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CHILEAN BUSINESS RESEARCH: AN ANALYSIS OF THE WEB OF SCIENCE DATABASE OVER 35 YEARS (1986-2020)

SERGIO OLAVARRIETA AND IGNACIO VARGAS

SUMMARY

This paper addresses the Chilean business research production in the Web of Science (WoS) in the last 35 years (1986-2020), where 1,797 research papers appeared in three business related WoS categories: 'business', 'management' and 'business & finance'. Chilean business research production represents a larger percentage of Latin American research (17.8%) in these fields compared to social sciences (12.8%) and all sciences (9.1%), and it is the leading country in the region for papers per capita. Important insights regarding the development of scientific field in Latin American countries can be drawn from examining this evolution in the Chilean context. We focus on the environmental drivers that may be explaining this evolution. Specific entity level research strategies, industry characteristics

like increased competition/collaboration or, more challenging demands (international accreditations) can be relevant drivers of this evolution. The inclusion of new Latin American business journals in WoS and the openness of relevant global journals to publish special issues appear as positive influencers. The national research promotion policies may have mixed results by promoting and stimulating research concentration by allocating all grants to winners. The promotion of Chilean indexed business journals and fostering of Chilean doctoral programs might be relevant to continue a more inclusive path in the future, reducing concentration in few schools and scholars. Implications are drawn for continuing the promotion of business research in Latin America.

 Assessment of research is a common practice in most disciplines and countries. However, the assessment of business research in emerging countries and, particularly, in Latin America is still scarce (Krauskopf and Vera 1997; Vogel 1997; Wilson and Osareh 2003; Ronda-Pupo *et al.*, 2015). This article provides an overview of Chilean research included in the Web of Science (Thomson Reuters; also known as ISI databases), the most used and reputable research database and journal indexation platform, over the last 35 years (1986-2020). This work builds upon

previous work in Chile (Koljatic and Silva, 2001a, b; Ronda-Pupo and Diaz-Contreras 2014a, b; Ronda-Pupo *et al.*, 2015) and aims to provide a comprehensive view of the business research production in Chile and to discuss the potential drivers of such development. This learning may be used to continue promoting business research in Chile and Latin American countries. Two major approaches can be taken in order to examine vast amounts of research production: scientometric approaches or literature reviews, and meta-analysis studies. Previous assessment of national research productions using scientometric methods

have considered total publications, areas or disciplines, collaboration patterns, citations, and institutions and author counts, among the most common dimensions. In this paper, university and authorship patterns are not explicitly described, since the focus is to provide an overall view of the state and evolution of business research in Chile in the last 35 years. The purpose is not to establish rankings or assessment of individual research productivity of universities or researchers. This descriptive work may offer elements for diagnosing the challenges for enhancing and promoting Chilean-based business research at the individual (researcher),

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school or, institutional (CONICYT, business school associations) levels. Drivers of research productivity can be found at different instances: the individual researcher, the business school or institution, the industry/country, and within the scientific field or discipline. It might be argued that the most important level might be the individual level since research production is finally generated by individual researchers and their collaboration with other individual researchers. However, as stated by Ryazanova and McNamara (2016), individual researchers do not act in a vacuum, and are affected by organizational and institutional/environmental factors, which may change their strategies, behaviors and production. In this paper we focus on the industry/country and environmental institutional drivers that may have influenced the development of business research in Chile. Some of these drivers affect, and are in turn affected, by individual or organizational drivers and cannot be completely isolated. Implications for business school strategies and for research and science agencies are derived from the findings in this manuscript.

The Drivers of Business Research in Latin America and Emerging Countries

As mentioned above, in this paper the focus is on the environmental drivers of research productivity, emphasizing industry and country level considerations. Organizational drivers are considered only partially when discussing general business school strategies and its effect on industry structure. Three different types of drivers can be identified: a) individual drivers, b) organizational drivers and c) environmental drivers. Individual drivers are most important and may require further research in future studies but are beyond the scope of this research.

Individual and organizational drivers

The characteristics of individuals and agencies may affect their behavior and research production, and these characteristics may be influenced also by the environments where they were trained or were they work. Ryazanova and McNamara (2016) explored some of these individual drivers and their interaction with organizational drivers. In their review, Ryazanova and Jaskiene (2022) focus on the organizational antecedents of drivers of research productivity. They argue that the dependent variable may mean different things for different researchers, but commonly involve two dimensions:

output quantity of research papers and impact measures of such papers. After reviewing over 7000 papers, they focus on 46 of them and identify four categories: 1) resource allocation (financial, human, material and time resources); 2) structural choices involving faculty development, faculty mix definitions and research process management; 3) organizational culture involving learned practices, meanings and institutional values; 4) task environment representing the way individuals setting and conditions in which individuals are engaging with the research and knowledge production task (like communication processes, supporting processes and even research setting and infrastructure arrangements). Consistent with Ryazanova and McNamara (2016) the authors suggest that university managers may influence research productivity by moving some levers, by creating research-prone environments through simple initiatives like periodic research seminars, support for attending local and international conferences, creation of research-based activities in the business programs curriculum (seminars, honors program, thesis), and other similar activities.

Environmental drivers

Several environmental factors have been identified in the literature as potential drivers of productivity. We classify them here using the traditional micro/macro environment framework used in strategic analysis and competitiveness. As stated by Porter (1990), countries might be more or less competitive in particular industries given the characteristics of such industries. Based on this model of country competitiveness, several authors have used it to study the competitiveness of countries in particular industries (Tsiligiris 2018; Afzal *et al.*, 2019). Tsiligiris (2018) proposes an adapted version of the model with particular subfactors under the main four drivers of competitiveness: firm strategy, structure and rivalry; factor conditions; demand conditions and; related and supporting industries. Based on this research and previous work on the development of Chilean and Latin American business research (Ronda Pupo *et al.*, 2015; Koljatic and Silva 2001a, b) we have identified seven environmental level factors separated in two subcategories, which are briefly presented below.

Environmental/Field Drivers

National and field specific research promotion institutions and policies. Countries have established specific

agencies and policies to promote research in different fields: Science, Social Sciences, Arts and Humanities. Resource allocation and policies may follow two general trends: a) focalization or b) proportional allocation. Regularly, business research is not chosen as a 'priority' scientific field or is assumed that business schools may obtain their own research funds through tuition, executive education or consulting fees.

Inclusiveness of the global disciplinary field and institutions. Fields can be more or less globally inclusive. Academic fields, and particularly business, have been a US-Europe driven field. Most prestigious journals have been launched in the US or UK and use the English language. The key indexing institutions tend to include more English-speaking journals, thus limiting or generating barriers for research developed in other languages. More importantly, journals in developed nations may be less interested in issues faced by business and industries in less developed or emerging nations, reducing the 'relevance' of this research for their audience.

Industry/Country Level Characteristics

Competition structure and rivalry. Competition exists: Powerful players can be relevant for increasing innovation, for collaborating and mimicking international players, for looking for new distinctive competencies in order to outperform their rivals. Also, a growing number of strong competitors allow for the development of critical mass in relevant factors.

Industry/participants research collaboration strategy. Research is largely influenced by collaborating between researchers and by belonging and participating in international networks. Countries, led by their most relevant institutions, may foster research collaboration at different levels (intra-organization, intra-nation and international). Given our context, we focus on the international collaboration of researchers in a country with researchers overseas.

Factor conditions. These represent the availability of relevant human and material resources for promoting research. On the human side, positive factor conditions involve good quality undergraduate and master students, the availability of sound undergraduate business programs (in Chile, the *Ingeniería Comercial* five-year degree has higher levels of mathematics and economics, compared to general business degrees), the availability of trained faculty. On the material side, the availability of financial and physical resources

to be used in research is a relevant factor. More recently, intangible resources such as 'brand' can also be considered relevant both at the country and individual business school level.

