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Article

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Economic Integration in Latin America: An Approach Through the Analysis of Biblio- metric Indicators on Research Production

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Abstract. *This article analyzes different bibliometric indicators on research papers which examine the issue of economic integration in the Latin American region. The documents have been obtained from the Scopus bibliographic database; a total of 564 papers published in the time span from 2000 to 2020 have been identified, processed, and analyzed using the open-source software Bibliometrix and Vos Viewer. The results achieved allow identifying elements such as volume and relevance in scientific publications by country, H-G-M index of researchers with the greatest impact, estimation of Lotka's Law, the analysis of co-occurrence between keywords, the dynamics in publication of the main sources,*

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and finally, the thematic evolution in the last two decades. The findings provide a better understanding of the research processes as well as a comprehensive analysis of authors, their impact and the relevant sources in the economic integration of Latin America.

Keywords: *economic integration, bibliometrics, research, Latin America*

Introduction

The concept of integration has been approached from different perspectives and by different authors; however, the definitions originated in the period after the Second World War as a product of the reconstruction exercise of the European continent. These definitions converge from the economic point of view towards the process developed between countries to facilitate international trade and eliminate existing trade barriers between them. In this way, Villamizar Pinto (2000) defines it as the process through which the participating countries agree to eliminate customs duties and restrictions of all kinds on imports of products originating in their respective territories.

Some approaches to the concept around the eighties include the political, social, and cultural components. Cohen Orantes (1981) defines economic integration as the process by which two or more governments adopt, with the support of common institutions, joint measures to intensify their interdependence and thus obtain mutual benefits; in this conceptualization, he does not give as much importance to trade barriers, rather, he focuses more on the institutional consequences derived from the process.

There are similar studies on economic integration in other regions of the world that, when compared with the Latin American process, reveal opportunities for improvement. Reyes et al. (2008) points out that integration in the case of Asian countries has been a process that has been worked on since prior to the eighties, and their integration into the world trade network was only achieved in this decade. The authors conclude in their comparative study that integration problems in Latin America may be related to the lack of stability that the countries of the region have displayed in the world trade network, hence, a better understanding of the research processes conducted in recent decades can offer information on the opportunities for improvement in the economic integration processes in the region.

In the case of Latin America, the process of economic integration has been seen as a strategy to achieve the development of the region, and it has also been studied by various authors and specific research projects. Most of these studies have been carried out since the nineties and have attempted primarily to do an analysis not only from an economic perspective, but also from the social and political implications involved in the processes of economic integration in the regions such as the Andean Community of Nations - CAN, the Bolivarian Alliance for the Peoples of America (ALBA), the Southern Common Market (MERCOSUR), Latin American Integration Association (ALADI), and more recently, the Pacific Alliance (AP).

The content of this article is structured to first conduct a review of the literature on the evolution of economic integration in Latin America, as well as other bibliometric studies that have addressed similar problems, then to describe the research methodology, the main results of the study, discussion on the results and finally, the conclusions of the research process. The objective is to present a bibliometric analysis of research documents located in the Scopus bibliographic database on economic integration in Latin America seeking to have a better understanding of the thematic trends, as well as the most relevant authors, the distribution of researchers according to the values of Lotka's coefficient, the main sources for publications, and the conceptual structure on the research carried out from 2000 to 2020.

1. Literature Review

1.1 *The Economic Integration in Latin America*

The integration process in Latin America has been studied especially after the 1990s, where the number of publications per year increases considerably. Franco and Di Filippo (1999) suggest that this phenomenon occurs due to the importance that integration processes have in the social dimension of integration, studying the coordination of macroeconomic policies for the improvement of the quality of life in certain segments of the population of the region.

Guerra Borges (2002) analyzed the Latin American integration process, considering that despite being far from approaching processes such as the ones carried out by the European Union, the Latin America region has shown signs of progress in the face of integration processes with a focus on making the trade of goods among the region easier and cheaper. If more structural changes are made at the country level, then it could be possible to look deeper into aspects of the economic integration processes. Sánchez Gómez (2006) points out that a globalization regionalization strategy is required, which implies deepening the integration processes, moving from free trade agreements to higher levels of integration.

More recently, Bonilla and Herrera (2020) indicate that unification in regional terms and the provision of strategic objectives such as Community of Latin American and Caribbean States (CELAC) can generate a highly competitive productive diversification for the region, where China would be its main trading partner in the long term, which would provide benefits under the interests of having trade agreements with the region for the exchange of goods and investment.

