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# Comparative analysis of Latin American countries in the SCImago Journal & Country Rank Top 5 for 2009 - 2019

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### Abstract.

The production, dissemination and citation of scientific papers in journals of recognized academic quality indexed in the Elsevier's Scopus Database constitute the data to measure the indicators of countries in SCImago Journal & Country Rank (SJCR) (which is a free access portal developed by SCImago). In this research a comparative analysis has been made, using the linear regression technique, of the indicators of Latin American countries in the SJCR Top 5: BR, MX, AR, CL and CO, in the period 2009-2019. First, information on the portal's country indicators is presented, and then the graphs are shown along with the trend lines for the countries. BR is the country with the highest growth rate in the Documents and Citable Documents indicators. Regarding the indicators with a drop rate, BR stands out in the Citations and Self-citations indicators and AR in the Citations per Document indicator. BR is

the country with the highest H index. The value of the determination coefficient is practically at least 80%.

**Keywords:** SJCR, Latin American countries, country indicators.

## 1. Introduction

In order to measure, evaluate and compare the quality and quantity of scientific publications, there are several indicators that provide information from both university institutions and the respective countries, through the rankings [1] [2] [3] [4]. Among them are: SIR IBER Ranking [5], QS World University Rankings [6], Webometrics Ranking [7], ARWU (or also called Shanghai Ranking) [8] and THE World University Rankings [9], to name a few.

With regard to indicators of scientific publications related to countries, the SCImago Journal & Country Rank (SJCR) [10] has a free platform, accessible to all. Based on the information of publications indexed in the Elsevier's Scopus® [11] Database since 1996, this platform makes and publishes a ranking which can be used to analyze the indicators individually or to compare them [12].

For the purposes of this paper, the following scientific indicators of countries, according to the SJCR, have been considered and compared in Latin American countries (LATAM): Documents, Citable Documents, Citations, Self-citations, Citations per Document and H index [12].

The purpose of this research is to carry out a comparative analysis (using the linear regression technique) of the LATAM country indicators in the SJCR Top 5 [13]: BR, MX, AR, CL and CO, in the period 2009 - 2019 [4]. This analysis is done in order to analyze them and estimate the rate of increase or decrease. First, information is presented on the country indicators of the SJCR portal. Then, the graphs are shown together with the trend lines of the mentioned indicators.

## 2. Country indicators on the SJCR portal

The SJCR portal provides information on two rankings: one referring to the visibility of scientific journals, based on an impact indicator SCImago Journal Rank (SJR) [10] and, the other referring to indicators related to Documents, Citable Documents, Citations, Self-citations, Citations per Document and H index of countries. These can be listed annually or over a period of time. In this paper, the period 2009-2019 has been taken into consideration (Table 1) [12]. The countries are classified according to each one of them, in descending order from the best.

**Table 1.** SJCR Indicators (2009-2019) [12].

Indicator	Definition
Documents	Published documents in 2009-2019.
Citable Documents	Citable documents include: articles, reviews and conference papers.
Citations	Whole period Citations to documents published during 2009-2019.
Self-citations	Whole period Country Self Citations to documents published during 2009-2019.
Citations per Document	Average citations to documents published during 2009-2019.
H index	Country's number of articles (h) that have received at least h citations.

As with the Journal Rankings, the Country Rankings allow countries to be listed in regard to 27 major thematic areas, according to 313 specific subject categories, per region/countries and per year since 1996 [10].

## 3. LATAM country comparison in the SCImago Journal & Country Rank (SJCR) Top 5 for 2009 - 2019

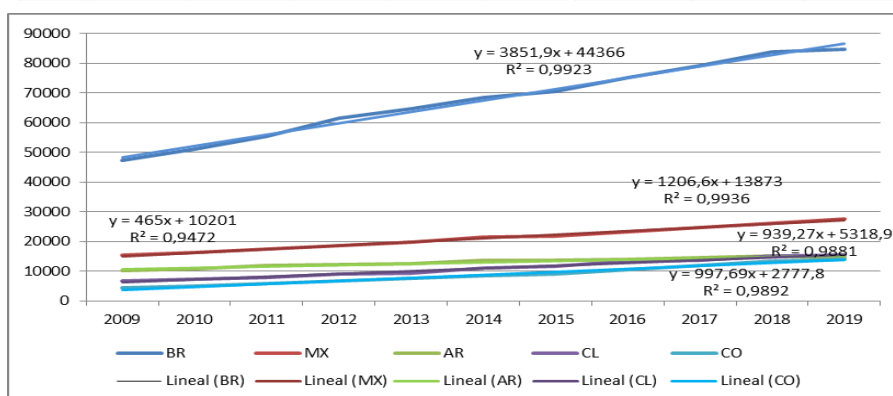
LATAM countries: BR, MX, AR, CL and CO are compared according to the indicators: Documents, Citable Documents, Citations, Self-citations, Citations per Document and H index, (in the SJCR) in the period 2009 - 2019 [12] [13].

