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Article

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A bibliometric analysis of venture capital research

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Abstract

Purpose – The purpose of this study is to present the evolution of academic research in venture capital (VC) research between 1990 and 2014.

Design/methodology/approach – The study analyzes the most influential journals in VC research by analyzing papers, which were published on the Web of Science database.

Findings – Results show a steady increasing rate of VC research during the past 25 years. The paper reports the 40 academic journals that permanently publish articles about VC research.

Originality/value – The main contribution of this work is to develop a general overview of the leading journals in VC research, which leads to the development of a future research agenda for bibliometric analysis, such as the review of the most productive and influential authors, universities and countries in VC research.

Keywords Web of science, Journals, Bibliometrics, Venture capital

Paper type Research paper

Introduction

There are different instruments, both public and private, which support the development and growth of new enterprises through the provision of financial resources. Venture capital (VC) is included among these instruments, which not only provides financial support for business growth but also offers business expertise, customer networks and good management practices (Gompers and Lerner, 2006; Gompers *et al.*, 2008; Dushnitsky and Lenox, 2006; Hochberg *et al.*, 2010). According to Cornelius and Persson (2006), venture capitalists are financial intermediaries who collect excess capital from those who have it and provide it to those who require it for the development of a business venture. Although a considerable amount of literature has been published on specific topics about VC in the past ten years (Jääskeläinen, 2012), there are few studies that have analyzed VC research from a bibliometric analysis perspective (Cornelius and Persson, 2006). In this decade, there are no new papers that present the evolution of VC research. This is the aim of our paper.



This work found a practical way to analyze VC research over a period of 25 years by using bibliometric indicators. Bibliometrics is the field that quantitatively studies bibliographic material (Broadus, 1987). Bibliometric studies are becoming very popular in the scientific literature, strongly motivated by the access to bibliographic information. Many authors have developed bibliometric analysis in a wide range of fields including management (Podsakoff *et al.*, 2008), economics (Coupé, 2003), entrepreneurship (Landström *et al.*, 2012), accounting (Merigó and Yang, 2016), pricing research (Leone *et al.*, 2012), health economics (Wagstaff and Culyer, 2012) and innovation (Merigó *et al.*, 2016).

In general, VC research has grown considerably compared to other disciplines. The citation structure identifies the citation level that this field has obtained, being able to see the location of the most cited papers over the past 25 years. Additionally, it shows the number of papers with lower levels of citations including those that have not received any citations yet. The article also develops a journal analysis identifying the leading ones in the field. In particular, this work describes that there are certain specialized journals that publish more in VC research with respect to other journals, for example, *Journal of Business Venturing*, *Entrepreneurship Theory and Practice* and *Small Business Economics*. It also highlights other journals for having a high number of citations, even if they publish a large number of articles in VC research, such as the *Journal of Finance*, *Journal of Financial Economics*, *Research Policy*, *Strategic Management Journal*, *Academy of Management Journal*, *Administrative Science Quarterly*, among others. Moreover, a temporal analysis is developed to see which journals have been the most influential ones throughout time.

This paper continues as follows: Section 2 develops the literature review regarding VC research. Section 3 describes the research method by describing the bibliometric study and its cluster analysis. Section 4 presents the results of our bibliometric analysis. Finally, Section 5 offers a discussion with concluding remarks.

Literature review

Gompers and Lerner (2006) define VC as the process which starts with raising a venture fund; proceeds with investing in, monitoring and adding value to firms; continues as the venture capitalist exits successful deals and returns capital to their investors; and renews itself with the venture capitalist raising additional funds. Hence, VC research explores several processes, which involve the pre-investment phase of VC, the management of VC and the exit strategies of VC. In the pre-investment phase, VC research explores how changes in public market signals affected VC (Gompers *et al.*, 2008) or the conditions to facilitate the creation of greater firm value after receiving VC (Dushnitsky and Lenox, 2006). Research in this stage also analyses the process of creating relationships between venture capitalists and entrepreneurs (Hochberg *et al.*, 2010). Research in the management stage focused its attention on companies when they receive VC. For example, researchers have explored the links between the influence and control of VC firms (Bottazzi *et al.*, 2008) and the management skills and expertise of entrepreneurs and new ventures, such as entrepreneurial orientation (Stam and Elfring, 2008). Finally, research in the exit stage reviews how firms can develop either their initial public offering (IPO) or their buyout. Nahata (2008) suggests that companies backed by more reputable VCs by IPO capitalization share are more likely to exit successfully, access public markets faster and have higher asset productivity at IPOs.