From the perspective of how external countries or institutions have been promoting economic integration in Latin America, Pintor-Pirzkall (2020) indicates that organisms like the Economic Commission for Latin America and the Caribbean (ECLAC) and the German Federal Ministry of Economic Cooperation and Development (BMZ) have conducted a series of cooperation agreements on sustainable economic develop-

ment since 1979; the main goals in these agreements included the promotion of energy projects and sustainable development in Latin America and the Caribbean. These long-term actions by external countries and organizations promote increased consumption and investment in the region. Basnet and Sharma (2010) conclude that this can be realized especially if the intervention actions by external entities are concentrated in the areas of integration such as trade, the mobility of people and tourism.

Regarding the study of the integration of the region carried out by external organizations and researchers, Tung et al. (2020) determine that the trade integration between different countries generates a decrease in the real income gap of workers, arguing that many companies have a demand for low-skilled people in the workforce; however, integration mechanisms for staff mobility, work permits and legalization processes take time and are significantly expensive compared to other regions. From the perspective of the people who work in countries outside the region, better integration processes between nations would reduce the costs and time as remittances, which represent a significant income for the countries of the region, have a considerable impact on poverty reduction and economic growth (Ekanayake & Moslares, 2020).

On the other hand, Márquez-Ramos et al. (2015) analyzed the economic integration in the region from two perspectives, the old and new regionalism, comparing two periods of time: 1962–1989, and 1990–2009; this comparison leads to the conclusion that some elements of improvement in the new regionalism consider social factors such as the mobility of people and educational issues and the increase in bilateral or multi-lateral agreements to improve trade between the nations of the region. Despite these efforts, the findings conclude that the region still has great challenges to move from the integration generated by mere commercial agreements to more complex processes of economic integration.

Some aspects of economic integration in the region are weak, and the process presents great obstacles that must be analyzed: Riethof (2017) mentions that one of the drawbacks to deepening the integration of the region lies in the economic and political instability of the countries, which prevents them from committing to more ambitious objectives. Likewise, Riethof (2017) suggests that increasing exports of the same products is not the best strategy to achieve the development of the region, which is why they highlight the importance of Latin American integration processes promoting diversification in the export of goods.

1.2 Challenges for Integration and Recent Studies

Despite the efforts of the countries to achieve a deeper economic integration through the creation of organizations such as the Organization of American States (OAS), the Latin American Integration Association (ALADI), the Community of Latin American and Caribbean States (CELAC), the Union of South American Nations (UNASUR), none of these have achieved a deep and competitive integration of all the countries of

the region. This situation has shown that Latin American regionalism has been territorially segmented, and sometimes delayed by political disagreements, which may be a manifestation of a regional integration process that is gradually wearing thin with each attempt.

According to Malamud and Gardini (2012), Latin American regionalism has become a political issue instead of an economic one over the last two decades, and no president of the region has had the intention of promoting a deeper integration among the countries of the region. To achieve a deeper integration process, it is necessary that a country in the region act as a leader to attain convergence between the countries; the researchers also mention that if no country emerges as a political focal point that fosters cohesion, the integration processes will continue to materialize in agreements with a limited scope that only seek cooperation instead of integration between countries in Latin America.

Another fact related to this problem is highlighted by Zamora and Thoene (2020), who concluded that economic integration in Latin America has been misunderstood by most of the countries in the region as a process of “injury” to their sovereignty, which explains that no president or nation has taken a leading role in the promotion of the region’s economic integration process. From the perspective of Bonilla and Herrera (2020), different economic models in the region such as protectionist for some countries and openness for others cause a crisis of regional integration, which makes it difficult for the countries of the region to achieve an open regionalism. According to these authors, the fragmentation of integration for Latin America can be defined in the following terms: the open, the revisionist and the anti-systemic policies of the countries among the regions.

A recent study that evaluates the progress in terms of integration carried out by Zamora and Thoene (2020) argues that although there are fairly solid lines of cooperation built by bilateral agreements or by a small group of countries in the region, when it comes to addressing deeper integration scenarios, Latin American countries are not willing to share the sovereign right to establish policies within their jurisdictions with other countries or with a regional governing institution. A similar idea is presented in the study conducted by Carrillo and Paranaguá (2012), where the researchers state that every country must consider principles based on an equanimous and participatory relationship framed in solidarity, equitable relations, reciprocal benefits, respect for national sovereignty, shared responsibility, non-interference, non-interventionism, self-determination, and independence.

