Half century of academic production in Capital Market in Brazil in high impact journals

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ABSTRACT

This article presents an analysis of the Brazilian scientific research in Capital Markets, from 1961 to 2016, published in journals of high impact in the area of Administration, Accounting and Tourism. We intend to outline a research profile in Capital Markets from journals with A2 impact factor classification according to the Qualis/CAPES list in 2010, as well as the specific periodicals of the area such as RBFin, RBMEC, CE and RC&F. Methodologically, this is an empirical study with bibliometric investigation, longitudinal temporal cross-section, quantitative approach and a statistical non-probabilistic sampling, descriptive regarding the purpose, and documental regarding the means. As main results, capital market articles represented 458 papers (6.12%) of the 7,489 papers published in these journals, produced by 607 authors in 12 different Brazilian scientific journals, emphasizing that the Brazilian production represents only 43% of foreign production, that is, 13,053 articles of 91,684 articles. The RBFin, RC&F, RBMEC and RAE (Print) published, respectively, the majority of the articles, with the RBFin being the journal that stood out with 28% of the scientific production in the studied period. Therefore, the scientific production of Capital Markets appears to be very concentrated in few individuals, in institutions of the southeast and south regions and published, mostly, in specific scientific periodicals.

Keywords: Capital Market, Finances, Academic production, Bibliometric study, Brazilian journals.

1. INTRODUCTION

Economies need growth and development to provide their agents with a better standard of living. For this expansion to occur, companies need to make investments to accumulate productive capital and increase their productivity. Investments in economies can be considered as the driving force behind economic growth. The study of Capital Market is relevant to understand the mechanisms of channeling of savings for productive investment, as well as the efficiency of these allocations. The Capital Market offers several financing instruments in the medium and long term to meet the needs of economic agents, such as securities (debentures and shares) and structured funds (Credit Rights Investment

Funds – FIDCs, Equity Investment Funds – EIF and Investment Funds in Emerging Companies – IFEC).

The Capital Markets area includes scholars from Administration, Economics, Accounting, Production Engineering, Mathematics and Statistics, among others. Scientific journals, in especial as well as textbooks, are sources of dissemination, exposure of ideas and development of knowledge, regardless of the academic area of the researchers. For this to occur, the authors' publications are related to the circulation of ideas in such sources (HOFFMAN; HOLBROOK, 1993; SOUZA *et al.*, 2008).

Investigating the production of a field is important, since it can reveal: (a) thematic trends; (b) the most productive teaching and research institutions; (c) the most prominent authors; (d) the most cited articles; (e) the repeated research questions; and (f) future research paths. The bibliometric model allows analyzing evolutionary productivity considering previous studies, i.e., it measures the development, characteristics and productivity of authors of scientific articles in a particular area (LEAL, ALMEIDA; BORTOLON, 2013).

With the aim of contributing to the advancement of Science and Technology (S&T), in particular capital market research, in addition to disseminating new sources of discussion, the present study had the objective of tracing a profile of the research in Capital Markets in Brazil, in the period from 1961 to 2016, in the high impact journals with A2 impact factor classification by the Administration, Accounting and Tourism areas at Qualis/CAPES in 2010, as well as the specific journals of the area RBFin, RBMEC, CE and RC&F. Therefore, we try to identify the most frequent vehicles of publication of studies, who they are and where the main researchers work.

Thus, this article is structured in 4 sections, besides the introduction. In the second part, we present the theoretical and empirical bases of the study, in the third section we present the methodological procedures, followed by the analysis and presentation of the results and, finally, the final considerations.

2. THEORETICAL AND EMPIRICAL BASES OF THE STUDY

The question of academic productivity in the various fields of knowledge has been a constant target of research, including the Capital Markets area, with a predominance of themes about the difficulties and facilities of knowledge production in the form of scientific articles. In this regard, Chan, Chen and Fung (2009) examined the effects of pedigree and placement on productivity in finance, and found results that suggest that researchers linked to reputable institutions (termed by the authors as elite institutions) tend to be more productive, especially when we consider journals of greater impact.

The study of issues associated with studies published in journals specialized in Finance is an already existing topic in the literature (OLTHETEN; THEOHARAKIS; TRAVLOS, 2005). Chan, Chen and Lung (2007) studied results of international research in Finance, published in the period 1990-2004. Other research since then have devoted attention to the understanding of standards of published work in the field of Finance, with Hardin III *et al.* (2008) being highlighted, which analyzed the impact of participation in editorial boards of scientific journals on research productivity.

In Brazil, the area of Finance has also been contemplated with bibliometric research, such as the one undertaken in this article, as shown in Table 1.

Table 1 shows that only one article dealt specifically with the scientific production related to the Capital Market.

