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Effect of COVID-19 on the economy: A bibliometric and content analysis of academic research

Noelia Araújo-Vila[a], Diego R Toubes[b] and Jose Antonio Fraiz-Brea[c]

[a]Department of Financial economics and accounting, University of Vigo, Spain, Email: naraujo@uvigo.es
[b]Department of Business Organization and Marketing, Universidade de Vigo, Spain, Email: drtoubes@uvigo.es
[c]Faculty of Economic & Business Sciences, Universidade de Vigo, Spain, Email: jafraiz@uvigo.es

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The year 2020 has been marked by the COVID-19 pandemic and its impact on health, the economy and society. This article presents the findings of a bibliometric study of COVID-19 literature in the economy domain to identify current areas of research and propose a way forward. The database selected for the analysis is Scopus. After a search with a 2-step filtering, a total of 458 works were obtained, which are used as a sample. The analysis is approached with a double methodology: a bibliometric analysis and a deductive content analysis. It is concluded that the terms economic crisis, tourism, stock, markets, governments, oil or economic recession have been the most repeated in this area of study during 2020. The United States is at the forefront of research on the subject, with 17.5% of total research, followed by the United Kingdom with 12%.

Keywords: COVID-19; crisis; economy effect; bibliometric analysis; content analysis

Introduction

At the end of 2019, the World Health Organization (WHO) reported a respiratory disease resulting in severe pneumonia, caused by a previously unknown virus. The city where the outbreak started was Wuhan, China. In early 2020, China issued an official statement on the discovery of a new coronavirus, named 2019-nCov, popularly known as COVID-19[1]. WHO declared the COVID-19 outbreak a global emergency on 30 January 2020. The pandemic affecting 192 countries has been a turning point, both socially and economically. The current situation is one of uncertainty. "The most obvious (uncertainty) is about how long the situation will last and how soon many activities will recover. Time is always a crucial factor in determining the trajectory of processes"[2].

Although society has been affected by several pandemics in the past, it is difficult to estimate the long-term economic, behavioural or social consequences, as these aspects have not been studied to a large extent in the past[3]. The limited studies that do exist indicate that the major historical pandemics of the last millennium have typically been associated with subsequent low asset returns[4]. The outbreak of COVID-19 is likely to cause business bankruptcies in many industries, due to reduced consumption and a freezing economy[5]. Clavellina[6] notes that it is still too early to assess the true effect of the pandemic and its impact on the economy but predicts devastating effects on the global economy. This author identifies three risks: i) economic slowdown and rapid fall in the price of financial assets; ii) lack of global leadership, caused by the weakness of the US medical and research system in dealing with the crisis in the first instance; iii) acceleration of risk in emerging markets, due to poor nutrition and low standards in housing quality.

Spence[7] noted in February 2020 that the economic consequences will be substantial but transitory for the Chinese economy. China seems to be taking advantage of the situation by buying European infrastructure and technology, thus improving its competitive advantage[8]. Experts believe that it is still too early to assess the effects of this pandemic at the economic level, the repercussions of which will be seen in the medium and long term. Rogoff[9] believes it is possible that a new global crisis, different from that of 2001 or 2008, may begin.

Baker et al.[10] note that assessing the economic impact of the COVID-19 pandemic is essential for policymakers but challenging because the crisis has unfolded so rapidly. They identify three indicators, i) stock market volatility, ii) newspaper-based economic uncertainty and iii) subjective uncertainty in

business expectation surveys– that provide real-time forward-looking uncertainty measures.

In the financial press, the effects of COVID-19 are often compared to the Global Financial Crisis (GFC) of 2008, which has been extensively researched in the literature as financial crises and stock market contagion[11]. Harvey[12] identified differences between the Global Financial Crisis (GFC) and the COVID-19 crisis, calling the latter the "Great Compression". Some experts also compare the COVID-19 crisis to global wars, responding to the dramatic news coming from many countries. The blockade measures that have been implemented by many countries have affected businesses, job security and essential services. Milanovic[13] argues that the analysis of financial variables in response to COVID-19 is inconclusive and should focus on physical quantities referring to supply and demand imbalances in the labour market.

In this current scenario, service-oriented economies will be particularly negatively affected and will have more jobs at risk. The travel industry has been deeply affected, in April 2020, 80% of hotel rooms in the United States were empty. Countries such as Greece, Portugal and Spain, which are more dependent on tourism (more than 15% of GDP) will be more affected by this crisis.