Even though VC research has three stages of analysis, VC research encompasses wide range of academic areas, without a particular discipline leading scientific research in this field. Academics from disciplines such as Finance, General Management, Innovation, Law, Public Policy, Sociology and Economics present a wide range of research on venture capital, which is very valuable because it brings different perspectives to analyze the problem of financing new businesses. For example, from a Finance perspective, [Berger and Udell \(1998\)](#) explain that firms are viewed through a financial growth cycle paradigm in which different capital structures are optimal at different points in the cycle. They show the sources of small business finance, and how capital structure varies with firm size and age. From a psychology perspective, [Krueger et al. \(2000\)](#) argue that promoting entrepreneurial intentions by promoting public perceptions of feasibility and desirability is not just desirable; but also thoroughly feasible. From a sociology perspective, [Podolny \(2001\)](#) draws an analytical distinction between two types of market uncertainty: egocentric, which refers to a focal actor's uncertainty regarding the best way to convert a set of inputs to an output desired by a potential exchange partner, and altercentric, which denotes the uncertainty confronted by a focal actor's exchange partners regarding the quality of the output that the focal actor brings to the market. From a public policies perspective, [Di Gregorio and Shane \(2003\)](#) provide insight into why some universities generate more new companies to exploit their intellectual property than do others. The above examples show that the analysis of VC research is varied and can derive from different disciplines. On the one hand, it could be positive to have different perspectives to try to understand the problem. On the other hand, analysis from different disciplines could be negative, especially if we want to know the specific group of authors in VC research who have more influence and productivity.

Research methodology

Bibliometric research is a field that quantitatively studies bibliographic material ([Broadus, 1987](#)) providing a general overview of a research field according to a wide range of indicators. There are different ways of ranking material in a bibliometric analysis. The most common approaches use the total number of articles or the total number of citations. Another useful indicator is the h-index ([Hirsch, 2005](#)) that combines articles with citations indicating the number of studies X that have received X or more citations. The general assumption is that the number of articles shows the productivity while the total cites reflect the influence of a set of articles. Note that this study follows the methodology developed by [Merigó et al. \(2015\)](#) and [Cancino et al. \(2017a, 2017b\)](#).

To search for articles that have focused on VC research, the study uses the keywords "venture capital*" or "business venturing" or "corporate venturing" in the title, abstract and keywords of any work available in WoS[1] between 1990 and 2014, to capture as many possible combinations of terms related to venture capital. This search finds 2,086 articles that have become 1,820 studies by only considering articles, reviews, letters and notes. The search was developed in October 2015 and January 2016.

Results

This section presents the results of the paper. First, the study analyzes the publication evolution of VC research during the past 25 years. Next, the work analyzes the citation structure indicating the number of articles that reach a specific citation threshold. Finally,

the article analyzes the most influential journals in VC research according to WoS (general analysis and by quinquennials).

Evolution of publications in venture capital research

Over the past 25 years, 1,820 articles have been published in VC research. Figure 1 presents the evolution of the number of papers published annually.

In general, the growth of VC research over the past 25 years is higher than the growth of science worldwide. This growth is usually between 5 and 10 per cent, and achieved over 20 per cent in 1991, 1998, 2000 and 2008.

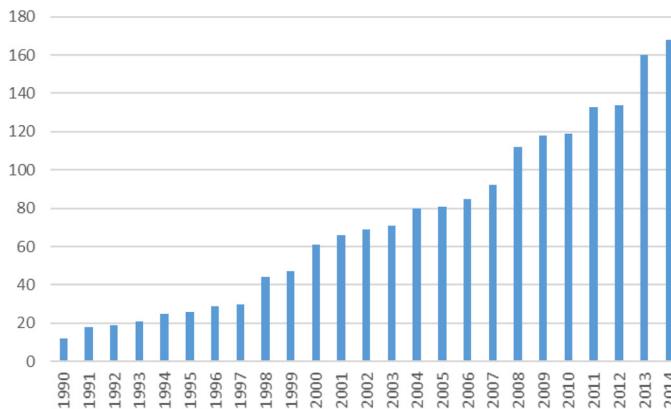
Citation structure in venture capital research

Table I presents the number of articles that reach a certain citation threshold to see the citation level that VC articles obtain. The analysis was developed between 1990 and 2014 and considers the citation thresholds of 200, 100, 50, 20, 10, 5 and 1. The total number of cites obtained by papers published each year is also included.

As we can see, most of the highly cited studies in VC were published in the late 1990s and beginning of the new millennium. The number of articles published in VC increases every year so the number of highly cited works also tends to increase. In general, only 2 per cent of the articles have received more than 200 and more than half of the articles received at least five citations. Only 20 per cent of the work did not receive any citations. Among the most cited papers it is possible to identify the following articles in VC research: Stuart *et al.* (1999), Zucker *et al.* (1998), Sahlman (1990), Megginson and Weiss (1991), Powell *et al.* (2005), Krueger *et al.* (2000), Berger and Udell (1998), Lee *et al.* (2001), Sorenson and Stuart (2001), McDougall *et al.* (1994), Shane and Stuart (2002), Kaplan and Stromberg (2003) and Podolny (2001).

