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The financial crisis research: a bibliometric analysis

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Abstract In previous research (Chiang and Yang in Appl Econ 44(22):2827–2839, 2012), they has been studied to analyze the growth of publication, the subject types, and the journal distributions, etc. for financial risk literatures through the perspective of bibliometrics from 1991 to 2009. From the growing incidence of financial risk Since 2008 year, The event of financial risk greater more impact on the economy, for example, the Lehman Brothers Holdings Inc bankruptcy, the Greek debt crisis, the Latin American sovereign Crisis etc. In this study, we extended previous research up to 2013 and investigates the features of financial crisis literature based on bibliometric methods from: (1) TP: the number of "total articles" of an institution or a country; (2) SP: the number of "single country article" (3) CP: the number of "internationally collaborative article" (4) FP: the number of "first author article", and (5) RP: the number of "corresponding author article". The distribution of journal articles was also examined utilizing Bradford's law and Citation model (Chiu and Ho in Scientometrics 63(1):3–23, 2005). Data were based on the Science Social Citation Index, from the Institute of Scientific Information Web of Science database. A total of 8485 entries from 1926 to 2013 were collected. This paper implemented the following publication type and language, characteristics of articles outputs, country, subject categories and journals, and the frequency of title-words and keywords used. Meanwhile, the analysis indicated the most relevant disciplines for financial crisis subject category provided by economics, business finance, and political science.

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Keywords Bibliometrics · Bradford's law · Citation model

Introduction

Research motivation

A financial crisis is a state which causes economic, social, and political disasters that lead to a shift from equilibrium. This equilibrium creates uncertainty and chaos while causing redistribution of capital. After the bankruptcy of Lehman Brothers. America, Europe, and Asia experienced crises in their financial markets. For example, many countries in Latin American experienced a debt crisis (Wang and Yao 2014). Argentina began a process of debt restructuring. A total of approximately USD12.86 billion of eligible debt was tendered into the exchange launched in April 2010; this represented 69.5 % of outstanding bonds still held by holdouts. A total of 152 types of bonds in seven different currencies under eight distinct jurisdictions were issued during the two debt exchanges. Another surge in financial market turbulence was caused by the sovereign debt crisis in European countries such as Portugal, Ireland, Greece and Spain. The European sovereign debt crisis became evident in 2010, starting with the reporting by the European Commission on January 8th that evidence had been found of severe irregularities in the Greek Excessive Deficit Procedure notifications. As a result, in May 2010 the financial problems of Greece became so severe that the euro countries agreed to provide bilateral loans for a total amount of EUR 80 billion to be disbursed over the period until June 2013. In addition, the International Monetary Fund financed EUR 30 billion under a stand-by arrangement (Mink and de Haan 2013). After the 2007–2009 financial crisis in the United States, United Kingdom, and the euro area. With short rates approaching the zero lower bound in late 2008/early 2009, the Federal Reserve, the Bank of England (BOE), and the European Central Bank (EGB) began to pursue less conventional monetary policies—including forms of quantitative easing (QE)—to stimulate economic growth. QE policies are those that unusually increase the monetary base, including asset purchases and lending programs. Programs designed to improve credit conditions—that is, credit easing—are a special case of QE if they also increase the monetary base (Gagnon et al. 2011a, b).

According to the recent literature on crises, For example, Chouard et al. (2014) find that euro area economies have seen significant losses in their potential total factor productivity (TFP) due to the financial crisis, Chiang and Yang (2012) study probes into the development of financial risk literatures through the perspective of bibliometrics from 1970 to 2009. Zartaloudis (2014) discusses the impact of the ongoing (2008–2013) economic crisis on Greek and Portuguese welfare state reforms with a particular focus on the public sector, labour markets and social protection, Huang and Ho (2010) research on corporate governance using a bibliometric method, Chang et al. focus on bibliometric analysis to financial crisis publications in 362 journals listed in the four ISI subject categories of economics, finance business, business, and management during 1992–2008. Furthermore, there has been no study in the Financial Crisis using the method bibliometrics for analyzing after the bankruptcy of Lehman Brothers.

The aim of this article is to investigate how the recent recession has affected potential TFP in the euro area.

Literature review

Greek debt crisis

The *Greek debt crisis* (also known as the *Greek Depression* in reference to the Great Depression) is part of the ongoing Eurozone crisis triggered by the arrival of the global economic recession in October 2008, and is believed to have been directly caused by a combination of structural weaknesses of the Greek economy along with a decade long pre-existence of overly high structural deficits and debt-to-GDP levels on public accounts. In late 2009, fears of a sovereign debt crisis developed among investors concerning Greece's ability to meet its debt obligations, due to a reported strong increase in government debt levels. This led to a crisis of confidence, indicated by a widening of bond yield spreads and the cost of risk insurance on credit default swaps compared to the other countries in the Eurozone, most importantly Germany (De Santis 2012).

The sharp increase in yield spreads of Greek sovereign bonds relative to German sovereign bonds starting in the latter part of 2009. The Fig. 1 below depicts Greek, Italian, Spanish, and Portuguese sovereign 5-year bond yield spreads relative to a German bond yield of the same maturity. The sample period spans 1/2005 to 6/2011 was covered extensively by the financial press and dubbed "the Greek debt crisis" (Afonso et al. 2011).

Figure 2 shows that throughout 2010 Greek interest rates rose to levels that made fiscal policy unsustainable, and were much higher than those of other euro area countries that got into trouble later on. As a result, in May 2010 the financial problems of Greece became so severe that the euro countries agreed to provide bilateral loans for a total amount of EUR 80 billion to be disbursed over the period until June 2013. In addition, the International Monetary Fund financed EUR 30 billion under a stand-by arrangement (Constâncio 2011; Grammatikos and Vermeulen 2012).

