HOW THE FINANCIAL CRISIS HAS CHANGED THE RESEARCH AGENDA ON BANKING REGULATION

José Dias Lopes *

* Assistant Professor of Finance, Lisbon School of Economics & Management (ISEG), Lisbon University, Portugal
Contact details: Lisbon School of Economics & Management (ISEG), Lisbon University, R. Quelhas 6, 1200-781, Lisbon, Portugal

OPEN ACCESS

How to cite this paper: Lopes, J. D. (2018). How the financial crisis has changed the research agenda on banking regulation. *Journal of Governance & Regulation, 7(3),* 37-46. http://doi.org/10.22495/jgr_v7_i3_p5

ISSN Print: 2220-9352
ISSN Online: 2306-6784

Received: 16.08.2018
Accepted: 03.10.2018

JEL Classification: G28, G01
DOI: 10.22495/jgr_v7_i3_p5

Abstract

The effects of the financial crisis, which began in 2007, were many and various. This paper examines those effects in the banking regulation and supervision research agendas. The crisis, as the most important economic and social event of the beginning of this century, has triggered debates in multiple spaces and across frameworks, in politics, the media, social networks, and elsewhere. As the crisis was focused in the financial sector, it is natural for the published academic investigation of the regulation of this sector to have suffered changes. With this paper, the author tries to understand the impact of the financial crisis started in 2007 in the research published about banking regulation. This study, using a 323-article sample, determined that there was a change in the volume of published investigations, evident after 2011. This indicates a time lag between the onset of the crisis and the growth of interest in its inherent themes. This study also testifies to a change in interest focuses, with new themes emerging, such as politics, Basel III, systemic risk, and regulatory capture. Further, the keywords with value at risk, Basel II, Basel Capital Accords, and market discipline lost some ground in literature.

Keywords: Basel Accords, Banking Regulation, Banking Supervision, Crisis, Research Agenda, Keywords Analysis

Acknowledgements: The author is grateful acknowledge financial support from FCT – Fundação para a Ciência e Tecnologia (Portugal), national funding through research grant (UID/SOC/04521/2013) and PTDC/IVC-ANT/4520/2014

1. INTRODUCTION

The financial crisis started in 2007, which impacted economies worldwide, is certainly the most prominent economic and social fact of the beginning of this century. Its dimensions are frequently compared to the crisis of 1929 that began the long Great Depression. The exceptionality of this financial crisis can be observed in the singularity of occurrences associated with it, such as the following:

– the large volume of support that states had to provide to ensure the stability of the financial system; these actions entailed the effective use of €1.7 trillion, or 13 percent of the GDP of the EU, in government support to banks between September 2008 and December 2011, in EU countries alone, according to the International Monetary Fund (IMF, 2013);[1]

– social insecurity connected to banks, which materialized in a succession of bank runs or protests at banks, as was observed in Cyprus, Spain, Greece, Ireland, Portugal, the United Kingdom, and other countries. For instance, according to Milne and Wood (2008), in 2007, the United Kingdom witnessed its first bank run that had a significant impact, that of The Northern Rock, since the reign of Queen Victoria (which ended in 1901).

This dimensions and singularity of the financial crisis have led to its being felt and analyzed by the population at large. Therefore, the financial crisis, beyond the great destruction of value on the level of the broad economy and the debilitation of the bank system's financial stability, produced collateral damage of great importance: it significantly reduced the size of the overall financial system and in particular the reputation of the banking sector

[1] In some EU countries, support given was greater than 20% of GDP, such as in Ireland (31.1%) and Greece (22.1%), or it came very close to that percentage, as in Cyprus (18.8%) and Slovenia (18.1%) (ECB, 2015). See also the implications for a country without rescue in Haskamp (2018).

reputation (Jones, 2015; Rowe, 2012). The loss of confidence in the banking system is so prevalent that it was a cliché for Springford (2011). Confidence is not a disposable element of the financial system. On the contrary, as Singh and LaBrosse (2011) stated, it has a very important role in the sustainability of the system; therefore, its loss must continue to have consequences felt in the collection of regulatory solutions.

The idea that the regulation of the financial sector must be rethought does not call forth much protest. On the contrary, the need to reevaluate the process of its regulation is relatively consensual, both amongst those who consider that the crisis is the result of excessive regulation (Nichols et al., 2011; Calabria, 2009) and those who consider that the crisis is the result of deregulation (Stiglitz et al., 2009; Chabrak & Gendron, 2015) or the process of the liberation of the financial markets based on the conviction that they can or should be self-regulated.

Could this call reevaluate banking regulation have already found an echo in published studies on this subject? To ask this question in a different way, can one speak of the study of banking regulations before and after the crisis? This is the main question of this paper, and it will be addressed through an analysis of a volume of published studies and an evaluation of the subjects examined.

In this paper we try to understand the changes in the research published about banking regulation as consequence of the financial crisis started in 2007. The paper is organized, after this introduction section, in five others: Literature review, Methodology, Results and Discussion of the Quantitative Analysis, Results and Discussion of the Keywords Analysis, and Final Considerations.

2. LITERATURA REVIEW

In the 20 years leading up to the 2007 crisis, the financial services went through deep changes, due to deregulation, technological evolution, and globalization, in the opinion of Claessens (2006).

This is not a triad of disconnected factors. On the contrary, there are established cause-effect relations among them. According to White (2000), the evolution of technology, particularly in data processing and telecommunications, allowed the financial sector to enter an era of rapid innovation.

In practice, this allowed financial systems, markets, and institutions to become global. The explosion of banks operating in multiple jurisdictions forced cooperation and coordination between regulatory entities, according to Schooner and Taylor (2010). The Basel accords were a fundamental instrument and the global model of banking regulation developed around them.

Financial systems went through changes that blurred the borders of different jurisdictions and made coordination and cooperation necessary among regulatory and supervisory entities of different countries, causing supranational, specific entities to emerge, such as the Bank for International Settlements (BIS). Some scholars went even further and proposed a global regulator (e.g., Kern, 2001).

