



Retirement planning and financial literacy, at the crossroads. A bibliometric analysis

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ABSTRACT

Governments in many countries are facing the challenge of providing sufficient retirement incomes for an ageing population. Through bibliometric analysis, this paper disentangles the intellectual and conceptual structure of the research on financial literacy in the various phases of retirement financial planning, identifying the most recent trends. The results are especially relevant for the financial community, considering the increasing emphasis of institutions and society in the use of financial literacy as a way of increasing the responsibility of individual citizens in the design of their own retirement strategies.

1. Introduction

The governments of many countries are currently facing the challenge of providing sufficient retirement incomes for a population that is ageing as a result of lower mortality and fertility rates. The average dependency ratio¹ has increased dramatically from 1975 to 2015, and is projected to accelerate in the forecoming years (OECD, 2019). In developed countries, ageing population places a considerable financial stress on governmental budgets, as spending on public welfare increases while there is a proportional reduction in working-age taxpayers Ntalianis and Wise (2011).

These potential problems are complicated by the fact that most people wait too long before establishing a personal savings program, which can result in deprivation not only for the individuals but for the entire society as well. Workers and retirees have increasingly been asked to assume an unprecedented degree of responsibility about their retirement. Pension systems enable and encourage their active participation, and the income stream after retirement increasingly relies on private savings (Hauff et al., 2014).

Nevertheless, while citizens are asked to make difficult decisions, it is not clear if they are prepared to do so. Financial literacy², which “measures how well an individual can understand and use personal finance-related information” (Huston, 2010: 306) can be a critical tool as, according to Fox et al. (2005), financial knowledge can reduce many social and personal problems (stress, illness,

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¹ This ratio is calculated as the number of individuals older than 65 for every 100 people between 20 and 64 years.

² Henceforth, FL

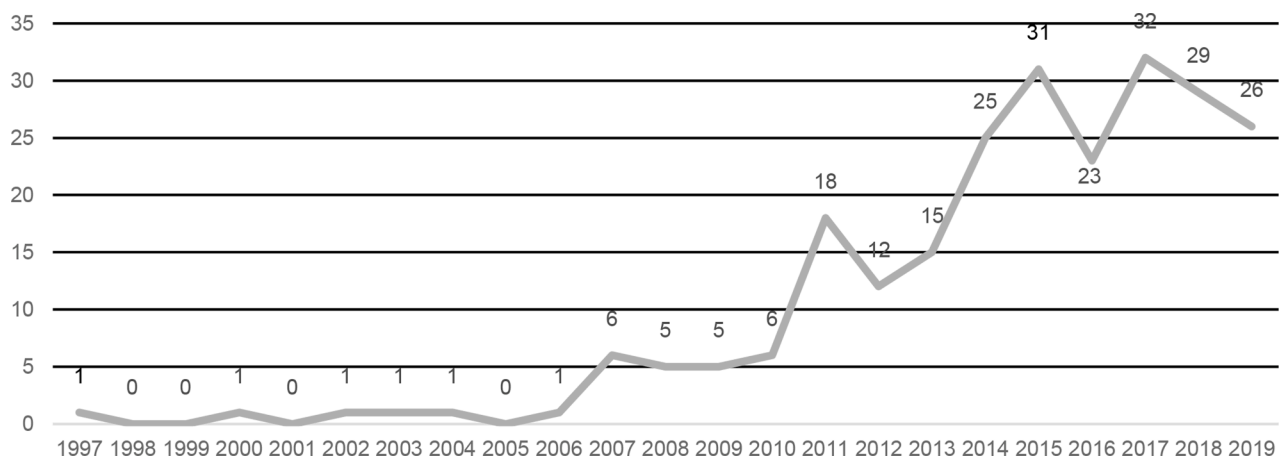


Fig. 1. Historical evolution of WoS publications about retirement planning and FL.

financial disputes...).

Figs. 1, 2 and 3

This study analyses the development status and current trends in retirement planning and FL research using bibliometric methods. In spite of the relevance of FL in retirement planning, no previous research has been found that has quantitatively analyzed the dynamics of this research stream. The goals of the paper can be linked with the following research questions: (1) What is the historical evolution of the literature? (2) Which are the most influential journals, countries, institutions, authors and articles in this research stream? (3) Which are the journals around which the research topic is organised? (4) Which are the central subjects inside the research topic? (5) Which are the hottest topics and patterns in the research field?