Table 1. Literature Review

Authors	Purpose	Considerations/Conclusions
Leal, Oliveira and Soluri (2003)	To analyze a sample of 551 articles from the finance area published in journals, in addition to the 264 articles included in the Annals of the Enanpad between 1974 and 2001.	Finance research in Brazil seems to be less productive than in the US, for example. The number of authors with more than one article is lower than that estimated by bibliometric models. Most of these authors are linked to institutions in Rio de Janeiro, São Paulo and Rio Grande do Sul, in that order.
Camargos, Coutinho and Amaral (2005)	To survey the scientific production in the area of Finance in Brazil based on the analysis of the 171 articles published in the annals of the National Meeting of ANPAD between the years of 2000 and 2004.	With regard to the authors' demographics, the prevalence of men was noted, with 82.16% of published studies, compared to only 17.84% of women. In addition, there is a strong concentration of Finance publications in institutions in the Southeast region with 68.41% of the total, especially in the states of São Paulo (30.52%) and Rio de Janeiro (24.85%). Most of the articles had up to two authors, with 74.85%. In addition, the number of publications in a foreign language (English) was still low at the time, only 12.06% of the total.
Matsumoto et al. (2008)	Analyze the publications in the area of finance of the main management joournals in recent years (2000 to 2007).	The results suggest that there are a large number of research groups in the area, and most of the publications are co-authored, highlighting the growing complexity of the area and the greater facility of establishing co-authoring.
Camargos, Castro Silva and Dias (2009)	To survey the scientific production of the area of finance in Brazil, in the 391 articles published in the annals of the main congress of the area of Administration, the National Meeting of the National Association of Graduate Studies in Administration (Enanpad) between 2000 and 2008.	It was found that the distribution of academic production is still concentrated in a few institutions and in three states (São Paulo, Rio de Janeiro and Minas Gerais). The mainstream of the area remains the subarea of corporate finance, responsible for almost a third of production in the period, followed by investment and financial markets and capital markets. The number of authors who published only one article in the analyzed period is higher than predicted by bibliometric theory, evidenced by the estimated Lotka coefficient. The articles, mainly in other languages, were the most used references, followed by books and theses, dissertations and monographs; the main national journals have a low impact on the academic production of the period, being little cited (average of 0.89 citations per article), far from the reality of foreign journals.
Nascimento, Pereira and Toledo Filho (2010)	To draw a longitudinal overview of the scientific production in journals related to the capital market.	(i) the journal with the largest number of publications was the Journal of Accounting and Finance, classified as "B1"; (ii) Regarding the theme, the most recurrent subject mentions shares; (iii) only 2 authors stood out as more prolific; (iv) the networks of collaboration between the authors, were dispersed and with weak ties; and (v) in relation to the similarity between the institutions and their respective location, it is verified that 28 educational institutions are located in the periphery, with only the University of São Paulo being downtown.
Leal, Almeida and Bortolon (2013)	To make a quantitative and qualitative bibliographic evaluation of 461 articles of finance published in 11 national scientific journals, through surveys on co-authoring, thematic areas and an analysis of authors' productivity.	Productivity remained concentrated on few individuals and in institutions in the Southeast and South regions, as in previous studies, and it is lower than that suggested by the bibliometric theory and the empirical evidence of the area of Finances in the USA. Most authors published only one article, and only 5% published five or more. Most of the prolific authors' international articles are from low impact journals. The lack of theoretical and methodological innovation hinders international impact publications.
Mendes-da-Silva, Onusic and Giglio (2013)	To analyze the structural properties of networks of relations among researchers in the area of Finance in Brazil in 11 journals selected using criteria adopted by Leal, Almeida and Bortolon (2013), adding to the Brazilian Business Review (BBR) journal classified as A2 in Qualis/Capes at the time of the development of this study.	(a) the Brazilian environment has structural characteristics that indicate the existence of Small Worlds; (b) a small portion (~3%) of researchers presents regular production; (c) the greater the researchers' centrality in the network, the greater the number of articles published by them.

Source: Authors' own elaboration.

In the specific case of the Capital Markets area, Nascimento, Pereira and Toledo Filho (2010) undertook an analysis of accounting journals, from 1998 to 2008, with the same focus. However, the authors limited the research using as criterion the academic publications specifically of the accounting area, which characterized the sample with classification journals in Qualis/CAPES of levels B1 to C.

Matsumoto *et al.* (2008) also analyzed periodicals, however from the administration area. We evaluated 158 publications from 4 Brazilian journals, between January 2000 and December 2007.

In the studies carried out by Camargos, Coutinho and Amaral (2005) the authors used scientific articles from the area of Finance published in the annals of the Meeting of the National Association of Postgraduate and Research in Administration (EnANPAD) between 2000 and 2004. Further on in 2009, Camargos, Castro Silva and Dias increased the sample to 391 articles published in the annals of EnANPAD, covering the period from 2000 to 2008.

Leal, Oliveira and Soluri (2003) analyzed a sample covering Finance articles published in the 5 main journals, according to the authors' classification, in addition to articles published in EnANPAD. This study is considered the first scientific production in Finance in Brazil. The authors based on 25 years of consultation, from 1974 to 2001, consisting of 815 articles.

Leal, Almeida and Bortolon (2013) examined the sample of Leal, Oliveira and Soluri (2003), adding a few more journals from the Administration area and related areas that publish Finance articles from time to time, in the period from 2000 to 2010, totaling 11 scientific journals.

In order to contribute to the research on Finance in Brazil, Mendes-da-Silva, Onusic and Giglio (2013) based their article on criteria used by Leal, Almeida and Bortolon (2013), adding a journal classified as A2, according to Qualis/CAPES. To do so, they analyzed 12 Brazilian journals and 532 articles, from 2003 to 2012.

Tracing the profile of a certain area in this sense is not a new fact. In Capital Markets, however, no such study is known in the country. In light of this, in the next topics, we present the methodology, demonstrating how to collect and process data, as well as analyzes and results of the present study.

3. METHODOLOGY

The present study is a bibliometric investigation. According to Borschiver and Guedes (2005, p. 15),

> Bibliometrics is a statistical tool that allows mapping and generating different indicators of treatment and management of information and knowledge, especially in scientific and technological information and communication systems, and productivity, necessary for planning, evaluation and management of science and technology, of a particular scientific community or country.

Therefore, this bibliometric research is an empirical, longitudinal temporal cross-section study and a non-probabilistic statistical sampling and, to explain the type of research, we adopted the taxonomy proposed by Vergara (2011), which establishes it according to two criteria, namely: as regards the end and means.

Regarding the ends, this study is characterized as descriptive. According to Vergara (2011), this type of research is the exposition of characteristics of a certain population or of a certain phenomenon, which can also establish correlations between variables and define their nature, describing the results from the analysis of their observation.

Therefore, we intend to examine and describe the state of the art, with regard to the Capital Market. The data come from Brazilian scientific journals, from the area of Administration, Accounting, Tourism, and related areas that publish Capital Market articles from time to time. It should be emphasized that the criterion for choice were publications in journals classified A2 impact factor according to the Qualis/CAPES list in 2010, as well as area-specific journals such as RBFin, RC&F and RBMEC. In the specific case of the Brazilian Capital Market Journal (RBMEC), despite its uneven publication in the 1970s and 1980s and subsequent extinction, it has been one of the main vehicles for publicizing the academic work of finance in the country for many years and, therefore, we included it in the analysis. It used an editorial committee, with an occasional blind review process.

It is also pointed out that for the selection of foreign journals (Qualis A1), the Qualis/CAPES list was also used as a criterion in 2010, including the adherence of studies in the area of finance, economics and related areas.

