-raising.

From the perspective of market discipline, Gordy and Howells (2006) examine the issue of procyclicality under Basel II. According to Mariathasan and Merrouche (2014), the bank's strategic risk-modeling accounted for a fraction of the decline in perceived riskiness under Basel II compared to the internal rating-based strategy. Basel II has also added to the complication. Mergaerts and Vennet (2016) support that the Basel III capital reform, arguing that the profitability-risk trade-off improved with higher capital ratios with other parameters being constant.

The risk absorption capability of US banks increased as a result of Basel III loan expansion efforts, according to Naceur et al. (2018). The introduction of the enhanced capital requirement norm has a detrimental influence on European bank credit

growth. More work needs to be done due to the various faults in both the Basel II and Basel III frameworks. Lall (2012) has also noted that the success of any framework is influenced by the timing and chronology of its introduction. The equity capital that is likely to be desirable for banks to deploy, according to Miles et al. (2013), is significantly larger than what banks have used in recent years, and it is also higher than the Basel III norm's targets. The impact of a significant increase in bank capital on borrowers' borrowing costs is negligible in the long run.

Basel III, according to Gambacorta and Marques-Ibanez (2011), claims that banks will be more robust if they can successfully manage their liquidity. The variety of debt funders used by banks has an impact on loan supply. According to Aiyar et al. (2014), after the implementation of Basel I, UK banks cut their loan supply, whilst non-Basel regulated banks increased their credit supply to the suitable reference group of regulated banks. According to Angelini et al. (2015), every 1% rise in capital ratio resulted in a 9% decrease in productivity. As a result of the implementation of Basel III, output volatility will be decreased. Furthermore, the deployment of countercyclical capital buffers will more effectively limit production variation.

Basel II, according to Altman and Sabato (2005), will drive banks to upgrade their internal systems and processes so that they can handle SMEs on a pooled basis using scoring, grading, or another automated decision mechanism. According to Furfine (2001), following the implementation of the BA, which sets tougher capital requirements, banks reduced their lending supply. Horvàth et al. (2014) found evidence that Basel III can reduce liquidity production while simultaneously diminishing bank solvency. Capital and liquidity ratios play a complementary role in ensuring the stability of big banks, according to Chiaramonte and Casu (2017). Although not applicable to all bank sizes.

Increased capital ratios in conformity with Basel III, according to Bitar et al. (2018), will have a negative impact on highly liquid banks' productivity and profitability. Allen et al. (2012) agree with Basel III's detractors that the credit supply will be impacted, not because of the higher capital and liquidity requirements but because of the shorter implementation period. The NSFR and liquidity ratio, according to Hong et al. (2014), do not protect banks from failing. Prudent liquidity risk management, according to the authors, should tackle liquidity risk at both the individual and system level. Demirguc-Kunt et al. (2013) discovered that the big well-capitalized banks saw less equity value loss during the crisis.

Repullo and Suarez (2013), Basel II appears to be more pro-cyclical than Basel I, although it also protects banks and is generally more welfare-friendly. According to Vallascas and Hagendroff (2013), risk-weighted assets perform badly when compared to a market estimate of bank portfolio risk. Gordy (2003) demonstrates how credit value-at-risk models and ratings-based capital constraints, such as the current Basel Accord and its proposed modification, can be reconciled.

Future of BA

Co-word analysis is used to indicate the future study direction, as recommended by Goh and See (2021) and Donthu et al. (2021). A keyword analysis is a useful method for identifying research hotspots and prospective study areas. The author's keywords, in particular, are more appropriate for describing the study topic and qualities of an article based on the author's point of view (Wang et al., 2012). We identified 32 publications after using the co-occurrence network and adding the author's keywords as a field (Figure 9). These publications aid in the identification of future research areas.