Another difficulty in the integration process in Latin America is related to the fact that certain economic models, such as neoliberalism, were not properly implemented in the countries of the region, generating ruptures in the integration process, and causing delays in key actions for the social, economic, and political growth of the countries (Gothems & Rollemberg Mollo, 2020). Other authors such as Pereira et al. (2018) mention that a deeper integration of the countries in the region could have counterpro-

ductive effects due to the participation of nations such as Cuba, Venezuela or Bolivia, whose problems related to their economic and social systems could be spread more easily to other countries of the region in a scenario of increasing integration. The profound differences in the political and economic systems in Latin American countries end up being a considerable barrier that prevents deeper economic integration processes (Jancic, 2019).

From a socio-spatial perspective, Muhr (2016) analyzes the cooperation process based on the experience of ALBA, Mercosur, and Caribbean Community CARICOM, highlighting that there are differences at the structural level since it is not a capitalist cooperation per se, but there is a socialist counterweight which can create difficulties. The author does also argue that there are similar characteristics and points of convergence that must be considered from this perspective; the author states that the region can be explained as a social construction and not only by a geographic space shared by the countries, so that ideological differences are an important part of the integration process. In this way, the cooperation process in the Latin American region has been the result of cooperation between private companies, public companies, and worker-led cooperatives, which allows us to observe progress in the democratization of management and ownership.

1.3 Bibliometric Analysis of Economics in Latin America

Although there is currently no research that presents bibliometric analyses specifically on studies in economic integration in Latin America, there are studies that use similar methodologies on other economic topics or that study economic integration in Latin America through other complementary methodologies. Bonilla et al. (2015) identified that Brazil, Mexico, Chile, Argentina, and Colombia are the main contributors in terms of scientific research around topics concerning economic science, while the other countries of the region, despite having sporadic publications, do not make a significant contribution on the evaluated documentary base.

In relation to research on the impact of corporate social responsibility in the economies of the region, the application of bibliometric analysis methodologies has made it possible to establish that issues such as sustainability, environmental awareness, green policies are areas that have gained importance in scientific research for the last decade (Jaen et al., 2018). Recently, bibliometric studies on thematic trends around economic integration show that topics such as innovation, sustainability and value chains in the private sector are elements that are currently related to integration processes in nations, and their development depends on the progress that countries make in terms of economic integration (Gamarra et al., 2018).

Some studies use bibliometric analysis to carry out an exploration of the economic and political relations between Latin America and China, identifying that recent research exercises focus on issues around negative phenomena for Latin American econ-

omies such as the loss of presence in the Chinese market, the decrease in exports of value-added products and the challenges for the Latin American manufacturing sector (Gil-Barragan et al., 2020). More recent studies of high-impact papers during the last two decades allow the identification of the main authors and thematic evolution around the economic, ecological, and social conflicts derived from the operation of large mining multinationals in the region and the economic impact of this phenomenon (Doussoulin & Mougenot, 2022).

2. Methodology

The collection of information related to the research production has been obtained through the Scopus bibliographic database, taking into account the quality, reliability and compatibility of the metadata with the tools used to process the information, and the equation used to identify the documents (See Appendix A) that applies time filters and documentary typology that ensure a final sample of academic papers that specifically study economic integration of the Latin American region, limiting documents only to publications from between 2000 and 2020, and finally, selecting only papers such as: research articles, books, book chapters, and review papers.

The information obtained by the search equation made it possible to collect a final database composed of 564 documents that have been exported from the Scopus database in BibTeX format to later be processed in the tool for the statistical programming language in RStudio-Bibliometrix (Aria & Cuccurullo, 2017). These tools allow the loading, processing and generation of statistics and specific indicators, which makes them the most widely used tools for bibliometric analysis. The final sample for the study (see Table 1) was processed in the bibliometrix application seeking to estimate specific bibliometric indicators to analyze elements related to performance, impact, network analysis and the relevance of the collected publications (Donthu et al., 2021).