2.1. A new paradigm for banking regulation

It was in this framework that the new principles of regulation found their place. They formed a new paradigm, one could say, intended to respond with more effectiveness and efficiency to the demands of a financial system that had very distinct features from the one that had existed in previous decades (Gubler, 2011). This is why most strong supporters of this new paradigm consider the 2007 financial crisis not to be a consequence of deregulation but a result of flaws in the construction of the new regulatory framework for this new paradigm (Stiglitz et al., 2009).

This new paradigm is based on the idea that globalization and technological innovation in banking represent great potential for economic growth (Greenspan, 2004). However, the release of the potential of this innovation was challenged by a certain style of regulation (Greenspan, 2002) that needed to be changed (Greenspan, 2000).

This new model of regulation relied on the models that had been created so far and existent practices of regulation, as it bets on innovation, and that bet necessarily implied a different attitude towards risk (Greenspan, 1997), specifically, approaches more oriented towards risk, competitiveness, and the market. For Greenspan (2000) competition was the facilitator of innovation.

There is a second strand in the construction of this new paradigm of banking regulation in its market orientation, which is related to the inefficiencies that result from information asymmetry (Freixas and Santomero, 2002). Tatom (2011) found that information asymmetry led market agents to make decisions in situations wherein they are not aware of all the elements that could or should be determinant in their decision-making process.

If information asymmetry is reduced, the market shows agents how that agent is evaluated by the market. When the market is aware that a certain agent is an imbalance, which could compromise its future, it shows its concern, through the establishment of higher interest rates for instance or through some other means. This will lead the market agent to resume its balance. Lane (1993) calls this market discipline.

Market discipline has had an important role in the debate over baking regulation since the end of the last century (beyond Lane, 1993, on this question, see Sijben, 2002a; Sijben, 2002b; and Llewellyn and Mayes, 2003). The theme has the merit of addressing and proposing a solution to the moral hazard problem. The most common example for describing the problem and, consequently, the solution is deposit insurance (Lane, 1993). The fact that deposits are insured may lead savers, as they make their deposits, or the receiving institutions of those deposits to become less prudent and less thoughtful about the choices they make ("deposit insurance is associated with weaker market discipline" Barth et al., 2006: p. 138).

According to Lane (1993), market discipline can be achieved through four elements. First, financial markets should be free and open. Second, there should be information available that would allow knowledge of the debtor's financial situation. Third, under no circumstances should debtors in imminent default be bailed out. Fourth, debtors should answer market signals and, if these signals are ignored and the debtor maintains indebtedness, this should provide a clear indication to the market of their unwillingness to fulfill their part.

On a large scale, critics found the recent evolution of banking regulation (neoliberal bias or deregulation and capital market liberalization, Claessens, 2006) lacking in its use of the concept of market discipline. For instance, it was found that it can lead to excessive faith in the rationality of market agents and the belief that they always perform in a rational way (Claessens, 2006).

2.2. The work of the Bank for International Settlements

The BIS, specifically its Basel Committee on Banking Supervision (BCBS), accomplished the most significant part of the definition of the paths that banking regulation will take. This was the product of a continuous process of discussion, establishment of patterns, and evaluation of effects and it had three main milestones: Basel I (with the reference document: BCBS, 1988), Basel II (with the reference document BCBS, 2004), and Basel III (with the reference documents BCBS, 2010a and BCBS, 2010a). The first of the Basel accords focused exclusively on capital requirements. This agreement was the culmination of many years' labor, with the purpose of establishing rules to regulate the capital adequacy of international banks (BCBS, 1988); in other words, it regulated banks that operate in various jurisdictions and whose supervision would be a problem for the banks but also for the regulators and supervisors. The goals of the Basel I accord include strengthening the stability of the international banking system and diminishing competitive asymmetry among international banks (BCBS, 1988: paragraph 3). As is evident, globalization was the cause and the competitiveness and stability of the international banking system were the goals that lead towards the establishment of this accord.

The Basel II accord is possibly the most structured of the three Basel accords, and this fact is fundamentally due to two causes:

– the enlargement of the scope of application, including a wide vision of the risks (not only credit risk, as previously considered, but market risk, which is not present in the original Basel I, and operational risk); and

– the integrated model of the proposed solution; it is not by chance that the image most associated with Basel-II shows the front of a classical Roman domus supported by three pillars (the three pillars of the accords), which the title page of the final document incorporates. The idea conveyed is precisely that of architecture.

The three pillars are minimum capital requirements, supervisory review, and market discipline (Vauhkonen, 2009). The model was based on the idea that capital requirements (pillar 1) could be properly evaluated by the banks through a robust process that could be appropriately examined by supervisors (pillar 2). Last, the two pillars previously mentioned were completed by the demand for disclosure, which assured market discipline (pillar 3). The model was based on an articulation between the three pillars. However, some authors hold that the importance attributed to the different pillars is very unbalanced (e.g., Vauhkonen) and there is an intrinsic imbalance in the model.

The third of the accords resumes the matter of capital requirements, specifically, the problem of procyclicality and its resolution in the establishment of countercyclical buffers. However, beyond this, Basel III addresses the matter of liquidity, establishing a pattern for it (Blundell-Wignall & Atkinson, 2010). Although the Basel III framework includes relevant developments, it will probably not cease to be seen as an immediate reaction to the collection of problems that the crisis initiated in 2007 made evident (Rudin, 2012; for a more complete description of the development process for Basel III and its main features see also Walker, 2011 or Quaglia & Spendzharova, 2017).

In summary, the frame of reference for analyzing the evolution of baking regulations over the last few decades, established in this paper, is of a new regulatory paradigm that

– has globalization and technological innovation as its great drivers;

– has a vision of the financial sector as an engine of economic growth that must be made efficient, a task that is achieved through undistorted market competitiveness, which demands the elimination of obstacles to competitiveness and innovation;

– faces risk evaluation in a different way and considers that it be adequate for maintaining the pace of innovation;

– attributes a new importance to markets and to the competitive dynamic; and

– will have the Basel accords as its main tool. These accords will have a technical side in the prudential sense, namely, capital requirements, risk evaluation models, and countercyclical buffers, and liquidity requirements, but it will also have a regulatory model side, specifically, that stemming from the second and third pillars of Basel II.