In addition, exhibitions, conferences, sporting events and other large gatherings, as well as cultural establishments such as galleries and museums, have been cancelled. Consulting in general and personal services, such as hairdressers, gyms and taxis, has also been paralysed by the closures. Major industries such as automotive, trucking and electronics also closed for some periods during the pandemic[3].

The current crisis is having knock-on effects on supply chains. For many functions within a manufacturing company, "working from home" is not a viable option[14.]

Import problems and staffing shortages stand out as key concerns for companies due to the disruption of supply chains and self-isolation policies, with countries highly dependent on foreign trade being the most affected. The results suggest that, on average, each additional month of crisis costs between 2.5% and 3% of global GDP[15]. New conflicts emerged in sectors and products. For example, Russia's refusal to cut oil production prompted Saudi Arabia to retaliate with extraordinary discounts for buyers and a threat to pump more crude. This oil price war is thus expected to have serious implications for the world economy. The agricultural sector has also been hard hit. A global slump in demand for hotels and restaurants has led to a 20% drop in agricultural commodity prices[16].

The economic and social costs of COVID-19 pandemic are of concern to society, policy makers and all financial market participants and individual investors[17]. This whole situation has only verified that markets are dynamic[18]. Internet-based businesses such as online entertainment, food delivery, online shopping, online education and remote work solutions have adapted best to the new situation.

This paper analyses the academic and scientific research on the effects of COVID-19 on the economy, seeking to know the impact it has had at the scientific level and the main issues addressed. This is a very recent phenomenon, and yet thousands of articles have already been published in a single year, which shows the high level of interest in this situation. For the analysis we used the Scopus database, one of the largest and highest-quality abstract and online citation databases of peer-reviewed literature[19]. A two-step search was carried out, obtaining a sample of 458 results, to which bibliometric and content analysis was applied. The main results obtained, and conclusions are presented.

Methodology

The aim of this paper is to analyse the academic and scientific research carried out in the wake of the global pandemic generated by the COVID-19 virus, focusing the analysis on the effects of the health crisis on the economy. Other types of publications that were not articles were not included in the study, thus seeking to analyse the works published in high impact journals. Both completed articles and articles in press were included.

No time horizon has been established, since, given the novelty of the subject, most of the articles found are after 2020. Thus, after searching with the words "covid+economy" in the titles, abstracts and keywords, a total of 1,622 results are obtained (data collected on February 3, 2021). As a second filtering, to focus the subject, the search was repeated with the words "covid+economy+effects" in the titles, abstracts and keywords, obtaining in this case 458 results, a sample that was used in this study. The 458 papers have been published in a total of 160 journals, showing the wide interest in this topic despite the short time that has elapsed since the pandemic situation (approximately one year). This interest in the topic can be seen by

doing a broad search, for example using only the word "Covid" the results show 55,900 papers published in various subject areas on this topic in the last two years (Table 1).

The analysis of the data obtained follows two methods: 1) Bibliometric analysis for which the following variables have been considered: keywords and abstracts. 2) Deductive content analysis applied to titles, abstracts and keywords of the articles and correlation analysis of the most studied topics. The analysis process included two main steps: the development of a coding matrix and the coding of the data into the categories in the matrix. Words were adopted as the unit of record, and frequency was the main enumeration rule for coding. Finally, the intraclass correlation coefficient (ICC) analysis was performed using Pearson's ρ statistic. This coefficient is used as the probability of establishing a linear equation between two variables; for every unit change in one variable, a unit change (correlated) in the other variable is expected, regardless of the magnitude and scale of measurement of the variables[20]. The CCI exists to quantify the agreement between different measurements of a numerical variable and extends its use to the case where more than two observations per subject are available. It is an indicator of the reliability of a single measurement determined by the following expression:

$$\rho = \frac{\mathrm{Var}\,(\pi)}{\mathrm{Var}\,(\pi) + \mathrm{Var}\,(\varepsilon)}$$

The CCI values can range from 0 to 1, so that the maximum possible concordance corresponds to a value of CCI=1. On the other hand, the ICC=0 value is obtained when the observed concordance is equal to that expected to occur by chance.

Results

First, the journals with the largest number of publications in the subject under study are analysed. Eleven journals have published more than four articles, with *Sustainability* (from MDPI) standing out above the others with a total of 15 articles on the effects of COVID-19 on the economy. Of the eleven journals, seven of them are indexed in Journal Citation Reports (JCR), and all of them are in the second or first quartile of this ranking (Table 2). MDPI and Elsevier are the publishers with the highest number of journals in this ranking.