Related industry: Accreditation and the journal publishing industry. The existence of sound accreditation agencies both at the national and international level influencing the behavior of universities and students/employers is a relevant factor, since it has reputational but also legal and material implications in terms of the operation and funding of universities participating in a given industry. Another relevant industry is the publishing or journal industry; the more developed the publication industry in a particular country the stronger the opportunity for researchers to publish in those outlets and the larger the visibility of their work.

Demand characteristics. The degree of sophistication in the needs and demands of the business sector clients (firms, state, families) may induce industry players to develop better educational services and more sophisticated offerings, including basic and applied research.

In this paper the influence of some of these environmental factors on the Chilean business research productivity is explored by examining the descriptive data showing the evolution of published business papers in WoS journals

Method

There are three major databases that contain research produced in Latin America and Chile: WoS, Scopus, and SciELO. Each has advantages and disadvantages for the purpose of assessing research productivity and performance. The SciELO database covers more Latin American and Spanish journals, but it does not include mainstream English academic journals. Scopus is broader in geographical coverage compared to WoS, and WoS covers a more selective list of journals and is regularly used for comparison purposes across disciplines and institutions. Google Scholar is an additional database, covering a larger amount of journals and publications (both printed and electronic), is increasing its popularity for citation analysis and may be an important source of data in the future.

For this paper the WoS database from Thomson Reuters was used. It indexes all publications in ISI (Institute for Scientific Information) from 1986 until 2020. All available publications included in the database over 35 years,

from 1986 to 2020, were considered. Previous works have used this index to assess Latin American research production (Koljatic and Silva 2001a, b; Collazo-Reyes *et al.*, 2008; Ronda-Pupo and Diaz-Contreras 2014a, b). All research papers (articles, research notes, editorials, etc.) in the database that had an affiliation from Chile in particular, and for comparison purposes also from a Latin American country, were considered (as in Vogel, 1997). The search was separated in four phases: 1) all ISI publications; 2) all ISI publications in the Social Sciences Citation Index (excluding Science Citation Index, Arts and Humanities and Emerging Sources Citation Index); 3) only ISI publications within the SSCI belonging to four WoS specific categories: management, business, business and finance, and economics and, 4) the search was refined including only papers from 'management', 'business' and 'business and finance', to define the 'business research' pieces.

Results

Overall findings in Chile

Table I-A presents the evolution of Chilean business research in the WoS compared to Latin America production and to other sciences and disciplines. In the period of study 1,797 business research publications are included in the ISI database having an author in Chile. In the same period, Chile-based articles included in the Social Sciences Citation Index (SSCI) were 20,797. Business articles represent 8.6% of total SSCI Chile-based articles and 44.3% of the Economics & Business Chile-based publications registered in WoS (4,061).

General descriptive statistics are presented in Table I-B. The average number of authors per papers is 2.95 (1-34), the average number of pages is 17.3 and the average number of cites in the WoS database is 19.2.

Business research in Chile vs Latin America

Total production of Latin American countries in the same period is 10,087 items. Chilean business research production (n= 1,797) represents 17.8% of total Latin American production. Traditionally, it has been argued that business schools in Latin America are less research oriented and more teaching or consulting oriented (Tiffin and Kunc, 2008). This is particularly noticeable when Latin America is compared to other regions of the world (Olavarrieta and Villena, 2014).

However, as stated by previous authors (Koljatic and Silva, 2001a, b; Tiffin and Kunc, 2008, Olavarrieta and Villena 2014), important differences can be observed within Latin American countries. Chilean business research production is higher in terms of percentages of the total production compared to its participation in other Sciences. Chilean participation (Table I-A) on business research production in Latin America is 17.8%, more than its participation in Social Sciences (12.8%) or Total Sciences (9.1%).

There are three countries that concentrate the production of business research in Latin America (Table II): Brazil (4,788), Chile (1,797) and México (1,278), followed by Colombia (951), Argentina (522) and Venezuela (370). When these results are adjusted (per million inhabitants), the results change dramatically, placing Chile at the top with 113.7 papers, Costa Rica second with 41.8, and Uruguay third with 38.9 papers/million. Brazil is in fourth place with 26.7 papers/million. These results are similar in other disciplines. In Business and Economics, Chile leads with 257 papers/million, compared to 123.7 in Uruguay, 88.9 in Costa Rica, and 69.4 in Colombia. In Social Sciences, Chile leads with 1,316.2, compared to 579.2 from Uruguay, 439.7 from Brazil, and 424 from Costa Rica. Finally, in All Sciences, Chile produces 11,126.7 papers/million, compared to 7,096 in Uruguay, 6,639.2 in Argentina, and 5,509 in Brazil.

These results provide evidence for the argument of heterogeneity of business research development among Latin American countries, and positions Chile in a leading position in the region. They show that despite the fact that size is a key variable for predicting research production, additional structural factors are important. When computing the correlation between business research production indicators with GDP *per capita* by country an $r = 0.54$ ($p < 0.05$) is obtained, showing that this can be another relevant factor, but leaving room for other potential explanatory variables. Structural and competitive conditions of the market for business research production should also be considered. For example, in Chile the quality of universities, business schools and the amount of faculty with PhD qualifications (Tiffin and Kunc 2008) may explain Chilean ranking of research productivity. Additionally, the degree of competition within the country (not just the quality) can be another important factor. For example, in *América Economía* rankings, Chilean schools have had consistently 5+ top 30 Latin American business schools.

TABLE I-A
TOTAL PUBLICATIONS IN WoS CHILE AND LATIN AMERICA IN FOUR GROUPS: BUSINESS, BUSINESS AND ECONOMICS, SOCIAL SCIENCES (SSCI) AND TOTAL WoS 1986-2020

Year	Chile								Latin America			
	Business	% Latam	Bus & Econ	% Latam	SSCI	% Latam	WoS	% Latam	Business	Bus & Econ	SSCI	WoS
1986	3	27.27%	11	15.07%	68	11.70%	1,504	13.52%	11	73	581	11,126
1987	1	5.00%	6	7.06%	60	10.14%	1,645	15.05%	20	85	592	10,930
1988	4	30.77%	9	11.69%	55	9.02%	1,413	13.66%	13	77	610	10,345
1989	4	21.05%	8	11.43%	53	8.41%	1,163	11.37%	19	70	630	10,227
1990	2	9.52%	7	7.69%	57	8.28%	1,239	11.26%	21	91	688	11,003
1991	8	26.67%	19	20.65%	71	11.23%	1,245	10.71%	30	92	632	11,625
1992	7	25.93%	17	16.04%	58	8.33%	1,320	10.62%	27	106	696	12,429
1993	7	21.88%	20	17.24%	64	8.60%	1,462	10.74%	32	116	744	13,616
1994	7	21.88%	13	11.02%	64	8.66%	1,451	9.93%	32	118	739	14,616
1995	7	20.00%	15	10.79%	64	6.90%	1,673	9.73%	35	139	928	17,203
1996	14	35.00%	23	15.86%	69	5.09%	1,777	8.97%	40	145	1,356	19,810
1997	9	13.43%	22	14.47%	79	7.78%	1,824	8.17%	67	152	1,016	22,320
1998	14	25.00%	30	16.57%	84	7.78%	1,919	7.81%	56	181	1,079	24,556
1999	10	12.82%	19	10.44%	75	6.33%	2,169	7.95%	78	182	1,184	27,300
2000	15	22.06%	50	25.25%	118	6.75%	2,404	8.05%	68	198	1,748	29,857
2001	19	27.94%	39	18.75%	92	5.93%	2,417	7.70%	68	208	1,552	31,376
2002	10	14.71%	31	15.82%	107	7.77%	2,695	7.85%	68	196	1,377	34,327
2003	20	32.79%	43	19.46%	138	8.93%	3,021	8.24%	61	221	1,545	36,683
2004	10	18.87%	35	15.15%	126	7.25%	3,124	7.92%	53	231	1,738	39,451
2005	17	21.25%	49	17.01%	176	9.01%	3,434	8.25%	80	288	1,953	41,621
2006	31	25.62%	75	20.05%	262	10.71%	3,864	8.43%	121	374	2,447	45,842
2007	28	15.82%	89	17.98%	334	8.74%	4,384	7.99%	177	495	3,821	54,858
2008	65	19.94%	142	17.75%	487	8.62%	4,908	7.68%	326	800	5,652	63,897
2009	53	13.18%	137	12.84%	579	9.07%	5,571	8.25%	402	1,067	6,384	67,491
2010	59	13.17%	141	14.67%	673	10.15%	5,975	8.30%	448	961	6,630	71,989
2011	85	17.49%	212	17.15%	873	10.73%	6,659	8.71%	486	1,236	8,139	76,460
2012	80	15.21%	211	17.63%	961	11.03%	7,408	9.04%	526	1,197	8,716	81,912
2013	82	16.05%	226	15.05%	1,011	12.35%	7,853	9.11%	511	1,502	8,187	86,225
2014	102	19.62%	219	17.10%	1,210	14.04%	8,700	9.79%	520	1,281	8,617	88,866
2015	127	19.51%	316	17.50%	1,484	15.01%	10,864	9.09%	651	1,806	9,886	119,572
2016	138	18.23%	300	17.35%	1,617	14.80%	11,964	9.36%	757	1,729	10,923	127,877
2017	151	17.79%	312	14.12%	1,901	14.97%	12,635	9.18%	849	2,210	12,695	137,596
2018	173	18.66%	356	18.46%	2,221	15.89%	13,822	9.46%	927	1,928	13,981	146,157
2019	223	17.81%	442	18.24%	2,576	15.61%	15,288	9.65%	1,252	2,423	16,497	158,448
2020	212	16.89%	417	17.00%	2,930	15.83%	17,019	9.91%	1,255	2,453	18,512	171,692
Total	1,797	17.82%	4,061	16.62%	20,797	12.80%	175,813	9.11%	10,087	24,431	162,475	1,929,303