As for the media, it is a documentary research that, according to Vergara (2011), is an investigation made from documents and data of any nature made available by the organization. In the present study, the data were obtained through the articles made available on the Internet by academic institutions in their journals, namely: Brazilian Administration Review (BAR); Brazilian Business Review (BBR); *Revista de Administração e Contabilidade* (RAC); *Revista de Administração e Contabilidade Eletrônica* (RAC-e); *Revista de Administração e Economia* (RAE); *Revista de Administração e Economia Impresso* (RAE – Print); *Revista de Administração da Universidade de São Paulo* (RAUSP); *Revista Brasileira de Economia* (RBE); Revista Brasileira de Finanças (RBFin); *Revista Brasileira do Mercado de Capitais* (RBMEC); *Revista de Contabilidade e Finanças* (RC&F) and its previous edition called *Caderno de Estudos* (CE).

We also point out that as parameters adopted for the survey of articles within journals, in addition to the individual examination in each published study, the recruitment of the articles was due to the consistency and adherence, the most common terms used in capital market articles, based on the titles, abstracts, keywords and texts of the surveys.

It is also a study of quantitative approach. According to Richardson (2004), the approach from representative samples applied to the statistical analyzes, the data are quantified in search of a conclusive distinction. In this research, the data were treated by means of descriptive statistical analysis using Excel software® (Microsoft).

We emphasize that in the second moment we verify if the frequency of the production of the authors comes from a distribution of the Poisson's Lagrangian type, establishing the 95% confidence level, as well as testing the hypothesis in Table 2:

Table 2. Research and evaluation hypotheses

Hypothesis	Procedure	Evaluation
If $X^2 > X^2_{,05}$	Rejection of the null hypothesis	Do not reject H_a
If $X^2 < X^2_{,05}$	Non-Rejection of the null hypothesis	Reject H_a

Source: Authors own elaboration.

Given this, it is necessary to present and analyze the results, which is established in the next topic.

4. PRESENTATION AND ANALYSIS OF RESULTS

The data used in this study reflect a total set of 454 articles published in the Capital Markets area, by 606 authors, in 11 different Brazilian scientific journals in the period 1961-2016.

Based on the presented in Table 3, we can identify that 6.12% are specifically about capital markets, with regard to articles produced in Brazil, in journals with higher rankings (predominantly A2). Possibly this result is consistent with the Brazilian profile in the capital market, and it is possible to establish a comparison with Table 4:

Table 3. Total number of articles and capital market articles in national journals

Journal	Classification	Number of articles	Number of copies	Articles by Issue	Number of Capital Market Articles	% of Capital Market Articles
1. BAR	A2	253	45	6	2	0.79%
2. BBR	A2	291	45	6	31	10.65%
3. RAC	A2	796	45	6	32	4.02%
4. RAC-e	A2	71	7	8	4	5.63%
5. RAE (PRINT)	A2	1868	251	7	52	2.78%
6. RAE	A2	161	18	9	17	10.56%
7. RAUSP	A2	1558	158	10	49	3.15%
8. RBE	A2	1622	279	6	0	0.00%
9. RBFin	B1	231	45	5	128	55.41%
10. RBMEC	–	212	35	5	67	31.60%
11. RC&F	A2	321	15	6	72	22.43%
12. CE	–	105	24	4	4	3.81%
Σ	–	7489	967	–	458	6.12%

Source: Research data.

As shown in Table 4, the production of articles in the area of capital markets corresponds to 14.24% of the works produced in the journals of the finance and related areas. It is worth noting that, when comparing the capital market publications in Brazil with the foreign ones, we can observe that they are low, representing only 43% of foreign production.

As shown in Table 5 and Figure 1, journals had different start dates and although most remain to this day, some have already ended their activities. We emphasize that data were collected by December 2016.

Based on the parameters presented, we find that the *Revista Brasileira de Economia* (RBE) does not have articles on capital markets, despite being part of the sample. For this reason, of course, RBE was excluded in the subsequent analyzes and, therefore, considered only the period from 1961 to 2016.

We elaborated Figure 1 with the purpose of graphically presenting how the productions of the journals during the studied period are made available (between 1961 and 2016). We can therefore observe that most journals present intercession in the period from 2007 to 2009, which probably also may have influenced the high production in the year 2008 as demonstrated in the subsequent analyzes.

Table 6 shows that RAE (Print) and RC&F, respectively, are the periodicals that have the most impact in the period between 2010 and 2015. As for the impact rate on citations that occurred in the same period, RC & F and BBR are the journals that presented the highest periodicity respectively.

Table 4. Total number of articles and capital market articles in international journals

International Journals A1	Number of articles	Number of capital market articles	% of capital market articles
Applied Economic Letters	5909	1571	26.59%
Applied Economics (ONLINE)	9451	1540	14.63%
Applied Financial Economics (PRINT)	10525	157	1.49%
Economic Modelling	3805	423	11.12%
Economics Letters	11070	395	3.57%
European Management Journal	2604	26	1.00%
Harvard Business Review	4071	422	10.37%
Insurance. Mathematics & Economics	4246	180	4.24%
International Business Review	1560	128	8.21%
International Economic Review (Philadelphia)	3176	1732	54.53%
International Journal of Production Economics	6517	244	3.74%
Journal of Applied Econometrics	1689	1211	71.70%
Journal of Banking & Finance (PRINT)	5593	957	17.11%
Journal of Business Research	5854	159	2.72%
Journal of Corporate Finance (PRINT)	1357	122	8.99%
Journal of Economics and Business	1371	208	15.17%
Journal of International Management	695	23	3.31%
Journal of Management Studies (Oxford. PRINT)	3962	196	4.95%
Quantitative Finance (PRINT)	1826	1693	92.72%
The British Accounting REVIEW (PRINT)	1313	202	15.38%
The International Journal of Accounting	1898	1246	65.65%
The Quarterly Review of Economics and Finance	1435	118	8.22%
The Review of Economics and Statistics	326	13	3.99%
The World Bank Economic Review (PRINT)	1431	87	6.08%
Σ	91684	13053	14.24%

Source: Research data.