The expected loss in the event of default is a decreasing function of collateral value drift, an increasing function of collateral value volatility, and an increasing function of the relationship between the value of the borrower firm's total assets and the borrower default probability, according to Jokivuolle and Peura (2003). Their proposed model can be used to determine loan-to-value ratios as lending guidelines or to estimate the expected loss assuming default for use in credit portfolio models. According to Lall (2012), it is worthwhile to look at the Basel II and Basel III problems. What are the reasons for these norms' failure to achieve their capital regulation objectives, and how can they be used to improve future regulatory needs and the global economy's long-term health? According to Jorion (2002), based on banks' publicly disclosed Value-at-Risk (VAR) disclosures, value at risk volatility is strongly linked to future market risk. This means that analysts can analyze the risk levels of various institutions based on publicly available VAR.

European Economic Letters
ISSN 2323-5233
Vol 14, Issue 3 (2024)
http://eelet.org.uk

Basel II is not a difficult capital requirement for Spanish banks, according to Saurina and Trucharte (2004), because their loan distribution to small and medium-sized businesses is on average the same as before, but there is room to investigate how the probability of default varies with the size of the SME. Anandarajan et al. (2007) look at how much Australian banks use loan loss provisions (LLPs) and how they've changed since the Basel regulations were implemented. The authors conclude that LLPs are more widely employed for earnings management by Australian banks. Following the establishment of Basel capital standards, its use among commercial banks has grown even more.

Based on the Basel II guidelines, Altman Sabato (2013) proposed a concept for lowering bank capital requirements for small and medium-sized businesses. Controlling default risk for SMEs, according to the study's findings, needs models and procedures adapted to the SME market. Between 1999 and 2009, Delis et al. (2011) examine the relationship between the Basel II capital adequacy agreement and bank productivity. The study found that the regulatory and supervisory component of Basel II has no effect on bank productivity. When financial pressure is at its peak, regulatory requirements and supervisory pillars have a positive impact on production. The findings of the article, according to Bellotti and Crook (2012), support Basel II by illustrating the importance of adding macroeconomic variables in the model, which aids stress testing efficiency during the recession. Loss-given-default regression algorithms were developed by Loterman et al. (2012). According to Barakat and Hussainey (2013), more audit committee activities, increased proactive participation of bank supervisors, board independence, and ease of entry into rules—will improve the quality of bank risk reporting. The capital buffer shrinks under Basel II, according to Heid (2007), because the increase in average risk weights frequently outweighs the decrease in lending. Even if banks have sufficient capital buffers, Basel II can have a major impact on aggregate demand in terms of macroeconomic volatility, especially in nations where bank financing plays a major role in a firm's investment decision.