Source: WoS.

Stages in Chilean business research

In Table III the Chilean business research production in WoS journals is divided in seven periods. As can also be seen in Figure 1, the sustained growth of Chilean business research between 1986 and 2005 experienced an important trend-change in the last three periods. From 2016 to 2020, the production

TABLE I-B
DESCRIPTIVES TOTAL PAGES, AUTHORS PER PAPER, TOTAL CITES, AND AVERAGE CITES OF CHILEAN ISI PUBLICATIONS (1986-2020)

	N	Min	Max	Mean	Std. dev.
Author/paper	1797	1	34	2.95	2.02
Pages	1797	1	122	17.34	8.89
Cites	1797	0	1521	19.22	56.37
N	1797				

Source: WoS.

TABLE II
SCIENCE, SOCIAL SCIENCES, BUSINESS AND ECONOMICS WOS PRODUCTIVITY BY COUNTRY IN LATIN AMERICA
1986-2020

Country	Paper count				Average population (Millions)	Papers per million people			
	Business	Bus & Econ	Social Sciences	All		Business	Bus & Eco	Social Sciences	All
Brazil	4,788	9,604	78,784	987,153	179.2	26.7	53.6	439.7	5,509.0
Chile	1,797	4,061	20,797	175,813	15.8	113.7	257.0	1,316.2	11,126.7
Mexico	1,278	4,279	28,756	331,876	103.5	12.4	41.4	277.9	3,207.3
Colombia	951	2,848	12,270	102,060	41.0	23.2	69.4	299.1	2,488.2
Argentina	522	2,111	13,936	252,681	38.1	13.7	55.5	366.2	6,639.2
Venezuela	370	498	2,202	40,852	25.0	14.8	19.9	88.2	1,635.6
Peru	287	740	4,459	31,392	26.8	10.7	27.6	166.1	1,169.5
Costa Rica	170	362	1,726	17,652	4.1	41.8	88.9	424.0	4,336.0
Uruguay	128	407	1,906	23,353	3.3	38.9	123.7	579.2	7,096.0
Ecuador	122	344	2,460	24,844	13.4	9.1	25.7	183.9	1,857.6
Nicaragua	35	62	442	2,234	5.3	6.6	11.8	84.0	424.3
Bolivia	24	84	816	5,993	8.9	2.7	9.4	91.4	671.0
Cuba	24	55	1,695	30,266	11.0	2.2	5.0	153.5	2,741.0
Panama	15	77	646	9,218	3.2	4.6	23.8	199.6	2,848.6
Guatemala	16	96	885	4,892	12.8	1.3	7.5	69.4	383.5
Honduras	7	27	274	2,040	7.1	1.0	3.8	38.5	286.9
Haiti	6	10	351	1,699	8.9	0.7	1.1	39.3	190.4
Paraguay	5	19	295	3,166	5.5	0.9	3.4	53.2	570.6
Dominican Rep.	3	16	140	866	8.8	0.3	1.8	15.9	98.4
El Salvador	3	12	255	1,420	5.9	0.5	2.0	43.3	241.1

These are not unique records. Some papers may have double country affiliations (they are not weighed by authorship). Source: WoS.

TABLE III
STAGES OF RESEARCH IN CHILE AND LANGUAGE 1986-2020

Year range	Language			Total
	English	Portuguese	Spanish	
1986-1990	14	0	0	14
1991-1995	36	0	0	36
1996-2000	62	0	0	62
2001-2005	76	0	0	76
2006-2010	205	0	31	236
2011-2015	432	2	42	476
2016-2020	887	3	7	897
Total	1,712	5	80	1,797

Source: WoS.

of Chilean business research is almost double the production of the previous period (2011-2015). These results are consistent with those presented with Ronda-Pupo and Díaz-Contreras (2014a), although these authors selected a different database (not including articles classified in the Business-Finance WOS subcategory).

Chilean business research by subject and time

Business research involves several disciplines and research traditions. Therefore, it is important to observe the composition of Chilean business

research by subdiscipline. To identify subdisciplines we used the information about journals provided by Scopus (ScimagoJR). It was found that Chilean based business papers can be classified in 66 categories, of which the top ten are (Table IV): Strategy and Management (539), Management Science and Operations Research (521), Economics and Econometrics (426), Business and International Management (409), Finance (330), Marketing (282), Management of Technology and Innovation (254), Organizational Behavior and Human Resource Management (172), Accounting (150) and Transportation (134).

Economics and Econometrics could be considered outside of business and some of the papers classified under Management Science and Operations Research and Management of Technology and Innovation can also be considered in the borders of the discipline, since they had more of an industrial engineering and optimization than a business focus. In terms of the classical business disciplines, Strategy leads the count (30%), followed by Finance (18.4%), Marketing (15.7%) and Human Resources (9.6%). On the other hand, the low percentage of Accounting papers (8.3%) is striking, as it is a very important area given the size of management control and accounting programs in business schools in Chile and the region.

As stated above, the evolution of Chilean-based business research experienced an important change in the last five years (2016-2020). This change is relatively stable across subdisciplines, but the changes have been steeper in Applied Psychology (219% growth in last five years), Industrial and Manufacturing Engineering (187,5%), Business and International Management (137.8%), Management of Technology and Innovation (113.4%), Computer Science Applications (105,2%), Finance (105%) and Organizational Behavior and Human

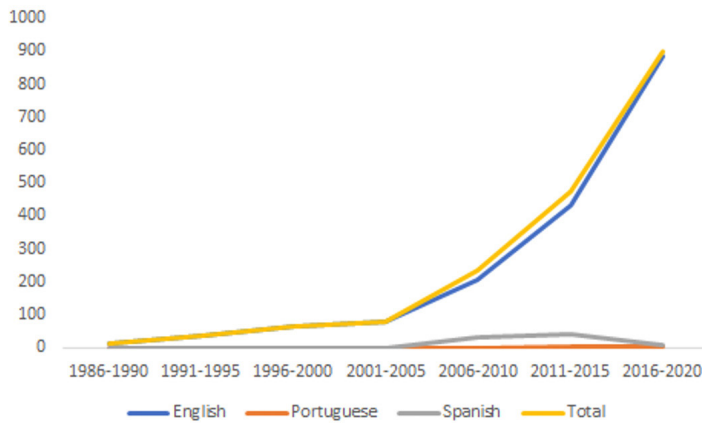


Figure 1: Stages of research in Chile and language 1986-2020. Source: WoS.