Leading journals in venture capital research

There are many journals in the scientific community that publish material related to VC research. Table II presents a list of the 20 journals with the highest *h*-index in VC research (HV). This article performed the ranking analysis by identifying the rank (R), the total number of publications in VC research (TPV), the total number of citations in



Source: Own elaboration

Figure 1. Annual number of studies in venture capital

Year	≥200	≥100	≥50	≥20	≥10	≥5	≥1	TC	TP
1990	2	2	3	5	7	7	7	1,041	12
1991	1	1	1	5	7	7	11	718	18
1992	0	1	7	12	12	14	16	782	19
1993	0	1	4	6	7	9	15	439	21
1994	3	7	10	16	18	19	23	1,926	25
1995	2	2	7	13	14	17	20	1,118	26
1996	1	6	7	10	14	17	24	1,146	29
1997	0	1	7	15	20	21	25	860	30
1998	4	10	15	22	27	31	41	3,281	44
1999	3	5	10	17	17	21	26	2,104	47
2000	3	7	13	20	23	29	41	2,362	61
2001	4	7	14	27	32	36	46	3,005	66
2002	4	7	18	31	37	44	54	3,010	69
2003	5	13	30	42	51	56	69	4,320	71
2004	2	11	21	35	42	50	56	2,951	80
2005	1	7	17	49	58	63	73	3,095	81
2006	0	2	17	38	55	63	78	2,223	85
2007	1	4	11	47	70	89	103	2,712	92
2008	0	0	15	31	47	64	75	1,929	112
2009	0	0	7	31	59	79	106	1,818	118
2010	0	0	5	26	48	78	106	1,546	119
2011	0	1	2	22	49	73	110	1,397	133
2012	0	1	2	9	35	61	107	1,063	134
2013	0	0	0	2	13	45	119	575	160
2014	0	0	1	3	10	19	99	414	168
<i>Total</i>	<i>36</i>	<i>96</i>	<i>244</i>	<i>534</i>	<i>772</i>	<i>1,012</i>	<i>1,450</i>	<i>45,835</i>	<i>1,820</i>
<i>%</i>	<i>2</i>	<i>5</i>	<i>13</i>	<i>29</i>	<i>42</i>	<i>56</i>	<i>80</i>		

Table I.
Citation structure of
venture capital

Source: Own elaboration

VC research (TCV), the total number of citations over the total number of publications in VC research (C/P1), the total number of publication of the journal (TP), the total number of citation of the journal (TC), the global h-index (H), the total number of citations over the total number of publications (C/P2) and the total number of publications in VC research over the total number of publications in any discipline (per cent PV).

It is seen that only the first journal publishes about 20 per cent of its total articles on venture capital, only one publishes about 10 per cent, three publish about 5 per cent and the rest does not publish more than 2 per cent. However, these have high numbers of citations, which explains the results of the *h*-index. Clearly, scientific analysis on VC comes from many disciplines, and it is not possible to identify a specific group of journals leading the discipline. This is evident if the group of the twenty most cited papers in VC research is analyzed. For this group it is possible to identify 12 different journals: *Administrative Science Quarterly*, *American Economic Review*, *American Journal of Sociology*, *Journal of Banking & Finance*, *Journal of Business Venturing*, *Journal of Finance*, *Journal of Financial Economics*, *Management Science*, *Rand Journal of Economics*, *Research Policy*, *Review of Economic Studies* and *Strategic Management Journal*. Among this group, three journals (*Journal of Financial Economics*, *Journal of Finance* and *American Journal of Sociology*) present three articles each on the list of the 20 most cited papers in VC research.