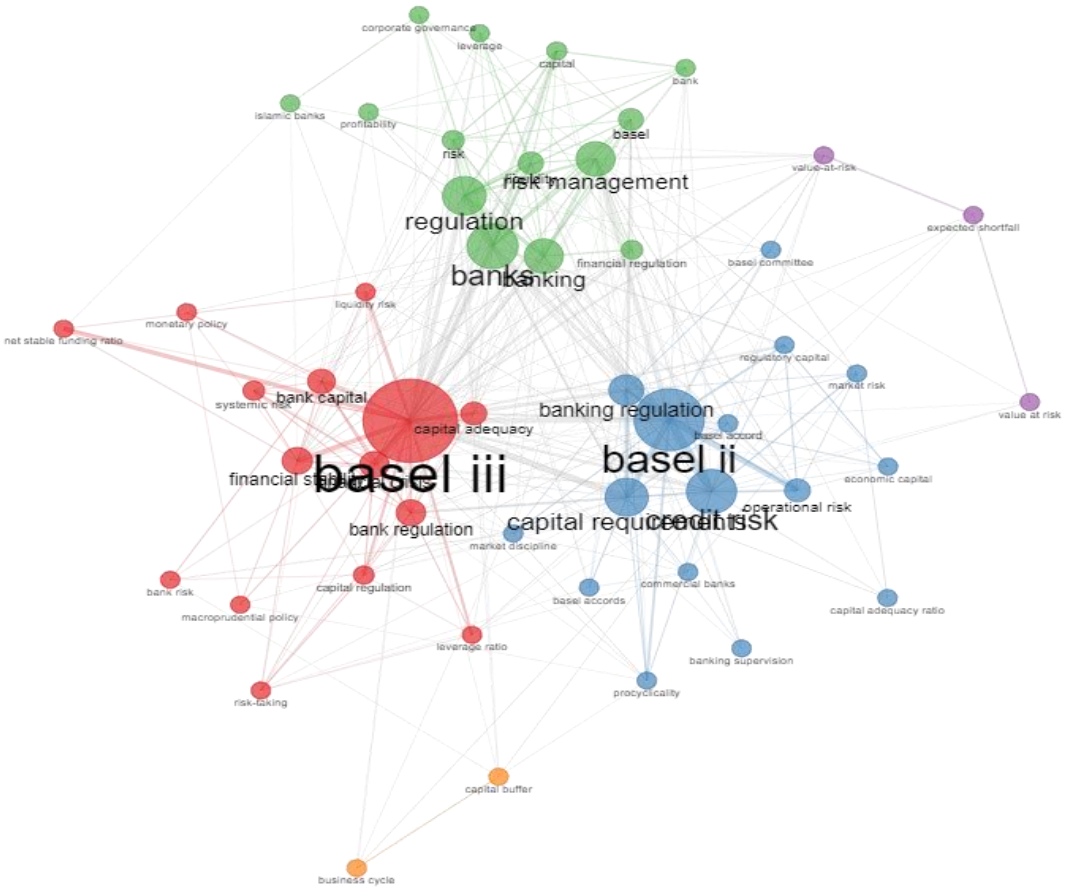

Figure 9. Author’s keywords co-word network (1997-2022)

According to Blum (2008), banks with a high level of risk have a high level of capital, which causes them to understate their risk. Supervisors must be able to detect and punish banks that misrepresent their risk status. The leverage ratio's upper limit could be used as a tactic to compensate for regulators' limited ability to judge dishonest institutions.

The right to select between an internal rating-based and a standardized method, according to Hakens and Schnabel (2011), destabilizes the banking system by increasing capital requirements, which are costly for smaller banks. Smaller banks will take on riskier projects, raising overall risk and threatening the system's stability. The business cycle, according to Shim (2013), has a negative association with bank default risk and capital buffer. As a result, the Basel III countercyclical capital buffer will be reinforced. Banks with a diverse portfolio are less likely to fail.

Guidara et al. (2013) concluded that Canadian banks' ability to successfully navigate through business and regulatory periods demonstrates the utility of a micro-and macroeconomic "through-the-cycle" capital adequacy strategy, as proposed in the Basel III framework, in strengthening the banking sector. According to King (2013), liquidity management, profitability, and risk are all intertwined. The purpose of establishing a NSFR is to encourage banks to keep their liquid assets high and employ more reliable funding sources. This will increase bank stability, but earnings will suffer as a result. During the financial crisis, banks with higher leverage and fewer liquid assets were more likely to fail, according to Vazquez and Federico (2015). The outcomes of the study back up Basel III's lower leverage level and high-quality leverage ratio standards.

Based on a study of bank liquidity management by Young and Jang (2016). Despite the fact that large banks are more successful in handling liquidity standards, the authors concluded that US banks manage their liquidity in accordance with the standard in place prior to the implementation of BA, which is similar to NSFR, with smaller banks taking it more seriously than larger banks. According to Khan et al. (2017), as deposits rise, liquidity production rises in lockstep with risk-weighted assets.

Higher capital has a positive influence on loan growth, according to Kim and Sohn (2017), but only when banks keep a sufficient quantity of liquid assets. These conclusions are only applicable to large banks; they are not applicable to medium and small banks. Cuoco and Liu (2006) looked into how banks use the value at risk measure according to the BA risk internal assessment methodology. According to the author, capital based on the VaR measure is successful in decreasing portfolio volatility, but it also exposes this risk. In the Basel II framework, Ali and Daly (2010) seek to know how to model credit risk. Total debt, GDP, and short-term interest rates all play a role in the default rates in the United States and Australia. Mariathasan and Merrouche (2014) look into the relationship between risk-weighted assets values and the readiness of a bank to use an internal ratings-based system. They discovered that after the internal rating technique is accepted, the risk-weighted ratio of undercapitalized banks decreases.