3. METHODOLOGY

This paper evaluates the evolution of academic production on banking regulation and supervision. Bibliometric techniques are used to evaluate the published investigation. Frequently, these techniques provide a quantitative evaluation, with the counting of articles, and a qualitative evaluation, through the analyses of keywords (KWs). Examples of studies similar in terms of goals and chosen methods can be found in Romo-Fernández et al. (2013), Lee and Su (2010), Zhang et al. (2015), and Liu et al. (2012).

The study was divided into two parts. In the first part, the quantitative evolution of the published evaluations on banking regulation is assessed. In the second part, it is examined whether the crisis that began in 2007 caused changes in the themes that are the most studied.

To perform the study, a sample of articles was obtained through research in documents that contained the search key term 'banking regulation' OR 'banking supervision' on their topic field (which in practical terms means that this study had access to only the following fields: Title, Abstract, Author, KWs, and KWs plus), on the Web of Science Core Collection of Thompson Reuters.

The preliminary work-related study was performed throughout the fourth quarter of 2015. This study allowed the analytical procedures used in the final sample to be tested. The final study was performed on January 26, 2016, and was limited to articles published before the end of 2015 (timespan: 1900–2015). This last study produced a sample of 323 articles. It is this sample (hereafter called the original sample) that will be the object of analysis.

4. RESULTS AND DISCUSSION OF THE QUANTITATE ANALYSIS

The 323 articles of the original sample were classified into 40 different Web of Science categories. The majority of the articles were focused on five categories, presented in Table 1.

Of the 323 articles of the original sample, 280 (86.69%) were classified into the five indicated categories. These 280 formed a subsample: subsample (A).

Recent years show a larger number of articles (Table 2, second column). This phenomenon may be due to a specific component of the theme of banking regulation to a global increase from newspapers and attached articles. To evaluate which of the two aspects was more significant to the verified growth, an auxiliary study was performed, also on the Web of Science, with the same filters, and with the search key 'bank OR banking'. The results were filtered, and only articles in the previously mentioned five Web of Science categories were considered. A sample of 21,486 articles was obtained. This sample is comparable to subsample (A) (280 articles).

Table 2 presents the data from the last 25 years on the three collections of articles: the original sample on banking regulation and supervision (323 articles); the subsample of the latter in the five considered Web of Science categories (subsample (A)); and the unabridged sample of articles on banking found from the Web of Science in the five considered categories (21,486 articles).

Table 1. Sample articles by web of science categories

Web of science categories	*# of articles(*)*	*% of articles(**)*
Economics	162	50.15%
Business finance	123	38.08%
Law	42	13.00%
Political science	41	12.69%
International relations	26	8.05%
Subsample total (in the five categories)	280	86.69%

Note: (*) Several articles are classified in more than one category. (**) of 323 articles.
Source: Web of Science and author calculations.

Table 2. Comparison of the sample with the total of articles in the five WoS categories indicated in Table 1

Years	*Articles (#323)*		*Articles (#280)*		*Articles (#21,486)*	
Previous to 1991	8	2.48%	8	2.86%	3,274	15.24%
1991	1	0.31%	0	0.00%	187	0.87%
1992	2	0.62%	2	0.71%	286	1.33%
1993	3	0.93%	3	1.07%	286	1.33%
1994	6	1.86%	5	1.79%	343	1.60%
1995	4	1.24%	3	1.07%	349	1.62%
1996	3	0.93%	3	1.07%	385	1.79%
1997	2	0.62%	2	0.71%	390	1.82%
1998	2	0.62%	2	0.71%	451	2.10%
1999	4	1.24%	4	1.43%	537	2.50%
2000	7	2.17%	6	2.14%	508	2.36%
2001	7	2.17%	6	2.14%	466	2.17%
2002	6	1.86%	6	2.14%	507	2.36%
2003	8	2.48%	8	2.86%	512	2.38%
2004	11	3.41%	8	2.86%	530	2.47%
2005	9	2.79%	8	2.86%	549	2.56%
2006	11	3.41%	11	3.93%	687	3.20%
2007	12	3.72%	11	3.93%	705	3.28%
2008	15	4.64%	14	5.00%	957	4.45%
2009	16	4.95%	14	5.00%	1.026	4.78%
2010	19	5.88%	13	4.64%	1.078	5.02%
2011	19	5.88%	16	5.71%	1.286	5.99%
2012	33	10.22%	27	9.64%	1.401	6.52%
2013	36	11.15%	31	11.07%	1.549	7.21%
2014	38	11.76%	32	11.43%	1.605	7.47%
2015	41	12.69%	37	13.21%	1.632	7.60%

Source: Web of Science and author calculations.

As can be verified, there is an increase in the number of published articles, visible in any one of the three considered series. However, in the samples on regulations and banking supervision (original and subsample), an additional increase in published investigations occurred after 2011 (2012 and after), beyond the already mentioned increase.

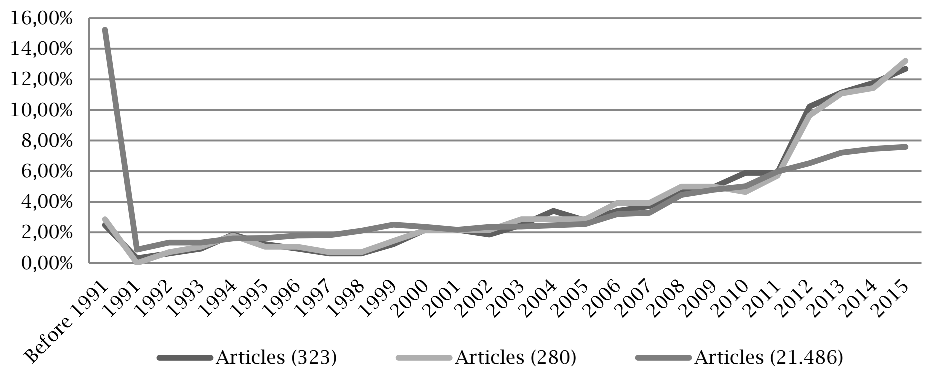
In Figure 1, a change in the pace of publication after 2011 is evident.