Latin American sovereign crisis

Wang and Yao (2014) investigate the effects of global financial factors and Greek sovereign debt risk Latin American sovereign CDS spreads before and after the bankruptcy

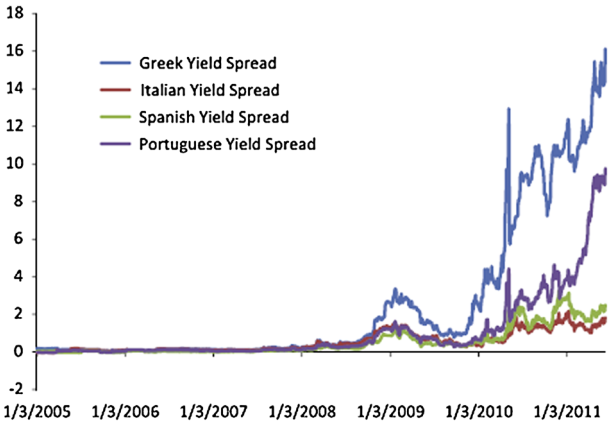

Fig. 1 Greek sovereign debt yield spreads (5-year bond yield)

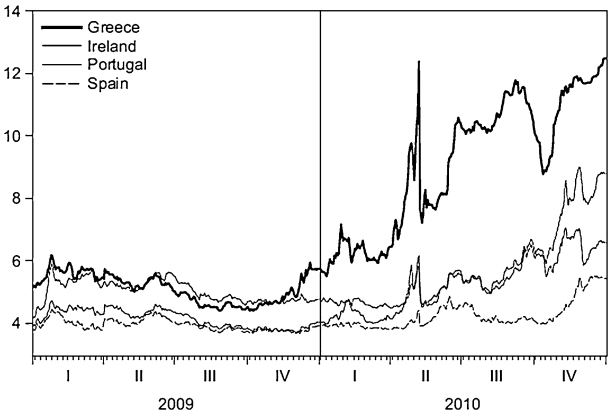

Fig. 2 Interest rates on 10-year government bonds during the Greek sovereign debt crisis

of Lehman Brothers. This research find that an increase in US default yield spread, Matei and Chen et al. (2011) concludes that the contagion effect of sovereign debt spread has changed after the subprime crisis for seven EU and non-EU countries. Table 1 presents the CDS spread in basis points on the dates of subprime mortgage crisis, bankruptcy of Lehman Brothers and Greek sovereign debt crisis, respectively, for six large Latin American countries and Germany and Greece. Both Latin American countries and EMU countries listed in the table have a higher spread in 2010 than the crisis point in 2007, while some Latin American countries (Brazil, Colombia and Mexico) honoured great solvency have lower spread in 2010 than the period around the Lehman's bankruptcy.

The sovereign CDS of these six Latin American countries ratcheted up after the mid-2007 and nearly reached a new high point in August 2007 (On 31 July 2007, Bear Sterns liquidated its two hedge funds, which invested in various types of mortgage-related securities). The CDS spreads of Argentina and Venezuela increased at a much larger rate compared to those of the other four countries. Until the early 2008, CDS spreads increased gradually. After the crisis of Lehman Brothers, the CDS spreads bolstered a sudden increase especially for Argentina and Venezuela. The other four Latin American countries also continued their upward trends and increased even further until early 2009. After the peak in financial crisis period, the CDS spreads ratcheted up again owing to Greek sovereign debt crisis in 2010. Figure 3 displays the historical observations of six Latin American country's CDS spreads, respectively.

Table 1 Five-year government bond CDS spreads on key dates of the financial crises

Date	CDS spreads (b.p.)							
	Latin America						Euro	
	Argentina	Brazil	Chile	Colombia	Mexico	Venezuela	Germany	Greece
31 July 2007	414.2	120.7	19.0	158.4	58.3	369.0	2.2	6.7
15 September 2008	942.7	192.4	73.0	229.7	161.0	806.2	9.8	56.8
9 May 2010	1025.1	151.7	98.6	180.6	151.0	1043.9	57.3	938.7

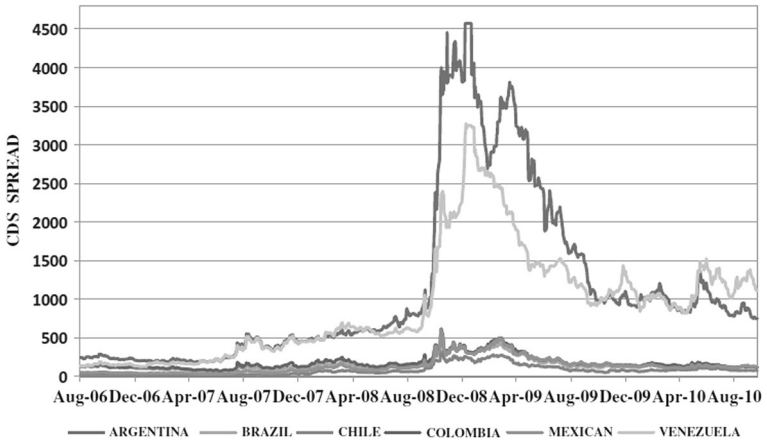

Fig. 3 Latin American sovereign CDS spread: 10 August 2006–2030 September 2010

Quantitative easing

In late 2008, the Federal Reserve lowered its target policy rate—the overnight federal funds rate—effectively to its zero lower bound. Given a deteriorating outlook for economic growth and a perceived threat of price deflation, the Fed began to purchase longer term securities to push down bond yields and provide additional monetary policy stimulus to the economy. Similarly, in the early spring of 2009, the Bank of England, which had lowered its policy interest rate—the Bank Rate—to its effective zero lower bound, projected weak UK economic growth and a medium-term inflation rate that was below its official 2 % target. Therefore, the Bank of England announced plans to purchase government bonds to increase nominal economic activity (Q.E. 2011). In the Fig. 3 spending in the United Kingdom slowed sharply in late 2008 as the global slowdown gathered pace. So the Bank cut Bank Rate substantially to reduce the risk of inflation falling well below target further ahead (Fig. 4).