Hong et al. (2014) proposed a method for computing the NSFR and liquidity coverage ratio (LCR) under Basel III. Angelini et al. (2008) proposed the standard and adaptable systems neural network techniques for estimating debtors' default probabilities. In the fundamental dynamic parametric VaR model, Escanciano and Olmo (2010) assessed the estimation risk and provided backtesting adjustment options. Du and Escanciano (2017) presented backtesting methodologies for the newly disclosed market risk indicator of the Basel III framework. The most recent Basel Principles for enhancing corporate governance recognize that boards and executives have a responsibility to creditors as well as shareholders, but they do not change the fundamental power structure in banks (Becht et al., 2011). Embrechts and Wang (2015) discovered that projected shortfall is less susceptible to aggregate reliance ambiguity and has a narrower uncertainty spread than VaR. Gordy (2003) demonstrates how a ratings-based system for allocating credit risk capital requirements can be developed and validated using credit value-at-risk factor model. When small and medium-sized firms are recognized as retail clients in all countries, according to Altman and Sabato (2005), banks will benefit greatly in terms of decreased capital needs. Capitalization has a significant impact on bank distress, according to Poghosyan (2011), but its economic impact is smaller than that of asset quality and earnings. Bank risks increase when the percentage of wholesale finance increases.

CONCLUSION

The present study has highlighted the importance of the BA as a research area, especially in recent years. As the world is recovering from another financial setback due to Covid-19, the importance of a more stable and cautious banking system is recognized now more than ever.

The study examines the evolution of financial regulation in relation to the BA from 1997 to 2022, based on 1723 publications selected after a thorough search on WoS and Scopus databases. We provide an overview of the global trends in this research field within three different timeframes, with a special focus on the quality of the research. The existing research is dominated by the United States with the most publications, making North America the most creative continent, followed by the United Kingdom.

Among journals, the Journal of Banking and Finance dominates with 68 publications, followed by the Journal of Financial Regulation and Compliance with 67 publications, and the Journal of Banking Regulation with 52 publications. Although many additional journals publish studies on BA, not all of them are in the field of economics, econometrics, finance, business, management, or accounting.

Our study also highlights that BA is a research area that requires global attention. However, emerging economies still lag behind in the implementation of Basel-based financial laws. The least number of publications can be explained by the fact that these countries have yet to begin implementing Basel-based financial laws. However, the integrity of the banking system is a critical component of the prudential framework's execution, particularly with regard to capital regulation, which tries to limit bank risk-taking.

To summarize, it is necessary for the global financial system to converge to the same laws through uniform target policies of central banks and regulators. The world's leading economies have various policies on the goals of their regulatory systems for a variety of reasons, but the recent financial crisis has highlighted the chain effect of shocks and demonstrated that combined actions are needed to avoid such scenarios. Thus, in order for the economic system to function efficiently and with the least amount of risk, the newly formed laws must be strictly obeyed in a way that does not influence real-economy funding channels or banking business plans' flexibility.

Some of the future research avenues could focus on investigating the financial burden of the new restrictions, Is it possible to transform bank stability into financial stability? What does the future hold for the global financial sector under the newly created regulatory framework? What are the necessities that lie behind these guidelines but aren't readily apparent? How will the implementation of BA affect both the regulated and unregulated sectors of the economy? (Vousinas, 2015). Also, the researchers could use other databases such as Google Scholar for the identification of research articles that have citations from sources other than WoS and Scopus.

REFERENCES

1. Abbasi, A., Hossain, L., & Leydesdorff, L. (2012). Betweenness centrality as a driver of preferential attachment in the evolution of research collaboration networks. *Journal of Informetrics*, *6*(3), 403-412.
2. Admati, A., & Hellwig, M. (2014). *The bankers' new clothes*. Princeton University Press.
3. Aiyar, S., Calomiris, C. W., & Wieladek, T. (2014). Does macro-prudential regulation leak? Evidence from a UK policy experiment. *Journal of Money, Credit and Banking*, *46*(s1), 181-214.
4. Allen, B., Chan, K. K., Milne, A., & Thomas, S. (2012). Basel III: Is the cure worse than the disease?. *International Review of Financial Analysis*, *25*, 159-166.
5. Altman, E. I., & Sabato, G. (2005). Effects of the new Basel capital accord on bank capital requirements for SMEs. *Journal of financial services research*, *28*(1), 15-42.
6. Altman, E. I., & Sabato, G. (2013). Modeling credit risk for SMEs: evidence from the US market. In *Managing and Measuring Risk: Emerging Global Standards and Regulations After the Financial Crisis* (pp. 251-279).
7. An assessment of the long-term economic impact of stronger capital and liquidity requirements, Basel Committee on banking Supervision. Bank for international settlements, Basel. (2010a)