The authors, affiliations and countries with the most papers in the total sample, as well as the most repeated keywords, are analysed below (Table 3 and Fig. 1). In terms of authors, the most productive are Sarah Cuschiere and Victor E. Greg, both from the Faculty of Medicine & Surgery of Msida (Malta) who present three papers each. The affiliations with the highest number of published papers are Saveetha Dental College and Hospitals and Saveetha Institute of Medical and Technical Sciences, both in India, with 6 published papers each. Considering that the sample size is 458 papers, the research is very fragmented in terms of affiliations. The United States is at the forefront of research on the subject, with 17.5% of total research and 45.5% more publications than the next highest-ranking country, the United Kingdom. India, China and Italy are the next countries in the ranking, all of them with more than 30 published papers (Fig. 1).

Although they do not provide relevant information on the subfields of research within the area of economics, the study of the most used keywords provides information on the main concepts in the description of the papers. As shown in Figure 2, the word "COVID-19" is the most common, followed by "pandemic" and "human/s", as well as "coronavirus-disease-2019" and a number of other pandemic and virus-related terms.

The frequency analysis of the words included in the titles shows that the main terms used are those linked to the virus and pandemic (COVID, pandemic, COVID-19, SARS) and in general, the words "impact" or "effect" on the economy. Therefore, to obtain more detailed information, a content analysis of abstracts of articles by the most productive authors in this area was performed (Table 4, Figure 3). Thus, it is observed that, regarding the effect of COVID-19 on the economy, the main issues studied focus on:

Table 1 — Searches carried out in Scopus to delimit the study sample

	Covid		Covid + economy – step 1		Covid+ economy+ effects step 2	
Year	Articles	%	Articles	%	Articles	%
2018	1	0.01	-	-	-	-
2019	28	0.05	1	0.07	-	-
2020	48,795	87.25	1,396	86.06	379	82.70
2021	7,099	12.69	225	13.87	79	17.30

Table 2 — Journals with the highest number of publications in the study area

Sl. no.	Journals	Cite score	Cuartil	Articles	Category	Publisher
1	*Sustainability*	2.592	Q2	15	Environmental studies Green & sustainable science & technology	MDPI
2	*Environmental and Resource Economics*	2.286	Q1	8	Economics Environmental studies	Springer
3	*World Development*	3.869	Q1	7	Economics Development studies	Elsevier
4	*Plos One*	2.740	Q2	6	Multidisciplinary sciences	Public Library Science
4	*Science of the Total Environment*	6.551	Q1	6	Environmental sciences	Elsevier
5	*International Journal of Environmental Research and Public Health*	2.468	Q2	5	Public, environmental & occupational health Environmental sciences	MDPI
5	*Journal of Public Affairs*	-	-	5	Political science and international relations Public administration	Wiley-Blackwell
6	*Advances in Science Technology and Engineering Systems*	-	-	4	Engineering Management of technology and innovation Physics and astronomy	ASTES Publishers
6	*Economic Outlook*	-	-	4	Economics and econometrics	Wiley-Blackwell Publishing Ltd
6	*European Journal of Molecular and Clinical Medicine*	-	-	4	Microbiology	Ubiquity Press
6	*Frontiers in Psychology*	2.067	Q2	4	Psychology, multidisciplinary	Frontiers Media S.A.

Table 3 — Publications on the effect of COVID-19 on the economy. Ranking of authors and affiliations

Authors	No. articles	Affiliation	No. articles
Cuschieri, S.	3	Saveetha Dental College And Hospitals	6
Grech, V.	3	Saveetha Institute of Medical and Technical Sciences	6
Arendt, F.	2	Chinese Academy of Sciences	5
Cano-Olivos, P.	2	University of Melbourne	5
Cappa, S.F.	2	University of Melbourne	4
Cerami, C.	2	Università degli Studi di Trento	4
Crespi, C.	2	Università degli Studi di Trento	4
Dodich, A.	2		
Galandra, C.	2		
Jothi Priya, A.	2		

- The effect of the pandemic on the tourism industry, one of the most affected by COVID-19.
- Falling stock market prices, an immediate effect after the first periods of confinement.
- The impact of COVID-19 on companies, especially SMEs, which have been less able to react and adapt to the situation, many of them going bankrupt.
- The loss of employment of many workers due to the crisis, with both an economic and psychological impact.
- Variations and fluctuations in the price of oil and the impact this has had on the world economy.
- Pandemic health spending and its impact and repercussions on global supply chain operations.