Table 5. Period of validity of journals

Journal	Start year	Last edition verified	Total period (years)
1. BAR	2004	2016	12
2. BBR	2004	2016	12
3. RAC	1997	2016	19
4. RAC-e	2007	2009	2
6. RAE	2002	2010	8
5. RAE (Print)	1961	2016	55
7. RAUSP	1977	2016	39
8. RBE	1947	2016	69
9. RBFin	2003	2016	11
10. RBMEC	1974	1989	15
11. RC&F	2001	2016	15
12. CE	1989	2000	11

Source: Research data.
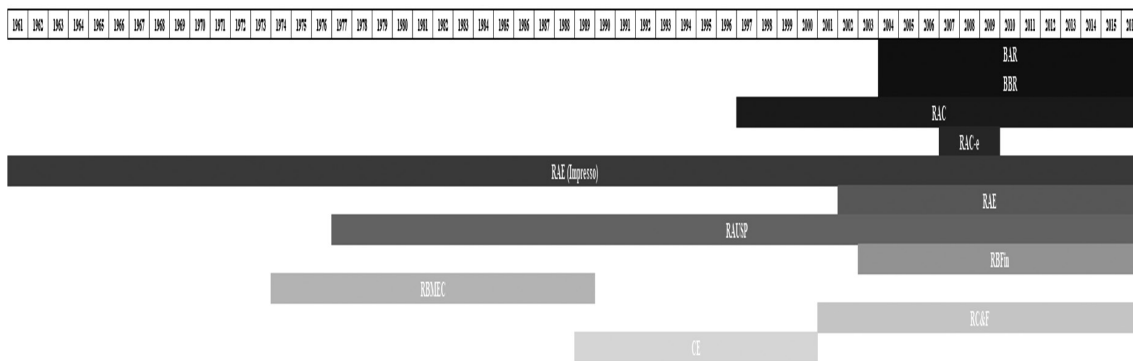
Source: Authors' own elaboration.

Figure 1. Journals Timeline

Table 6. profile of surveyed journals

Journal	Impact in 5 years	Citation rate on impact of 5 years
BAR	0.328	4.88%
BBR	0.654	10.34%
RAC	1.119	7.19%
RAC-e	0.000	0.00%
RAE	0.000	0.00%
RAE (Print)	1.338	8.19%
RAUSP	0.624	2.29%
RBFin	0.476	10.00%
RBMEC[1]	–	–
RC&F	1.185	11.01%
CE	–	–

Source: SPELL (2017).
[1] No information available on SPELL.

With regard to the year of publication, we can verify, through Graph 1, the periodicity of publications. We can identify, therefore, that the development of the research, with publications in highly qualified journals in Brazil, shows relevant oscillations, such as the low production during 19 years, from 1981 to 2001. During the years 1963 to 2001, we observed an average of 4 articles published per year. In the period from 2002 to 2016 the average increases, significantly for 22 articles published per year. It is important to note that Graph 1 shows the years in which there was at least one publication and, for this reason, has leaps in the years of 1964, 1966 to 1971, 1982, 1988, 1995 and 1999, respectively, with only the period between 2000 and 2016 being the one with constant publications and, above all, high, presenting, therefore, a scientific evolution as well as the constant attention in the researched area. We do not know the reason for the consecutive absence of publications of this theme during 5 years in high-impact journals and, therefore, there is a gap for future studies.

In spite of the oscillations, the most fertile period was between 2002 and 2014, with the apex in 2014, especially for the years 2014, 2015, 2008 and 2012, among which, perhaps coincidentally, 2008 was the year in which the world's financial market was more turbulent because of the economic crisis that began in the United States with the explosion of the speculative bubble in the real estate market. Is this assumption really correct, or was it the
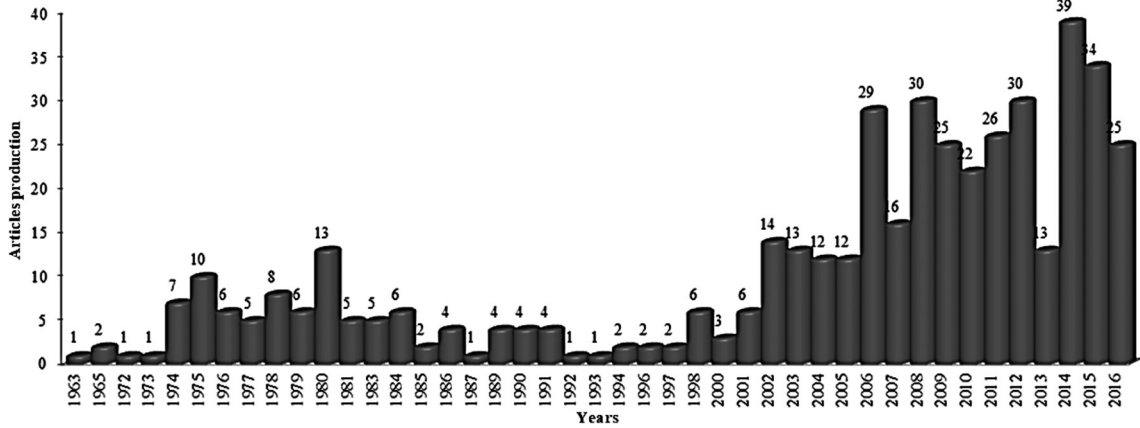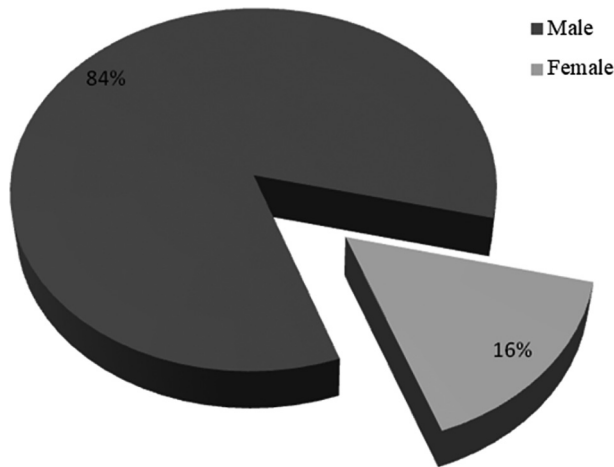
Source: Research data.