The increase in publications that can be observed after 2011 is a result of the increase in an investigation focused on studying the financial crisis. When one studies the original sample (323 articles) and includes the expression 'financial crisis' in the topic field, one obtains the results presented in Table 3.

With this new data, a better perception of the mentioned global evolution was possible. The publication of articles on the financial crisis, which were practically nonexistent before 2011, have a meaningful presence from that year.

Therefore, it is concluded that publication of investigations of banking regulation and supervision increased after the advent of the financial crisis. This increase can be associated with the outburst of lines of investigation precisely focused on the debate of matters related to the financial crisis. Further, the increment is not immediate, rather it waited about four or five years from the first indications of the financial crisis, and only then does a significant increase in the number of published articles become visible.

Figure 1. Evolution of the published articles



Source: Web of Science.

Table 3. Subsample of articles on the financial crisis

Years	*Articles*
2000	1
2003	1
2009	2
2010	1
2011	4
2012	8
2013	6
2014	12
2015	8
Total	**43**

Source: Web of Science.

This time lag is attributed to the delay involved in study design and conducting research as well as to the process of elaboration, editing, and publication.

5. RESULTS AND DISCUSSION OF THE ANALYSIS OF KEYWORDS

For the 323 articles of the original sample, in only 272 were their records of KWs. Therefore, a subsample was built, constituted from these 272 articles (subsample (B)), which will be the object of study.

5.1. Characterization of the sample and description of the procedures

In a subsample(B)'s 272 articles, the number of registered KWs was 2,172, or 7.99 KWs per article. The number of KW per article was divergent throughout the sample: it ranged from a minimum of 1 KW (in 14 articles) to a maximum of 21 KWs in one article. The most frequent numbers were 4 KWs per article (28 occurrences), 6 KWs per article (28 occurrences), 5 KWs per article (26 occurrences), 7 KWs per article (25 occurrences), 8 KWs per article (24 occurrences), and 9 KWs per article (19 occurrences).

In all 1,127 KWs were identified. The three most frequent were banking regulation, which occurred in 82 articles, 'banking supervision', observed in 32, and deposit insurance, which occurred in 23.

An orthographic standardization of the KWs was done. This was done in a similar way to Lee and Su (2010) and Zhang et al. (2015). The standardization included the following changes in KWs: (1) singular/plural standardization (e.g., from bank failure to bank failures); (2) standardization of the use of the hyphen (e.g., from Basel-II to Basel II); (3) standardization of orthographic variations (e.g., from crises to crisis; from Basle II to Basel II); (4) standardization of the use of the terms bank/banking (e.g., from bank regulation to banking regulation); (5) standardization of the use of abbreviations (e.g., from BIS to Bank for International Settlements). Using these criteria, 63 KWs were standardized.

Besides the described procedures, 15 other standardizations were performed, listed in the notes[2], which allowed the elimination of another 28 KWs.

In the standardizations performed, the rule was to always choose the most frequent KWs.

This process led to repetitions of the same KW in the same article, as occurred 42 times in the sample. These repetitions were eliminated, providing a final list of 1,036 KWs used 2,130 times.

After the standardization, a list of the most frequent KWs, (in Table 5), was presented. In the first column is the KW's code number; in the second is the KW; in the third and fourth columns, the numbers of articles having that KW, from before 2012 and after 2011, respectively, are listed; and in the last column, the total number of articles where the KW has occurred is noted. The value of this last column was used to order the table.

While creating this KW list, a threshold was established, or the line under which KWs stopped being considered for analysis. This threshold was defined as a KW occurring in eight articles, which meant that KWs that only occurred in seven or fewer

[2] (1) From Asia Including Middle East or East Asia or Southeast Asia to Asia;
(2) From Basel Accord or Basel Accords or Basle Accord or New Basel Capital Accord to Basel Capital Accord;
(3) From Basel Committee or Basle Committee of Banking Supervision to Basel Committee on Banking Supervision;
(4) From Basel Principles to Basel Core Principles;
(5) From Basel II Accord or Basel II Capital Accord to Basel II;
(6) From capital adequacy or capital adequacy requirements or capital adequacy requirements (CARs) or minimum capital requirements or capital adequacy rules to capital requirements;
(7) From insured deposits to deposit insurance;
(8) From Euro area or Euroland to Eurozone;
(9) From financial-intermediaries to financial intermediation;
(10) From forecasts to forecasting;
(11) From ring-fenced banking to ring-fencing;
(12) From securities to securitization;
(13) From subprime banking crisis or subprime-mortgage financial crisis to sub-prime crisis;
(14) From transitional economies to transition economies;
(15) From bank market discipline to market discipline.

articles were not considered for analysis.

The obtained list is composed of 43 different KWs (4.15% of all KWs), mentioned 680 times altogether (31.92% of occurrences), in 237 articles (86.81% of articles). If the threshold would have been established at a lower number, at seven, for instance, this would implicate the analysis of 12 more KWs and the addition of only five new articles. The trade-off between the complexity of analysis and the KW coverage of the sample articles justifies the indicated value for the threshold.

Some of the KWs did not add any value to the analysis, either because they only reflect the theme of the study (e.g., banking regulation, banking, or financial regulation) or because their meaning is related to aspects which are not the object of study (EU or European Union). Therefore, the following KWs were not considered for analysis: banking regulation, banking supervision, banking, banks, financial regulation, regulation, EU or European Union, and G21 (i.e., JEL code G21: banks, depository institutions, microfinance institutions, and mortgages). The number of KWs for analysis was thus reduced to 35.

The number of articles in the subsample (B) posterior to 2011 (2012, 2013, 2014, and 2015) was 136, and 137 for the entire period preceding (from 1991, when the first article was registered, to 2011). This trend is the fruit of the already mentioned increase in publications in these more recent few years.

Since the two values are practically equal, the incidence of KWs per article in each of the periods can be evaluated through the simple comparison of the number of articles with this keyword belonging to one period of time and then again to the other.