### 1.1 Regarding the Documents indicator

Table 3 and Fig. 1 show the data, slope and coefficient of determination ( $r^2$ ) of the trend line of the Documents indicator of LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019. BR is the country with the highest growth rate: 3,851.9 documents per year, followed by MX with 1,206.6 documents per year. In third, fourth and fifth place are CO, CL and AR with 997.69; 939.27 and 465 documents per year. All trend lines present an  $r^2$  value of at least 95%.

**Table 3.** Indicator, slope and  $r^2$  data from the Documents trend line of LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019.

	BR	MX	AR	CL	CO	
2009	47306	15472	10201	6733	4240	
2010	51020	16240	10848	7146	4942	
2011	55476	17322	11806	7889	5718	
2012	61509	18736	12320	8988	6710	
2013	64835	19889	12516	9421	7561	
2014	68398	21381	13519	11112	8450	
2015	70484	21669	13611	11765	9154	
2016	75160	23164	14007	13415	10473	
2017	79335	24643	14388	13573	11872	
2018	83839	26183	15108	14971	13282	
2019	84887	27542	14580	15487	14001	
						Country
						Slope
						$r^2$
						Brazil
						3851,9
						0,9923
						Mexico
						1206,6
						0,9936
						Argentina
						465
						0,9472
						Chile
						939,27
						0,9881
						Colombia
						997,69
						0,9892



**Fig 1.** Documents Indicator of LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019.

### 1.2 Regarding the Citable Documents indicator

Table 4 show the data, slope and coefficient of determination ( $r^2$ ) of the trend line of the Citable Documents indicator for LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019. BR is again the country with the highest growth rate: 3,533.1 citable documents per year, followed by MX with 1,084.1 citable documents per year. In third, fourth and fifth place are CO, CL and AR with 929.88; 871.58 and 419.29 citable documents per year. All trend lines have an  $r^2$  value of at least 98%.

**Table 4.** Indicator, slope and  $r^2$  data from the Citable Documents trend line of LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019.

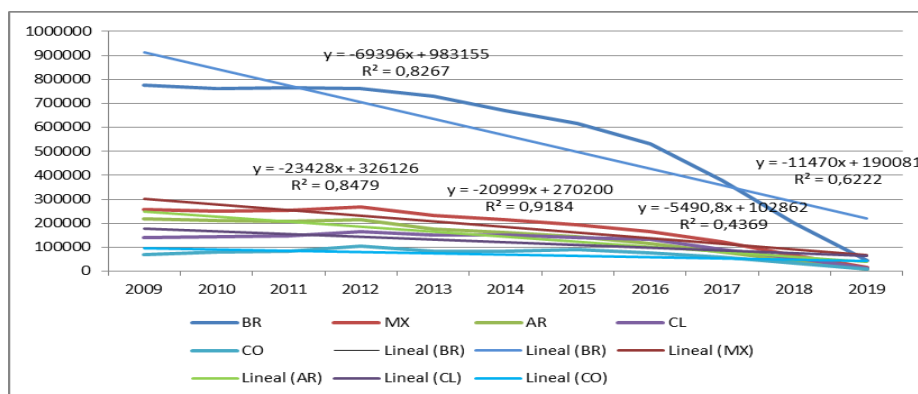
	BR	MX	AR	CL	CO																					
2009	45057	14567	9606	6365	4058	<table border="1"> <thead> <tr> <th>Country</th> <th>Slope</th> <th><math>r^2</math></th> </tr> </thead> <tbody> <tr> <td>Brazil</td> <td>3533,1</td> <td>0,9951</td> </tr> <tr> <td>Mexico</td> <td>1084,1</td> <td>0,9861</td> </tr> <tr> <td>Argentina</td> <td>419,29</td> <td>0,9804</td> </tr> <tr> <td>Chile</td> <td>871,58</td> <td>0,9886</td> </tr> <tr> <td>Colombia</td> <td>929,88</td> <td>0,9867</td> </tr> </tbody> </table>	Country	Slope	$r^2$	Brazil	3533,1	0,9951	Mexico	1084,1	0,9861	Argentina	419,29	0,9804	Chile	871,58	0,9886	Colombia	929,88	0,9867		
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2012	57757	17285	11296	8410																						
2013	60689	18258	11436	8813																						
2014	64408	19674	12254	10420																						
2015	65993	19918	12291	10986																						
2016	69927	21191	12770	12401																						
2017	73821	22556	13106	12546																						
2018	77885	23768	13797	14005																						
2019	80430	25823	13755	14691	13319																					