Starting from a description of the data sources and methods used, this article studies the intellectual status of the knowledge around retirement planning and FL, extracting the latest research trends from the analysis of the most recent publications in the field. Finally, it sums up its key findings, including its conclusions and future development lines.

2. Data collection and method

Bibliometric methods analyse a specific scientific domain using bibliographic data through two main approaches: performance analysis and science mapping (Noyons et al., 1999; Van Raan, 2005; Cobo et al., 2011). They are frequently used to evaluate the development of a given research field (Liao et al., 2018). So, bibliometric analysis provides scholars with a powerful tool to study a specific research area analyzing citations, geographical distribution, co-citations, and word frequency.

To begin this systematic review, a keyword search of the literature was carried out in order to exclude potential researchers' bias. The works selected only included scientific articles published in peer-reviewed journals included in the Web of Science (WoS) Core Collection, rejecting proceedings papers, book chapters, working-papers, communications and conferences. The terms selected were 'financial literacy' or 'financial knowledge' or 'financial education' or 'financial ability' or 'financial abilities' or 'financial skills' or 'financial training' AND 'retirement' (Hauff et al., 2014) or 'pension' or 'retired'. The search chain was performed over the subfields 'title', 'abstract', and 'keywords', in order to recognize which articles are dealing with this topic. The period of the search was from 1/1/1990 to 31/12/2019. This first selection included a total of 364 articles. All the results obtained in this initial search were double-checked to eliminate possible inconsistencies. To foster objectivity, all the authors performed this second screening.

The final sample consisted of a total of 242 articles. After the selection, the bibliometric analysis was performed. Firstly, we used Sci-mat, a software developed by Cobo et al. (2012), in order to analyse the distribution of articles by country, institution, journal and individual author. To determine the impact and influence of the different papers, we have also studied the absolute and relative number of citations of the most cited articles. Secondly, we have followed a bibliometric mapping approach using VOS Viewer software Van Eck and Waltman (2010), which enables us to visualize diverse networks resulting from co-word and co-citation analyses.

3. Results

3.1. Number of publications

When considering the number of publications per year, a growth trend was recognized. Fig. 1 shows the evolution of the number of academic articles per year in the field of retirement planning and FL for the reference period.

Since the first article Curtley (1997), this research line attracted relatively low attention in the following 10 years. Two economic critical events, the US subprime meltdown (Sanders, 2008; Mayer, 2011) and the European sovereign debt and banking crisis (Moro, 2014 and Gruppe et al., 2017), which relationship through different mechanisms has been discussed in the literature (Ureche-Rangau

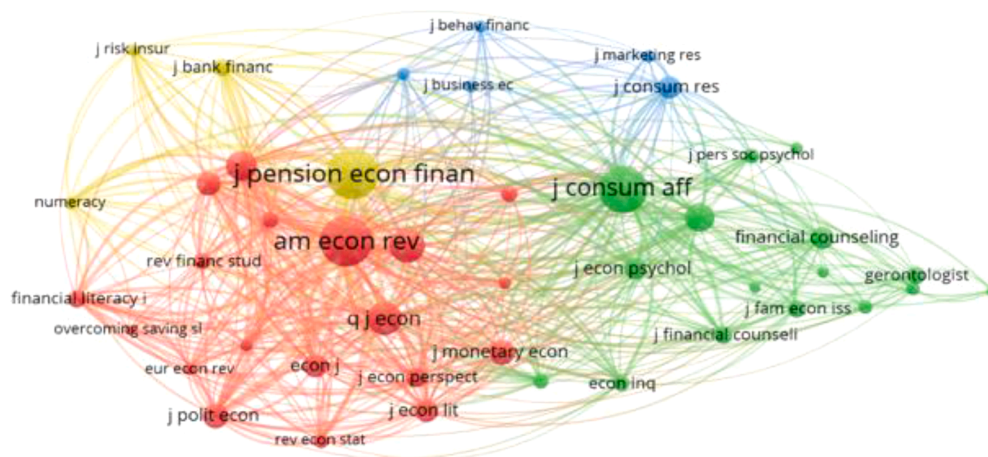


Fig. 2. Co-citation network of journals, prepared using VOSviewer software.