Table 1
Dataset Overall Characteristics

Overall Information		Typology		Authors and references	
Documents	564	Articles	362	Authors	1014
Keywords	1303	Books	40	Authors per document	1.8
Sources	435	Chapter of a book	117	References	26967
Time span	2000–2020	Reviews	45	Documents per author	0.556

Considering the limitations of the Bibliometrix software for the estimation, visualization or evaluation of some bibliometric indicators and the database of published papers was loaded simultaneously in the VOS viewer software, as this practice allows

corroborating the results, minimizing interpretation errors, and providing alternatives in the visualization of different specialized bibliometric indicators (Perianes-Rodríguez et al., 2016).

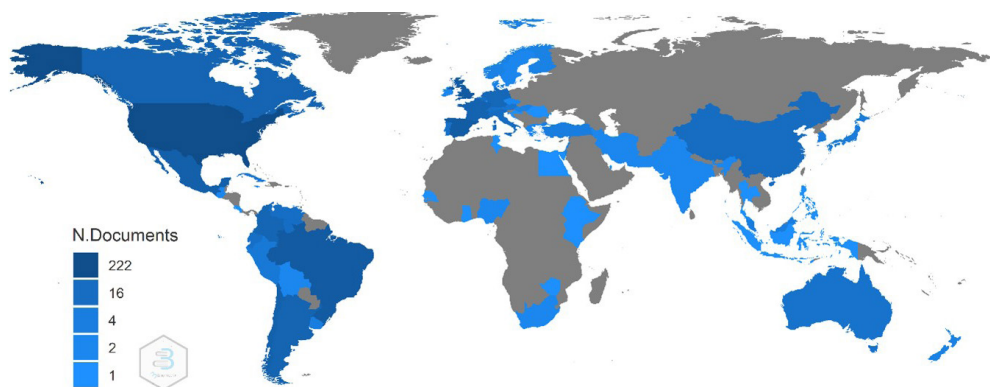
3. Research Results

3.1 Volume and Impact on Production by Country

In terms of production volume by country, the results present the United States (222 documents) as the country with the greatest contribution in the number of papers published related to economic integration in Latin America (see Figure 1), followed by Brazil (74), the United Kingdom (70), Spain (63), Mexico (46); for this indicator, Colombia is ranked 10, with a contribution of 30 documents.

Figure 1

Contribution to Research by Country



Regarding the relevance of the scientific production observed, from the perspective of the total citations (TC) that each country has on the topics studied, the United States ranks first with a TC of 1911 (see Table 2), followed by the United Kingdom (1159), Spain (294), Chile (246) and Austria (181); Colombia ranks 18 with a TC value equal to 49 and an average citation per article of 7.00.

A deeper analysis of the results in terms of volume and citation by country shows that despite the fact that the countries that represent the region have a considerable representation in the contribution by volume of documents, the papers are published mainly by countries outside the region of Latin America; in terms of the relevance of the documents, the participation of countries in the region is even lower, with only 3 representatives among the 10 countries with the highest volume of citations.

Table 2*Countries with the Highest Volume of Citations*

Rank	Country	Total citation (TC)	TC average per article
1	United States	1911	20.55
2	United Kingdom	1159	46.36
3	Spain	294	14.70
4	Chile	246	18.92
5	Austria	181	60.33
6	Brazil	176	7.65
7	Mexico	144	5.76
8	Italy	136	27.20
9	Portugal	133	19.00
10	China	123	41.00

3.2 Contribution by Author and Bibliometric Indexes

The results of the authors with the highest volume of published documents show the Italian researcher Pía Riggirozzi has the highest productivity, reaching a total of 6 documents (see Table 3), followed by Florensa, Gaspare, Hogenboom and Jenkins, each of the above with a total of 4 documents published; taking into account exclusively the Latin American authors, Argentine María Luisa Recalde leads the productivity of the sample reaching a total of 3 documents, ranking in the sixth position among the 1014 authors analyzed.

Table 3*Authors with the Highest Number of Publications*

Rank	Author	Documents	Fractional value
1	Pía Riggirozzi	6	4.33
2	Florensa ML	4	1.33
3	Gaspare M. Genna	4	2.50
4	Barbara Hogenboom	4	2.50
5	Rhys Jenkins	4	2.83
6	Maria Luisa Recalde	3	1.33
7	Fred R. Harris	3	2.50
8	Alex E. Fernández Jilberto	3	1.50
9	Laura Márquez-Ramos	3	1.00
10	Rajagopal	3	1.08

In terms of bibliometric indicators related to the impact per author, the value of H, G and M indices has been estimated (see Table 4), understanding the H index as an indicator that qualifies the citation that other authors make about the production of a researcher in particular (Scimago, 2006), the G index that considers additional variables such as the average of the citations of other research documents (Castillo et al., 2019), and finally, the M index that relates the results of the H index with the number of years since the first publication of the researcher on which the indicator is estimated.