R	Journal	Venture capital					Global				
		TPV	TCV	HV	C/P1	TP	TC	H	C/P2	%PV	
1	<i>Journal of Business Venturing</i>	164	6,976	48	42,5	836	36,562	98	43,7	19,6	
2	<i>Journal of Finance</i>	23	2,923	21	127,1	1,972	1,70,112	199	86,3	1,2	
3	<i>Journal of Financial Economics</i>	35	2,884	21	82,4	1,791	1,06,449	153	59,4	2,0	
4	<i>Entrepreneurship Theory and Practice</i>	49	1,070	21	21,8	515	15,361	62	29,8	9,5	
5	<i>Research Policy</i>	37	1,609	20	43,5	2,059	87,374	141	42,4	1,8	
6	<i>Small Business Economics</i>	67	833	16	12,4	1,252	21,557	63	17,2	5,4	
7	<i>Strategic Management Journal</i>	25	1,477	15	59,1	1,726	1,79,035	202	103,7	1,4	
8	<i>Journal of Management Studies</i>	23	624	14	27,1	1,252	47,442	101	37,9	1,8	
9	<i>Journal of Banking Finance</i>	25	1,024	13	41,0	3,561	49,728	78	14,0	0,7	
10	<i>Journal of Corporate Finance</i>	35	569	13	16,3	723	8,678	43	12,0	4,8	
11	<i>Technovation</i>	30	396	13	13,2	1,538	24,024	59	15,6	2,0	
12	<i>Academy of Management Journal</i>	19	916	11	48,2	1,490	1,80,389	218	121,1	1,3	
13	<i>Review of Financial Studies</i>	26	763	10	29,3	1,377	60,715	116	44,1	1,9	
14	<i>Harvard Business Review</i>	26	634	10	24,4	4,847	65,716	113	13,6	0,5	
15	<i>Management Science</i>	14	966	9	69,0	3,247	1,51,121	166	46,5	0,4	
16	<i>Entrepreneurship and Regional Development</i>	18	300	9	16,7	381	5,525	35	14,5	4,7	
17	<i>Administrative Science Quarterly</i>	8	1,050	8	131,3	512	1,02,142	168	199,5	1,6	
18	<i>Organization Science</i>	16	613	8	38,3	1,301	1,13,095	154	86,9	1,2	
19	<i>Financial Management</i>	14	494	8	35,3	832	10,680	47	12,8	1,7	
20	<i>Journal of International Business Studies</i>	11	260	8	23,6	1,162	61,441	121	52,9	0,9	
21	<i>R D Management</i>	13	231	8	17,8	781	13,961	54	17,9	1,7	
22	<i>Journal of Financial Intermediation</i>	13	185	8	14,2	395	7,486	43	19,0	3,3	
23	<i>Journal of Small Business Management</i>	17	184	8	10,8	622	10,391	47	16,7	2,7	
24	<i>Regional Studies</i>	10	311	7	31,1	1,805	29,878	68	16,6	0,6	
25	<i>Journal of Financial and Quantitative Analysis</i>	11	182	7	16,5	958	22,384	73	23,4	1,1	
26	<i>European Planning Studies</i>	16	148	7	9,3	1,174	8,769	36	7,5	1,4	
27	<i>European Financial Management</i>	10	104	7	10,4	340	2,706	24	8,0	2,9	
28	<i>California Management Review</i>	10	260	6	26,0	730	30,914	86	42,3	1,4	
29	<i>Journal of Business Finance Accounting</i>	12	135	6	11,3	533	3,446	24	6,5	2,3	
30	<i>International Journal of Technology Management</i>	32	131	6	4,1	1,810	9,342	33	5,2	1,8	
31	<i>Strategic Entrepreneurship Journal</i>	17	126	6	7,4	155	2,502	26	16,1	11,0	
32	<i>Journal of Technology Transfer</i>	13	118	6	9,1	322	2,295	22	7,1	4,0	
33	<i>Journal of Business Research</i>	14	99	6	7,1	3,214	53,711	87	16,7	0,4	
34	<i>Industrial and Corporate Change</i>	10	95	6	9,5	598	12,070	53	20,2	1,7	
35	<i>Health Affairs</i>	8	56	6	7,0	5,495	92,245	108	16,8	0,1	
36	<i>Journal of Management</i>	7	484	5	69,1	1,100	80,900	135	73,5	0,6	
37	<i>Journal of Economics Management Strategy</i>	13	200	5	15,4	672	10,496	51	15,6	1,9	
38	<i>Accounting Review</i>	6	150	5	25,0	1,167	34,321	82	29,4	0,5	
39	<i>International Small Business Journal</i>	12	119	5	9,9	371	4,090	28	11,0	3,2	
40	<i>Corporate Governance an International Review</i>	11	62	5	5,6	606	6,798	34	11,2	1,8	

Source: Own elaboration

Table II.
Most influential journals in venture capital

Leading journals in venture capital by periods of time

In this section, let us focus on the evolution of leading journals in innovation research throughout time. To do this, the study considers five-year periods between 1990 and 2014. In each period, a list with the journals that have published the highest number of articles in VC is presented. The analysis uses similar indicators to [Table II](#). [Tables III, IV, V](#) and [VI](#) present the results (period 2000-2004 was omitted in this version of the paper).

Journal of Business Venturing and *Journal of Financial Economics* have been the main leaders during the last twenty-five years. In the 1990s, there were few specialized journals in