Resource Management (102.4%). A deeper analysis should be conducted in terms of the centrality or attractiveness of themes, topics (i.e. keywords) that are being researched by Chilean-based professors, since a certain misfit may exist between Chilean interests and international interests or hot topics (see Ronda-Pupo and Díaz-Contreras 2014a).

Language and field inclusiveness

Some explanations for the observed evolution of business research across time might be found in the

environmental drivers related to the inclusiveness of the field.

Chilean publication in WoS journals and language. Language has been an important barrier for dissemination and visibility of Latin American research and, as suggested by Gómez-Sancho *et al.* (1999), Collazo-Reyes *et al.* (2008) and Aguado-López (2014), the lack of research production may be attributed to an absence of relevant publication outlets published in Spanish. According to the data, this important trend change in the period 2008-2012 is explained by the number of articles published by

Chile-based researchers both in Spanish and in English.

The inclusion of several Latin American journals in the Web of Science since 2006 represents a relevant driver of this increase in the number of Chilean business articles in WoS. Prior to that year, only one academic journal included in WoS (*Trimestre Económico*) focused on Latin American finance (and economics) research and published articles written in Spanish. Since 2006 several Latin American journals covering business research were included in WoS, among which *Academia-Revista Latinoamericana de Administración* and *Revista de Administração de Empresas* stand out due to the number of Chilean-based articles received. Other journals entered the WoS database for only a few years, but are also relevant in terms of the number of Chile affiliated business articles: *Innovar-Journal of Administrative Sciences*, *Revista de Ciencias Sociales* and *Revista Venezolana de Gerencia*. These journals accept or publish articles in local languages, Spanish and Portuguese, as well as English, allowing for Chilean and Latin American researchers to overcome the language barrier.

Table V shows all journals were Chilean-based business researchers have published their work. Three Latin American journals: *Academia*, *Revista de Ciencias Sociales* and *Innovar* appear among the top 10 journals and

TABLE IV
AREAS OF CHILEAN BUSINESS RESEARCH OVER TIME

Sub Discipline	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020	% of 1797	Grow-rate last range
Strategy and Management	5	8	28	22	70	143	263	30.0%	95.3%
Management Science and Operations Research	7	14	32	34	79	136	219	29.0%	72.5%
Economics and Econometrics	3	11	18	29	53	104	208	23.7%	95.4%
Business and International Management	3	6	4	18	37	104	237	22.8%	137.8%
Finance	2	7	8	17	31	96	169	18.4%	105.0%
Marketing	0	2	11	12	42	89	126	15.7%	80.8%
Management of Technology and Innovation	3	5	13	9	30	59	135	14.1%	113.4%
Organizational Behavior and Human Resource Management	0	0	1	1	20	63	87	9.6%	102.4%
Accounting	1	5	4	11	31	42	56	8.3%	59.6%
Transportation	6	9	3	11	27	37	41	7.5%	44.1%
Civil and Structural Engineering	6	9	3	11	27	33	38	7.1%	42.7%
Computer Science Applications	0	4	3	4	9	38	61	6.6%	105.2%
Modeling and Simulation	1	4	10	13	19	25	37	6.1%	51.4%
Public Administration	0	1	0	0	23	47	38	6.1%	53.5%
Education	0	0	0	0	13	35	43	5.1%	89.6%
Information Systems and Management	1	4	8	6	9	15	39	5.0%	90.7%
Industrial and Manufacturing Engineering	0	0	2	0	13	9	45	4.0%	187.5%
Applied Psychology	0	0	2	1	2	16	46	4.0%	219.0%
Management Information Systems	0	1	6	4	6	19	24	3.0%	66.7%
Statistics, Probability and Uncertainty	0	3	6	7	7	15	7	3.0%	18.4%

Source: SCImago Journal Rank.

with 25 or more articles published. Surprisingly, Brazilian journals are not included in the table, showing a lack of connection of Chilean researchers with the Brazilian research community, a relevant community in the region. Again, language might be a barrier, since Brazilian journals publish a substantial number of articles in Portuguese, thus reducing their influence and readability in Latin America (and other parts of the world).

Geographical-cultural relevance and journal openness and inclusiveness. As seen in Table V, key international journals in operations research and management science and modeling appear on the top of the list (*Interfaces*, *European*

Journal of Operational Research, *Journal of the Operational Research Society*, *Operations Research*, *Management Science*). Among the few general business journals included in the list are the *Journal of Business Research*, *Journal of Business Ethics*, *Management Science*. Several insights can be obtained from these results, particularly the importance of the geographical-cultural relevance of articles to be published. While operations research and management science articles tend to focus on modeling and optimization problems, using mathematical methods that can be used to solve problems regardless of the country, geographical location or culture, business articles (i.e.

marketing, management, accounting, organizational theory, finance, etc.) regularly address problems that need to consider culture, country, consumer or market idiosyncrasies, which make them more difficult to be accepted by international review boards. Also, the lack of replications in business research, compared to other sciences, represent another challenge for publishing in international business journals (Fanelli, 2010; Olavarrieta and Diaz, 2021). Exceptions to this rule are the *Journal of Business Ethics*, since cultures, social norms and legal traditions are linked to values and ethical reasoning and therefore is more open to manuscripts from diverse nationalities (including Latin America), and the *Journal of Business Research*, that has published special Latin America issues on General Business and Strategy.

Although new outlet opportunities exist, mainstream journals remain distant from Latin America. The emergence of Asian countries and markets has attracted more attention from international business journals. Chile-based business researchers are overcoming some of these difficulties, establishing alliances and collaborations with researchers overseas and generating research on broader themes relevant for emerging markets.

Industry level drivers

Research industry concentration. A strong concentration can be observed in the participation of individual authors and institutions in the production of WoS papers. Three institutions participate in 64.9% of the publications (Table VI-A, B), and 20 authors based in Chile participate in 22.9% of the articles. Together (collaboration and concentration) these results suggest that collaboration between institutions, authors, and countries should be actively explored in order to increase research productivity for Chilean institutions and authors.

Research collaboration strategies: Authors per paper and collaboration with other countries. Research production can be increased though research collaboration due to different reasons: connection with major research centers, mentoring graduate students, researching central topics, sharing research activities, obtaining grants, combining databases, etc. (Bozerman and Corley, 2004). A simple measure of research collaboration is the number of authors per paper. Table VII presents the count and percentage of papers within each of the five-year periods with a particular number of authors; the number of authors/paper has followed an increasing but not lineal or constant

TABLE V
MAIN ISI JOURNALS PUBLISHING CHILEAN BUSINESS RESEARCH (1988-2012)

Journal	Count	%
Academia-Revista Latinoamericana de Administración	78	4.34%
Journal of Business Research	77	4.28%
Transportation Research Part B-Methodological	73	4.06%
European Journal of Operational Research	49	2.73%
Emerging Markets Finance and Trade	39	2.17%
Interfaces	35	1.95%
Revista de Ciencias Sociales	32	1.78%
Journal of the Operational Research Society	30	1.67%
Transportation Science	27	1.50%
Innovar-Revista de Ciencias Administrativas y Sociales	25	1.39%
Operations Research	24	1.34%
Transportation Research Part E-Logistics and Transportation Review	23	1.28%
Management Science	22	1.22%
International Transactions in Operational Research	21	1.17%
Expert Systems with Applications	21	1.17%
Networks & Spatial Economics	21	1.17%
International Journal of Production Economics	21	1.17%
Journal of International Money and Finance	20	1.11%
Annals of Operations Research	20	1.11%
Journal of Banking & Finance	17	0.95%
Finance Research Letters	16	0.89%
Journal of Theoretical and Applied Electronic Commerce Research	16	0.89%
Computers & Operations Research	16	0.89%
Small Business Economics	15	0.83%
International Journal of Production Research	15	0.83%
World Bank Economic Review	15	0.83%
RAE-Revista de Administração de Empresas	14	0.78%
Technological Forecasting and Social Change	13	0.72%
Group Decision and Negotiation	13	0.72%
Journal of Business & Industrial Marketing	13	0.72%
Journal of Monetary Economics	11	0.61%
Journal of Business Ethics	11	0.61%
International Entrepreneurship and Management Journal	10	0.56%
World Economy	10	0.56%
Omega-International Journal of Management Science	10	0.56%
Entrepreneurship Theory and Practice	10	0.56%
Journal of Futures Markets	10	0.56%
Others	904	50.31%

Source: WoS.