Table 4

Bibliometric Indices H-G-M by Author

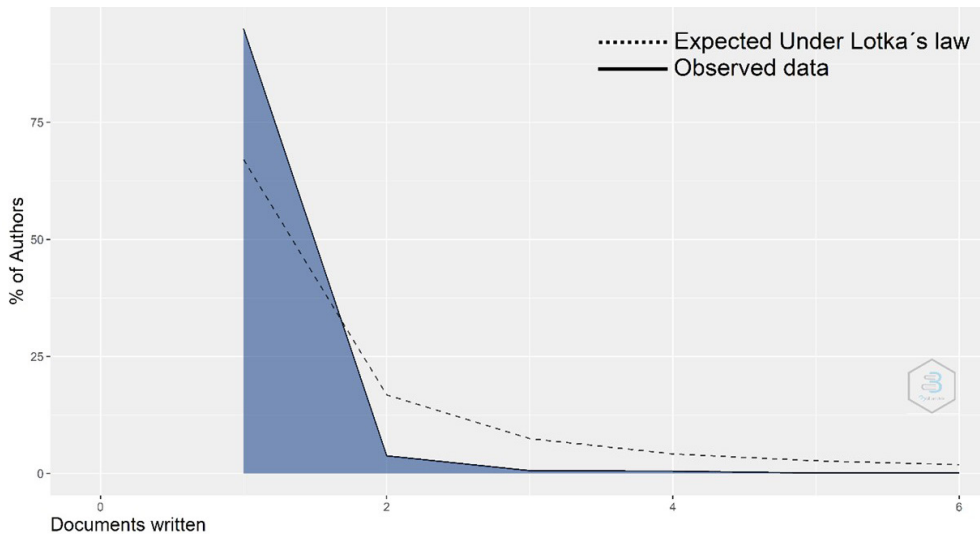
Author	H Index	G Index	M Index	TC	YFP
Riggirozzi P	6	6	0.429	251	2008
Renna GM	4	4	0.211	76	2003
Jenkins R	4	4	0.286	200	2008
Florensa LM	3	4	0.429	29	2015
Hogenboom B	3	3	0.167	22	2004
Márquez-Ramos L	3	3	0.429	28	2015
Recalde ML	3	4	0.429	29	2015
Berg AF	2	2	0.091	15	2000
Borensztein E	2	2	0.091	15	2000
Briceo-Ruiz J	2	2	0.286	27	2015

Note. TC = Total citation, YFP = Year of first publication.

The indicators G, H, and the total volume of citations (TC) present the Italian researcher Pía Riggirozzi as the author with the greatest impact on the research on economic integration in Latin America. Regarding the impact from the perspective of the M index, a total of four authors presents an impact value of 0.429: Riggirozzi P, Florensa LM, Márquez-Ramos L and Recalde ML.

The results on the Lotka coefficient are calculated as the total number of publications in sum per author in the time horizon studied. This indicator is important since it allows us to identify the degree of expertise or dedication of the researchers to the same topic over the last two decades. The results show that the distribution of authors according to their academic production is below Lotka's law, a concentration of 92% of the researchers are classified in the group of small producers who have contributed with a single document throughout the time span studied (see Figure 2).

The remaining researchers in the sample are classified as medium producers as they are in the range of published works that includes between 2 and 9 documents. Based on the classification proposed by Obón et al. (2019), there are no erudite or highly specialized authors among the sample of researchers studied.

Figure 2*Lotka's Law*

3.3 Conceptual Structure and Thematic Evolution

The results of the co-occurrence of keywords are evidenced by five differentiated nodes (see Figure 3): the most relevant clusters (green and yellow) have as central concepts the words *Latin America* and *economic integration* respectively, while the nodes with less centrality are grouped around the words *North America*, *China*, and *international co-operation*. The proximity of the nodes shows that the processed documents deal with different topics jointly, while the direction and thickness of the lines that connect the words of each node show the relationships that exist among the words with the highest co-occurrence (Aria & Cuccurullo, 2019).