8. Anandarajan, A., Hasan, I., & McCarthy, C. (2007). Use of loan loss provisions for capital, earnings management and signalling by Australian banks. *Accounting & Finance*, *47*(3), 357-379.
9. Angelini, E., Di Tollo, G., & Roli, A. (2008). A neural network approach for credit risk evaluation. *The quarterly review of economics and finance*, *48*(4), 733-755.
10. Angelini, P., Clerc, L., Cúrdia, V., Gambacorta, L., Gerali, A., Locarno, A., ... & Vlček, J. (2015). B asel III: Long-term Impact on Economic Performance and Fluctuations. *The Manchester School*, *83*(2), 217-251.
11. Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *The review of economic studies*, *58*(2), 277-297.
12. Arellano, M., & Bover, O. (1995). Another look at the instrumental variable estimation of error-components models. *Journal of econometrics*, *68*(1), 29-51.
13. Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of informetrics*, *11*(4), 959-975.
14. Barakat, A., & Hussainey, K. (2013). Bank governance, regulation, supervision, and risk reporting: Evidence from operational risk disclosures in European banks. *International Review of Financial Analysis*, *30*, 254-273.
15. Basel Committee on Banking Supervision (BCBS). (2010). Results of the comprehensive quantitative impact study. *BCBS Publication No. 186*. (2010c)
16. Bellotti, T., & Crook, J. (2012). Loss given default models incorporating macroeconomic variables for credit cards. *International Journal of Forecasting*, *28*(1), 171-182.
17. Bitar, M., Pukthuanthong, K., & Walker, T. (2018). The effect of capital ratios on the risk, efficiency and profitability of banks: Evidence from OECD countries. *Journal of international financial Markets, Institutions and Money*, *53*, 227-262.
18. Blum, J. (1999). Do capital adequacy requirements reduce risks in banking?. *Journal of Banking & Finance*, *23*(5), 755-771.
19. Blum, J. M. (2008). Why 'Basel II'may need a leverage ratio restriction. *Journal of Banking & Finance*, *32*(8), 1699-1707.
20. Blundell, R., & Bond, S. (2000). GMM estimation with persistent panel data: an application to production functions. *Econometric reviews*, *19*(3), 321-340.
21. Briner, R. B., & Denyer, D. (2012). Systematic review and evidence synthesis as a practice and scholarship tool. *Handbook of evidence-based management: Companies, classrooms and research*, 112-129.
22. Cadavid Higuita, L., Awad, G., & Franco Cardona, CJ (2012). Bibliometric analysis of the innovation diffusion modeling field. *Managerial Studies , 28* (SPE), 213-236.
23. Chiaramonte, L., & Casu, B. (2017). Capital and liquidity ratios and financial distress. Evidence from the European banking industry. *The British Accounting Review*, *49*(2), 138-161.
24. Chiuri, M. C., Ferri, G., & Majnoni, G. (2002). The macroeconomic impact of bank capital requirements in emerging economies: Past evidence to assess the future. *Journal of banking & finance*, *26*(5), 881-904.
25. Cohen, B. H., & Scatigna, M. (2016). Banks and capital requirements: channels of adjustment. *Journal of Banking & Finance*, *69*, S56-S69.
26. Culnan, M. J., O'Reilly III, C. A., & Chatman, J. A. (1990). Intellectual structure of research in organizational behavior, 1972–1984: A cocitation analysis. *Journal of the American Society for Information Science*, *41*(6), 453-458.
27. Cuoco, D., & Liu, H. (2006). An analysis of VaR-based capital requirements. *Journal of Financial Intermediation*, *15*(3), 362-394.
28. Delis, M. D., Molyneux, P., & Pasiouras, F. (2011). Regulations and productivity growth in banking: Evidence from transition economies. *Journal of Money, Credit and Banking*, *43*(4), 735-764.
29. Demirgüç-Kunt, A., & Detragiache, E. (2011). Basel core principles and bank soundness: does compliance matter?. *Journal of Financial Stability*, *7*(4), 179-190.
30. Demirguc-Kunt, A., Detragiache, E., & Merrouche, O. (2013). Bank capital: Lessons from the financial crisis. *Journal of Money, Credit and Banking*, *45*(6), 1147-1164.
31. Dermine, J. (2015). Basel III leverage ratio requirement and the probability of bank runs. *Journal of Banking & Finance*, *53*, 266-277.