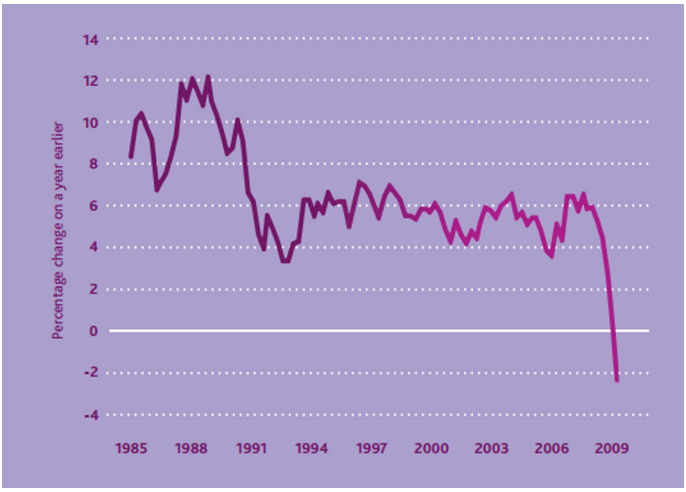

Fig. 4 UK money spending (*source*: Q.E. 2011)

Facing similar circumstances, the Federal Reserve and the Bank of England purchased roughly comparable amounts of bonds—both relative to the size of their economies and to the stocks of outstanding government debt. Recent research also suggests that the two central bank bond purchase programmes induced a comparable reduction in government bond yields in each country. For the US, Gagnon et al. (GRRS) (2011a, b) report a cumulative decline in the 10-year US Treasury yield of 91 basis points following eight key announcements about the Fed's first programme of large-scale asset purchases (LSAPs). For the UK, Joyce et al. (JLST) (2011) report that long-term UK government bond (or gilt) yields fell a total of about 100 basis points after six key quantitative easing (QE) announcements. Quantitative easing can be used to help ensure that inflation does not fall below target. Risks include the policy being more effective than intended in acting against deflation (leading to higher inflation in the longer term, due to increased money supply), or not being effective enough if banks do not lend out the additional reserves. According to the International Monetary Fund (IMF) and various economists, quantitative easing undertaken since the global financial crisis of 2007–2008 has mitigated some of the adverse effects of the crisis. Financial experts have criticized the programs for exacerbating wealth inequality, a finding confirmed by the Bank of England.

Materials and methods

The methodology used in this study was based on the SSCI database of Web of Science from Thomson Reuters (updated on 31 Dec 2013). According to Journal Citation Reports (JCR) of 2013, it indexes 2966 journals in 56 Web of Science categories of social science edition.

Keywords "Financial Crisis*", "Financial risk*" were used to search titles, abstracts, keywords or keywords plus of papers indexed in the Science Social Citation Index (SSCI) from the ISI databases. A total of 8673 entries in a span of 22 years from 1926 to 2013 were collected for further analysis. The articles were classified into five types based on the country and institution: (1) TP: the number of "total articles" of an institution or a country; (2) SP: the number of "single country article", if the researchers' addresses were from the same country or "single institution article", if the researchers' addresses were from the same institution; (3) CP: the number of "internationally collaborative article", if the articles were coauthored by researchers from multiple countries (Chiu and Ho 2005) or "inter-institutionally collaborative article", if authors were from different institutions; (4) FP: the number of "first author article", if the first author was from the country or institution for analysis; and, (5) RP: the number of "corresponding author article", if the corresponding author was from the country or institution for analysis.

In most cases, there are more than one author and more than one address in one record, and sometimes some authors may have more than one address. In order to solve this problem, we need to link every author with his/her addresses in the database.

Result and discussion

The growth analysis of publication year

A total of 8485 articles had records in Financial Crisis in SSCI and it was more than previous research 2727 papers (Chiang and Yang 2012). These papers were published

between 1926 and 2013 (Fig. 5). The literature growth rate from 1997 to 2007 remained stagnant, but the literatures gradually increased since 2008, reaching at least 100 every year. For instance, the Financial crisis of 2007–2008, Greek government-debt crisis of 2009, eurozone crisis of 2010 gave rise to an explosive growth. Finally, In 2013, the number of literatures reached 1529 and total cite paper was 9369.

Distribution by country/territory

Table 2 indicated that higher percentage of single country's classic articles was found in Financial Crisis field. The leading country was US (2681 articles), accounting for 31.59 %, followed distantly by the UK (1194 articles) and AUS (572 articles). Domination in Financial Crisis articles by the US was not surprising since this pattern occurs in other scientific fields such as, obstetrics and gynecology (Brandt et al. 2010) and orthopaedic surgery (Kelly et al. 2010). As for the 25 internationally collaborative articles, 1546 involved contribution by the US, followed by the UK 695 articles. As US took the lead with an overwhelming majority, they had the highest percentage of articles in other research fields, such as articles of urology and subspecialty (76 %) (Hennessey et al. 2009). The top cited publications originated from the United States are explained in part by the large number of the American scientific publications (Zhou and Leydesdorff 2008). There is some evidence that US authors tend to reference articles from US journals than from other countries (Campbell 1990).