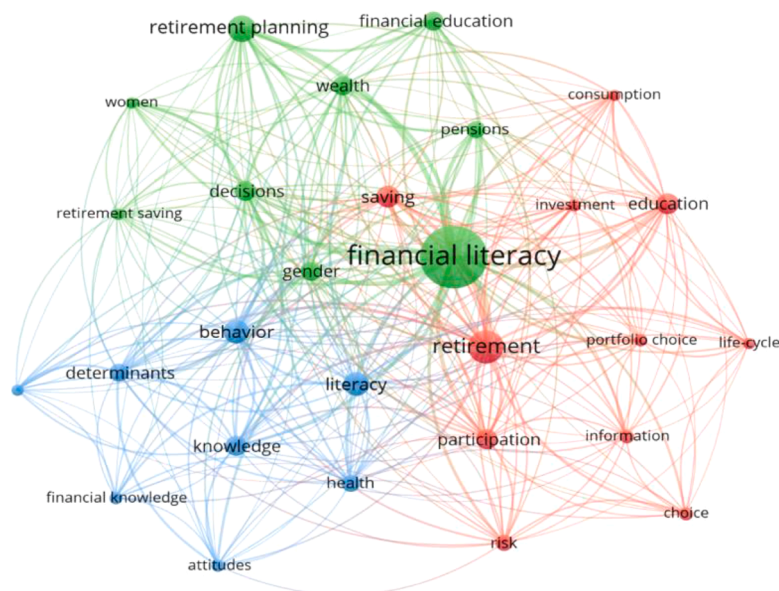


Fig. 3. Co-word analysis, prepared using VOSviewer software.

and Burietz, 2013; Ludwig, 2014; Wegener, Kruse and Basse, 2019), probably meant a boost in the concern about the topic. As it can be seen, it is especially after 2008, when the financial crisis started in the United States, that a growing trend can be recognized. This is particularly visible from 2011, with a considerable increase in the number of documents. A new boost can be perceived in 2014. Specifically, 18 articles stressed these crises as triggering events of a greater concern in retirement planning and financial literacy. The number of publications peaked in 2017 ($n = 32$), though a new jump can be anticipated in the forthcoming months due to the financial crisis derived from COVID-19.

3.2. Author's country and institution

As can be seen in Table 1, nearly half of the authors are linked with American universities, while some other countries, such as Australia, the United Kingdom, Germany or Italy are also importantly represented. Considering the top 10 countries, all of them but three belong to the OECD, sharing a generally high pensions expenditure (peaking a 17,4% of the total GDP in Italy), derived either from their public system (16,2% in Italy) or from a strong private coverage (5,8% in the Netherlands) (OECD, 2019). In the case of the United Kingdom, we have to remark the importance of a strong voluntary pension scheme, also present in the US or Canada. As a result, most of the countries included in this top 10 have a significant replacement rate compared with the OECD average.

Though many of the most influential institutions are American, the degree of concentration is relatively low, which shows that the interest in this topic is widespread amongst different work teams affiliated with these institutions, though, as we will remark later, there are some especially prolific authors. The importance of private pensions in the Dutch system could be partially related with the presence of a university and a specialized research centre (NETSPAR) from the Netherlands in this top 10. Also, the position of both NETSPAR and NBER in these top places can be associated with the importance of both FL and pensions in order to implement public policies.

Focusing the attention on the most productive journals, Table 1 shows the sources which have published a higher number of articles on the research topic, as well as the main areas to which the articles are associated. As it can be seen, 9 journals (5,7%) gathered 66 articles. We can distinguish between journals linked with different research areas, like economics, finance, psychology, family issues and gerontology. So, retirement planning and FL studies currently lay somewhere between public economy, financial management and consumer behaviour. We can also see that there is still no specialized publication about FL, so there is possibly a gap to be filled in the next future.

3.3. Publications by author

The 242 articles were written by 547 different authors. The largest proportion of authors (87.5%; $n = 479/547$) are related to only one publication; 17.6% of the authors ($n = 96/547$) published two; and 2,2% ($n = 12/547$) are credited in three publications. Finally, Table 2 displays the most productive ones, with more than four articles on the research topic.