32. Devos, P. (2011). Research and bibliometrics: a long history…. *Clinics and Research in Hepatology and Gastroenterology*, *35*(5), 336-337.
33. DeYoung, R., & Jang, K. Y. (2016). Do banks actively manage their liquidity?. *Journal of Banking & Finance*, *66*, 143-161.
34. Diamond, D. W. (1991). Monitoring and reputation: The choice between bank loans and directly placed debt. *Journal of political Economy*, *99*(4), 689-721.
35. Diamond, D. W., & Rajan, R. G. (2000). A theory of bank capital. *the Journal of Finance*, *55*(6), 2431-2465.
36. Dietrich, A., Hess, K., & Wanzenried, G. (2014). The good and bad news about the new liquidity rules of Basel III in Western European countries. *Journal of Banking & Finance*, *44*, 13-25.
37. Distinguin, I., Roulet, C., & Tarazi, A. (2013). Bank regulatory capital and liquidity: Evidence from US and European publicly traded banks. *Journal of Banking & Finance*, *37*(9), 3295-3317.
38. DeYoung, R., & Jang, K. Y. (2016). Do banks actively manage their liquidity?. *Journal of Banking & Finance*, *66*, 143-161.
39. Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, *133*, 285-296.
40. Du, Z., & Escanciano, J. C. (2017). Backtesting expected shortfall: accounting for tail risk. *Management Science*, *63*(4), 940-958.
41. Embrechts, P., Wang, B., & Wang, R. (2015). Aggregation-robustness and model uncertainty of regulatory risk measures. *Finance and Stochastics*, *19*(4), 763-790.
42. Escanciano, J. C., & Olmo, J. (2010). Backtesting parametric value-at-risk with estimation risk. *Journal of Business & Economic Statistics*, *28*(1), 36-51.
43. Furfine, C. (2001). Bank portfolio allocation: The impact of capital requirements, regulatory monitoring, and economic conditions. *Journal of Financial Services Research*, *20*(1), 33-56.
44. Gambacorta, L., & Marques-Ibanez, D. (2011). The bank lending channel: lessons from the crisis. *Economic policy*, *26*(66), 135-182.
45. Gambacorta, L., & Mistrulli, P. E. (2004). Does bank capital affect lending behavior?. *Journal of Financial intermediation*, *13*(4), 436-457.
46. Garfield, E. (1979). Is citation analysis a legitimate evaluation tool?. *Scientometrics*, *1*(4), 359-375.
47. Goh, K. H., & See, K. F. (2021). Twenty years of water utility benchmarking: A bibliometric analysis of emerging interest in water research and collaboration. *Journal of Cleaner Production*, *284*, 124711.
48. Gordy, M. B. (2003). A risk-factor model foundation for ratings-based bank capital rules. *Journal of financial intermediation*, *12*(3), 199-232.
49. Gordy, M. B., & Howells, B. (2006). Procyclicality in Basel II: Can we treat the disease without killing the patient?. *Journal of financial intermediation*, *15*(3), 395-417.
50. Gropp, R., & Heider, F. (2010). The determinants of bank capital structure. *Review of finance*, *14*(4), 587-622.
51. Guidara, A., Soumaré, I., & Tchana, F. T. (2013). Banks' capital buffer, risk and performance in the Canadian banking system: Impact of business cycles and regulatory changes. *Journal of Banking & Finance*, *37*(9), 3373-3387.
52. Guler, A. T., Waaijer, C. J., Mohammed, Y., & Palmblad, M. (2016). Automating bibliometric analyses using Taverna scientific workflows: A tutorial on integrating Web Services. *Journal of Informetrics*, *10*(3), 830-841.
53. Guler, A. T., Waaijer, C. J., & Palmblad, M. (2016). Scientific workflows for bibliometrics. *Scientometrics*, *107*(2), 385-398.
54. Hakenes, H., & Schnabel, I. (2011). Bank size and risk-taking under Basel II. *Journal of banking & finance*, *35*(6), 1436-1449.
55. Heid, F. (2007). The cyclical effects of the Basel II capital requirements. *Journal of Banking & Finance*, *31*(12), 3885-3900.
56. Hellmann, T. F., Murdock, K. C., & Stiglitz, J. E. (2000). Liberalization, moral hazard in banking, and prudential regulation: Are capital requirements enough?. *American economic review*, *90*(1), 147-165.
57. Hong, H., Huang, J. Z., & Wu, D. (2014). The information content of Basel III liquidity risk measures. *Journal of Financial Stability*, *15*, 91-111.