TABLE VI-A
CONCENTRATION OF BUSINESS RESEARCH BASED IN CHILE UNIVERSITIES

Organization	Records	Total count	% of 1797	Cumulative
Universidad de Chile	550	4,804	30.6%	30.6%
Pontificia Universidad Católica de Chile	378	5,020	21.0%	51.6%
Universidad Adolfo Ibáñez	238	862	13.2%	64.9%

Source: WoS.

TABLE VI-B
CONCENTRATION OF BUSINESS RESEARCH BASED IN CHILE UNIVERSITIES

Researcher (University)	Records	Articles in WoS	% of 1797	Cumulative %
Researcher 1 (PUC)	36	74	2.00%	2.00%
Researcher 2 (UCH)	36	97	2.00%	4.01%
Researcher 3 (UCH)	31	218	1.73%	5.73%
Researcher 4 (UAI)	24	33	1.34%	7.07%
Researcher 5 (UAI)	24	56	1.34%	8.40%
Researcher 6 (UDD)	23	33	1.28%	9.68%
Researcher 7 (UCH)	22	93	1.22%	10.91%
Researcher 8 (PUC)	21	131	1.17%	12.08%
Researcher 9 (PUC)	20	24	1.11%	13.19%
Researcher 10 (UCH)	19	69	1.06%	14.25%
Researcher 11 (UCH)	19	25	1.06%	15.30%
Researcher 12 (UAI)	18	31	1.00%	16.30%
Researcher 13 (UDD)	17	24	0.95%	17.25%
Researcher 14 (UCH)	16	61	0.89%	18.14%
Researcher 15 (UCH)	16	19	0.89%	19.03%
Researcher 16 (PUC)	15	53	0.83%	19.87%
Researcher 17 (PUC)	15	18	0.83%	20.70%
Researcher 18 (UDP)	13	24	0.72%	21.42%
Researcher 19 (PUC)	13	25	0.72%	22.15%
Researcher 20 (PUC)	13	15	0.72%	22.87%

Source: WoS.

trend, but the effect is significant. It went from 1.79 authors/paper in 1986-1990 to 3.17 in the last period, the average number over 35 years is 2.95 authors. Overall, these results show an increase in research collaboration of Chilean-based business researchers with colleagues.

Another indicator of research collaboration is the association with researchers based in other countries. In Tables VIII-A and B the collaboration patterns of Chilean-based business, business and economics researchers, social sciences and all sciences researchers can be examined. The major partner is the

USA, participating in 20.1% of all papers published in WoS by Chilean-based researchers. Spain is second (12.1%) and Germany third (8.4%). In the Business discipline, patterns of collaboration are more intense and concentrated; the major research partner is also the USA, participating in 25.4% of all business papers published in WoS, Spain is second (13.6%) and England is third with 10.1% participation. The top three country partners in the business discipline concentrate 49.2% of participation in these papers vs 40,6% of the top three in all papers published in WoS. However, collaboration with other Latin American researchers in Business is much lower in percentage than in all sciences (11% vs 19.4%), showing lower levels of integration of Chilean-based researchers with Latin America, and probably stronger links with USA, Spain and England due to higher numbers of doctoral trainees in those countries. These results show an area of opportunity for Chilean researchers to collaborate with Latin American colleagues and leverage their USA contacts and relative stronger research training.

These collaboration trends are noteworthy and should be considered with attention. In fact, collaboration is concentrated with given countries (being English speaking countries the most favored ones). Table VIII-C shows that collaboration with USA-based researchers was 14,3% of the total Chilean papers in business categories between 1986-1990 and 24% between 2016-2020; a similar trend is followed in the case of Spain-based researchers (7,1% in the first period and 17,9% in the last one) and England-based researchers (0% and 15,1%).

Factor conditions. The rise of PhD trained faculty critical mass. A third explanation for the positive change in the publication trend of Chile-based researchers in WoS is the increase in critical

TABLE VII
AUTHORS PER PAPER OVER TIME

Authors/paper	Year							Total
	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020	
Average	1.79	2.11	2.74	2.54	2.61	2.91	3.17	
1 Count (%)	5 (35.7%)	13 (36.1%)	12 (19.4%)	15 (19.7%)	42 (17.8%)	58 (12.2%)	75 (8.4%)	220
2 Count (%)	7 (50.0%)	12 (33.3%)	22 (35.5%)	27 (35.5%)	81 (34.3%)	154 (32.4%)	241 (26.9%)	544
3 Count (%)	2 (14.3%)	7 (19.4%)	18 (29.0%)	26 (34.2%)	76 (32.2%)	158 (33.2%)	304 (33.9%)	591
4 Count (%)	0	2 (5.6%)	5 (8.1%)	5 (6.6%)	26 (11.0%)	70 (14.7%)	171 (19.1%)	279
5 Count (%)	0	2 (5.6%)	2 (3.2%)	1 (1.3%)	7 (3.0%)	22 (4.6%)	65 (7.2%)	99
6-9 Count (%)	0	0	2 (3.2%)	1 (1.3%)	3 (1.3%)	8 (1.7%)	33 (3.7%)	47
10+ Count (%)	0	0	1 (1.6%)	1 (1.3%)	1 (0.4%)	6 (1.3%)	8 (0.9%)	17
Total count (%)	14 (100%)	36 (100%)	62 (100%)	76 (100%)	236 (100%)	476 (100%)	897(100%)	1797(100%)

Source: WoS.

TABLE VIII
RESEARCH COLLABORATION WITH THE CHILE-WORLD AND CHILE-LATIN AMERICA IN BUSINESS 1986-2020 (TOP 10 COUNTRIES OVERALL & TOP 7 LATAM COUNTRIES)

VIII-A. PERCENTAGE OF COLLABORATIONS WITH RESEARCHERS OVERSEAS BY AREA

Business			Bus & Econ			SSCI			WoS		
Country	n	%	Country	n	%	Country	n	%	Country	n	%
Total Chile	1,797	100.00%	Total Chile	4,061	100.00%	Total Chile	20,797	100.00%	Total Chile	175,813	100.00%
USA	457	25.43%	USA	995	24.50%	USA	4,140	19.91%	USA	35,343	20.10%
Spain	245	13.63%	Spain	405	9.97%	Spain	3,061	14.72%	Spain	21,295	12.11%
England	182	10.13%	England	324	7.98%	England	1,721	8.28%	Germany	14,784	8.41%
Top 3		49.19%	Top 3	1,724	42.45%	Top 3	8,922	42.90%	Top 3	71,422	40.62%
Canada	78	4.34%	Canada	138	3.40%	Australia	854	4.11%	France	13,705	7.80%
Australia	76	4.23%	Australia	119	2.93%	Argentina	852	4.10%	England	13,444	7.65%
France	59	3.28%	France	107	2.63%	Brazil	831	4.00%	Brazil	10,508	5.98%
Argentina	53	2.95%	Germany	104	2.56%	Germany	810	3.89%	Italy	9,130	5.19%
Germany	51	2.84%	Argentina	96	2.36%	Canada	775	3.73%	Argentina	8,418	4.79%
Mexico	44	2.45%	Brazil	88	2.17%	Colombia	718	3.45%	Canada	8,187	4.66%
Netherlands	43	2.39%	Italy	81	1.99%	France	657	3.16%	Australia	7,655	4.35%
Top 10	1,288	71.68%	Top 10	2,457	60.50%	Top 10	14,419	69.33%	Top 10	142,469	81.03%