Table 4. Most frequent keywords

id.	*Keyword*	*Before 2012*	*After 2011*	*Total*
	Banking Regulation	*49*	*44*	*93*
	Banking Supervision	*15*	*19*	*34*
1	Capital Requirements	18	12	30
2	Crisis	5	23	28
3	Deposit Insurance	14	10	24
	Banking	*13*	*9*	*22*
4	Market	10	10	20
5	Risk	11	9	20
6	Models	8	10	18
7	Value-at-Risk	13	4	17
	Banks	*10*	*6*	*16*
	Financial Regulation	*1*	*15*	*16*
8	Politics	4	12	16
9	Basel III	1	14	15
10	Competition	5	10	15
11	Financial Crisis	2	13	15
12	Liquidity	8	7	15
13	Financial Stability	6	8	14
14	Information	4	10	14
15	Systemic Risk	3	11	14
16	Governance	6	7	13
	Regulation	*4*	*9*	*13*
17	Basel Capital Accord	11	1	12
18	Basel II	9	3	12
	EU	*4*	*8*	*12*
19	Banking Crisis	6	5	11
20	Management	7	4	11
21	Policy	3	8	11
22	Market Discipline	8	2	10
23	Risk-Taking	4	6	10
24	Central Bank	5	4	9
25	Commercial-Banks	4	5	9
26	Economic-Growth	3	6	9
27	Globalization	4	5	9
28	Regulatory Capture	0	9	9
29	Basel Committee on Banking Supervision	4	4	8
30	Credit	4	4	8
31	Determinants	0	8	8
32	Financial Intermediation	3	5	8
	G21	*3*	*5*	*8*
33	Monetary Policy	2	6	8
34	Risk Management	5	3	8
35	Securitization	2	6	8

Source: Web of Science and author calculations.

5.2. Analysis of the results per KW

In this section, the analysis for each of the 35 most frequent, meaningful KWs in this study is reported. Throughout the analysis, all investigations published through 2011 inclusive will be considered pre-crisis academic production. Likewise, investigations published after 2011 will be considered post-crisis, in accordance with to what has been stated in previous sections of this paper.

In comparing academic production pre- and post-crisis, it was noted when 75% or more of articles within a period share a KW.

The most frequent KW is capital requirements. This subject was already relevant before the Basel accords and was very important in them. It is a core theme in banking regulation. There were no drastic changes between the pre- and post-crisis pace of publication on this subject (three out of five articles were published through 2011).

The second most frequent KW is a crisis. If one also includes the occurrence of the financial crisis (no. 11) and banking (no. 19), there is a total of 56 occurrences in articles, with 41 occurrences after 2011, and 15 in the previous period. As has been shown, there is a large disparity between the use of these KWs before and after the crisis. This is quite normal, according to the results shown in Table 3. It is important to mention that the theme was already appearing regularly in the literature before the crisis.

The third most used KW was deposit insurance. It is the only one of the KWs that is directly connected to matters of consumer protection. These matters gained momentum after the 2007 crisis. For instance, in the United States, besides the already existent entity that dealt with the matter of insurance of deposits, the Federal Deposit Insurance Corporation, an agency was created to specifically deal with the matter of protection of clients of financial services: the Consumer Financial Protection Bureau (CFPB). Out this experience, new approaches and new opportunities for investigation of banking regulation resulted.

However, the matter of deposit insurance cannot only be evaluated in terms of consumer protection, as it entails important consequences for moral hazard. Thus, it is expected that this would be mirrored in research agendas.

The fourth most important KW is market, which was found in 20 articles. This KW was associated with six others related either to business, such as politics (no. 8), competition (id 13), and information (id 15), or to aspects concerning global management, such as governance (no. 17), management (no. 22), and policy (no. 23). These KWs are not specific to banking regulations. Other similar studies concerning an investigation in other areas of knowledge have also found a high frequency in the use of these KWs, or at least some of them. Different quartets of these seven KWs occurred in Liu et al. (2012) (politics, governance, management, and policy), in Zhang et al. (2015) (management, information, policy, and politics), and in Ronda-Pupo (2015) (competition, information, policy, and market).

No significant differences between pre-crisis production and post-crisis production were found, with the exception of the KW politics, which occurred in 12 articles before 2011 and in only 4 before 2012. This could indicate that the response to the crisis had a political dimension and that this fact was properly considered by investigators.

Like the market, risk occurs in the KWs of 20 articles. It can also be found within other frequent KWs: value-at-risk (no. 7), systemic risk (no. 14), risk-taking (no. 25), and risk management (no. 33). In aggregate terms, the risk is a concept present in KWs in the analyzed literature, occurring in a total of 69 articles either alone or within one of the four mentioned KWs. It is observed more significantly in value-at-risk in the period before the crisis and in systemic risk in more recent years.

The sixth most frequent KW was models. The use of KWs to describe the nature of the method used in the study is common in academic papers. The occurrence of models or determinants (no. 34) is the reflection of this practice. Zhang et al. (2015) also found these two KWs to be among the most frequent in their sample of 4,575 papers. The KW models were used in the same way before and after the crisis. However, determinants appeared only in papers published after 2011.

The ninth most frequent is Basel III. This is just the first of four KWs related to the Basel accords. The others are Basel Capital Accords (no. 19), Basel II (no. 20), Basel Committee on Banking Supervision (no. 29), with a total of 47 occurrences in articles. After risk, this is the subject with the most KWs and with the largest number of occurrences. The importance of BIS in the recent evolution of banking regulation, and in particular of the BCBS, is very significant. Naturally, Basel III is the KW used over the last few years, and Basel II and Basel Capital Accord are the KWs used in the previous period of time. Last, the reference to the BCBS was as frequent over the last few years as it was in previous years.

In addition, liquidity occurs in 15 articles. The idea that this last subject emerged with Basel III itself is contradicted by the facts showing it was already frequently used in the literature on banking regulation.

The 13th most frequent word is financial stability. To simplify the analysis, it was joined with economic growth (no. 26), globalization (no. 27), and monetary policy (no. 33) creating a cluster of KWs related to economic themes. Altogether, these four KWs were used in 40 articles. Only one of them, monetary policy, registered a preponderance of publications in one of the periods: publications from more recent years (after 2011) were 75% of the total (six out of eight). The centrality of bank activity in the economy justifies the significant presence of these KWs on the list.