A more detailed analysis of the keywords was carried out, focusing on those that show some link to the economy and discarding the rest of the more general words linked to the virus (Table 5). Thus, the topics that have aroused most interest during 2020 have been the economic crisis, tourism, global economic risk, markets, the stock market and the availability of a wide variety of products at specific times of the year, financial systems, government management, the entry into a possible economic recession and the price of oil.

Finally, once the most studied topics in the area were established, we looked for correlations between

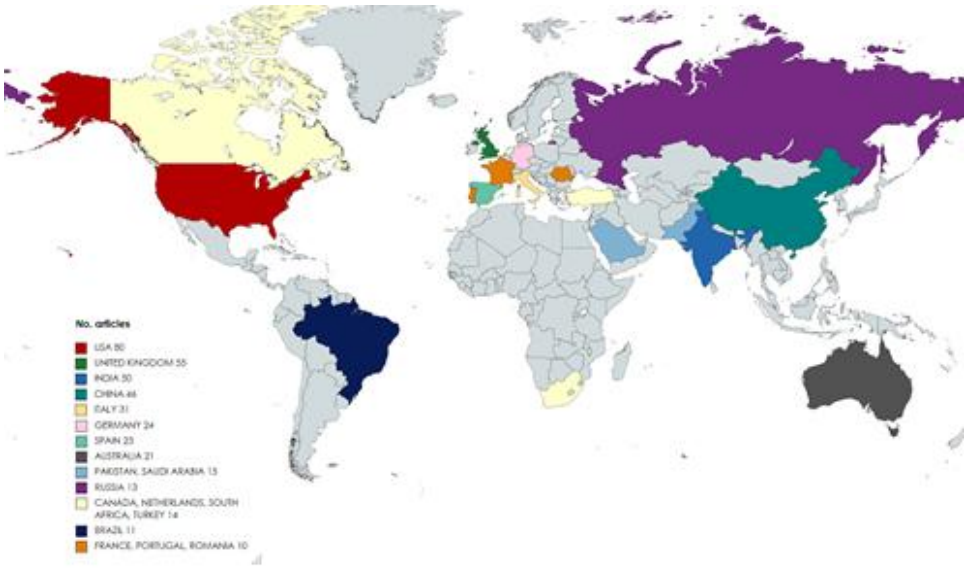

Fig. 1 — Publications on the effect of COVID-19 on the economy

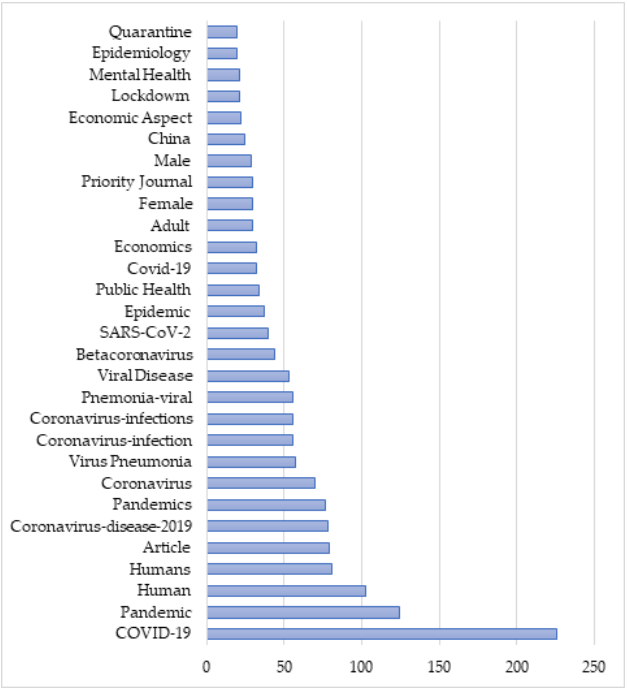

Fig. 2 — Most common keywords

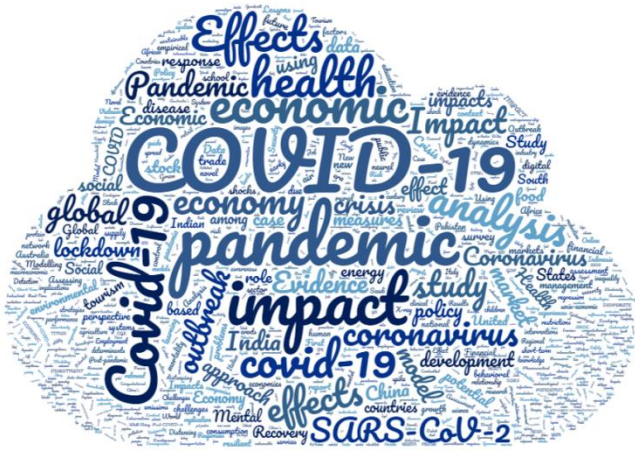

Fig. 3 — Word cloud of sample article titles

them, or thematic associations. After applying Pearson's ρ statistic, we search for the results closest to 1, finding that the highest correlations in the following fields: works on economics deal especially with growth and finance and the international level; works whose topic is growth deal with risk and policy. The works that mention the word "market", include finance in their topics of study and are international in nature; and the studies on finance also allude to the economy and market and the scope of study is international (Table 6). The topics energy and economy, economic with stock, tourism and global; policy with economy, risk, international and financial; crisis with global, analysis and stock, also show high correlations, higher than 0.9 (Figure 4).

Discussions and conclusions

The world has suffered previous economic crises with global repercussions, among them the Great Depression of 1929, dragging the stock market crash in the United States to the rest of the world (especially in Europe), or the stock market crash in the US in 2008 due to the subprime mortgage crisis. These crises had economic repercussions like the current one in certain aspects, such as the increase in

Table 4 — Content analysis of the articles of the most productive authors on the subject

Author	Number of works	References	Topics
Cuschieri, S. and Grech, V.	3	Grech, V.; Cuschieri, S.; Balzan, M., (...), Fabri, S.; Gauci, C. (2020) Grech, V.; Cuschieri, S. (2020) Cuschieri, S.; Grech, V. (2020)	Effects Covid; reduce tourism revenues and potentially accelerate job losses and bankruptcies in affected countries; re-imposed restrictions; Best Practice Guidelines (BPG); economic aspects; effects of the second wave on tourism revenues; vulnerable population; non-communicable diseases.