We have compared with the previous research (Chiang and Yang 2012). USA and England are the same with the production order articles on Financial Crisis. South Korea is 7th in rank, and with the previous research they were 3rd in rank. Canadian is 6th in rank, and with the previous research they were 5th. Germany is 4th in rank, and with the previous research they were 7th in rank. China is the 5th in rank, and with the previous research they were 6th in rank.

In Fig. 6, we can find the article distribution of the top five countries/territories in each year. The US leads Financial Risk fields and is followed by England. The result indicates that the US is still the main country/territory in Financial Risk research domain.

Distribution by institution name

Table 3 is easy to summarize: Harvard Univ also published the most first and single institute articles while Int Monetary Fund had the most first author articles and

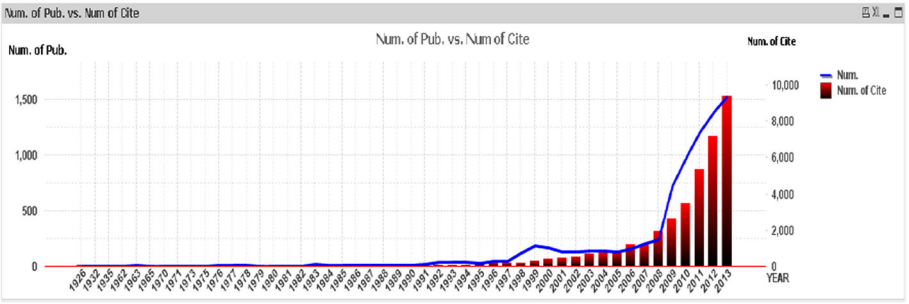

Fig. 5 The growth trend of the financial crisis literatures

Table 2 Distribution of top 25 countries/territories in each type (from 1991 to 2012)

Country	Rank (TP)	Rank (SP)	Rank (CP)	Rank (RP)	Rank (FP)
USA	1 (2681)	1 (1135)	1 (1546)	1 (2306)	1 (2358)
England	2 (1194)	2 (499)	2 (695)	2 (905)	2 (961)
Australia	3 (572)	3 (223)	3 (349)	3 (459)	3 (459)
Germany	4 (536)	4 (187)	3 (349)	4 (404)	4 (421)
People's Republic China	5 (392)	7 (89)	4 (303)	5 (289)	5 (314)
Canada	6 (350)	5 (152)	7 (198)	6 (276)	6 (281)
South Korea	7 (314)	6 (92)	5 (222)	7 (250)	7 (256)
Spain	8 (283)	11 (62)	6 (221)	8 (248)	8 (252)
Netherlands	9 (283)	8 (81)	8 (192)	10 (191)	10 (216)
France	10 (274)	7 (89)	9 (185)	9 (222)	9 (232)
Italy	11 (244)	10 (67)	10 (177)	12 (181)	11 (193)
Taiwan	12 (194)	12 (49)	11 (145)	11 (182)	12 (179)
Switzerland	13 (160)	13 (48)	12 (112)	14 (112)	13 (121)
Japan	14 (155)	9 (68)	14 (87)	13 (118)	14 (119)
Singapore	15 (126)	14 (41)	15 (85)	18 (81)	17 (86)
Turkey	16 (124)	19 (28)	13 (96)	15 (102)	15 (105)
Scotland	17 (115)	16 (37)	17 (78)	20 (75)	19 (76)
Greece	18 (118)	18 (31)	14 (87)	16 (97)	15 (105)
Belgium	19 (109)	19 (28)	16 (81)	19 (79)	18 (80)
Czech Republic	20 (105)	15 (40)	18 (65)	17 (84)	16 (94)
Brazil	21 (90)	20 (25)	18 (65)	21 (69)	20 (73)
Sweden	22 (81)	17 (34)	21 (47)	23 (56)	24 (58)
Romania	23 (73)	22 (17)	19 (56)	21 (69)	21 (70)
Ireland	24 (70)	20 (25)	22 (45)	22 (57)	23 (60)
Malaysia	25 (70)	21 (22)	20 (48)	23 (56)	22 (61)

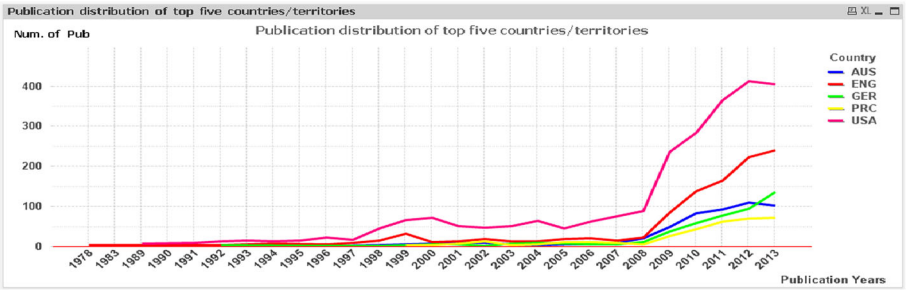

Fig. 6 Publication distribution of top five countries/territories in financial crisis

corresponding author articles. Of the total articles, 4497 articles (53 %) were inter-institute collaboration, and 3987 (47 %) were independent publications. The percentage of collaboration between institutes was higher than that between countries (18 %). In total there

were 798 institutes, 510 (64 %) of which had no independent articles, and 111 (14 %) had no collaborative articles. For 184 institutes with both independent and inter-institute collaboration articles, average number of collaborative articles per institute (7.8) was higher than that of independent (4.8), and mean value of citation per publication of inter-institute collaborative publish (4.5) was higher than citation per publication of single institute collaborative publish (2.1), which means collaboration produced more articles and collaborative articles had higher impact in the research field.