Graph 1. Annual production in capital markets

focus of authors and/or periodicals with similarity in the period? In an attempt to understand this, some analyzes were elaborated on the authors and journals, which are presented below. Nevertheless, the total production frequency of journals and authors was first analyzed.

Regarding gender, it was evidenced that, in the area of capital markets, production is predominantly male (as shown in Graph 2). This result is somewhat expected, given that the market (associated with finance) is dominated by men (job titles mostly taken by men), as well as the result found in previous research (presented in Table 1).
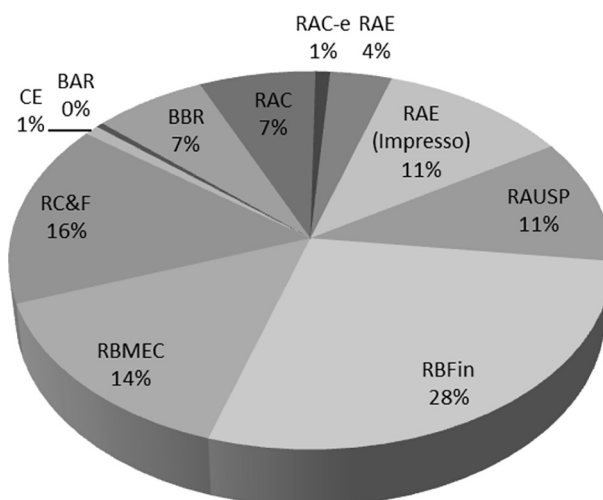

Source: Research data.

Graph 2. Authors' gender

It is noteworthy that in the sample two articles were produced by institutions, and thus were not considered as gender, and these represent 0.33% of the total number of authors.

In Graph 3 we were able to verify the number of authors who published articles in the area studied per journal. We note that in total there are 454 articles. We identified that RBFin was the one that had the most publications, even though it was a journal with 'only' 15 years of existence; secondly, the RC&F (which was once a journal named as "*Caderno de Estudos*", but was extinguished and began its publications in 2001); the RBMEC (which began publications in 1974 and was exclusive to the area, as well as ending its activities earlier, in 1989) and third place. RAE (Print) is the fourth journal with the most publications, but is also the oldest (beginning in 1961, and publications in the researched area since 1963).

Source: Research data.

Graph 3. Percentage of authors who published articles on capital markets per journal

It is worth mentioning that 5 of the 11 periodicals have produced special editions, namely: BAR (in the year of 2012); BBR (in the year of 2015); RAC (in the years of 2001, 2003, 2004, two in 2005, 2006, two in 2007, 2008, 2009, 2010, 2014, and three in 2015); RAE – Print (in the years of 2004, 2005 and 2006); and RC&F (2006, 2007 and 2014). This may have helped in the growth of productions per year, as well as indicating interest on the part of the journals in subjects in the market, being, therefore, another gap for future studies.

Given the analyzed productions, we can observe which authors published, as well as how often they published. These elements are represented in Table 7, evidencing the most prolific authors; it is worth noting that the authors were ranked according to the number of publications.

The authors in Table 7 represent 6.26% of the total number of authors who published articles in the sample. However, its production represents 54.59% of the total Capital Market items found. Another finding is that the authors who published more than 6 articles (15 authors) represent almost 31% (30.79%) of all the production of Capital Markets articles found.

In order to verify how often the authors have made the publications, in an attempt to identify whether there is a lasting only momentary line of research, as well as the constancy of the author's involvement with the production on the topic of Capital Markets and the like, Figure 2, in which it is possible to make some inferences such as these.

We show, as shown in Figure 2, that the authors of the first places in the ranking are those who maintain a continuity of scientific production in the area, not only representing many articles in a short time, which provides the inference that they are authors who have lines of research in the area and/or groups/nuclei of research cohesive and solid in the area of capital markets. We emphasize that the most veteran author in the area (Walter Lee Ness Jr) is also the one who has kept a constant in the publications, although the frequency is not so homogeneous (distribution) presenting a period of 16 years without publishing in these journals of high impact and others specific to the area, as in the case of the most prolific authors (Ricardo Pereira Câmara Leal).

It is worth mentioning that among the most prolific authors, there are two women (Adriana Bruscato Bortoluzzo and Fernanda Finotti Cordeiro Perobelli), who represent 7.14% of the most prolific authors; 0.33% of the total number of authors; and 2.08% of the

Table 7. Prolific authors on capital markets

Publications	Author	f	f cumm	% of the Total	Cumulative Publications
Above 10 articles	Antonio Zoratto Sanvicente	14	14	5.69%	5.69%
	Ricardo Pereira Câmara Leal	14	28	5.69%	11.38%
	Rubens Famá	12	40	4.88%	16.26%
	Walter Lee Ness Jr	11	51	4.47%	20.73%
	William Eid Júnior	11	62	4.47%	25.20%
8 to 10 articles	Newton Carneiro Affonso da Costa Júnior	10	72	4.07%	29.27%
	Jairo Laser Procianoy	9	81	3.66%	32.93%
	Richard Saito	9	90	3.66%	36.59%
	Fernando Caio Galdi	8	98	3.25%	39.84%
	Otávio Ribeiro de Medeiros	8	106	3.25%	43.09%
6 to 7 articles	Alexsandro Broedel Lopes	7	113	2.85%	45.93%
	Alfredo Sarlo Neto	7	120	2.85%	48.78%
	Antônio Carlos Figueiredo Pinto	7	127	2.85%	51.63%
	José Roberto Securato	7	134	2.85%	54.47%
	Ney Roberto Ottoni de Brito	7	141	2.85%	57.32%
	Alexandre Di Miceli da Silveira	6	147	2.44%	59.76%
	Aureliano Angel Bressan	6	153	2.44%	62.20%
	Hudson Fernandes Amaral	6	159	2.44%	64.63%
	Marcelo Cabus Klotzle	6	165	2.44%	67.07%
5 articles	Antonio Gledson de Carvalho	5	170	2.03%	69.11%
	Fernanda Finotti Cordeiro Perobelli	5	175	2.03%	71.14%
	Lucas Ayres Barreira de Campos Barros	5	180	2.03%	73.17%
	Márcio André Veras Machado	5	185	2.03%	75.20%
	Paulo Renato Soares Terra	5	190	2.03%	77.24%
	Paulo Rogério Faustino Matos	5	195	2.03%	79.27%
	Roy Martelanc	5	200	2.03%	81.30%
	Tabajara Pimenta Júnior	5	205	2.03%	83.33%
	Wesley Mendes-da-Silva	5	210	2.03%	85.37%
4 articles	Adriana Bruscato Bortoluzzo	4	214	1.63%	86.99%
	Alexandre Assaf Neto	4	218	1.60%	87.20%
	Carlos Patricio Samanez	4	222	1.60%	88.80%
	Edilson Paulo	4	226	1.60%	90.40%
	Francisco Vidal Barbosa	4	230	1.60%	92.00%
	Nelson Laks Eiziriki	4	234	1.60%	93.60%
	Orleans Silva Martins	4	238	1.60%	95.20%
	Paulo Sérgio Ceretta	4	242	1.60%	96.80%
	Pedro L. Valls Pereira	4	246	1.60%	98.40%
	Robert Aldo Iquiapaza	4	250	1.60%	100.00%
Σ	–	250	–	100%	–