The 22nd most used KW was market discipline. It appears mostly after 2012, which means that the concept was present, particularly in the period of Basel II, where, as it is known, it had a central position. Market discipline is intrinsically connected to the moral hazard problem. Not only there are no indications that the developments introduced by Basel II in this area solved the problem, but also the outbreak of the financial crisis reveals its persistence. Therefore, it is expected that the theme would regain importance and find solid ground in investigations and in literature in the future.

With references in nine articles, the KWs central bank and commercial banks are in the 24th and 25th positions, respectively. They establish the natural space of banking regulation and supervision: the relation between the commercial bank (regulated) and the central bank (regulator). This is the most common model of regulation in banking and it has, in fact, gained predominance during the post-crisis period, as Melecky and Podpiera (2015) showed.

Found in nine articles is the KW regulatory capture (no. 28). Its importance is much larger than its relative position, because it refers to an effective regulation problem, as a market discipline does. It is symptomatic that the theme only appeared in literature after 2011, in the time of recovery from the financial crisis. There are indications that the theme is becoming more current, especially in the public pronunciations of supervisors (e.g., Dudley, 2014; Visco, 2013). It is probable that the subject has been on the agenda for debates on banking regulation for a large amount of time and that it has moved on from speech to action.

The last KWs on the list are related to the banking business: credit (no. 30), financial intermediation (no. 32), and securitization (no. 35). Each of these KWs occurs in eight articles.

It should be pointed out that only securitization presents more frequent occurrences over the last years (six out of eight). The other two KWs do not present significant differences in their frequency per period.

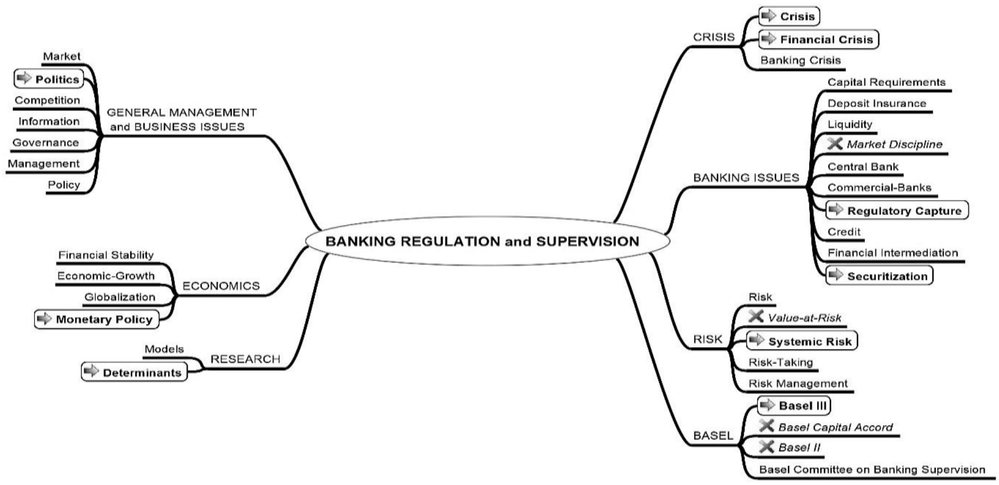
Its more frequent occurrences prove the importance of securitization to the current banking business. This added importance is associated with changes in the core model of the banking business. Traditionally, banks received deposits from one side and channeled such financial means into credit, the classic financial intermediation. This way of doing banking business evolved to much more complex models on a large scale through the practices of securitization. In the traditional model, the risk was confined to the agents (this is where the additional protection of the depositors comes from, in the sense that they had the most exposed role). However, in new models of the banking business, the complexity of the connections makes risk restraint much harder (e.g., Markose et al., 2012). Alluring opportunities for investigation will surely be found here.

Figure 2 summarizes the obtained results. It shows the 35 most frequent KWs. Some KWs are highlighted because of they

– have gained importance over the last few years (shown with the KW's name in bold with a solid line around it and with an arrow [→] preceding it);

– have lost importance over the last few years (shown in italics with a mark [X] before the KW).

Figure 2. The keywords map on banking regulation and supervision



Source: Author.

This figure is as it were a genetic map for banking regulation and supervision. As it can be verified, recent changes in some banking 'genes' have been found, as a result of changes in the environment in which regulation is produced and developed. Time will tell whether these changes correspond to lasting mutations or just momentary adjustments, whether the changes are restricted to those found or if other 'genes' will change as well.

A final note, which is not related to the presented KWs but is related to certain absences or barely approached themes.

The study allowed the identification of various theme collections, whose KWs dominate the literature, such as banking issues, risk, and Basel, as well as crisis, economics, management, and research. The most surprising fact is the absence of a collection on one of the themes of banking regulation, where perhaps market discipline, regulatory capture, and, for instance, moral hazard could be included (related to this subject, the following KWs were registered: dynamic moral hazard [once], moral hazard and bank supervision [once], and moral hazard [six times]) or self-regulation (for this theme, the following KW have been identified: enforced, self-regulation, market self-regulation, and self-regulation, with only one occurrence for each), or where the meaning of new institutions in banking regulation could be discussed, such as the Financial Conduct Authority in the United Kingdom or the already mentioned CFPB in the USA.

6. FINAL CONSIDERATIONS

The evolution of recent investigations into banking regulation was examined in this study. The volume of production and KWs used in published articles on the theme were analyzed. The study found a growth in the investigations published, which is most evident after 2011. This indicates the existence of a time gap of about four or five years between the first signs of the phenomenon (crisis) and the boom of publications where a phenomenon is an object of study.

A stable core of the 35 most used KWs was established. These KWs describe the majority of published investigations on the theme well. On this most frequent KWs list, a change concerning focuses of interest is verified, with the growth of themes such as politics, Basel III, systemic risk, and regulatory capture. On the opposite side, KWs associated with value-at-risk, with the Basel Accords, particularly, Basel II, Basel Capital Accord, and market discipline lost some ground in the literature.

The analysis proves the importance of the Basel Accords and the centrality of BIS in developing banking regulation. Besides the central importance of BIS, the following were also found in relevant strands:

– the nature of banking, including such themes as capital requirements, deposit insurance, risk (several dimensions), liquidity, credit, and securitization:

– economic issues, including financial stability, economic growth, globalization, and monetary policy; and

– business and management, connected with the themes market, competition, information, governance, and management.