Arendt, F.	2	Arendt, F.; Mestas, M. (2021) Arendt, F.; Markiewitz, A.; Mestas, M.; Scherr, S. (2020)	Pandemic and stock price crashes; pandemic effect in public health and the economy; positive relationship between the amount of news coverage about Covid -19 and the extent of the stock price drop.
Cano-Olivos, P.	2	García-Villagrán, A.; Cano-Olivos, P.; Martínez-Flores, J.L.; Sánchez-Partida, D. (2020) Alvarez-Placencia, I.; Sánchez-Partida, D.; Cano-Olivos, P.; Martínez-Flores, J.-L. (2020)	The Covid-19 effect in Mexican SMEs; managing risks in the supply chains; world´s companies, including micro, small and medium enterprises (SMEs); covid in impact on business activities; vulnerability of SMEs; need of change; inventory management practices during Covid-19; reserve employment by increasing customer service level ensuring the availability of the finished product and improving the delivery time in the distribution center.
Cappa, S.F.; Cerami, C.; Crespi, C.; Dodich, A.; and Galandra, C.	2	Galandra, C., Cerami, C., Santi, G.C., (...), Vecchi, T., Crespi, C. (2020) Cerami, C., Santi, G.C., Galandra, C., (...), Vecchi, T., Crespi, C. (2020)	Job loss; psychosocial and economic crisis; covid impact in economy and health.
Jothi Priya, A.; Khan, M.K.	2	Qin, X.; Godil, D.I.; Khan, M.K.; (...), Alam, S.; Janjua, L. (2021) Khan, M.I.; Teng, J.-Z.; Khan, M.K.; Jadoon, A.U.; Khan, M.F. (2020)	Effects of Covid-19 and public health expenditure on global supply chain operations; the impact of oil prices on stock market development; fluctuating oil price; global financial markets; stock market returns.
Kiran Srinivas, B.	2	Kiran Srinivas, B.; Sasanka, K.; Yuvaraj Babu, K.; Ramanadhan, V. (2020) Kiran Srinivas, B.; Gayatri Devi, R.; Yuvaraj Babu, K. (2020)	Covid effect in daily wage workers; knowledge and awareness on economic impact of Covid-19; pandemic plays an important role in deciding a country's economy.

Table 5 — Frequency analysis of keywords related to the field of economics (N=2,578). Ranking of words with frequency more than 5

Rank	Keyword	Frequency	Rank	Keyword	Frequency
1	economy	51	23	network	9
2	economic	47	24	inequality	8
3	policy	27	25	disease	8
4	crisis	18	26	management	8
5	global	18	27	governmet	8
6	social	17	28	consumption	8
7	tourism	16	29	rate	8
8	risk	16	30	supply	8
9	analysis	15	31	system	8
10	energy	15	32	regression	7
11	data	14	33	resilience	7
12	market	14	34	impacts	6
13	impact	13	35	depression	6
14	growth	13	36	internet	6
15	international	12	37	recession	6
16	effects	11	38	outbreak	6

(*Contd*.)