Source: Research data.

Figure 2 — Periodicity of production of the most prolific authors (Publication year columns: 1973, 1975, 1976, 1977, 1978, 1980, 1981, 1984, 1986, 1989, 1990, 1991, 1992, 1993, 1994, 1996, 1997, 1998, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016)

Author	Total
LEAL, R. P. C.	14
SANVICENTE, A. Z.	14
FAMÁ, R.	12
NESS JR, W. L.	11
EID JÚNIOR, W.	11
COSTA JR., N. C. A.	10
PROCIANOY, J. L.	9
SAITO, R.	9
GALDI, F. C.	8
MEDEIROS, O. R.	8
LOPES, A. B.	7
NETO, A. S.	7
PINTO, A. C. F.	7
SECURATO, J. R.	7
BRITO, N. R. O.	7
SILVEIRA, A. Di M. da	6
BRESSAN, A. A.	6
AMARAL, H. F.	6
KLOTZLE, M. C.	6
CARVALHO, A. G.	5
PEROBELLI, F. F. C.	5
BARROS, L. A. B. C.	5
MACHADO, M. A. V.	5
TERRA, P. R. S.	5
MATOS, P. R. F.	5
MARTELANC, R.	5
PIMENTA JÚNIOR, T.	5
MENDES-DA-SILVA, W.	5
BORTOLUZZO, A. B.	4
ASSAF NETO, A.	4
SAMANEZ, C. P.	4
PAULO, E.	1
BARBOSA, F. V.	4
EIZIRIKI, N. L.	4
MARTINS, O. S.	4
CERETTA, P. S.	4
PEREIRA, P. L. V.	4
IQUIAPAZA, R. A.	4

Source: Research data.

Figure 2. Periodicity of production of the most prolific authors

total number of women who publish in the Brazilian high impact periodicals specific to the capital market area, with this being a relevant result for the analysis of gender in scientific productions in finances.

The majority of the authors, 76.11%, 462 out of a total of 607 authors, published only once. On the other hand, those who published twice totaled 76, representing 12.52% of the total. Only 6.75% of the authors published above 3 articles and, when we observe publications above 4 articles only 4.61% of the total authors presented this frequency. We present these characteristics in Table 8:

Table 8. Frequency of production by author

Authors who published	Quantity	%	% cumulative
Above 4 articles	28	4.61%	4.61%
from 3 to 4 articles	41	6.75%	11.37%
2 articles	76	12.52%	23.89%
1 articles	462	76.11%	100.00%
Σ	607	100%	–

Source: Research data.

In order to identify the origin of the productions, we verified the institutional links of the authors and, thus, we find several institutions, of which we selected the 10 with most participation in publications, namely: Getúlio Vargas Foundation (FGV); Capixaba Institute for Research in Accounting, Economics and Finance (FUCAPE); Brazilian Institute of Capital Markets (IBMEC); Institute of Postgraduate and Research in Administration of the

Federal University of Rio de Janeiro (COPPEAD/UFRJ); Pontifical Catholic University of Rio de Janeiro (PUC – Rio); University of São Paulo – Ribeirão Preto (USP – RP); University of São Paulo (USP); Federal University of Minas Gerais (UFMG); Federal University of Ceará (UFC); Federal University of Rio Grande do Sul (UFRS). It should be noted that, despite representing the majority of authors, the accumulated production of these institutions represents 32.40% of the total production of all institutions. Therefore, we analyzed the frequency of articles published by institution, correlating to the journal, presented in Table 9:

Table 9. Ranking of Number of articles published in national journals selected according to the authors' professional link

Institution	BAR	BBR	RAC	RAC-e	RAE	RAUSP	RBFIN	RBMEC	RC&F	CE	Total
USP	2	3	3	1	16	31	6	1	0	4	67
FGV	0	1	5	1	26	4	6	3	0	0	46
IBMEC	0	4	0	0	2	2	1	30	0	0	39
PUC – Rio	1	1	1	1	2	1	6	5	7	0	25
UFMG	0	3	1	0	2	7	2	0	8	0	23
COPPEAD/UFRJ	0	0	4	1	5	5	3	4	0	0	22
UFRGS	0	0	2	0	5	3	5	0	7	0	22
UFC	1	3	0	0	2	1	2	1	6	0	16
FUCAPE	0	2	0	0	5	1	3	0	0	0	11
USP – RP	0	1	2	0	0	6	0	0	0	0	9

Source: Research data.

Also based on Table 7, we were able to observe that, apparently, there is a preference of publications by the actual institution in its journal, as can be observed at the University of São Paulo (USP) anda t the University of São Paulo – Ribeirão Preto (USP – RP), in which 49.21% and 66.67% of the published articles are in RAUSP, respectively, as well as all articles published in the *Caderno de Estudos* (CE) were published by authors of USP; and at the Brazilian Institute of Capital Markets (IBMEC), in which 76.92% of the published articles are in RBMEC.