In order to compare institute's research performance by country, publication per institute (PPI) in a country was used to be an indicator. A country's PPI is equal to the ratio of the publications of the country and the number of related institutes of the country. The USA produced the most articles (2681, 31.59 %), but it also had the most institutes (4289, PPI = 1.6). However, the institutes from the Germany had a higher PPI of 2.2. It should be noted that, for one article, the sensitivity of the value of PPI mainly depends on the number of institutes. If the number of institutes is not large enough, the uncertainty resulted from the number of articles (if there is) would affect PPI considerably. Table 4 shows the PPI of countries with top 5th publish countries.

Distribution by subject area

Table 5 lists top 10 subject areas articles in Financial Crisis. The subject areas was Economics (3950 articles), accounting for 46.55 %, followed distantly by the Business Finance (1744 articles, 20.55 %) and Political Science (793 articles, 9.34 %). The Journal of Banking Finance were published the most papers in Economics and Business Finance fields. Aizenman, J. were the most productive articles for collaborative author, first author, and corresponding author in Economics field.

Table 3 Distribution of the top 15 institutions for financial crisis (total publish >60)

Institution	Rank (TP)	Rank (SP)	Rank (inter-institute CP)	Rank (FP)	Rank (RP)
Harvard Univ	1 (130)	1 (50)	4 (80)	2 (91)	3 (80)
Int Monetary Fund	2 (127)	5 (33)	2 (94)	1 (95)	1 (96)
World Bank	3 (112)	11 (15)	1 (97)	4 (65)	4 (70)
NBER	4 (103)	10 (16)	3 (87)	13 (1)	5 (68)
Univ Oxford	5 (106)	2 (43)	5 (63)	3 (76)	2 (81)
Australian Natl Univ	6 (87)	3 (36)	9 (51)	5 (56)	7 (61)
Univ Cambridge	7 (88)	6 (29)	6 (59)	7 (53)	6 (66)
Univ Calif Berkeley	8 (75)	7 (28)	11 (47)	6 (55)	8 (60)
NYU	9 (69)	9 (21)	10 (48)	10 (44)	10 (47)
Univ London	10 (67)	4 (35)	14 (32)	11 (43)	9 (49)
Univ Sydney	11 (67)	8 (24)	12 (43)	8 (46)	12 (44)
European Cent Bank	12 (66)	13 (10)	7 (56)	9 (45)	10 (47)
Columbia Univ	13 (65)	3 (36)	15 (29)	11 (43)	10 (47)
Korea Univ	14 (64)	12 (11)	8 (53)	12 (32)	13 (35)
Natl Bur Econ Res	15 (64)	8 (24)	13 (40)	13 (1)	11 (46)

Table 4 The PPI of top five publish countries for financial crisis

Country	Number of articles	Number of institutes	PPI
USA	2681	4289	1.6
England	1194	2268	1.9
Australia	572	1201	2.1
Germany	536	1179	2.2
People's Republic China	392	706	1.8

Distribution by source title

Table 6 highlights information on trends for Financial Crisis, allowing researchers to closely approach the distribution of the top 23 source titles in future research. The Journal of Banking Finance published the most papers (222, I.F = 1.72), followed by the Journal of International Money and Finance (142, I.F. = 1.43). We have compared with the previous research (Chiang and Yang 2012). Pacific Review is 13th in rank(previous research is 3th). Cambridge Journal of Economics is 6th in rank (previous research is 4th). IDS Bulletin Institute of Development Studies is 23th in rank (previous research is 5th). World Development is 21th in rank (previous research is 6th). Economic and Political Weekly is seventieth in rank (previous research is 7th). Asian Survey is thirty-seventh in rank (previous research is ninth). Bulletin of Indonesian Economic Studies is thirty-sixth in rank (previous research is tenth). Review of International Political Economy is twelfth in rank (previous research is tenth). Applied Economics Letters is ninth in rank for this research.

Of these 23 journals listed in the Web of Science category of Financial Crisis in 2013, Journal of Financial Economics was the only journal with impact factor higher than 3. As expected, the Journal articles were published in journals with high impact factors, similar to the subject area of anesthetics (Baltussen and Kindler 2004). The leading journals attracted the publications, which in turn maintained the high impact factor of these journals. However, Journal articles with TC2013 C50 in Financial Crisis field could also be found in journals with lower impact factors such as Asian Economic Journal (IF = 0.211; 302/333) with four articles and AUSTRALIAN Economic Papers (IF = 0.17; 308/333) with one article.

The distribution of papers by reference to their I.F. was as follows: 3.2 % of total papers had an I.F. of >3, 28 % had an I.F. of 2 ~ 1, 48 % had an I.F. of 1 ~ 0.5, 6.7 % had an I.F. of 0.5 ~ 0.03, 7.1 % had an I.F. of <0.03, and 7.3 % had no information on IF. The mean impact factor of the journals was 1.02. In Fig. 7, The top citing research journals are Journal of Financial Economics (I.F = 3.424,2626 citing), followed by Journal of Banking Finance (I.F = 1.72,1399 citing) and Journal of International Money and Finance (I.F = 1.434,1137 citing).