VIII-B. PERCENTAGE OF COLLABORATIONS WITH RESEARCHERS IN LATIN AMERICA BY AREA

Business			Bus & Econ			SSCI			WoS		
Country	n	%	Country	n	%	Country	n	%	Country	n	%
Total Chile	1,797	100.00%	Total Chile	4,061	100.00%	Total Chile	20,797	100.00%	Total Chile	175,813	100.00%
Argentina	53	2.95%	Argentina	96	2.36%	Argentina	852	4.10%	Brazil	10,508	5.98%
Mexico	44	2.45%	Brazil	88	2.17%	Brazil	831	4.00%	Argentina	8,418	4.79%
Brazil	40	2.23%	Mexico	79	1.95%	Colombia	718	3.45%	Mexico	5,442	3.10%
Colombia	32	1.78%	Colombia	71	1.75%	Mexico	606	2.91%	Colombia	4,974	2.83%
Peru	19	1.06%	Peru	40	0.98%	Peru	330	1.59%	Peru	1,988	1.13%
Ecuador	5	0.28%	Uruguay	18	0.44%	Uruguay	176	0.85%	Uruguay	1,477	0.84%
Bolivia	4	0.22%	Costa Rica	14	0.34%	Ecuador	166	0.80%	Ecuador	1,206	0.69%
Top 7	197	10.96%	Top 7	406	10.00%	Top 7	3,679	17.69%	Top 7	34,013	19.35%

Source: WoS.

TABLE VIII-C
RESEARCH COLLABORATION WITH THE CHILEAN-BASED RESEARCH IN BUSINESS BY YEAR RANGES

Country	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2015	2016-2020
Chile	14	36	62	76	236	476	897
USA	2 (14,3%)	14 (38,9%)	29 (46,8%)	22 (28,9%)	57 (24,2%)	118 (24,8%)	215 (24,0%)
Spain	1 (7,1%)	2 (5,6%)	1 (1,6%)	4 (5,3%)	15(6,4%)	61 (12,8%)	161 (17,9%)
England	0	0	2 (3,2%)	7 (9,2%)	9(3,8%)	29 (6,1%)	135 (15,1%)

mass of PhD-trained professors in Chilean business schools. As stated by Kunc (2009) and Tiffin and Kunc (2008), Latin American business schools faced a critical need of new PhD trained professors. Some countries in the region (Chile among them) started addressing this issue earlier on (late 1990s). Due to Chilean public policies, competition, and accreditation pressures, several Chilean business schools have been upgrading their faculty, with larger percentages of professors in research-oriented tenure tracks. In América Economía (2015) ranking of Latin American business schools, six of the top 20 schools are based in Chile,

with relative stronger faculty and research productivity scores.

Institutions that hire larger percentages of PhD trained faculty allocate more resources to research and develop a more research-oriented culture. Also, individuals that have doctoral training and regularly come from overseas institutions (given the lack of doctoral programs in the region) have shown larger proactiveness and are more equipped for nurturing international research networks. In particular, we compared the participation of PhD-trained fulltime academics (FTA) in the three institutions with higher productivity (UCH, PUC, UAI) and other

universities with similar overall faculty size levels (Table IX). Figure 2 shows the evolution of the percentage of FTA with PhD degree of these three institutions compared to the mean of their peers between the years 2011-2020. Overall, these three institutions have faculty bodies with over 50% of PhD trained faculty, compared to an average in peer institutions of ~20%.

Related industries: Accreditation and journal publishing industry. As suggested by the competitiveness theory, the presence of relevant related industries may have a positive influence on the faster development of an industry. In the case

TABLE IX
PERCENTAGE OF FULL TIME ACADEMICS WITH PHD BY UNIVERSITY

Institutions	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
University of Chile (UCH)	40.4%	44.6%	46.8%	48.9%	49.5%	50.5%	50.9%	52.3%	53.7%	53.5%
Pontifical Catholic University of Chile (PUC)	41.8%	43.0%	42.5%	45.5%	45.3%	45.9%	46.3%	47.2%	48.0%	48.5%
University Adolfo Ibáñez (UAI)	37.2%	39.3%	44.0%	43.1%	45.3%	60.7%	50.8%	50.7%	53.6%	61.4%
Mean other universities	14.8%	16.4%	17.0%	17.7%	18.5%	19.0%	21.5%	24.2%	26.6%	27.6%

Source: Higher Education Information Service (SIES, in Spanish).

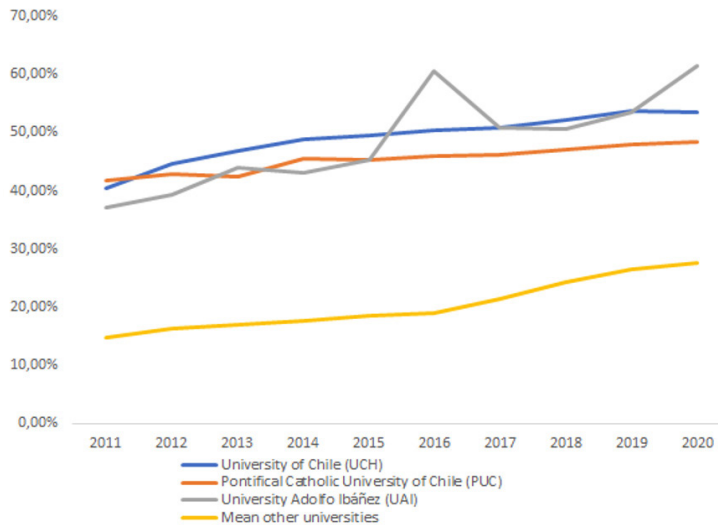


Figure 2: Percentage of full time academics with PhD by university. Source: Higher Education Information Service (SIES, in Spanish).

of the Chilean Business School industry, several new private competitors appeared in the 80s due to new regulation generated competition in the higher education industry. This competition, as in other Latin American nations, combined with a growing demand for managers and business specialists made the key players in the Chilean industry look for ways to differentiate and strengthen their competitive advantages. They choose early on for international accreditation agencies (AACSB, AMBA and EQUIS) to 'certify' the superior and global quality of their offerings. International accreditation was more relevant than national accreditation, particularly for master and MBA programs, generating earlier on an emphasis on academically qualified (PhD trained) faculty and the move from a pure teaching orientation to a more balanced or research-prone strategy. National accreditation also played a role but there was not a unique certification board and some of the international standards had to be adopted. The Chilean publishing industry played a bipolar role in the development of business research in the country; during the 70s and 80s it was the main

outlet for Chilean business research and journals published by the main Chilean business schools were very prestigious in the region. National scientific and international bodies recognized those outlets. Increasingly though, during the 2000s the emphasis on international publications by top schools and national agencies started to dilute the value of publication in Chilean journals and led local researchers to focus on international journals. A more balanced perspective, valuing published work in international journals with a stronger national journal system, like Brazil or Colombia, might generate an even larger number of publications, a more inclusive system relevant to local stakeholders, and reduce concentration.