As it can be seen, Lusardi is the most prolific one. In 10 of her 19 studies, she cooperates with Mitchell, the second most relevant author in this field. She also cooperated four times with Van Rooij, and twice with Clark. Therefore, there is an intensive networking between this community of researchers. Hershey and Gerrans also cooperate frequently, though just one article written by both is

Table 1

Distribution of articles by most influential countries, institutions, journals and research areas.

		Countries			Institutions			Journals			Research Areas	
		N	%		N	%		N	%		N	%
1	United States	112	46,3%	George Washington University	16	6,6%	Journal of Pension Economics and Finance	24	9,8%	Business Economics	167	69,0%
2	Australia	26	10,7%	NBER	13	5,4%	Journal of Consumer Affairs	9	3,7%	Geriatrics Gerontology	21	8,7%
3	United Kingdom	17	7,0%	University of Pennsylvania	13	5,4%	Economic Inquiry	6	2,5%	Psychology	16	6,6%
4	Germany	17	7,0%	University of North Carolina	10	4,1%	Gerontologist	6	2,0%	Social Sciences other Topics	10	4,1%
5	Italy	16	6,6%	North Carolina State University	8	3,3%	International Journal of Bank Marketing	5	2,0%	Family Studies	8	3,3%
6	Netherlands	14	5,8%	Oklahoma State University Stillwater	7	2,9%	Journal of Economic Psychology	4	1,6%	Education Educational Research	7	2,9%
7	Malaysia	12	5,0%	Oklahoma State University System	7	2,9%	Journal of Family and Economic Issues	4	1,6%	Government Law	7	2,9%
8	Spain	9	3,7%	University of New South Wales Sidney	7	2,9%	Journal of Public Economics	4	1,6%	Social Work	6	2,5%
9	Canada	7	2,9%	Stanford University	6	2,5%	Journal of Behavioral Finance	4	1,6%	Sociology	6	2,5%
10	China	6	2,5%	NETSPAR	5	2,1%	Journal of Consumer Policy	3	1,2%	Public Administration	5	2,1%

Notes: Table 1 shows the ranking of the top 10 countries, institutions, journals and research areas, using the information collected from WoS. All the rankings are sorted by the numbers of articles, and include the percentage of the total sample (N=242) represented by each item.

NBER = National Bureau of Economic Research; NETSPAR = Network for studies on Pensions, Ageing and Retirement

Publications by journal and research area

included in the database. Finally, it should be addressed that the United States is the most represented country.

3.4. Most cited articles

Table 3 shows the papers with the highest number of citations in absolute terms (>100) ordered by citations per year (C/Y). The most cited paper in relative terms Lusardi and Mitchell (2014) can be considered a thorough review and assessment of the literature about this, then incipient, but rapidly growing, body of research. The most cited paper in absolute terms (553 cites) was also published by the same authors Lusardi and Mitchell (2007), and can be considered the seminal work of the main research stream inside this topic.

Two of the most cited papers address that FL and wealth are determined jointly. Japelli and Padula (2013) used an empirical approach to show that FL and wealth are positively correlated over the life-cycle, while Van Rooij et al. (2012) provide evidence of a strong positive association between FL and net worth.

FL and its relation to retirement planning is studied under different perspectives: amongst young people (Lusardi et al., 2010), around the world (Lusardi and Mitchell, 2011a), in the United States (Lusardi and Mitchell, 2011b), in the Netherlands (Van Rooij et al., 2011), in the workplace (Bernheim and Garrett, 2003). Finally, it can be seen that the first publication related to the psychological aspects of retirement readiness appeared 20 years ago in the Gerontologist Journal Hershey and Mowen (2000).

3.5. Thematic organisation of the research field

As can be seen in Fig. 2, the articles about FL and retirement planning are based on four main groups of publications. The first one,

Table 2

Most prolific authors in retirement and FL.

Rank	Name of Author	Country of author	University/Institution	Number of publications
1	Lusardi, A.	USA	George Washington School of Business	19
2	Mitchell, O.S.	USA	The Wharton School, University of Pennsylvania	10
3	Hershey, D.A.	USA	Oklahoma State Universidad	7
4	Van Rooij, M.	Netherlands	De Nederlandsche Bank	6
5	Gerrans, P.	Australia	The University of Western Australia	5
6	Clark, R.L.	USA	Poole College of Management. North Carolina State University	5
7	Topa, G.	Spain	Universidad Nacional de Educación a Distancia	5

Table 3

The 10 most frequently cited publications in FL and Retirement Planning. Source: Author's.