Regarding the thematic evolution, the database of research papers was segmented according to the year of publication into three groups as follows: the first group that ranges from 2000 to 2006 (Figure 4), the second from 2007 to 2013 (Figure 5), and the third group for publications from 2014 to 2020 (Figure 6). The most relevant results present the economic integration theme as a transversal element, with high centrality and low density, present in the Basic themes quadrant of the three groups segmented.

An observation of the Motor themes quadrant for group 3 that presents the most recent production (Figure 5) shows that in the last 7 years, topics such as sustainable development and climate change have had a greater development and importance among the research processes on the economic integration in Latin America. It should be pertinent to highlight the decrease in centrality and density of themes related to the United States or North America that have specific clusters in Figures 4 and 5 in the Basic theme

quadrant; however, this phenomenon does not occur in the thematic evolution for the period between 2014 to 2020 (Figure 6).

Figure 3
Keyword Co-occurrence

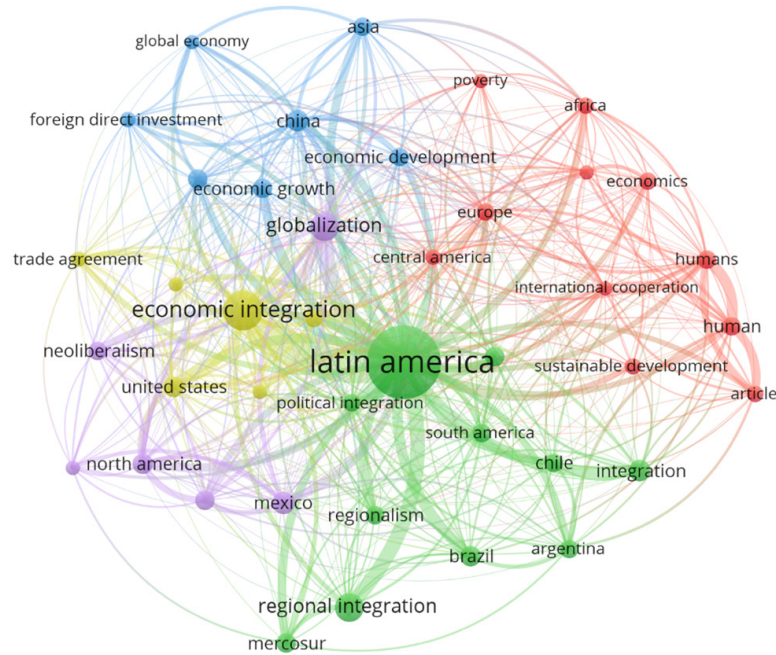


Figure 4
Thematic Evolution for the Time Span from 2000 to 2006

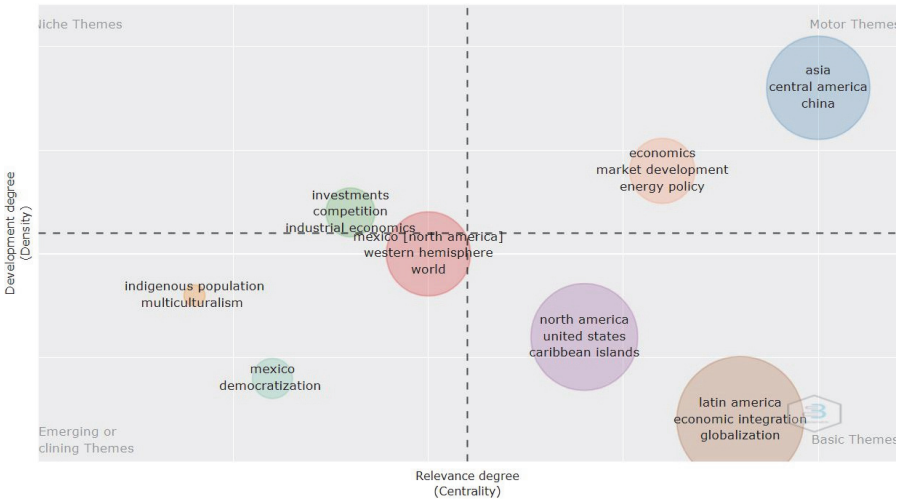


Figure 5
Thematic Evolution for the Time Span from 2007 to 2013

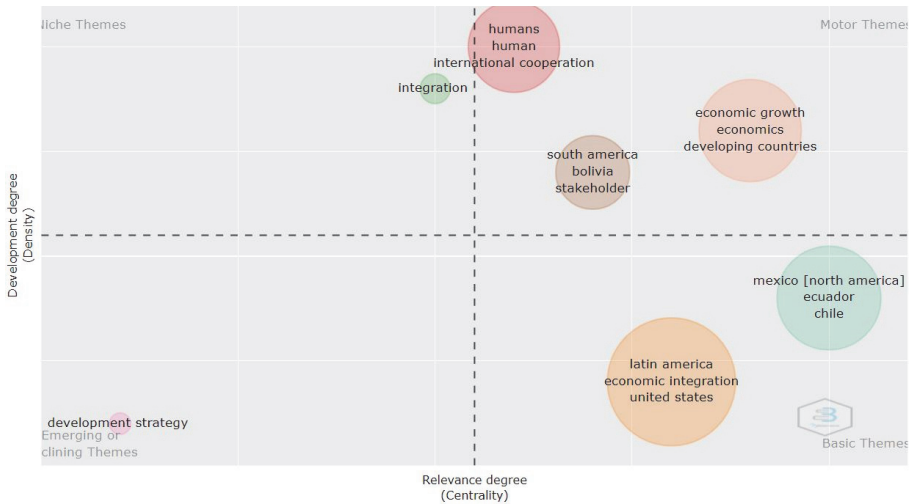
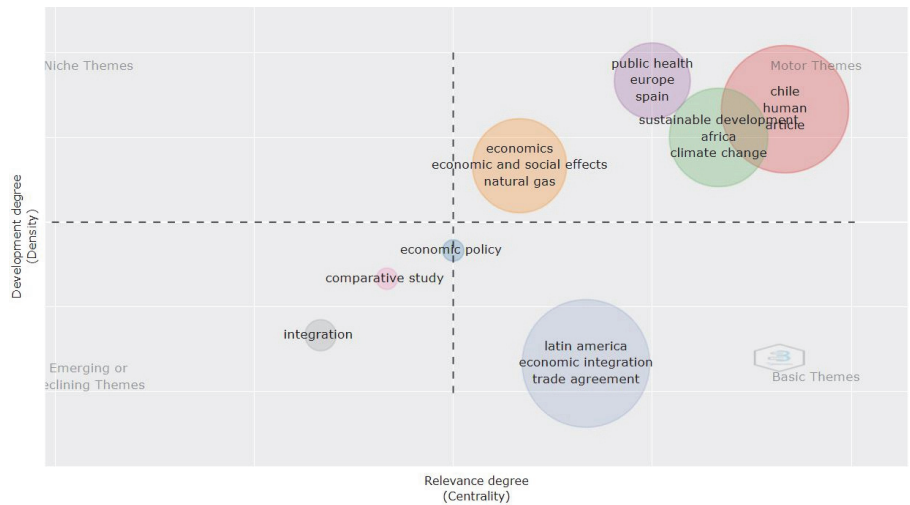