R	Journal	TPV	TCV	HV	C/P1	TP	TC	H	C/P2
1	<i>Journal of Business Venturing</i>	29	1,543	20	53,2	149	8.551	55	57,4
2	<i>Journal of Financial Economics</i>	3	1,091	3	363,7	154	18.034	65	117,1
3	<i>Financial Management</i>	3	418	3	139,3	254	3.661	30	14,4
4	<i>Harvard Business Review</i>	3	72	2	24,0	900	19.538	63	21,7
5	<i>Technovation</i>	3	30	2	10,0	180	1.400	19	7,8
6	<i>Journal of Finance</i>	2	703	2	351,5	417	42.723	104	102,5
7	<i>Academy of Management Journal</i>	2	286	2	143,0	268	42.520	119	158,7
8	<i>Strategic Management Journal</i>	2	162	2	81,0	300	45.300	114	151,0
9	<i>Long Range Planning</i>	2	42	1	21,0	397	3.295	29	8,3
10	<i>Organization Science</i>	1	96	1	96,0	141	31.823	70	225,7
11	<i>Management Science</i>	1	45	1	45,0	575	35.956	99	62,5
12	<i>Journal of Management Studies</i>	1	19	1	19,0	175	8.395	49	48,0
13	<i>California Management Review</i>	1	15	1	15,0	152	6.339	38	41,7
14	<i>Health Affairs</i>	1	4	1	4,0	549	6.947	37	12,7
15	<i>Journal of Portfolio Management</i>	1	0	0	0,0	259	1.940	19	7,5
16	<i>Administrative Science Quarterly</i>	0	0	0	0,0	113	40.473	90	358,2
17	<i>Journal of Management</i>	0	0	0	0,0	196	23.883	85	121,9
18	<i>Review of Financial Studies</i>	0	0	0	0,0	142	14.424	67	101,6
19	<i>Journal of International Business Studies</i>	0	0	0	0,0	167	12.182	62	72,9
20	<i>Research Policy</i>	0	0	0	0,0	174	8.379	46	48,2
21	<i>Accounting Review</i>	0	0	0	0,0	235	6.256	46	26,6
22	<i>Journal of Product Innovation Management</i>	0	0	0	0,0	120	6.059	45	50,5
23	<i>Journal of Financial and Quantitative Analysis</i>	0	0	0	0,0	177	5.155	42	29,1
24	<i>Journal of Law & Economics</i>	0	0	0	0,0	121	5.081	39	42,0
25	<i>Journal of Business Research</i>	0	0	0	0,0	257	5.535	38	21,5
26	<i>Journal of Banking Finance</i>	0	0	0	0,0	315	5.533	38	17,6
27	<i>Regional Studies</i>	0	0	0	0,0	276	4.650	34	16,8
28	<i>Chimia</i>	0	0	0	0,0	450	3.406	28	7,6
29	<i>Ieee Transactions on Engineering Management</i>	0	0	0	0,0	197	2.688	26	13,6
30	<i>RD Management</i>	0	0	0	0,0	126	2.312	26	18,3
31	<i>Small Business Economics</i>	0	0	0	0,0	90	1.417	20	15,7
32	<i>Journal of Economics Management Strategy</i>	0	0	0	0,0	68	1.200	17	17,6
33	<i>Research Technology Management</i>	0	0	0	0,0	238	1.155	17	4,9
34	<i>International Journal of Technology Management</i>	0	0	0	0,0	56	306	9	5,5
35	<i>Technology Analysis Strategic Management</i>	0	0	0	0,0	30	160	6	5,3
36	<i>Journal of Technology Transfer</i>	0	0	0	0,0	6	2	1	0,3
37	<i>Entrepreneurship Theory and Practice</i>	0	0	0	0,0	0	0	0	0,0
38	<i>Journal of Corporate Finance</i>	0	0	0	0,0	0	0	0	0,0
39	<i>Entrepreneurship and Regional Development</i>	0	0	0	0,0	0	0	0	0,0
40	<i>Journal of Financial Intermediation</i>	0	0	0	0,0	0	0	0	0,0

Source: Own elaboration

Table III.
Leading journals in
VC between
1990-1994

VC indexed in WoS. Since 2005, journals with the highest proportion of VC items over total publications have appeared.

In the first five-year period analyzed it is possible to see that academic papers in VC research are published mainly in journals of General Management and Finance. In the second quinquennial, in addition to journals of General Management and Finance, several papers were published in specialized journals in Innovation and Entrepreneurship research. In the last quinquennial (Table VI), it is possible to see that there are several journals, from a wide spectrum of disciplines, publishing papers in VC research.