R	Title	Authors	Year	Journal	TC	(C/Y)
1	The Economic Importance of FL: Theory and Evidence	Lusardi and Mitchell	2014	Journal of Economic Literature	495	82,5
2	Baby Boomer retirement security: The roles of planning, FL, and housing wealth	Lusardi and Mitchell	2007	Journal of Monetary Economics	553	42,5
3	FL around the world: an overview	Lusardi and Mitchell	2011	Journal of Pensions Economics and Finance	300	30,0
4	FL among the Young	Lusardi, Mitchell and Curto	2010	Journal of Consumer Affairs	265	26,5
5	FL, Retirement Planning and Household Wealth	Van Rooij, Lusardi and Alessie	2012	The Economic Journal	179	22,4
6	FL and retirement planning in the United States	Lusardi and Mitchell	2011	Journal of Pensions Economics and Finance	146	16,2
7	Investment in FL and saving decisions	Jappelli and Padula	2013	Journal of Banking and Finance	99	14,1
8	FL and retirement planning in the Netherlands	Van Rooij, Lusardi and Alessie	2011	Journal of Economic Psychology	114	12,7
9	The effects of financial education in the workplace: evidence from a survey of households	Bernheim and Garrett	2003	Journal of Public Economics	175	10,3
10	Psychological determinants of financial preparedness for retirement	Hershey and Mowen	2000	The Gerontologist	115	5,8

Abbreviations: R=rank; TC=Total citations; C/Y=Citations per year

represented by the red cluster, gathers publications especially focused on economy, such as the American Economic Review or the Journal of Public Economy. So, the main perspective of this theoretical ground deals with the role of policy makers and institutions in retirement planning.

A second group of publications, the green one, includes journals which are linked with consumer behaviour and decision making. The most cited one is the Journal of Consumer Affairs, but it is interesting to remark that many of these publications are rooted in the field of psychology. A third less populated group includes some publications related with marketing and management, such as the Journal of Marketing Research and Management Science. Finally, a fourth bunch of publications, including for instance the Journal of Banking and Finance, is mainly linked with pensions, but also deals with banking and risk insurance. Analysing the specific subsample of 61 papers published in the following years after the financial crises' events (2008-2013), we have detected no relevant differences with the entire sample of 242 articles.

In the 242 articles analyzed we obtained 832 keywords, out of which 28 met the threshold of a minimum of 10 occurrences. The keywords "financial literacy" (127 occurrences and 299 total link strength), "retirement" (50 and 158) and "retirement planning" (36 and 90) form the core.

In the green node, "financial literacy" has thicker lines with "retirement planning", "pensions" "retirement" and "saving", belonging these later two to the red cluster. This node is also closely related to "wealth", "retirement savings" and "decisions". Considering these keywords together, we could state that this group of terms is mainly related with preparing for retirement, considering the importance of saving and planning, along with the accumulation of wealth. The node "women", also belonging to this green cluster of keywords, closely related to "gender", remarks the importance of gender issues in the FL and retirement literature, pointing at a more than promising research stream.

The red cluster can be associated with the field of research dealing with the process of general financial planning and portfolio choice. Therefore, words like "investment", "saving", "portfolio choice", "information", "life-cycle", "risk" or "participation" are prominent and deeply related to each other. Analysing the specific subsample of papers published in the following years after the financial crises' events (2008–2013), the keywords belonging to this red cluster, such as "risk", "choice", "life-cycle" or "participation" were specially outstanding, probably remarking the relevance of portfolio management to mitigate the impact of crises on personal finances.

Table 4

Most frequent keywords.

Keywords	Frequency
Financial literacy	127
Retirement	50
Retirement planning	36
Behavior	30
Literacy	30
Saving	26
Education	24
Decisions	23
Participation	23
Knowledge	23

Table 5
Research Trends 2019 & 2020.