### 1.3 Regarding the Citations indicator

Table 5 and Fig. 2 show the data, slope and coefficient of determination ( $r^2$ ) of the trend line of the Citations indicator for LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019. BR is the country with the highest rate of descent: 69,396 citations per year. MX continues in second place with a decrease of 23,428 citations per year. In third, fourth and fifth place, AR, CL and CO are located with an annual decrease of 20,999, 11,470 and 5,491 citations. Only the AR trend line shows a  $r^2$  value above 90%.

**Table 5.** Indicator, slope and  $r^2$  data from the Citations trend line of LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019.

	BR	MX	AR	CL	CO																					
2009	777294	255974	216860	141933	67598	<table border="1"> <thead> <tr> <th>Country</th> <th>Slope</th> <th><math>r^2</math></th> </tr> </thead> <tbody> <tr> <td>Brazil</td> <td>-69396</td> <td>0,8267</td> </tr> <tr> <td>Mexico</td> <td>-23428</td> <td>0,8479</td> </tr> <tr> <td>Argentina</td> <td>-20999</td> <td>0,9184</td> </tr> <tr> <td>Chile</td> <td>-11470</td> <td>0,6222</td> </tr> <tr> <td>Colombia</td> <td>-5490,8</td> <td>0,4369</td> </tr> </tbody> </table>	Country	Slope	$r^2$	Brazil	-69396	0,8267	Mexico	-23428	0,8479	Argentina	-20999	0,9184	Chile	-11470	0,6222	Colombia	-5490,8	0,4369		
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2010	761054	250251	212467	145382	81484																					
2011	764079	254095	206011	149124	81909																					
2012	762629	269138	214797	165412	104388																					
2013	728612	234004	177366	149932	82026																					
2014	669789	215386	162953	151540	82637																					
2015	616442	191916	143229	139796	91568																					
2016	529956	164384	116654	133999	76442																					
2017	377940	123250	80831	89551	60202																					
2018	200861	65836	45240	54971	32786																					
2019	45929	16923	9856	12269	8053																					



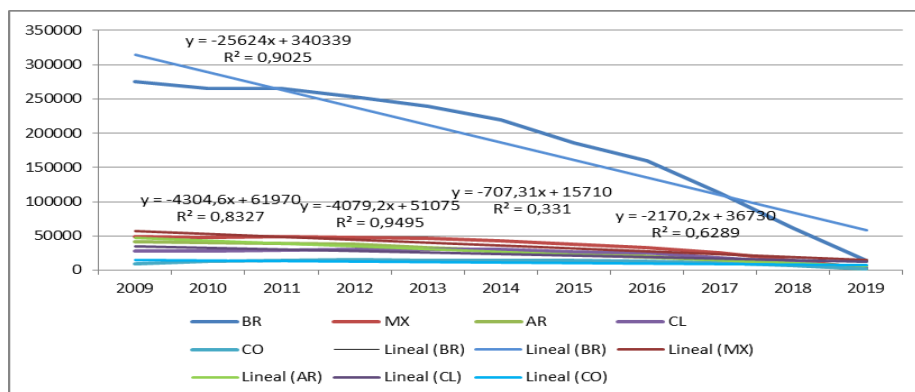
**Fig 2.** Citations indicator of LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019.

### 1.4 Regarding the Self-citations indicator

Table 6 and Fig. 3 show the data, slope and coefficient of determination ( $r^2$ ) of the trend line of the Self-citations indicator for LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019. BR is the country with the highest rate of decline: 25,624 self-citations per year. It is followed by MX with a drop rate of 4,304.6 self-citations per year. In third, fourth and fifth place are AR, CL and CO with an annual decrease of 4,079.2; 2,170.2 and 707.31 self-citations per year. Only the BR and AR trend lines have an  $r^2$  above 90%.

**Table 6.** Indicator, slope and  $r^2$  data from the Self-citations trend line of the LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019.