Impact of Research and Citations

Research productivity can be assessed from a 'product count' perspective, but also from an 'impact' perspective. Research impact can be assessed in terms of its use for new technologies and methods, or in terms of its use in classroom and teaching, and other important uses. In scientific disciplines, impact

is regularly assessed more narrowly, looking at the influence of the research piece on other research or scientific articles. It is measured through citation counts per article, adjusted by time, discipline, etc. Citations can be used as one general indicator of research impact, and we include it in this analysis but there are several limitations of this single-dimension assessment of research impact, since it leaves out other important impact dimensions (student training, business practice, new technologies), is affected by discipline size, by language, by visibility of journals, by topic centrality, and by international research collaboration (see Ronda-Pupo and Díaz-Contreras 2014a, b; Ronda-Pupo *et al.*, 2015, for recent empirical articles on Latin American management research). The average citation count per paper in the present sample is 19.2 but the variance is very large, 14% receive no citations and only 40% of papers have 10 or more. Publication in journals with high visibility variance is one explanation for these results and age of the paper can be another potential explanation. However, citation variance can also be explained by the language used. English-written papers get 20.1 cites compared to only 2.1 for Spanish-written papers. An analysis of variance was performed to test this hypothesis, using only papers published from 2006 to 2020 in order to control for potential age bias (as explained earlier, before 2006 most Chilean papers were published in English, and this may artificially inflate the cites per year for English-written papers given a higher longevity). In Table X it can be observed that from 2006 to 2020, 1,604 papers were published by Chilean-based business researchers, and the average cites per paper is 14.5. However, the mean for English-written papers is 15.2, impressively higher than the mean for Spanish-written papers (2.1, $p=0.000$).

Since ISI indexed Latin American journals are relatively new and less known, visibility can be very low, and the language hypothesis might in fact combine three different explanatory factors: language, journal awareness and visibility, and topic centrality/country relevance.

TABLE X
CITATION MEANS (YEARLY AVERAGE) OF CHILEAN PAPERS WRITTEN IN ENGLISH VS SPANISH (2006-2020)

	N	Mean	Std. dev.	Std. error	
Spanish	80	2.11	3.894	0.435	
English	1524	15.18	26.889	0.689	
Total	1604	14.52	26.378	0.659	
	Sum of squares	df	Mean square	F	Sig.
Between groups	12972,496	1	12972,496	18,852	0
Within groups	1102355,507	1602	688,112		
Total	1115328,002	1603			

Source: SPSS results.

Discussion and Implications

Chilean business research has experienced interesting developments during the last 35 years. By observing the publications in ISI (WoS), a steady increase in research production can be observed over time, totaling 1,797 papers from 1986 to 2020. The numbers are low but are explained by a very low production in the first 20 years. This is also true for all Latin America: only 1.9% of total business research (in WoS) during the last 35 years has been published by Latin American researchers. However, for Chile, business research trends in ISI are positive. The rate of growth has been particularly steep in the last five years, when 897 research pieces (almost 50% of all publications) have been published in ISI journals. This change in trend is partially explained by several institution-specific, country-specific and external factors. For example, the acceptance of four newer Latin American business-related journals in WoS has been a relevant external factor. These new journals have helped Chilean and Latin American researchers in two major ways: by accepting manuscripts written in Spanish (or Portuguese) and by being more receptive of research topics and data sets more relevant to local research communities. However, fostering business research quantity and quality in Latin America involves joint efforts of research institutions and country scientific authorities and academic communities.

In the following paragraphs we explore these challenges for both country-level scientific and research promotion bodies and for institutional (e.g. Business School) strategies. We believe that these policy implications are relevant for most Latin American and developing countries interested in promoting Business Research. Business Research is related to innovation and gross product growth (Olivarrieta and Villena 2014) and promoting it is a relevant element for a

country's competitiveness strategy. Also, we believe that these ideas can also be used to promote research in other social sciences, where Latin American research is lacking.

Challenges for country-level business research promotion policies

Promotion of research in specific disciplines must consider the realities and particularities of each discipline. While business and economics are regularly included within the Social Sciences, they have realities, research traditions, and competitive structures that are different than other disciplines like sociology, psychology or political science. For example, the faculty base of different disciplines may vary in terms of the percentage of doctoral training and therefore the need to promote doctoral studies or local doctoral programs may be more relevant in some disciplines than in others. In Chile, for example, despite the lack of doctoral-trained business faculty, the Chilean National Graduate Scholarship Program has specifically 'banned' the possibility to obtain scholarships for graduate studies (master level) in business disciplines, arguing that such degrees are valued by the market, and therefore they might be financed by private funds. This policy has prevented more students to get into Master of Sciences/Arts programs in business that are the first-level years of many doctoral programs. However, master's in economics, operational research and information systems, disciplines regularly taught in Business Schools, are not included in the prohibitions, with a relative abundance in those areas.

Disciplines have their own traditions and should be considered by national scientific bodies, particularly by those in charge of scientific funds, grants, and other research promotion activities. In Chile the *Agencia Nacional de Investigación y Desarrollo* (ANID;

formerly CONICYT) is in charge of granting research funds, graduate scholarships for national and international master/doctoral studies, and for assessing journals on behalf of SciELO. The agency works with external advisory academic committees for different academic disciplines. In the case of business and economics, they share one of these committees, which has had a stronger presence of economics professors in the last 20 years. Despite some similarities, business and economics followed different paths in terms of their research traditions, that have generated undesired effects for business disciplines. For instance, until 2021 no Chilean business journal has been granted SciELO status, despite many trials by existing local journals; research grants are not allocated proportionally to the amount of teaching and students served, with Economics being overrepresented (an author review of the projects allocated to Economics is over 50% of the total, while in Chile only five out of 49 institutions offer a major in Economics). One of the potential reasons for this bias is the definition of a single-indicator rule for assessing research projects based on the Article Influence Score (AIS) of the authors. As discussed by Olavarrieta (2022), AIS scores are substantially higher for Economics journals compared to Business journals, given the heavier weights assigned to centrality in science, age and quantitative orientation by the computation algorithm. National scientific agencies should be aware of these differences between disciplines in order to facilitate research in business.

Institutional accreditation standards and regulations might be another important factor to motivate business research production increases. Fleet *et al.* (2014), for example, in their empirical study of quantitative determinants of institutional accreditation in Chile, did not include research production (quality or quantity) since "in Chile only a fraction of the universities performs research and opt to get accredited in that area", thus negatively affecting the interest of university boards and administrators to promote research in the university and business schools. Interestingly, business-specific international accreditations (AMBA, AACSB, EQUIS) and public rankings can be an important external control mechanism to promote business research. The *América Economía* (2015) ranking of Business Schools assigns an important weight (14%) to the research production and 30% to academic strength (faculty qualifications and size) for computing the ranking, and has encouraged Chilean business schools to promote research.

The need for more doctoral programs and research promotion

Another factor that may impact the business research environment in Chile in the future is the launch of quality doctoral programs in Business (Tiffin and Kunc 2008). Three major national universities (U. of Chile, U. Adolfo Ibáñez and U. of Santiago) are offering PhDs in business. Today, the impact is starting to show up in conferences and publications, and we expect it to increase, as newer initiatives are needed to increase the critical mass of doctoral students and mentor communities in Chile.

Research promotion is critical for increasing research promotion and Chilean business schools and scientific bodies have a large responsibility for providing structural conditions that nurture and promote research. Despite the growing trend of Chilean business research production, it is rather concentrated: 20 professors concentrate 22.9% of the articles, and three institutions concentrate 64.9% of publications.

The need for stronger Chilean and Latin American indexed journals

Despite the fact that Chile is by far the most productive country (per million inhabitants) in terms of research publications in Business in Latin America, it is surprising that it did not have a WoS indexed journal until recently (the *Journal of Theoretical and Applied Electronic Research*, with a very particular scope, was included in 2017). Chilean researchers collaborate with most international and Latin American business journals, but they do not have one journal of their own. This is not the case in other sciences, where several Chilean based journals are in WoS. While the positioning and international relevance of Latinoamerican and Iberoamerican journals in international databases (WOS and Scopus) is still low (Aguado-López *et al.*, 2014), challenges for Chilean business researchers might be stronger compared to Brazilian researchers, for example, who have several WoS indexed business and management journals.