	Reference	Objective
1	Nguyen & Rozsa (2019)	Exploring whether the relationship between FL and advice search is substitute or complementary in the context of retirement investment choice
2	Clark et al. (2019)	Evaluating the effect of informational interventions on contribution rates made by workers to supplemental saving plans
3	Clark et al. (2019b)	Analysing the different retirement planning behaviors, distinguishing between patient and impatient individuals depending on their time preferences and risk aversion
4	Goi et al. (2019)	Examining the influence of different personal factors (individual characteristics, cognitive ability, self-efficacy and religious faith), apart from FL, on retirement planning behavior
5	Goda et al. (2019)	Determining the influence of exponential growth bias (EGB) and present bias (PB) on retirement planning behavior
6	Vermeer et al. (2019)	Studying the influence of social ties in order to determine the retirement age
7	Wagner & Walstad (2019)	Distinguishing between the long-term and short-term influence of financial education on financial behaviour, discovering a much higher influence in the long-term
8	Ketkaew et al. (2019)	Studying the factors determining an individual's retirement contribution and how it affects an individual's short-term and long-term financial goals
9	Nguyen et al. (2019)	Determining the impact of FL and pension knowledge on retirement investment choice
10	Adetayo et al. (2019)	Analysing the weight of financial education in a generally literate group
11	Chung & Park (2019)	Examining how objective financial knowledge (OFK) and financial knowledge network intensity (FKNI) influence retirement investment decisions
12	Motika (2019)	Stressing the role of personality traits, such as conscientiousness, on savings and wealth amongst low wealth old people
13	Ali & Frank (2019)	Determining the importance of education level as the key driver of the choice between defined contribution retirement plans and defined benefit plans
14	Bongini & Cucinelli (2019)	Investigating the main predictors of University students' intention to invest in a pension fund
15	Cosma et al. (2019)	Studying the profile of older consumers who could be interested in home equity conversion products due to the expected reduction in pension incomes
16	Kumar et al. (2019)	Studying the barriers in the path of implementation of retirement planning
17	Mahapatra et al. (2019)	Examining the role of financial cognition (FC) and mental accounting (MA) as antecedents to personal financial planning (PFP)
18	Kasper et al. (2019)	Revealing the structural country factors and the effects of contextual variables (including individual attributes, early-in-life socialization experiences, and variables that locate the person in social structures) that influence the financial preparedness of middle-aged workers
19	Cupák et al. (2019)	Determining the influence of FL on the contribution to voluntary planning pension schemes
20	Jiménez et al. (2019)	Analysing the influence of capacity, willingness, and opportunities to plan and save on financial planning for retirement
21	Farrar et al. (2019)	Analysing the role of gender in financial planning for retirement through the inclusion of attitudinal and expectational variables
22	Meyll et al. (2020)	Investigating the determinants that affect individuals' decision to rely on bank deposits and not investing in subsidized pension products, including FL and financial advice
23	Tsotsoros et al. (2019)	Stating which are the expected retirement satisfaction drivers for people of different races
24	Li et al. (2019)	Analysing the relationship between the kind of financial retirement plan (defined contribution versus defined benefit) and the degree of FL
25	Gany et al. (2020)	Determining the retirement savings drivers, including demographic, workplace and financial profile ones
26	Oliver-Márquez et al. (2020)	Creating a macroeconomic tool to measure the degree of financial knowledge
27	Nam & Loibl (2020)	Analysing the impact of financial inclusion on planning behaviour in low income adults near retirement
28	Larisa et al. (2020)	Examining the effects of demographical factors (age, education and income), psychological factors (future time perspective, financial risk tolerance) and FL on retirement planning among female workers in Indonesia
29	Rostamkalaei and Riding, (2020)	Identifying gaps in financial knowledge and behaviors between immigrants to Canada and individuals who are born in Canada
30	Agabalinda & Isoh (2020)	Investigating the direct effects of FL (knowledge, skills, and attitudes) on financial preparedness for retirement and the moderating effect of age among the small and medium enterprises
31	Jais & Asokumar (2020)	Focusing on psychological process, social influence and environmental influences on employee's retirement planning
32	Katenova & Sang (2020)	Studying FL, retirement planning and delinquency in payment in different regions
33	Blanco et al. (2020)	Analysing the influence of nudges on fostering retirement planning amongst Hispanic female workers
34	Robertson-Rose (2020)	Evaluating the influence of parents' financial capabilities and pension experience on their adult children's retirement saving strategies
35	DeLiema et al. (2020)	Analysing the potential influence of financial illiteracy on being the victim of frauds
36	Goda et al. (2020)	Examining whether the predictors of retirement contribution behavior vary based on aspects of the choice environment, namely the default contribution rate (Opt-in vs Auto-Enrollment)
37	García & Vila (2020)	Analyzing whether nudging has a relevant effect on financially literate individuals, even if these individuals are professionals with extensive experience in finance and pensions
38	Tan & Singaravelloo (2020)	Examining the level of FL, financial behaviour and retirement planning and their dynamics
39	Zeka (2020)	Investigating the retirement funding adequacy of black South Africans and how it can be influenced by family structure, health status, FL and the role of the financial planner
40	Hj et al. (2020)	Exploring the role of retirement concerns, along with FL, on retirement planning
41	De los Santos et al. (2019)	Examining the relationship between perceptions of happiness and retirement readiness among pre-retiring employees
42	Ramos-Hernández et al. (2020)	Determining the level of FL of college students in two different countries
43	Ivy et al. (2020)	Examining several common financial decisions that physicians and surgeons encounter, providing with general guidelines for successful financial practices and planning, and remarking common pitfalls to avoid
44	Niu et al. (2020)	Examining the level of FL and its impact on retirement preparation
45	Song (2020)	