R	Journal	TPV	TCV	HV	C/P1	TP	TC	H	C/P2
1	<i>Journal of Business Venturing</i>	24	1.481	20	61,7	131	8.107	51	61,9
2	<i>Small Business Economics</i>	10	228	8	22,8	215	5.116	36	23,8
3	<i>Journal of Banking Finance</i>	8	752	6	94,0	391	9.011	48	23,0
4	<i>Journal of Management Studies</i>	6	139	5	23,2	188	6.691	47	35,6
5	<i>Technovation</i>	6	109	5	18,2	256	3.643	41	14,2
6	<i>Harvard Business Review</i>	5	253	5	50,6	688	20.775	70	30,2
7	<i>Journal of Financial Economics</i>	3	653	3	217,7	249	26.749	90	107,4
8	<i>Journal of Finance</i>	3	568	3	189,3	371	49.983	122	134,7
9	<i>Journal of Law & Economics</i>	2	168	2	84,0	120	4.075	39	34,0
10	<i>Research Policy</i>	2	61	2	30,5	279	16.886	70	60,5
11	<i>International Journal of Technology Management</i>	4	4	1	1,0	530	3.183	23	6,0
12	<i>Long Range Planning</i>	2	9	1	4,5	368	4.881	32	13,3
13	<i>Administrative Science Quarterly</i>	1	730	1	730,0	124	35.632	91	287,4
14	<i>Academy of Management Journal</i>	1	133	1	133,0	279	53.250	126	190,9
15	<i>Management Science</i>	1	130	1	130,0	656	39.825	102	60,7
16	<i>Review of Financial Studies</i>	1	117	1	117,0	175	11.199	59	64,0
17	<i>RD Management</i>	1	113	1	113,0	132	2.293	26	17,4
18	<i>California Management Review</i>	1	72	1	72,0	155	13.695	57	88,4
19	<i>Regional Studies</i>	1	37	1	37,0	341	6.884	40	20,2
20	<i>Health Affairs</i>	1	18	1	18,0	708	14.189	57	20,0
21	<i>Journal of Business Research</i>	1	10	1	10,0	341	9.294	92	27,3
22	<i>Journal of Small Business Management</i>	1	2	1	2,0	171	3.128	33	18,3
23	<i>Advances in Strategic Management A Research Annual</i>	1	2	1	2,0	23	212	9	9,2
24	<i>Journal of Portfolio Management</i>	1	1	1	1,0	235	1.702	20	7,2
25	<i>Strategic Management Journal</i>	0	0	0	0,0	310	55.319	116	178,4
26	<i>Organization Science</i>	0	0	0	0,0	218	28.238	93	129,5
27	<i>Journal of International Business Studies</i>	0	0	0	0,0	195	14.909	71	76,5
28	<i>Journal of Management</i>	0	0	0	0,0	189	15.815	70	83,7
29	<i>Journal of Product Innovation Management</i>	0	0	0	0,0	141	8.608	52	61,0
30	<i>Journal of Financial and Quantitative Analysis</i>	0	0	0	0,0	135	5.385	43	39,9
31	<i>Accounting Review</i>	0	0	0	0,0	130	7.589	39	58,4
32	<i>Ieee Transactions on Engineering Management</i>	0	0	0	0,0	187	3.997	35	21,4
33	<i>Chimia</i>	0	0	0	0,0	504	4.550	32	9,0
34	<i>Journal of Economics Management Strategy</i>	0	0	0	0,0	120	2.903	30	24,2
35	<i>Financial Management</i>	0	0	0	0,0	150	2.137	27	14,2
36	<i>Technology Analysis Strategic Management</i>	0	0	0	0,0	141	2.596	25	18,4
37	<i>Journal of Financial Intermediation</i>	0	0	0	0,0	70	1.744	24	24,9
38	<i>Research Technology Management</i>	0	0	0	0,0	210	1.957	22	9,3
39	<i>Economic Development Quarterly</i>	0	0	0	0,0	145	1.423	20	9,8
40	<i>Entrepreneurship Theory and Practice</i>	0	0	0	0,0	0	0	0	0,0

Source: Own elaboration

Table IV.
Leading journals in
VC between
1995-1999

Mapping journals in venture capital research with VOS viewer software

A further interesting issue to consider is mapping the leading journals to visualize their publication and citation structure. To do so, this work uses VOS viewer software (Van Eck and Waltman, 2010). VOS viewer is very useful for collecting bibliographical material providing visualizations of the bibliographic connections of documents, journals, authors and universities by using a wide range of techniques including bibliographic coupling (Kessler, 1963) and co-citation (Small, 1973).

First, this work studied bibliographic coupling between journals in VC research. Recall that bibliographic coupling (Kessler, 1963) occurs when two documents cite the same third document.