In answer to the question asked at the beginning of this paper, one can, in fact, observe changes either quantitatively, or in the contents of in published investigation on banking regulation and supervision before and after the crisis.

Over the last few decades, banking regulations have suffered profound changes. The agenda for the process of implementation of these changes, the evaluation of their impact and the establishment of new methods of regulation were, on a large scale, defined by regulator forums or institutions of a similar nature. In this debate, the academy appeared to be more reactive than proactive. As a consequence, its research agenda frequently reflected themes and subjects established by other forums and other institutions. It is important to the academy to recover its role of a relevant player in the debate on banking regulation, because only the academy can bring to this debate its own particular contribution, derived from the diversity of points of view that exist within it and from the autonomy with which these points of view can be expressed.

The dynamics of an area of knowledge is influenced by many factors. Analyzing the content of the articles published in this area gives us some understanding about these dynamics, however, the analysis must be complemented by deeper studies.

Banking regulation has evolved a lot in recent years, with the emergence of new players – e.g. Basel Committee on Banking Supervision - and new regulatory frameworks - Basel I, Basel II, or Basel II. It is important to stay focused on investigating these issues so that these regulatory processes do not evolve far away from academy scrutiny.

REFERENCES

1. Ban, C., Seabrooke, L., & Freitas, S. (2016). Grey matter in shadow banking: international organizations and expert strategies in global financial governance. *Review of International Political Economy, 23(6),* 1001-1033. https://doi.org/10.1080/09692290.2016.1235599
2. Barth, J. R., Gerard, Jr. C., & Levine, R. (2006). *Rethinking bank regulation*: *Till angels govern.* Cambridge: Cambridge University Press.
3. BCBS. (1988). *International convergence of capital measurement and capital standards.* Basel, Switzerland: Basel Committee on Banking Supervision. Retrieved from the World Wide Web: https://www.bis.org/publ/bcbs04a.pdf
4. BCBS. (2004). *International convergence of capital measurement and capital standards. A revised framework.* Basel, Switzerland: Basel Committee on Banking Supervision. Retrieved from the World Wide Web: https://www.bis.org/publ/bcbs107.pdf
5. BCBS. (2010a). *Basel III: International framework for liquidity risk measurement, standards and monitoring.* Basel, Switzerland: Basel Committee on Banking Supervision. Retrieved from the World Wide Web: https://www.bis.org/publ/bcbs188.pdf
6. BCBS. (2010b). *Basel III: A global regulatory framework for more resilient banks and banking systems.* Basel, Switzerland: Basel Committee on Banking Supervision. Retrieved from the World Wide Web: https://www.bis.org/publ/bcbs189_dec2010.pdf
7. Blundell-Wignall, A., & Atkinson, P. (2010). Thinking beyond Basel III: Necessary solutions for capital and liquidity. *OECD Journal: Financial Market Trends, 2010(1),* 9-33. http://dx.doi.org/10.1787/fmt-2010-5km7k9tpcjmn
8. Calabria, M. A. (2009). Did deregulation cause the financial crisis? *Cato Policy Report, 31(4),* 5-8.
9. Chabrak, N., & Gendron, Y. (2015). Promoting research from the 'periphery': Engaging critically with the Global Financial Crisis. *Critical Perspectives on Accounting, 30(July),* 1-8. https://doi.org/10.1016/j.cpa.2015.01.002
10. Claessens, S. (2006). *Current challenges in financial regulation* (World Bank Policy Research Working Paper 4103). Washington, DC: World Bank. https://doi.org/10.1596/1813-9450-4103
11. Dudley, W. C. (2014). *Improving financial institution supervision: Examining and addressing regulatory capture.* Retrieved from the World Wide Web: http://www.bis.org/review/r141125a.html
12. European Central Bank (ECB). (2015). The fiscal impact of financial sector support during the crisis. *Economic Bulletin, 6,* 74-87. Retrieved from the World Wide Web: https://www.ecb.europa.eu/home/html/index.en.html
13. Freixas, X., & Santomero, A. M. (2002). *An overall perspective on banking regulation* (Working Paper No. 02-1, Federal Reserve Bank of Philadelphia). Retrieved from the World Wide Web: https://ideas.repec.org/p/fip/fedpwp/02-1.html
14. Greenspan, A. (1997). *The evolution of banking in a market economy.* Retrieved from the World Wide Web: http:// www.bis.org/review/r970502b.pdf
15. Greenspan, A. (2000). *Technology and financial services.* Retrieved from the World Wide Web: http://www.bis.org/review/r000417a.pdf
16. Greenspan, A. (2002) *Regulation, innovation and wealth creation.* Retrieved from the World Wide Web: http://www.bis.org/review/r020925b.pdf
17. Greenspan, A. (2004). *Globalisation and innovation.* Retrieved from the World Wide Web: http://www.bis.org/review/r040512a.pdf
18. Gubler, Z. J. (2011). The financial innovation process: Theory and application. *Delaware Journal of Corporate Law, 36(1),* 55-119. Retrieved from the World Wide Web: http://www.djcl.org/2011-%E2%80%A2-volume-36-%E2%80%A2-number-1-2