(continued on next page)

Table 5 (continued)

Reference	Objective
46 Haliassos et al. (2020)	Conducting a field experiment to study the relationship between peoples' misunderstanding of compound interest and their pension contributions in rural China
47 Hauff et al. (2020)	Determining the role of FL externalities (defined as the influence of literate neighbours and relations) over retirement behaviour
48 Castro-González et al. (2020)	Examining the influence of FL on retirement saving
49 Hastings & Mitchell (2020)	Analysing the effect of self-control on participating in voluntary pension schemes
	Determining the influence of present bias and FL on retirement investment behaviour

Finally, the blue cluster of keywords can be linked with the determinants of financial and retirement decision making, being “attitudes”, “health”, “behaviour” and “knowledge” the most prominent ones. The relatively lower presence of these keywords could point at a possible higher potential for further development of this kind of studies.

3.6. Recent research trends

In order to determine the most recent research trends and hottest topics, we have analysed in depth the contents of the articles about the topics published in 2019 and 2020 (January to September), extracting the main research lines, summing them up in Table 5.

4. Conclusions

The results show that we are facing a critical topic that has been able to capture a high degree of attention of the academic community in the last 23 years (1997–2019). The evolution of the number of publications along this time reveals a clearly growing interest, despite of the classical sawtooth of relatively young research streams.

Probably, the main limitation of the paper derives from the necessary selection of documents to be analyzed. Though the database chosen, Web of Science, gathers the majority of the most prominent publications in this research stream, some relevant studies could be potentially not included in it. Also, even if it is not frequent, some of the documents analyzed may not include keywords, which could slightly modify the results of the co-work analysis.

As we have remarked before, the research on this topic has experienced two boosts as a result of crisis situations. The burst of the crisis of COVID-19 has put again this debate on the table. The failure to manage personal finances' responsibility may result in long-term consequences for individuals and the entire society. Are citizens prepared to take on greater responsibility needed to make informed decisions about their retirement? Or is, in turn, the State who has to care about individuals' retirement? The answers given to these questions will critically influence the decisions and behavior of the economic agents, leading to new breakeven points which will decide the political agenda. Obviously, FL plays an important role in society, and much research needs to be carried out in financial behaviour and retirement planning, so we end up expecting that in the coming months there will be a greater interest in the topic, as happened in the wake of the 2008 financial crisis.

Author Contributions

Conceptualization, R.G.L.; writing—original draft preparation, R.G.L. and A.M.N.; writing—review and editing, J.-L.R.-S. and T.G.T.; visualization, J.-L.R.-S. and T.G.T.; supervision, R.G.L. and A.M.N.; methodology, T.G.-T.; validation, J.-L.R.-S., T.G.T., A.M.N., and R.G.L.; formal analysis, T.G.-T. and A.M.N.; resources, R.G.L.

Competing Interests Statement

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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