R	Journal	TPV	TCV	HV	C/P1	TP	TC	H	C/P2
1	<i>Journal of Business Venturing</i>	44	1.530	25	34,8	185	7.896	51	42,7
2	<i>Entrepreneurship Theory and Practice</i>	32	973	20	30,4	234	10.276	55	43,9
3	<i>Research Policy</i>	14	753	13	53,8	550	23.611	78	42,9
4	<i>Journal of Financial Economics</i>	12	535	10	44,6	458	24.741	83	54,0
5	<i>Small Business Economics</i>	17	210	9	12,4	282	6.773	44	24,0
6	<i>Journal of Corporate Finance</i>	11	286	8	26,0	211	4.345	35	20,6
7	<i>Technovation</i>	12	174	7	14,5	458	10.467	50	22,9
8	<i>Journal of Financial Intermediation</i>	7	162	7	23,1	112	1.755	23	15,7
9	<i>Entrepreneurship and Regional Development</i>	7	157	6	22,4	122	2.186	26	17,9
10	<i>Journal of Business Finance Accounting</i>	7	121	6	17,3	297	2.756	23	9,3
11	<i>Strategic Management Journal</i>	6	326	6	54,3	336	23.028	85	68,5
12	<i>Journal of Management Studies</i>	6	262	6	43,7	313	13.248	64	42,3
13	<i>Journal of Banking Finance</i>	6	141	6	23,5	913	16.012	50	17,5
14	<i>Journal of Technology Transfer</i>	6	107	6	17,8	107	1.279	19	12,0
15	<i>European Planning Studies</i>	11	78	5	7,1	369	3.686	27	10,0
16	<i>Journal of Finance</i>	5	523	5	104,6	332	21.160	83	63,7
17	<i>Academy of Management Journal</i>	5	370	5	74,0	298	28.004	95	94,0
18	<i>Organization Science</i>	5	206	5	41,2	265	16.307	78	61,5
19	<i>Review of Financial Studies</i>	5	165	5	33,0	366	16.744	68	45,7
20	<i>Accounting Review</i>	5	151	5	30,2	255	7.684	46	30,1
21	<i>Management Science</i>	5	133	5	26,6	700	25.463	74	36,4
22	<i>Strategic Entrepreneurship Journal</i>	5	92	5	18,4	56	1.792	25	32,0
23	<i>International Journal of Technology Management</i>	13	69	4	5,3	439	2.127	19	4,8
24	<i>Journal of Small Business Management</i>	5	47	4	9,4	145	3.075	33	21,2
25	<i>Administrative Science Quarterly</i>	4	227	4	56,8	89	7.371	49	82,8
26	<i>Journal of International Business Studies</i>	4	139	4	34,8	313	15.442	66	49,3
27	<i>Financial Management</i>	4	57	4	14,3	132	1.590	17	12,0
28	<i>Management Decision</i>	6	21	3	3,5	276	2.228	21	8,1
29	<i>Research Technology Management</i>	5	14	3	2,8	175	1.080	15	6,2
30	<i>R D Management</i>	4	53	3	13,3	175	4.173	34	23,8
31	<i>Advances in Strategic Management A Research Annual</i>	4	26	3	6,5	88	428	10	4,9
32	<i>Health Affairs</i>	4	21	3	5,3	1431	29.033	76	20,3
33	<i>Journal of Economics Management Strategy</i>	3	58	3	19,3	180	2.871	26	16,0
34	<i>European Financial Management</i>	3	47	3	15,7	162	2.092	22	12,9
35	<i>Journal of Business Research</i>	4	51	2	12,8	789	17.616	59	22,3
36	<i>Harvard Business Review</i>	3	86	2	28,7	1072	9.235	45	8,6
37	<i>Industrial and Corporate Change</i>	3	61	2	20,3	200	4.479	34	22,4
38	<i>Long Range Planning</i>	3	12	2	4,0	128	2.153	26	16,8
39	<i>Journal of Management</i>	2	119	2	59,5	214	13.710	62	64,1
40	<i>Ieee Transactions on Engineering Management</i>	2	31	2	15,5	227	4.068	33	17,9

Table V.
Leading journals in
VC between
2005-2009

Source: Own elaboration

Figure 2 shows the results. Note that the figure considers journals with at least X documents in VC and the one hundred most representative connections in the bibliographic network.

The *Journal of Business Venturing* is at the core of the field confirming the results seen in the previous tables. It is worth noting that some leading management and financial journals also have a significant position in the field publishing a significant number of articles.

Next, let us analyze co-citation between journals in venture capital. Recall that co-citation (Small, 1973) occurs when two documents receive a citation from the same third document. Figure 3 presents the map considering a minimum threshold of X citations and the one hundred most representative connections.