Table 5 — Frequency analysis of keywords related to the field of economics (N=2,578). Ranking of words with frequency more than 5 (*Contd.*)

Rank	Keyword	Frequency	Rank	Keyword	Frequency
17	public	11	39	chain	6
18	stock	11	40	population	6
19	financial	10	41	stress	6
20	development	10	42	technology	6
21	income	9	43	oil	6
22	recovery	9	44	economies	6

Table 6 — Correlations between the most researched issues on the effects of COVID-19 on the economy

	EC	ECON	PO	CR	GL	SO	TOU	RI	ANA	ENER	DA	MAR	IMP	GRO	INT	EFF	PUB	ST	FIN	DEV
EC	1,00	0,61	0,95	0,21	0,32	0,68	0,83	0,98	-0,08	0,98	-0,97	1,00	-0,37	1,00	1,00	-0,82	0,12	0,48	1,00	-0,74
ECON	0,61	1,00	0,82	0,90	0,94	1,00	0,95	0,76	0,74	0,44	-0,8	0,56	0,5	0,78	0,56	-0,05	-0,71	0,99	0,56	-0,98
PO	0,95	0,82	1,00	0,49	0,59	0,87	0,96	0,99	0,22	0,88	-1	0,93	-0,08	1,00	0,93	-0,61	-0,18	0,72	0,93	-0,91
CR	0,21	0,90	0,49	1,00	0,99	0,86	0,72	0,40	0,96	0,01	-0,46	0,14	0,83	0,43	0,14	0,39	-0,94	0,96	0,14	-0,81
GL	0,32	0,94	0,59	0,99	1,00	0,91	0,80	0,50	0,92	0,12	-0,56	0,25	0,76	0,53	0,25	0,28	-0,90	0,98	0,25	-0,87
SO	0,68	1,00	0,87	0,86	0,91	1,00	0,98	0,81	0,67	0,52	-0,85	0,63	0,43	0,83	0,63	-0,14	-0,64	0,97	0,63	-1,00
TOU	0,83	0,95	0,96	0,72	0,80	0,98	1,00	0,92	0,49	0,70	-0,94	0,79	0,21	0,93	0,79	-0,35	-0,46	0,89	0,79	-0,99
RI	0,98	0,76	0,99	0,40	0,50	0,81	0,92	1,00	0,12	0,92	-1,00	0,96	-0,18	1,00	0,96	-0,69	-0,08	0,64	0,96	-0,86
ANA	-0,08	0,74	0,22	0,96	0,92	0,67	0,49	0,12	1,00	-0,28	-0,18	-0,15	0,96	0,15	-0,15	0,64	-1,00	0,83	-0,15	-0,61
ENER	0,98	0,44	0,88	0,01	0,12	0,52	0,70	0,92	-0,28	1,00	-0,89	0,99	-0,55	0,91	0,99	-0,92	0,32	0,30	0,99	-0,59
DA	-0,97	-0,8	-1	-0,46	-0,56	-0,85	-0,94	-1,00	-0,18	-0,89	1,00	-0,94	0,12	-1,00	-0,94	0,64	0,14	-0,69	-0,94	0,89
MAR	1	0,56	0,93	0,14	0,25	0,63	0,79	0,96	-0,15	0,99	-0,94	1,00	-0,44	0,96	1,00	-0,86	0,19	0,42	1,00	-0,69
IMP	-0,37	0,5	-0,08	0,83	0,76	0,43	0,21	-0,18	0,96	-0,55	0,12	-0,44	1,00	-0,15	-0,44	0,84	-0,97	0,63	-0,44	-0,35
GRO	1	0,78	1	0,43	0,53	0,83	0,93	1,00	0,15	0,91	-1,00	0,96	-0,15	1,00	0,96	-0,67	-0,11	0,67	0,96	-0,87
INT	1	0,56	0,93	0,14	0,25	0,63	0,79	0,96	-0,15	0,99	-0,94	1,00	-0,44	0,96	1,00	-0,86	0,19	0,42	1,00	-0,69
EFF	-0,82	-0,05	-0,61	0,39	0,28	-0,14	-0,35	-0,69	0,64	-0,92	0,64	-0,86	0,84	-0,67	-0,86	1,00	-0,67	0,11	-0,86	0,22
PUB	0,12	-0,71	-0,18	-0,94	-0,90	-0,64	-0,46	-0,08	-1,00	0,32	0,14	0,19	-0,97	-0,11	0,19	-0,67	1,00	-0,81	0,19	0,58
ST	0,48	0,99	0,72	0,96	0,98	0,97	0,89	0,64	0,83	0,30	-0,69	0,42	0,63	0,67	0,42	0,11	-0,81	1,00	0,42	-0,94
FIN	1	0,56	0,93	0,14	0,25	0,63	0,79	0,96	-0,15	0,99	-0,94	1,00	-0,44	0,96	1,00	-0,86	0,19	0,42	1,00	-0,69
DEV	-0,74	-0,98	-0,91	-0,81	-0,87	-1,00	-0,99	-0,86	-0,61	-0,59	0,89	-0,69	-0,35	-0,87	-0,69	0,22	0,58	-0,94	-0,69	1,00