58. Horváth, R., Seidler, J., & Weill, L. (2014). Bank capital and liquidity creation: Granger-causality evidence. *Journal of Financial Services Research*, *45*(3), 341-361.
59. Institute of International Finance. (2011). The Cumulative Impact on the Global Economy of Proposed Changes in the Banking Regulatory Framework. *IIF Net Cumulative Impact Study, IIF*.
60. Jacques, K., & Nigro, P. (1997). Risk-based capital, portfolio risk, and bank capital: A simultaneous equations approach. *Journal of Economics and business*, *49*(6), 533-547.
61. Jokipii, T., & Milne, A. (2008). The cyclical behaviour of European bank capital buffers. *Journal of banking & finance*, *32*(8), 1440-1451.
62. Jokipii, T., & Milne, A. (2011). Bank capital buffer and risk adjustment decisions. *Journal of Financial Stability*, *7*(3), 165-178.
63. Jokivuolle, E., & Peura, S. (2003). Incorporating collateral value uncertainty in loss given default estimates and loan-to-value ratios. *European Financial Management*, *9*(3), 299-314.
64. Jones, D. (2000). Emerging problems with the Basel Capital Accord: Regulatory capital arbitrage and related issues. *Journal of Banking & Finance*, *24*(1-2), 35-58.
65. Kaur, M., & Kapoor, S. (2015). Adoption of Basel norms: a review of empirical evidences. *Journal of Financial Regulation and Compliance*, *23*(3), 271-284.
66. Keeley, M. C. (1990). Deposit insurance, risk, and market power in banking. *The American economic review*, 1183-1200.
67. Khan, M. S., Scheule, H., & Wu, E. (2017). Funding liquidity and bank risk taking. *Journal of Banking & Finance*, *82*, 203-216.
68. Kim, D., & Santomero, A. M. (1988). Risk in banking and capital regulation. *The journal of finance*, *43*(5), 1219-1233.
69. Kim, D., & Sohn, W. (2017). The effect of bank capital on lending: Does liquidity matter?. *Journal of Banking & Finance*, *77*, 95-107.
70. King, M. R. (2013). The Basel III net stable funding ratio and bank net interest margins. *Journal of Banking & Finance*, *37*(11), 4144-4156.
71. Koehn, M., & Santomero, A. M. (1980). Regulation of bank capital and portfolio risk. *The journal of finance*, *35*(5), 1235-1244.
72. Laeven, L., & Levine, R. (2009). Bank governance, regulation and risk taking. *Journal of financial economics*, *93*(2), 259-275.
73. Lall, R. (2012). From failure to failure: The politics of international banking regulation. *Review of International Political Economy*, *19*(4), 609-638.
74. Loterman, G., Brown, I., Martens, D., Mues, C., & Baesens, B. (2012). Benchmarking regression algorithms for loss given default modeling. *International Journal of Forecasting*, *28*(1), 161-170.
75. Low, M. B., & MacMillan, I. C. (1988). Entrepreneurship: Past research and future challenges. *Journal of management*, *14*(2), 139-161.
76. Mariathasan, M., & Merrouche, O. (2014). The manipulation of basel risk-weights. *Journal of Financial Intermediation*, *23*(3), 300-321.
77. Matloff, N. (2011). *The art of R programming: A tour of statistical software design*. No Starch Press.
78. Mergaerts, F., & Vander Vennet, R. (2016). Business models and bank performance: A long-term perspective. *Journal of Financial Stability*, *22*, 57-75.
79. Miles, D., Yang, J., & Marcheggiano, G. (2013). Optimal bank capital. *The Economic Journal*, *123*(567), 1-37.
80. Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group*. (2009). Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of internal medicine*, *151*(4), 264-269.
81. Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of Web of Science and Scopus: a comparative analysis. *Scientometrics*, *106*(1), 213-228.
82. Naceur, S. B., Marton, K., & Roulet, C. (2018). Basel III and bank-lending: Evidence from the United States and Europe. *Journal of Financial Stability*, *39*, 1-27.
83. Poghosyan, T., & Čihak, M. (2011). Determinants of bank distress in Europe: Evidence from a new data set. *Journal of Financial Services Research*, *40*(3), 163-184.