Schools, school administrators, research policy groups and governmental agencies may have responsibility in the fragmentation and lack of incentives to publish in those outlets. Chilean business journals (*Estudios de Administración*, *Multidisciplinary Business Review*, *Panorama Socioeconómico*, *Horizontes Empresariales*, etc.) should improve communication strategies, web and social media visibility, and focus more on indexing

criteria that point towards both content and editorial process qualities. Some of these journals have a reasonable reputation in Ibero-America (Ruiz-Torres *et al.*, 2012), and can develop from a good starting point. Google scholar is another opportunity to improve visibility. Also, Chilean journals should promote special issues on hot topics outside Chile, bringing newer collaborators from outside the region.

National research and science agency policies

ANID, the national agency for science and research promotion, should also take into consideration these findings. From one perspective it seems that research promotion policies that have favored publication in international journals have produced relevant results in terms of research productivity for the Chilean business research community. On the negative side, there is a marked concentration in terms of universities and scholars, and subdisciplines, that need to be corrected. In particular, the ANID economics and business research group should take these insights into consideration when establishing norms and criteria for granting national research grants. Currently, only researchers who have published recently in international journals with high article influence scores are likely to obtain these funds. Chilean business schools should promote collaboration and include incentives to promote local journals while stimulating aiming at reputable international journals. In the long run, this is the dominant strategy to follow.

Challenges for business school strategies

Faculty mix and development. At the business school level, faculty hiring and development strategies that combine practitioner professors with a higher percentage of PhD professors are needed. Increasing PhD ratios in the faculty, however, is not enough, since professors follow incentives and preferences. Teaching incentives and financial models of today's business schools pose a key challenge to faculty hiring and development strategies. This trend is difficult to change, particularly due to the existing lack of funding for business research from the State and from enterprises. Therefore, faculty selection, hiring, and socialization procedures should carefully consider and assess *a priori* skills and preferences of new PhD trained faculty. When critical masses are not easily reached, business schools should collaborate. One such collaboration instances is ASFAE (Chilean Association of Business Schools) which

year to year organizes an annual research conference (ENEFA) and doctoral/master consortiums.

Research collaboration, the language factor and Latin American integration

Publishing in Spanish reduces visibility and impact by several times. Therefore, business researchers in Chile should aim to publish in English, regardless whether they publish in international or Latin-American journals. One successful strategy appears to be collaboration with researchers in English-speaking countries. Overall, Chilean collaboration with USA and UK is present in more than 35% of the papers. Other opportunities for collaboration exist with Australia, New Zealand, Canada, Hong Kong, Singapore, and other English-speaking nations. Chilean based business researchers can exploit their contacts with USA researchers by increasing their collaboration with Latin American countries when it is particularly low. Combining databases and samples, performing multinational replication studies, looking at cultural or institutional differences (or similarities) across Latin countries or emerging countries, represents an important avenue for increasing research publication production and impact. As suggested by Nicholls-Nixon *et al.* (2011) for the Management discipline, research opportunities exist at different levels of analysis: country/regional, inter organizational, organizational and individual levels, each offering grounds for collaboration between business researchers from different Latin American countries. The research efforts should consider how to insert themselves, contributing, advancing, contrasting existing research streams in the English-based journals.

Other implications

Many of the above implications at the country and business school level for Chilean institutions can be relevant in other Latin American settings. Most of the learnings of studying the Chilean case in the last 35 years of business research production, can be used in the promotion of research in countries with lower *per capita* productivity. Three main considerations should be made. First, countries and institutions maybe in different stages of business research development and therefore some of the implications should be adapted to the particular level. Countries and institutions that are at the embryonic stages need to take a long-term perspective for both developing and investing in the necessary resources and for promoting the need behaviors in the

existing faculty and student populations. Second, the objectives of different countries might be different and should be considered. Even now, there is a relevant discussion in science, and in business science in particular, regarding the needed relevance and impact of business research, and how it might impact their communities. Research that is consumed and demanded by local entrepreneurs, regulatory agencies, and managers might be more relevant, and more applauded also by external business school stakeholders, and should be considered in this adaptation. Finally, there is always the issue of available resources and trade-offs. Countries and institutions have limited resources to deploy to different activities and goals including teaching, and long-life learning. Countries and institutions need to be realistic in how to combine or use resources for research purposes, considering the previous point, by promoting investigations that impact in their communities and driving support and funding from those served communities.

Future research may also need to consider the interaction of these organizational and environmental drivers with the individual-level drivers of research productivity.

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INVESTIGACIÓN EN NEGOCIOS EN CHILE: UN ANÁLISIS DE LA BASE DE DATOS DEL *WEB OF SCIENCE* DURANTE 35 AÑOS (1986-2020)

Sergio Olavarrieta e Ignacio Vargas

RESUMEN

Se analiza la producción sobre investigación en negocios en Chile en el Web of Science (WoS) en los últimos 35 años (1986-2020), donde 1.797 trabajos de investigación aparecieron en tres categorías relacionadas a negocios: 'negocios', 'gerencia' y negocios y finanzas'. La producción de la investigación en negocios de Chile representa un mayor porcentaje de las investigaciones en Latinoamérica (17,8) en esos campos, comparado a las ciencias sociales (12,8%) y todas las ciencias (9,1%), y es el país de la región con mayor número de trabajos per capita. Del examen de la evolución en el contexto chileno pueden sacarse importantes conclusiones acerca del desarrollo del campo científico en América Latina. Nos enfocamos en los determinantes ambientales que pudiesen explicar esa evolución. Determinantes relevantes pueden ser: estrategias específicas a nivel de entidades, ca-

racterísticas de la industria tales como una mayor competencia/colaboración, o demandas más exigentes (acreditaciones internacionales). La inclusión de nuevas revistas de negocios latinoamericanas en el WoS y la apertura de revistas globales de importancia a publicar números especiales aparecen como influencers positivos. Las políticas nacionales de promoción de la investigación pueden tener resultados mixtos al promover y estimular la concentración de las investigaciones al asignar todas las subvenciones a los ganadores. La promoción de revistas de negocios indexadas y el refuerzo de programas doctorales en Chile pueden tener relevancia para continuar un camino más inclusivo en el futuro, reduciendo la concentración en pocas escuelas y académicos. Se sacan conclusiones para continuar la promoción de las investigaciones en negocios en Latinoamérica.

PESQUISA EM NEGÓCIOS NO CHILE: UMA ANÁLISE DA BASE DE DADOS DA *WEB OF SCIENCE* DURANTE 35 ANOS (1986-2020)

Sergio Olavarrieta e Ignacio Vargas

RESUMO

É analisada a produção sobre pesquisa em negócios no Chile na Web of Science (WoS) nos últimos 35 anos (1986-2020), onde aparecem 1.797 trabalhos de pesquisa em três categorias relacionadas a negócios: 'negócios', 'gerência' e negócios e finanças'. A produção de pesquisa em negócios no Chile representa a maior porcentagem das pesquisas na América Latina (17,8) nesses campos, em comparação com as ciências sociais (12,8%) e todas as ciências (9,1%), e é o país da região com maior número de trabalhos per capita. Do exame da evolução no contexto chileno podem se obter importantes conclusões em relação ao desenvolvimento do campo científico na América Latina. Focamos nos determinantes ambientais que poderiam explicar essa evolução. Determinantes relevantes podem ser: estratégias específicas em nível de entidades, características

da indústria tais como maior concorrência/colaboração, ou procuras mais exigentes (credenciamentos internacionais). A inclusão de novas revistas de negócios da América Latina na WoS e a disposição de revistas globais de importância para a publicação de números especiais aparecem como influencers positivos. As políticas nacionais de promoção da pesquisa podem trazer resultados mistos por promover e incentivar a concentração das pesquisas ao designar todas as subvenções aos vencedores. A promoção de revistas de negócios indexadas e o reforço de programas de doutorados no Chile podem ter relevância para continuar um caminho mais inclusivo no futuro, reduzindo a concentração em poucas escolas e acadêmicos. Há conclusões para continuar a promoção das pesquisas em negócios na América Latina.