Finally, with the purpose of verifying if the productions of the authors came from a distribution of the Poisson's Lagrangian type, which shows the relationship of authors' productivity, we carry out the relevant treatment. Table 10 presents the distribution of the frequencies of articles produced:

From these data, we were able to obtain the variables for application to the model, which are discriminated in Table 11:

After the data treatment, in concluding the application of the model, we verified the relation of the observed frequency with the theoretical frequency and, thus, applied to the Chi-square, as presented in Table 12:

Before the calculation of the Chi-square (represented by X^2), we obtained the parameter of degree of freedom, which was represented as 6. It should be noted that the parameter established was with the confidence level of 95%, evaluating the degree of freedom on the table of critical values of X^2, the value is 12.5916. This value is much lower than that obtained in the calculation, meaning that the null hypothesis is rejected. Thus, we conclude that the present values regarding the periodicity do not come from a distribution of Poisson's Lagrangian type. Graph 4 shows how the ratio between the periodicity observed and the theoretical occurred:

Table 10. Distribution of observed frequencies of articles produced by author

Nº of Cont. per author	N of authors	% of authors	N of articles	% of articles	x^2	x^2y
x	y	% y	xy	% xy		
0	0	0.0000	0	0.0000	0	0
1	462	76.1120	462	48.2759	1	462
2	76	12.5206	152	15.8830	4	304
3	31	5.1071	93	9.7179	9	279
4	10	1.6474	40	4.1797	16	160
5	9	1.4827	45	4.7022	25	225
6	4	0.6590	24	2.5078	36	144
7	5	0.8237	35	3.6573	49	245
8	2	0.3295	16	1.6719	64	128
9	2	0.3295	18	1.8809	81	162
10	1	0.1647	10	1.0449	100	100
11	2	0.3295	22	2.2989	121	242
12	1	0.1647	12	1.2539	144	144
13	0	0.0000	0	0.0000	169	0
14	2	0.3295	28	2.9258	196	392
Σ	607	100	957	100	1015	2987

Source: Research data.

Table 11. Values of the variables applied to the model

Variable	Result
Standard Deviation	1.5618
Dispersion Effect	0.1960
Dispersion Index	1.5472
Arithmetic Mean	1.5766
Attraction Rate	1.2675
Competition Rate	6.46556
Variance	2.4393

Source: Research data.

Table 12. Calculation of Chi-square

x	f_0	f_t	$f_0 - f_t$	$(f_0 - f_t)^2$	$\dfrac{(f_0 - f_t)^2}{ft}$
0	0	170.9097569	-170.91	29210.15	170.91
1	462	178.0704727	283.93	80615.98	452.72
2	76	121.4608965	-45.46	2066.69	17.02
3	31	69.0511653	-38.05	1447.89	20.97
4	10	35.5897261	-25.59	654.83	18.40
5	9	17.2928723	-8.29	68.77	3.98
6 – 7	9	11.7775851	-2.78	7.71	0.66
8 – 10	5	2.7019569	2.30	5.28	1.95
11 – 14	5	0.2364482	4.76	22.69	95.97
Σ	607	607.09	-0.09	114100.00	782.57

Source: Research data.
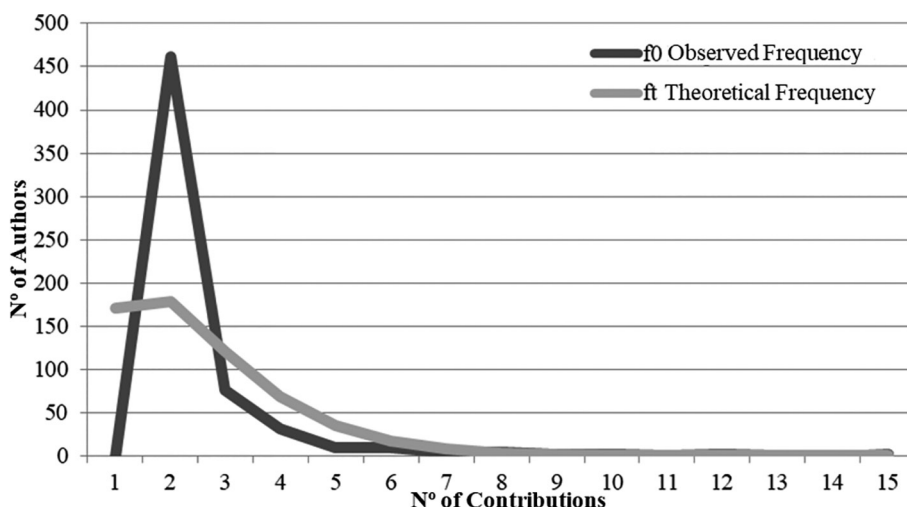
Source: Research data.

Graph 4. Ratio of observed periodicity to theoretical periodicity

From the relation presented in Graph 4, we can verify that in the expected periodicity (which is the theoretical periodicity) points out that most authors would only publish once, but would not be as high as in the observed periodicity; in addition, that would decrease gradually, in fact the change was significantly expressive. From this verification, we are already able to infer that it would not be adherent to the studied model, which was proven when testing the null hypothesis.

Therefore, the final considerations of the present study are presented in the next topic.

5. FINAL CONSIDERATIONS

The objective of this study is to draw a profile of the research in Capital Markets in Brazil, from 1961 to 2016, of journals with high impact publications, with A2 impact factor classification in the Qualis/CAPES area of Administration, Accounting and Tourism in 2010, as well as the specific journals of the area RBFin, RBMEC, CE and RC&F.

Therefore, this study analyzed 458 Capital Markets articles published in 12 national scientific journals in the areas of Administration, Accounting and Tourism — one was excluded because it did not present any production in capital markets —, in the period between 1961 and 2016. Capital Markets accounted for 6.12% of the total of 7,489 articles published in these journals in the period established in the sample, highlighting that the Brazilian production represents only 43% of the production of foreign production. RBFin, RC&F, RBMEC and RAE (Print) published, respectively, most of the articles of Capital Markets.

The scientific production in Capital Markets concentrated much in few individuals, in a few institutions in the Southeast and South regions and published, for the most part, in specific journals. We confront such information with the presence of the states with the greatest participation in the country's GDP generation, as well as the educational institutions that traditionally form most researchers in the areas of Administration, Accounting and Tourism.