84. Repullo, R. (2004). Capital requirements, market power, and risk-taking in banking. *Journal of financial Intermediation*, *13*(2), 156-182.
85. Repullo, R., & Suarez, J. (2013). The procyclical effects of bank capital regulation. *The Review of financial studies*, *26*(2), 452-490.
86. Rey-Martí, A., Ribeiro-Soriano, D., & Palacios-Marqués, D. (2016). A bibliometric analysis of social entrepreneurship. *Journal of Business Research*, *69*(5), 1651-1655.
87. Rime, B. (2001). Capital requirements and bank behaviour: Empirical evidence for Switzerland. *Journal of banking & finance*, *25*(4), 789-805.
88. Sánchez, A. D., Del Río, M. D. L. C., & García, J. Á. (2017). Bibliometric analysis of publications on wine tourism in the databases Scopus and WoS. *European Research on Management and Business Economics*, *23*(1), 8-15.
89. Saurina, J., & Trucharte, C. (2004). The impact of Basel II on lending to small-and medium-sized firms: a regulatory policy assessment based on Spanish credit register data. *Journal of Financial Services Research*, *26*(2), 121-144.
90. Shim, J. (2013). Bank capital buffer and portfolio risk: The influence of business cycle and revenue diversification. *Journal of banking & finance*, *37*(3), 761-772.
91. Shrieves, R. E., & Dahl, D. (1992). The relationship between risk and capital in commercial banks. *Journal of banking & finance*, *16*(2), 439-457.
92. Vallascas, F., & Hagendorff, J. (2013). The risk sensitivity of capital requirements: Evidence from an international sample of large banks. *Review of Finance*, *17*(6), 1947-1988.
93. VanHoose, D. (2007). Theories of bank behavior under capital regulation. *Journal of Banking & Finance*, *31*(12), 3680-3697.
94. Vazquez, F., & Federico, P. (2015). Bank funding structures and risk: Evidence from the global financial crisis. *Journal of banking & finance*, *61*, 1-14.
95. Vousinas, G. L. (2015). Supervision of financial institutions: The transition from Basel I to Basel III. A critical appraisal of the newly established regulatory framework. *Journal of Financial Regulation and Compliance*.
96. Wang, H., He, Q., Liu, X., Zhuang, Y., & Hong, S. (2012). Global urbanization research from 1991 to 2009: A systematic research review. *Landscape and urban planning*, *104*(3-4), 299-309.
97. Wang, L., Wei, Y. M., & Brown, M. A. (2017). Global transition to low-carbon electricity: A bibliometric analysis. *Applied Energy*, *205*, 57-68.
98. (2015a). A brief history of the Basel Committee (pp. 1–11). Bank for International Settlements. Retrieved 16 January 2022, from www.bis.org/bcbs/ history.pdf
99. (2015b). Eighth progress report on adoption of the Basel regulatory framework (pp. 1–21). Bank for International Settlements. Retrieved 20 January 2022, from www.bis.org/bcbs/publ/d318.html