	BR	MX	AR	CL	CO			
2009	274728	49074	41640	27368	9906			
2010	265986	48326	40561	28402	12623			
2011	265597	48550	39748	29486	13667			
2012	253533	48029	37867	31050	15109			
2013	239882	46981	33321	29974	14357			
2014	218791	42939	29565	30268	14041	Country	Slope	$r^2$
2015	185390	37976	25535	26364	14102	Brazil	-25624	0,9025
2016	160020	32694	20269	25045	13361	Mexico	-4304,6	0,8327
2017	111914	25152	14341	18401	10686	Argentina	-4079,2	0,9495
2018	61972	14160	7830	11571	6463	Chile	-2170,2	0,6289
2019	14720	3679	1923	2863	1812	Colombia	-707,31	0,331



**Fig 3.** Self-citations indicator of LATAM countries in the SJCR Top5 [12] [13] in the period 2009 - 2019.

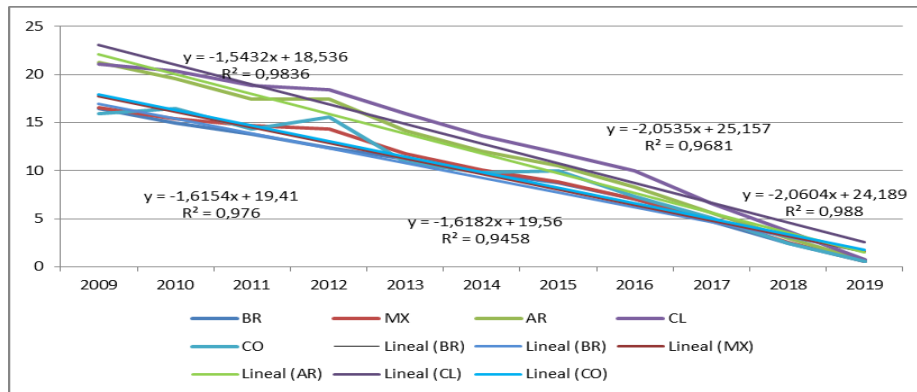
### 1.5 Regarding the Citations per Document indicator

Table 7 and Fig. 4 show the data, slope and coefficient of determination ( $r^2$ ) of the trend line of the Citations per Document indicator for the LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019. AR is the country with the highest rate of descent: 2.0604 citations per document per year. It is followed by CL with a rate of descent of 2.0535 citations per document per year. In third, fourth and fifth place are CO, MX and BR with an annual decrease of 1.6182; 1.6154 and 1.5432 citations per document per year. All trend lines have an  $r^2$  above 95%.

**Table 7.** Indicator, slope and  $r^2$  data from the Citations per Document trend line of LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019.

	BR	MX	AR	CL	CO
2009	16,43	16,54	21,26	21,08	15,94
2010	14,92	15,41	19,59	20,34	16,49
2011	13,77	14,67	17,45	18,9	14,32
2012	12,4	14,36	17,43	18,4	15,56
2013	11,24	11,77	14,17	15,91	10,85
2014	9,79	10,07	12,05	13,64	9,78
2015	8,75	8,86	10,52	11,88	10
2016	7,05	7,1	8,33	9,99	7,3
2017	4,76	5	5,62	6,6	5,07
2018	2,4	2,51	2,99	3,67	2,47
2019	0,54	0,61	0,68	0,79	0,58

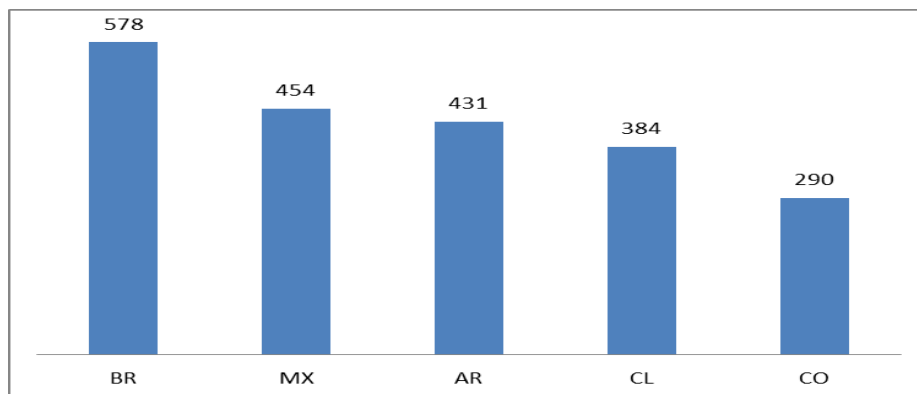
Country	Slope	$r^2$
Brazil	-1,5432	0,9836
Mexico	-1,6154	0,976
Argentina	-2,0604	0,988
Chile	-2,0535	0,9681
Colombia	-1,6182	0,9458



**Fig 4.** Citations per Document indicator of LATAM countries in the SJCR Top 5 [12] [13] in the period 2009 - 2019.

**1.6 Regarding the H index indicator**

Figure 5 shows the H index data for the LATAM countries in the SJCR Top 5 [12] [13]. BR is the country with the highest H index (578). It is followed by MX (454). Then there is AR (431). CL is in fourth place (384). In fifth place is CO (290).