The application of the descriptive statistical analysis in the data sample presented a low productivity and with great variability during the analyzed period. Most authors (76%) published only one article. Only 69 authors published 3 or more articles, representing 11.37% of the total authors, and production periodicity do not come from a distribution

of Poisson's Lagrangian type. These data allow us inferring that the great majority of the articles is the result of isolated works not linked to research centers for research in the area of capital markets. An exception to this inference was the articles produced by IBMEC, a former research institute created in the mid-1970s, which in addition to maintaining a research group focused on Capital Markets, disseminated its work in a journal of its own, RBMEC.

We also found that the production is predominantly male, with a representativity of 84.18% of the authors.

Finally, as limitations of this study, we can highlight: i) the concentration of analysis in journals of related areas including those classified in the A2 impact factor by representatives of the Administration area at Qualis/CAPES; and ii) the subjectivity inherent to the analysis of each one of the authors of this study, which may have led to different conclusions for the same situation/variable, despite the efforts made to resolve all doubts and ambiguities.

Therefore, we suggest for future researches, the accomplishment of studies that analyze journals of other areas and classifications, in capital markets, as well as the verification of the gaps found, such as the fact that one did not know the reason for the consecutive absence during five years of publications of this theme in high impact journals; the discussion of the results on low female productivity in the area of capital markets; the high productivity found in some specific journals; as well as the reason why the journals elaborated special editions in given journals.

6. REFERENCES

BORSCHIVER, Suzana; GUEDES, Vânia Lisboa da Silveira. Bibliometria: uma revisão da literatura dessa ferramenta estatística para a gestão da informação e do conhecimento, em sistemas de informação, de comunicação e de avaliação científica e tecnológica. In: SEMINARIO DE GESTIÓN TECNOLÓGICA – ALTEC, 11., 2005, Salvador. *Anais...* São Paulo: ALTEC, 2005.

CAMARGOS, Marcos Antônio de; COUTINHO, Eduardo Senra; AMARAL, Hudson Fernandes. O perfil da área de finanças do Enanpad: um levantamento da produção científica e de suas tendências entre 2000-2004. In: ENCONTRO DA ASSOCIAÇÃO NACIONAL DE PÓS-GRADUAÇÃO E PESQUISA EM ADMINISTRAÇÃO – EnANPAD, 28., 2005, Curitiba. *Anais...* Rio de Janeiro: ANPAD, 2005.

CAMARGOS, Marcos Antônio de; CASTRO SILVA, Wendel Alex; DIAS, Alexandre Teixeira. Análise da produção científica em Finanças entre 2000-2008: um estudo bibliométrico dos Encontros da ANPAD. In: ENCONTRO DA ASSOCIAÇÃO NACIONAL DE PÓS-GRADUAÇÃO E PESQUISA EM ADMINISTRAÇÃO – EnANPAD, 33., 2009, São Paulo. *Anais...* Rio de Janeiro: ANPAD, 2009.

CHAN, Kam C.; CHEN, Carl R.; FUNG, Hung-Gay. Pedigree or placement? An analysis of research productivity in finance. *The Financial Review,* v. 44, n. 1, p. 87-111, fev. 2009.

CHAN, Kam C.;CHEN, Carl R.; LUNG, Peter P. One-and-a-half decades of global research output in finance: 1990–2004. *Review of Quantitative Finance and Accounting,* v. 28, n. 4, p. 417-439, 2007.

HARDIN III, William G. *et al.* Finance editorial board membership and research productivity. *Review of Quantitative Finance and Accounting,* v. 31, n. 3, p. 225-240, 2008.

HOFFMAN, Donna L.; HOLBROOK, Morris B. The intellectual structure of consumer research: a bibliometric study of author cocitations in the first 15 years of the Journal of Consumer Research. *Journal of Consumer Research,* Chicago, v. 19, n. 4, p. 505-517, mar. 1993.

LEAL, Ricardo Pereira Câmara; ALMEIDA, Vinicio de Souza e; BORTOLON, Patrícia Marla. Produção científica brasileira em Finanças no período 2000-2010. *Revista de Administração de Empresas – RAE,* São Paulo, v. 53, n. 1, p. 46-55, jan./fev. 2013.

LEAL, Ricardo Pereira Câmara; OLIVEIRA, Jefferson de. Perfil da pesquisa em Finanças no Brasil. *Revista de Administração de Empresas – RAE,* São Paulo, v. 43, n. 1, p. 91-104, jan./mar. 2003.

MATSUMOTO, Alberto Shigueru *et al.* A pesquisa em Finanças no Brasil: a estrutura das colaborações científicas. In: SIMPÓSIO DE EXCELÊNCIA EM GESTÃO E TECNOLOGIA – SEGeT, 5., 2008, Resende. *Anais...* Resende: Associação Educacional Dom Bosco – AEDB, 2008.

MENDES-DA-SILVA, Wesley; ONUSIC, Luciana Massaro; GIGLIO, Ernesto Michelangelo. Rede de pesquisadores de Finanças no Brasil: um mundo pequeno feito por poucos. *Revista de Administração Contemporânea – RAC,* Rio de Janeiro, v. 17, n. 6, p. 739-763, nov./dez. 2013.

OLTHETEN, Elisabeth; THEOHARAKIS, Vasilis; TRAVLOS, Nicholaos G. Faculty perceptions and readership patterns of finance journals: a global view. *Journal of Financial and Quantitative Analysis,* v. 40, n. 1, p. 223-239, 2005.

RICHARDSON, Roberto Jarry. Metodologia da pesquisa aplicável às ciências sociais. In: BEUREN, Ilse Maria (Org.). *Como elaborar trabalhos monográficos em contabilidade:* teoria e prática. 2. ed. São Paulo: Atlas, 2004.

SOUZA, Flávia Cruz de *et al.* Finance Journals: características dos principais periódicos, autores importantes e artigos mais citados. *Revista Brasileira de Finanças,* Rio de Janeiro, v. 6, n. 1, p. 113-132, 2008.

SPELL. *Scientific Periodicals Eletronic Library.* 2017. Disponível em: <http://www.spell.org.br/>. Acesso em: 01 out. 2017.

VERGARA, Sylvia Constant. *Projetos e relatórios de pesquisa em administração.* 13. ed. São Paulo: Atlas, 2011.