19. Haskamp, U. (2018). Spillovers of banking regulation: the effect of the German bank levy on the lending rates of regional banks and their local competitors. *International Economics and Economic Policy, 15(2),* 449-466. https://doi.org/10.1007/s10368-017-0404-4
20. IMF (International Monetary Fund). (2013). *European Union: Publication of financial sector assessment program documentation – Technical note on progress with bank restructuring and resolution in Europe* (IMF Country Report No. 13/67). Washington, DC: International Monetary Fund. Retrieved from the World Wide Web: https://www.imf.org/external/pubs/ft/scr/2013/cr1367.pdf
21. Jones, J. M. (2015). *Ratings of U.S. banking industry level off, Gallup.* Retrieved from the World Wide Web: http://www.gallup.com/poll/184916/ratings-banking-industry-level-off.aspx
22. Kern, A. (2001). The need for efficient international financial regulation and the role of a global supervisor. *Journal of Money Laundering Control, 5(1),* 52-65. https://doi.org/10.1108/eb027293
23. Lane, T. D. (1993). Market discipline. *IMF Staff Papers, 40(1),* 53-88. Washington, D.C.: International Monetary Fund.
24. Le, P.-C., & Su, H.-N. (2010). Investigating the structure of regional innovation system research through keyword co-occurrence and social network analysis. *Innovation 12(1),* 26-40. https://doi.org/10.5172/impp.12.1.26
25. Liu, X., Hong, S., & Liu, Y. (2012). A bibliometric analysis of 20 years of globalization research: 1990–2009. *Globalizations, 9(2),* 195-210. https://doi.org/10.1080/14747731.2012.658256
26. Llewellyn, D. T., & Mayes, D. G. (2003). *The role of market discipline in handling problem banks.* Retrieved from the World Wide Web: https://core.ac.uk/download/pdf/6603876.pdf
27. Markose, S., Giansante, S., & Shaghaghi, A. R. (2012).Too interconnected to fail' financial network of US CDS market: Topological fragility and systemic risk. *Journal of Economic Behavior & Organization, 83(3),* 627-646. https://doi.org/10.1016/j.jebo.2012.05.016
28. Melecky, M., & Podpiera, A. M. (2015). *Placing bank supervision in the central bank: Implications for financial stability based on evidence from the global crisis* (Policy Research Working Paper, No. 7320, World Bank, Washington, DC). Retrieved from the World Wide Web: http://hdl.handle.net/10986/22196
29. Milne, A., & Wood, G. E. (2008). Banking crisis solutions old and new. *Federal Reserve Bank of St. Louis Review, 90(5),* 517-530. https://doi.org/10.20955/r.90.517-530
30. Nichols, M. W., Hendrickson, J. M., & Griffith, K. (2011). Was the financial crisis the result of ineffective policy and too much regulation? An empirical investigation. *Journal of Banking Regulation, 12(3),* 236-251. https://doi.org/10.1057/jbr.2011.3
31. Pereira Pedro, C, Ramalho, J. J. S., & da Silva, J. V. (2018). The main determinants of banking crises in OECD countries. *Review of World Economics, 154(1),* 203-227. https://doi.org/10.1007/s10290-017-0294-0
32. Quaglia, L., & Spendzharova, A. (2017). Post-crisis reforms in banking: Regulators at the interface between domestic and international governance. *Regulation & Governance, 11(4),* 422-437. https://doi.org/10.1111/rego.12157
33. Romo-Fernández, L. M., Guerrero-Bote, V. P., & Moya-Anegón, F. (2013). Co-word based thematic analysis of renewable energy (1990-2010). *Scientometrics, 97(3),* 743-765. https://doi.org/10.1007/s11192-013-1009-5
34. Ronda-Pupo, G. A. (2015). Growth and consolidation of strategic management research: insights for the future development of strategic management. *Academy of Strategic Management Journal, 14(2),* 155-169.
35. Rowe, O. (2012). *Case study. Reputation of banking.* Retrieved from the World Wide: http://cdn.yougov.com/cumulus_uploads/document/tlgxb3zoa8/Reputation_case_study.pdf
36. Rudin, J. N. (2012). Basel III: The banking Band-Aid? *Brooklyn Journal of Corporate, Financial & Commercial Law, 6(2),* 621-647.
37. Schooner, H. M., & Taylor, M. W. (2010). *Global bank regulation: Principles and policies.* Burlington, MA: Elsevier. https://doi.org/10.1016/C2009-0-22537-2
38. Sijben, J. J. (2002a). Regulation and market discipline in banking supervision: An overview – Part 1. *Journal of International Banking Regulation, 3(4),* 363-380. https://doi.org/10.1057/palgrave.jbr.2340125
39. Sijben, J. J. (2002b). Regulation and market discipline in banking supervision: An overview – Part 2. *Journal of International Banking Regulation, 4(1),* 55-71. https://doi.org/10.1057/palgrave.jbr.2340130
40. Singh, D., & LaBrosse, J. R. (2011). Developing a framework for effective financial crisis management. *OECD Journal: Financial Market Trends, 2011(2),* 1-30. Retrieved from the World Wide Web: https://www.oecd.org/finance/financial-markets/49191776.pdf
41. Springford, J. (Ed.). (2011). *A confidence crisis? Restoring trust in financial services.* London: Social Market Foundation.
42. Stiglitz, J., Bougrov, A., Boutros-Ghali, Y., Fitoussi, J. P., Goodhart, C. A., Johnson, R., & Persaud, A. (2009). *Report of the commission of experts of the President of the United Nations General Assembly on reforms of the international monetary and financial system.* Retrieved from the World Wide Web: http://www.un.org/ga/econcrisissummit/docs/FinalReport_CoE.pdf
43. Tatom, J. A. (Ed.). (2011). Financial legislation: The promise and record of the financial modernization act of 1999. In *Financial market regulation*: *Legislation and implications* (pp. 3-17). New York: Springer. https://doi.org/10.1007/978-1-4419-6637-7
44. Vauhkonen, J. (2009). *Bank safety under Basel II capital requirements* (Bank of Finland Research, Discussion Papers, No. 29/2009). http://dx.doi.org/10.2139/ssrn.1513239
45. Visco, I. (2013). *The financial sector after the crisis.* Retrieved from the World Wide Web: https://www.bancaditalia.it/pubblicazioni/interventi-governatore/integov2013/Visco_05032013.pdf
46. Walker, G. A. (2011). Basel III market and regulatory compromise. *Journal of Banking Regulation, 12(2),* 95-99. https://doi.org/10.1057/jbr.2011.4
47. White, L. J. (2000). Technological change, financial innovation, and financial regulation in the US: The challenge for public policy. In P. Harker, & S. Zenios (Eds.), *The performance of financial institutions.* Cambridge: Cambridge University Press.
48. Zhang, W., Zhang, Q., Yu, B., & Zhao, L. (2015). Knowledge map of creativity research based on keywords network and co-word analysis, 1992-2011. *Quality & Quantity, 49(3),* 1023-1038. https://doi.org/10.1007/s11135-014-0032-9