Distribution by authors

Table 7 shows the top 25 most productive authors, with the number of their total articles, first author articles and corresponding author articles, and the single author articles. Among the top 25 authors, 16 were from the USA, 8 from the UK, and 1 from Canada. Aizenman, J. from Univ So Calif in USA, and Eichengreen, B. from Univ Calif Berkeley in USA,

Table 5 Distribution of top 10 subject areas in Financial Crisis

Subject area	Rank (TP)	Single author (TP)	Collaborative author (TP)	First author (TP)	Corresponding author (TP)	Top of Journal Name (TP)
Economics	1 (3950)	Dajcman S (5) Sussangkarn C (5)	Aizenman J (11)	Aizenman J (13)	Aizenman J (12)	Journal of Banking Finance (237)
Business finance	2 (1744)	Moshirian F (4)	Demirguc-Kunt A (8); DE Haan J (8)	Aizenman J (7); Acharya VV (7); Stulz RM (6)	Aizenman J (6); Acharya VV (6)	Journal of Banking Finance (237)
Political science	3 (793)	Quaglia L (4); Seabrooke L (4);	Williams K (6)	Helleiner E (4); Seabrooke L (4)	Helleiner E (4); Seabrooke L (4)	Review of International Political Economy (50)
International relations	4 (717)	Cooper RN (6)	Quaglia L (3); Onis Z (3);	Cooper RN (6)	Cooper RN (6)	Review of International Political Economy (50)
Business	5 (560)	Moloney N (3); Das DK (3)	Yeh YH (3); Wright M (3)	Moloney N (3); Das DK (3)	Moloney N (3); Das DK (3)	European Business Organization Law Review (41)
Management	6 (523)	Czarniawska B (4)	Luftman J (4); Jiang Y (4)	Zagelmeyer (4); Luftman J (4); Czarniawska B (4)	Zagelmeyer (4); Luftman J (4); Czarniawska B (4)	African Journal of Business Management (41)
Planning development	7 (456)	Aalbers MB (5)	Sumner A (6)	Aalbers MB (5)	Aalbers MB (5)	World Development (42)
Area studies	8 (382)	Sapir J (4); Dent CM (4)	Sumner A (5)	Sapir J (4); Dent CM (4)	Sapir J (4); Dent CM (4); Sumner A (4)	Pacific Review (48)
Law	9 (367)	Moloney N (5)	Schwarcz SL (2); Zaring D (2);	Moloney N (5)	Moloney N (5)	European Business Organization Law Review (41)
Geography	10 (305)	Wainwright T (5)	Leyshon A (5)	Wainwright T (5); Aalbers MB (5)	Wainwright T (5)	Eurasian Geography and Economics (36)

Table 6 Distribution of top 23 source titles in Financial Crisis (Num. >38)

Journal	Num.	I.F. (5-Year)	Rank/subject total	Subject type
Journal of Banking Finance	222	1.72	23/89	Business, Finance
Journal of International Money and Finance	124	1.434	44/89	Business, Finance
Actual Problems of Economics	83	0.04	287/333	Economics
Economic Modelling	76	0.557	217/333	Economics
Journal Of Financial Economics	74	3.424	3/89	Business, Finance
Cambridge Journal of Economics	70	0.951	140/333	Economics
Journal of Financial Stability	65	1.463	15/89	Business, Finance
Applied Economics	63	0.655	245/333	Economics
Applied Economics Letters	58	0.23	274/333	Economics
Journal of Economic Issues	54	0.32	260/333	Economics
Journal of Money Credit and Banking	50	1.104	29/89	Business, Finance
Review of International Political Economy	48	1.04	65/333	Economics
Pacific Review	47	1.051	6/65	area Studies
Journal of International Financial Markets Institutions Money	46	0.05	34/333	Economics
Journal of Post Keynesian Economics	46	0.28	293/333	Economics
Oxford Review of Economic Policy	46	0.875	153/333	Economics
Journal of International Economics	45	2.086	41/333	Economics
International Review of Economics Finance	42	0.855	45/89	Business, Finance
Global Policy	41	1.206	19/83	International Relations
New Political Economy	41	1.93	52/333	Economics
World Development	41	1.527	76/333	Economics
European Business Organization Law Review	39	0.143	108/116	Business
Ids Bulletin Institute of Development Studies	39	0.64	18/65	Area Studies

were the same productive authors with 16 articles respectively. Aizenman, J. also had the top collaborative articles, first author articles,and corresponding author for articles. Eichengreen, B. had the most single author article.

Citation model

There was a linear relationship with a high coefficient of determination (Chiu and Ho 2005). The model can be expressed as:

$$C_c = KY + S;$$

where K is the citation rate (number of times cited/year), and S is the visibility potential when a paper is published (number of times cited). Moreover, S is a measure of how

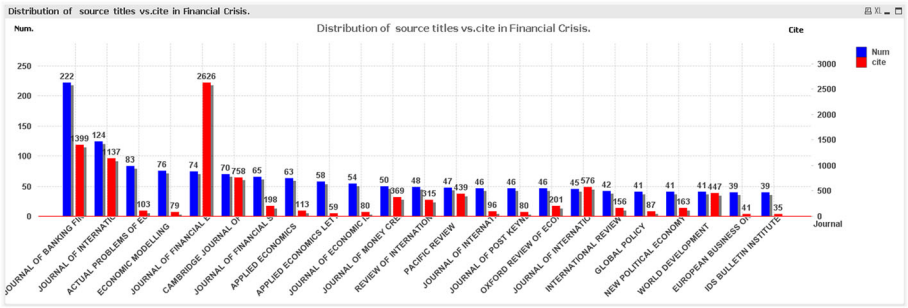

Fig. 7 Distribution of source titles versus cite in financial crisis

Table 7 Distribution of top 25 authors in financial crisis (Num. >7)