R	Journal	TPV	TCV	HV	C/P1	TP	TC	H	C/P2
1	<i>Journal of Business Venturing</i>	38	578	14	15,2	217	3.088	31	14,2
2	<i>Small Business Economics</i>	30	153	8	5,1	421	2.126	20	5,0
3	<i>Strategic Management Journal</i>	12	170	8	14,2	436	5.480	36	12,6
4	<i>Review of Financial Studies</i>	17	212	7	12,5	498	6.124	67	12,3
5	<i>Entrepreneurship Theory and Practice</i>	16	102	7	6,38	254	3.038	27	12,0
6	<i>Research Policy</i>	14	143	7	10,2	628	6.986	34	11,1
7	<i>Journal of Financial Economics</i>	10	144	6	14,4	615	7.989	39	13,0
8	<i>International Entrepreneurship and Management Journal</i>	13	69	5	5,31	165	1.003	18	6,1
9	<i>Strategic Entrepreneurship Journal</i>	12	58	5	4,83	99	710	16	7,2
10	<i>Academy of Management Journal</i>	10	85	5	8,5	323	6.947	45	21,5
11	<i>Journal of Financial and Quantitative Analysis</i>	8	87	5	10,9	284	1.699	21	6,0
12	<i>Journal of Management Studies</i>	8	76	5	9,5	293	4.456	32	15,2
13	<i>Journal of International Business Studies</i>	7	147	5	21	288	3.772	29	13,1
14	<i>Industrial and Corporate Change</i>	7	43	5	6,14	276	1.636	18	5,9
15	<i>Journal of Corporate Finance</i>	19	72	4	3,79	413	1.648	18	4,0
16	<i>Review of Finance</i>	9	40	4	4,44	191	813	14	4,3
17	<i>Corporate Governance an International Review</i>	8	39	4	4,88	156	887	12	5,7
18	<i>Journal of Banking Finance</i>	8	30	4	3,75	1.450	7.019	27	4,8
19	<i>European Financial Management</i>	7	73	4	10,4	178	614	12	3,4
20	<i>Organization Science</i>	7	45	4	6,43	455	6.255	37	13,7
21	<i>Journal of Financial Intermediation</i>	6	38	4	6,33	139	1.275	17	9,2
22	<i>Asia Pacific Journal of Management</i>	6	32	4	5,33	227	1.374	16	6,1
23	<i>Journal of Finance</i>	5	117	4	23,4	332	5.508	35	16,6
24	<i>International Small Business Journal</i>	9	27	3	3	200	995	13	5,0
25	<i>Journal of Business Research</i>	8	25	3	3,13	1.305	5.952	25	4,6
26	<i>Journal of Economics Management Strategy</i>	8	16	3	2	189	610	11	3,2
27	<i>Financial Management</i>	7	39	3	5,57	194	713	11	3,7
28	<i>Entrepreneurship and Regional Development</i>	6	33	3	5,5	177	973	15	5,5
29	<i>Harvard Business Review</i>	6	11	3	1,83	1.363	2.030	17	1,5
30	<i>California Management Review</i>	5	27	3	5,4	135	760	14	5,6
31	<i>Journal of Business Finance Accounting</i>	5	23	3	4,6	236	690	11	2,9
32	<i>Journal of Product Innovation Management</i>	5	20	3	4	430	2.699	22	6,3
33	<i>Technovation</i>	5	16	3	3,2	283	2.573	24	9,1
34	<i>Regional Studies</i>	4	25	3	6,25	479	2.357	19	4,9
35	<i>R D Management</i>	4	23	3	5,75	164	994	15	6,1
36	<i>Journal of Technology Transfer</i>	7	26	2	3,71	209	1.014	16	4,9
37	<i>International Review of Financial Analysis</i>	6	13	2	2,17	315	475	8	1,5
38	<i>Management Science</i>	5	30	2	6	747	5.678	28	7,6
39	<i>Journal of Small Business Management</i>	4	21	2	5,25	167	904	15	5,4
40	<i>Journal of Management</i>	3	19	2	6,33	297	6.286	41	21,2

Source: Own elaboration

Table VI.
Leading journals in
VC between
2010-2014

The *Journal of Business Venturing* is the most influential journal, although the *Journal of Finance* and the *Journal of Financial Economics* also receive numerous citations. Moreover, several management journals are also very influential in the field including the *Strategic Management Journal* and the *Academy of Management Journal*.

Conclusions

This work presents a general overview of the leading journals in VC research between 1990 and 2014. Different analyses were performed, both at a general level for the described period, and also at the quinquennial level.

Business Venturing which is the most productive, is also the most influential journal. Evidently, this is the only specialized journal in VC research. Interestingly, some cases, such as *Journal of Finance*, *Strategic Management Journal* and *Journal of Banking & Finance*, present an important number of citations (more than 1,000) in less than 25 papers. These three journals, despite not being specialized in VC research, publish very influential papers. The work also develops a graphical visualization of the publication and citation structure between journals by using VOS viewer software with bibliographic coupling and co-citation.

A quinquennial analysis, five periods of five years each, allowed us to recognize the transition among journals which focus on VC research. Specifically, in the first quinquennials analyzed, less than 15 journals published papers on venture capital, and the journals that accepted these articles come from a Finance and General Management perspective. Currently, this situation is very different. The last quinquennials analyzed show that more than 40 journals normally accept and publish papers on venture capital. This group of journals does not come from a few disciplines; in fact, a wide range of perspectives that include psychology, law, innovation and sociology, among others, represents it.

Clearly, VC research will continue growing, and it is necessary to deepen the analysis of the authors, countries and universities that lead research in this discipline, who are not only the most productive players but also the most influential actors.

Note

1. Web of Science (WoS) is one of the most popular databases for classifying scientific research worldwide. The assumption is that it only includes those journals that are evaluated with the highest quality.

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