EC: economy; ECON: economic; PO: policy; CR: crisis; GL: global; SO: social; TOU: tourism; RI: risk; ANA: analysis; ENER: energy; DA: data; MAR: market; IMP: impact; GRO: growth; INT: international; EFF: effects; PUB: public; ST: stock; FIN: financial; DEV: development

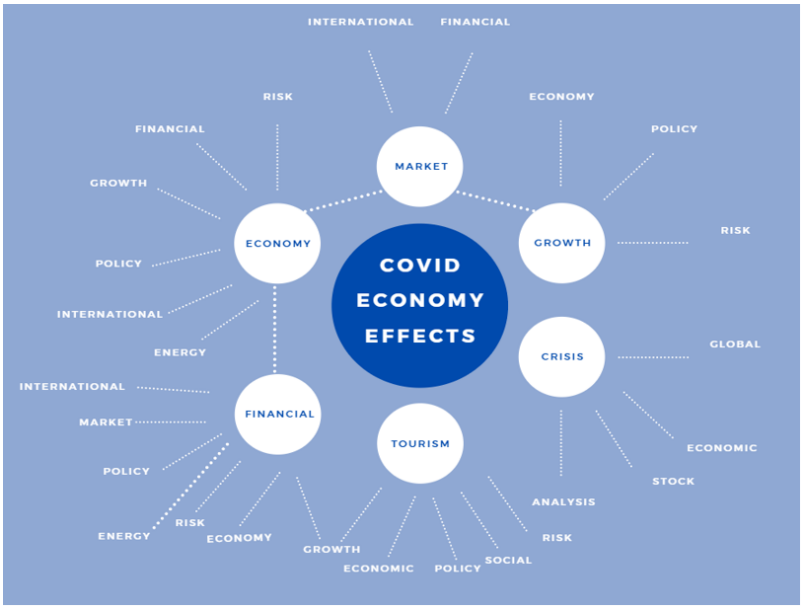

Fig. 4 — Main thematic correlations in the study area

unemployment or stock market falls. Today we are facing a new scenario, an economic crisis caused by a virus, or rather, by the actions carried out to minimize the spread of this virus. Published research speculates on possible scenarios, but these forecasts incorporate a high degree of uncertainty. The effects of this economic crisis may be short term or prolonged in time, depending, on the one hand, on the health

advances to treat or prevent this virus, and on the other hand, on the capacity of adaptation and survival of each sector, industry and economy of each country.

Some more resilient companies and sectors, which even had a contingency plan for possible threats such as this one, have adapted their business model and have been able to overcome the critical situation. But for many, it has been an unexpected situation to which they have not known how to react. Hence, the majority reactions have been unemployment and the cessation of activity, temporary or permanent. This has been one of the most researched aspects throughout this year, showing the interest and importance of this topic, both socially and economically. Research in the different areas related to COVID-19 has boomed since the end of 2019, with numerous calls for special issues of various scientific journals. More than 55,900 papers have been published in which the word "covid" is included in the title or keywords, and there are more than 1,600 papers in which the words "covid" and "economy" are found. More than 160 journals in the Scopus database have included articles on the effects of COVID-19 on the economy. The number of institutions, universities and different organizations that have addressed this issue is very broad, and there is no single leading organization; rather, research has been very fragmented.

Although the first problem derived from the COVID-19 is health, some of the key issues dealt with in the economic sphere are the health expenditure produced by the crisis and research in the hardest hit sectors, including the tourism industry. Particularly important for countries where a high percentage of their GDP depends on tourism, e.g., Spain, Greece or Portugal (countries where tourism contributes more than 15% of GDP) has been the investigation of the losses generated by the tourism sector and the prospects for recovery and return to normality.