Author	Country	Institution	Rank (TP)	Rank (SP)	Rank (CP)	Rank (FP)	Rank (RP)
Aizenman J	USA	Univ So Calif	1 (16)	7 (2)	1 (14)	1 (16)	1 (14)
Eichengreen B	USA	Univ Calif Berkeley; NBER	1 (16)	1 (9)	7 (7)	2 (11)	2 (10)
Shin HS	USA	Princeton Univ	2 (12)	6 (3)	3 (11)	9 (3)	7 (4)
Mckee M	ENG	Univ London London Sch Hyg and Trop Med;	2 (12)	0	2 (12)	11 (1)	9 (2)
Stuckler D	ENG	Univ Cambridge; Univ Oxford Christ Church	2 (12)	0	2 (12)	9 (3)	8 (3)
Allen F	USA	Univ Penn	3 (10)	7 (2)	6 (8)	3 (10)	2 (10)
Demirguc-Kunt A	USA	World Bank	3 (10)	0	4 (10)	7 (5)	8 (3)
Stiglitz JE	USA	Columbia Univ; Roosevelt Inst	3 (10)	3 (6)	4 (10)	6 (6)	5 (6)
Quaglia L	ENG	Univ York; Univ Sussex	3 (10)	2 (7)	3 (11)	4 (8)	3 (8)
Williams K	ENG	Univ Manchester	4 (9)	0	5 (9)	0	0
Acharya VV	USA	NYU; NBER	5 (8)	0	6 (8)	4 (8)	4 (7)
Bordo MD	USA	Rutgers State Univ	5 (8)	7 (2)	8 (6)	4 (8)	7 (4)
Kutan AM	USA	Univ Bonn; So Illinois Univ; Emerging Markets Grp	5 (8)	0	6 (8)	11 (1)	9 (2)
Lobo GJ	USA	Univ Houston	5 (8)	0	6 (8)	0	6 (5)
Schmukler SL	USA	World Bank	5 (8)	0	6 (8)	11 (1)	7 (4)
Basu S	USA	Stanford Univ	6 (7)	0	7(7)	0	0
Bird G	ENG	Univ Surrey	6 (7)	5 (4)	3 (11)	5 (7)	4 (7)
Kanagaretnam K	Canada	McMaster Univ	6 (7)	0	7 (7)	8 (4)	8 (3)
Laeven L	USA	Int Monetary Fund; CEPR	6 (7)	8 (1)	8 (6)	10 (2)	7 (4)
Langley P	ENG	Northumbria Univ	6 (7)	2 (7)	0	5 (7)	4 (7)
Leyshon A	ENG	UNIV BRISTOL	6 (7)	0	7 (7)	8 (4)	6 (5)
Mendoza EG	USA	Univ Maryland	6 (7)	8 (1)	8 (6)	9 (3)	8 (3)
Reinhart CM	USA	Inst Int Econ; NBER	6 (7)	0	7 (7)	7 (5)	5 (6)
Rose AK	USA	Univ Calif Berkeley	6 (7)	0	7 (7)	6 (6)	8 (3)

quickly the .average article. in the field is cited. The *S* shows how often articles published in the field are cited within the same year. A good linear relationship with a coefficient of determination (0.992) was obtained for contingent valuation research articles published from 1991 to 1998. For this research, articles published per year there were also significantly linear relationships between the cumulative number of citations (C.N.O.C.) and the year after publish(Y.A.P.) in recently 10 years. Articles published in 2013 had the highest citation rate. However, it should be noted that *K* is determined by two factors: number of articles per year and citations per article. Based on the data from 2004 to 2013, that means *K* increased with the increase of the number of articles. Figure 8 basically obeyed this trend.

Bradford's law

A total number of 8485 articles on Financial Crisis was scattered among 1848 journals. Of these, 481 journals have published only 1 paper that employed an Financial Crisis. Table 8. lists the nucleus and the successive zones of journals. Four zones, each publishing approximately 26,000 articles, constitute the most specific subdivisions of these data for which the Bradford hypothesis is valid. The nucleus of journals (zone I) consists of 41 journals, followed by 104 titles (zones II), 282 titles (zone III), and 1413 titles (zone IV). The ratio of journal number among these 4 zones is 41:104:282: 1413 = 1:2.5:6.8:34.4, which is quite close to 1:2.5: 2.5^2(6.25):2.5^3(15.6), except for zone IV, which is much larger than Bradford's law predicts (Bradford 1948). This may be due to the widespread

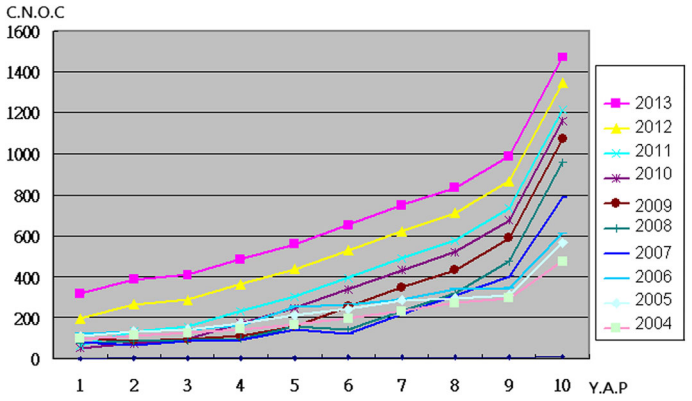

Fig. 8 Relationship between the cumulative number of citations and the article life