**Fig 5.** Conglomerate of the SJR impact index and the Citable Docs. indicator (3 years) of LATAM country journals in the SJR 2019 Top 20 [12] [13].

#### 4. Conclusions

In the free portal SCImago Journal & Country Rank people can view the indicators of scientific publications per journal and per country. The information refers to documents published in scientific journals indexed on Scopus, Citable Documents, Citations, Self-Citations, Citations per Document and H index. There are five countries in the SJCR Top 5: BR, MX, AR, CL and CO. In this paper, a comparative analysis has been made (using the linear regression technique) of the scientific indicators of these countries in the SJCR, in the period 2009-2019. Among the results are:

1. BR is the country with the highest growth rate in the Documents and Citable Documents indicators: 3,851.9 documents per year and 3,533.1 citable documents per year, respectively.
2. BR is the country with the highest rate of descent in the Citations and Self-citations indicators: 69,396 citations per year and 25,624 self-citations per year, respectively.
3. AR is the country with the highest rate of descent in the Citations per Document indicator: 2,0604 citations per document per year.
4. BR is the country with the highest H index (578), followed by MX (454), then AR (431), CL in fourth place (384) and, CO in fifth place (290).
5. Practically, in the trend lines a value of determination coefficient ( $r^2$ ) above 80% was obtained.

#### References

1. Quartiero, E.: Chemistry brazilian scientific journals indexed in characteristics and internacionalization. *Biblios*. 71 Pittsburg april/jun. (2018).
2. Mondragon Unibertsitatea. Publication Impact Indexs. <https://www.mondragon.edu/es/web/biblioteka/indices-de-impacto-de-las-publicaciones>, last accessed 2020/09/20.
3. De-Moya-Anegón, F., Herrán-Páez, E., Bustos-González, A., Corera-Álvarez, E., Tibaná-Herrera, G. & Rivadeneyra F. Ranking iberoamericano de instituciones de educación superior 2020 (SIR Iber). Granada: Ediciones Profesionales de la Información. ISBN: 978 84 120239 3 0 <https://doi.org/10.3145/sir-iber-2020SCImago>, last accessed 2020/10/05.
4. Quacquarelli Symonds. QS World University Rankings, Available in: <https://www.topuniversities.com/qs-world-university-rankings/methodology>, last accessed: 2020/09/30.
5. Consejo Superior de Investigaciones Científicas. Ranking Web of Universities About us. Available in: [http://www.webometrics.info/en/About\\_Us](http://www.webometrics.info/en/About_Us), last accessed 2020/09/29.
6. Shanghai Ranking Consultancy, About us, Available in: <http://www.shanghairanking.com/aboutarwu.html#>, last accessed 2020/09/30.
7. Times Higher Education (THE), World University Rankings, Available in: <https://www.timeshighereducation.com/world-university-rankings#>, last accessed 2020/09/27.
8. SCImago Institutions Rankings. SJR - SCImago Journal & Country Rank Homepage, <https://www.scimagojr.com/aboutus.php>, last accessed 2020/10/05.
9. ELSEVIER, «Scopus Preview» ELSEVIER BV, <https://www.Scopus.com/home.uri>, homepage, last accessed 2020/09/30.
10. SCImago Institutions Rankings. SJR - SCImago Journal & Country Rank Homepage, <https://www.scimagojr.com/countryrank.php?region=Latin%20America>, last accessed 2020/09/23.
11. SCImago Institutions Rankings. SJR - SCImago Journal & Country Rank Homepage, [https://www.scimagojr.com/comparecountries.php?ids\[\]=br&ids\[\]=co&ids\[\]=cl&ids\[\]=ar&ids\[\]=mx&area=2200&area=](https://www.scimagojr.com/comparecountries.php?ids[]=br&ids[]=co&ids[]=cl&ids[]=ar&ids[]=mx&area=2200&area=), last accessed 2020/09/23.