Figure 6
Thematic Evolution for the Time Span from 2014 to 2020

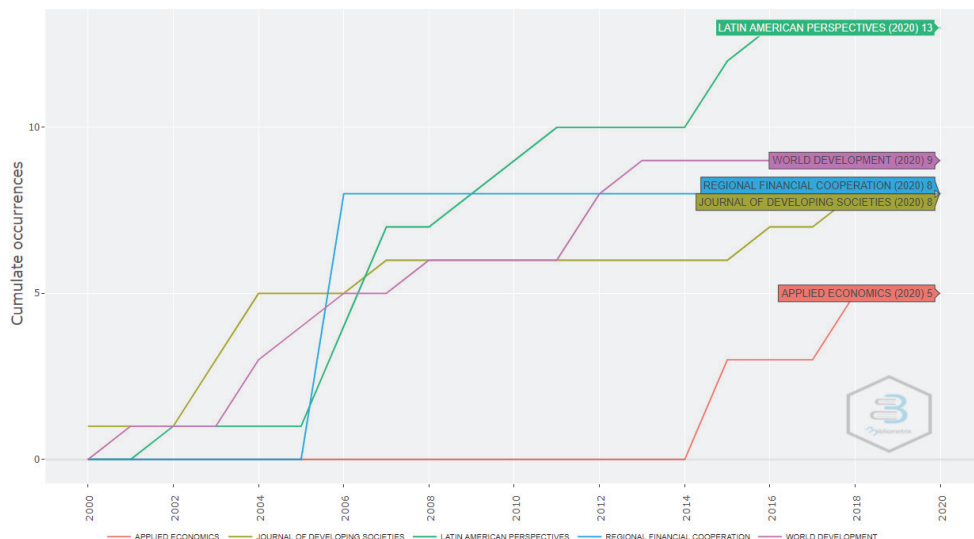


3.4 Main Sources of Publication

The results on the main sources of publication of documents on integration in Latin America present the journal *Latin American Perspectives* as the source with the greatest contribution with a total of thirteen published documents (see Figure 7); the results also show that the main sources of publication are grouped in journals specializing in development, cooperation, and economic cooperation.

Figure 7

Publication Dynamics of the Main Sources



The results related to the evolution of the total number of papers published about economic integration in Latin America show that there is a positive trend in the volume of publications for the period studied, which can be evidenced in that all the main sources have increased the papers published over time (Figure 7); this may be a reflection that economic integration in the region is a topic that has aroused greater interest in researchers over the years.

Discussion

The publication of papers focused on studying economic integration in Latin America has increased in the last two decades, going from an average of 5 to 15 publications per year for the period studied. Regarding the sources of publication, studies on the economic integration of the region have gone from being published in journals that address topics related to the main theme to specialized journals that concentrate their scope of study on economic issues exclusively in the region such as the Latin American Perspectives Journal.

Despite the fact that Latin American economic integration is a phenomenon that should be studied mainly by researchers and organizations in the region, curiously, the main contributions of high-impact research come from countries like the United States and the United Kingdom that do not belong to the region, which may show the insufficient destination of resources that the nations of the region allocate to research, the lack of tools, inputs or interest on the part of the researchers or other variables that can also be associated with this phenomenon (Levitsky & Murillo, 2013).

The complementary basic themes present in the thematic evolution show that although integration mechanisms are a central theme that has gained relevance, the association with secondary research themes has varied considerably in the last two decades, going from specifically studying the integration of the region related to the North American economy to a more open approach where trade agreements are studied; this may be due to the recent interest of Asian countries in signing trade agreements directly with some of the regional integration figures such as Mercosur or the Pacific Alliance.

Conclusions

In the last decade, the thematic trends on which researchers focus the study of economic integration in the region have changed drastically including elements related to the environment, sustainability development and climate change. It is also considered relevant to mention that at the thematic level, new regions such as Africa, China and Europe have been incorporated into the study of the integration of the region.

Even though there are contributions and individual researchers that have studied economic integration in Latin America, the proportion of authors who have contributed with more than four papers on the subject is too low, which can lead us to conclude that few authors have consistently investigated the phenomenon of integration in the region over the last two decades.

The publication sources show that there is a greater interest on the part of researchers in conducting studies related to Latin American economic integration, in the same way the publication sources have a greater degree of specialization in these topics compared to the sources two decades ago.

The keyword co-occurrence network allows us to conclude that the research processes on economic integration in Latin America for the last two decades have been linked to elements such as political integration, economic growth, regionalism, and globalization.

Appendix

Search Equation to Identify the Documents in Scopus Database

TITLE-ABS-KEY (economic AND integration) AND TITLE-ABS-KEY (Latin AND America OR south AND America) AND (LIMIT-TO (PUBYEAR , 2020) OR LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015) OR LIMIT-TO (PUBYEAR , 2014) OR LIMIT-TO (PUBYEAR , 2013) OR LIMIT-TO (PUBYEAR , 2012) OR LIMIT-TO (PUBYEAR , 2011) OR LIMIT-TO (PUBYEAR , 2010) OR LIMIT-TO (PUBYEAR , 2009) OR LIMIT-TO (PUBYEAR , 2008) OR LIMIT-TO (PUBYEAR , 2007) OR LIMIT-TO (PUBYEAR , 2006) OR LIMIT-TO (PUBYEAR , 2005) OR LIMIT-TO (PUBYEAR , 2004) OR LIMIT-TO (PUBYEAR , 2003) OR LIMIT-TO (PUBYEAR , 2002) OR LIMIT-TO (PUBYEAR , 2001) OR LIMIT-TO (PUBYEAR , 2000)) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "ch") OR LIMIT-TO (DOCTYPE , "re") OR LIMIT-TO (DOCTYPE , "bk"))

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