Table 8 Bradford zones of scatter for Financial Crisis literature

Zones	No. of journals	No. of articles	Cumulative no (%)
I	41	2078	2078 (24.45)
II	104	2412	4490 (52.91)
III	282	2218	6708 (79.05)
IV	1413	1777	8485 (100)

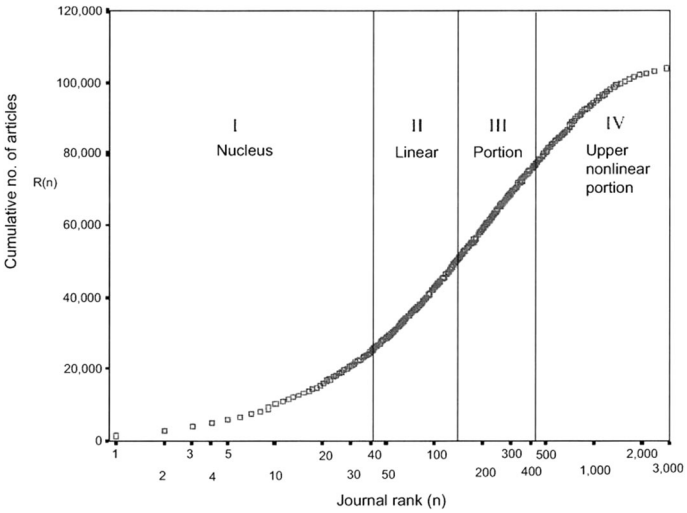

Fig. 9 The Bradford–Zipf plot of financial crisis journal literature

nature of articles in a vast number of journals. Figure 9 illustrates the Bradford–Zipf plot—the cumulative number of papers for each journal against the logarithm of its ranks—for the Financial Crisis journal literature. Noticeably, the figure conforms very well to the typical Bradford–Zipf pattern. The approximately linear portion appears after the journal rank of about 41. The top 41 journals may be considered the core journals in the Financial Crisis literature. The final droop portion begins approximately at the journal rank of 498.

Conclusion

In this study, some significant points have been obtained on the research trends throughout the period from 1926 to 2013. This analysis provides an understanding of the state of Financial Crisis research and examines publication productivity at the individual and institutional level. The vivid analysis of the study divulges the following major findings:

1. In the Financial Crisis research, the Financial crisis of 2007–2008, Greek government-debt crisis of 2009, eurozone crisis of 2010 gave rise to an explosive growth. Finally, In 2013, the number of literatures reached 1529 and total cite paper was 9369. Clearly, English is still the major trend of language in Financial Crisis research.
2. On the basis of the countries/territories, the US, England, Australia, Germany and Roples of China are the top five countries/territories in this field (63.34 percent of articles). Besides, USA is the major academic article providers in Financial Crisis. At the national level, the scattering of contributors are limited within five countries. 31.06 percent of articles are contributed by USA; and 14.07 percent of articles are contributed from a UK.
3. At the institutional level, 4497 articles (53 %) were inter-institute collaboration, and 3987 (47 %) were independent publications. The results show the dominance of USA universities among top 10 institutions for Financial Crisis. Harvard Univ also

published the most first and single institute articles while Int Monetary Fund had the most first author articles and corresponding author articles.

4. Judging from the subjects, the most relevant disciplines for Financial Crisis subject category provided by Economics, Business Finance, and Political Science, which was consistent with some studies for service innovation (Chiang and Yang 2012). The Journal of Banking Finance were published the most papers in Economics and Business Finance fields. Aizenman, J. were the most productive articles for collaborative author, first author, and corresponding author in Economics field.
5. Based on the sources, We have compared with the previous research (Chiang and Yang 2012). Pacific Review is 13th in rank (previous research is 3th). Cambridge Journal of Economics is 6th in rank (previous research is 4th). IDS Bulletin Institute of Development Studies is 23th in rank (previous research is 5th). World Development is 21th in rank (previous research is 6th). Economic and Political Weekly is seventieth in rank (previous research is 7th).
6. Based on the authors, Among the top 25 authors, 16 were from the USA, 8 from the UK, and 1 from Canada. Aizenman, J. had the top collaborative articles, first author articles, and corresponding author for articles. Eichengreen, B. had the most single author article.
7. From the cited model (Chiu and Ho 2005), articles published per year there were also significantly linear relationships between the cumulative number of citations (C.N.O.C.) and the year after publish (Y.A.P.) in recently 10 years.
8. In the Bradford's law test, the cumulative number of papers for each journal against the logarithm of its ranks—for the Financial Crisis journal literature.

The analysis provides a roadmap for future research, abstracts technology trend information and facilitates knowledge accumulation, therefore the future research can concentrated in core categories.

Limitation of the study

Due to paucity of time and certain unavoidable situations, the authors could not make the study a little more exhaustive—which could have provided some more interesting results. Therefore, the authors feel that this research may provide useful scaffolding to the following area of research in future:

1. Articles published in non-SSCI indexed publications were not included although they contributed to scientific production. As such more studies are needed to compare the research productivity of Financial Crisis researchers based on their publication coverage in non-SSCI databases such as Scopus and Google Scholar. However, we believe that this work can be a basis for future studies aimed to create a clear picture of the Financial Crisis and scientific contributions of Financial Crisis researchers.
2. A comparative study may be drawn between two single journals of relatively similar standard with reference to the metrics used in this study.
3. A Complex network analysis could link all elements in a this domain. An element can not only make direct impact on adjacent subjects, but also have indirect effect on other actors of subjects. Complex network analysis can be also used to measure indirect influence besides direct effect in the Financial Crisis field

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