The main lines of research addressed include, the stock market crash, mainly due to the sharp declines in the stock market in the period March-April 2020, and the fluctuations in the price of oil, which caused price wars between countries whose oil is a key resource, with major repercussions on the world economy. The terms "economic crisis", "tourism", "stock", "markets", "governments", "oil" or "economic recession" have been the most repeated in this area of study during 2020 and the first two months of 2021. Furthermore, high correlations are shown between some of these topics. For example, papers that address economics include aspects such as finance, growth and are international in nature; the works that focus on tourism do so from a global perspective, also dealing with the terms economic and stock.

In short, we are facing an unexpected crisis that has damaged not only the economy but also personal and social welfare. In this situation, companies will have to behave resiliently, adapting their businesses to the new measures and innovating with new models that provide greater value and attractiveness.

References

1 Mazzei J A, COVID-19: una nueva enfermedad respiratoriay una posible amenaza mundial, *Revista Americana de Medicina Respiratori*a, 20(1) (2020) 1-4.

2 Andreu A, Muñiz M, Pérez A M, Vendramin B, Girona J M, Tapia J A, Bernabé D, *Número 189 de abril de 2020 Notas del mes La crisis del coronavirus* (2020).

3 Donthu N and Gustafsson A, Effects of COVID-19 on business and research, *Journal of business research*, 117 (2020) 284.

4 Jordà Ò, Singh S, Taylor A, Longer-run economic consequences of pandemics, *National Bureau of economic research* No. w26934 (2020).

5 Tucker H, *Coronavirus bankruptcy tracker*. Doctoral dissertation (2020).

6 Clavellina M, José L, *Posibles efectos del Coronavirus en la economía mundial* (2020).

7 Spence M. Puede la economía china resistir al coronavirus. *Project Sindicate. The world's opinion page* (2020).

8 Rapoza K, Watch out for china buying spree, NATO warns. *Forbes* (2020).

9 Rogoff K, Mapping the COVID-19 recession, *Project Syndicate* (2020) 7.

10 Baker S, Bloom N, Davis S J, Terry S J, Covid-induced economic uncertainty, *National Bureau of Economic Research* (2020) 26983.

11 Yarovaya L, Brzeszczyński J, Lau Keung Marco C, Intra-and inter-regional return and volatility spillovers across emerging and developed markets: Evidence from stock indices and stock index futures, *International Review of Financial Analysis*, 4 (2016) 96-114.

12 Harvey C, *The economic and financial implications of COVID-19 (*2020*)*. Available on https://www.darden.virginia.edu/sites/default/files/inline-files/COVID-19%20Presentation_Cambell%20Harvey.pdf

13 Milanovic B, *The Real Pandemic Danger Is Social Collapse* (2020). Available online https://www.foreignaffairs.com/articles/2020-03-19/real-pandemic-danger-social-collapse

14 Nicola M, Alsafi Z, Sohrabi C, Kerwan A, Al-Jabir A, Iosifidis C, Agha, The socio-economic implications of the coronavirus and COVID-19 pandemic: a review, *International journal of surgery* (2020).

15 Fernandes N, Economic effects of coronavirus outbreak (COVID-19) on the world economy, *IESE Business School Working Paper* No. WP-1240-E (2020).

16 Rediff Realtime News. *Prices of agricultural commodities drop 20% post COVID-19 outbreak* (2020). Available on https://realtime.rediff.com/news/india/Prices-of-agricultural-commodities-drop-20-post-COVID19-outbreak/955078599584b749?src=interim_alsoreadimage

17 Sharif A, Aloui C, Yarovaya L, COVID-19 pandemic, oil prices, stock market, geopolitical risk and policy uncertainty nexus in the US economy: Fresh evidence from the wavelet-based approach. *International Review of Financial Analysis*, 70 (2020) 101496.

18 Jaworski B, Kohli A, Sahay, Market-driven versus driving market. *Journal of the Academy of Marketing Science*, 28(1) (2000) 45-54.

19 Andalial R, LabradaII R, Castells M, Scopus: La mayor base de datos de literatura científica arbitrada al alcance de los países subdesarrollados, *Rev. Cuba. Inf. Cienc. Salud (ACIMED)*, 21 (2010) 270–282.

20 Zhou H, Deng Z, Xia Y, Fu M, A new sampling method in particle filter based on Pearson correlation coefficient, *Neurocomputing*, 216 (2016) 208-215.