


Article

Incentive Policies for Scientific Publications in the State Universities of Chile

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Abstract: Most state universities in Chile (15 out of 18) have monetary incentive policies for scientific publications, but they are based on criteria that do not necessarily aim to improve institutional performance in all disciplines. This work compares affinities and differences of these policies in three areas: (i) type of publications encouraged, (ii) beneficiaries, and (iii) monetary amounts per type of publication. It was found that the 15 universities encourage publications with WoS indexing, 13 do so for Scopus and SciELO, and 6 are open to other databases. Only seven institutions encourage the production of books and book chapters. As expected, the 15 universities direct the incentives to their academic staff, although with different requirements, six accept non-academic staff, and only one university considers its student body. In general, the highest monetary amounts are received by WoS publications, with differentiation by quartile or impact factor of the journal. All in all, there is a clear need to design incentive policies in universities that are more homogeneous and take into account the “quality” and “impact” of the research they publish based on different metrics that tend to provide robust analyses in the different areas of knowledge.

Keywords: higher education; universities; research productivity; incentives; scientific publications; university governance



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1. Introduction

At Latin America level, Chile exhibits some remarkable results in the field of scientific production, despite the low investment made in R&D. In the year 2019, the Gross domestic spending on R&D reached barely 0.34%, a value very far from the 2.52% average of the OECD countries [1]. In addition, the national scientific output per researcher or economically active population exhibits the highest levels in Latin America, above Brazil, Mexico, and Argentina [2], even when there are strong differences between disciplines, regions of the country, or gender.

In Chile, scientific-technological research was institutionalized and developed in the second half of the twentieth century [3–5]. Only in 1967 was the National Commission for Scientific and Technological Research (CONICYT) created, and in 1982 the financing instrument National Fund for Scientific and Technological Research (Fondecyt). The last one is the main and most important public mechanism for supporting research in basic science and technological development [6]. The last relevant event occurred in January 2020 when the National Agency for Research and Development (ANID) was created. In this line of progress of the national system for R&D, it stands out for another part that

Chilean scientific-technological research is carried out mainly by universities and with state funds [7]. Although the returns of financial and capital resources on productivity have been growing, there are marked differences in efficiency between universities [8,9]. In any case, it is known that the economic contributions to research have had a proven impact on the number of articles, but not on their quality measured by the number of citations [10]. On the other hand, it is relevant to mention that the evaluation of scientific-technological research in Chilean higher education institutions is considered one more component along with other academic and management activities in quality assurance processes [11,12].

With the implementation of various university reforms, research excellence and related incentive systems have been promoted by public policies in Chile [13] and even in European countries [14]. This has made it increasingly urgent for university institutions to develop strategies aimed at motivating their academics to generate new knowledge and strive to publish it in indexed journals. To this end, policies have been defined to encourage publication, since there are studies that suggest that economic incentives have a positive impact on publication productivity [15]. However, “one-size-fits-all” incentive policies can undermine research excellence by inducing disparate results that are misaligned with institutional expectations, which is why such policies should consider the heterogeneity of developmental stages and target different groups and contexts with appropriate interventions [14,16].

The use of indicators to evaluate academic performance at both the individual and institutional levels has a wide range of consequences, so much that Abramo et al. [17] suggested that governments implement evaluation systems for the allocation of resources with the following objectives: (i) to stimulate the efficiency of research activity, (ii) to place resources according to merit, (iii) to reduce the asymmetry of information between those who generate knowledge and those who demand it, (iv) to inform research policies and institutional strategies, and (v) to demonstrate that investment in research is compelling and generates benefits for society. In this context, it should be recognized that there is a certain consensus among researchers that research resources should be allocated according to rigorous evaluation criteria and that the debate is really about how to carry out such evaluations.

Under this scenario, the payment of scientific productivity incentives seems logical and necessary to harmonize personal and institutional interests. Dahler-Larsen [18] argued that, since their introduction, indicator-based performance programs have been used to align the work of public administration institutions with the interests of those who construct the indicator. However, multiple studies examine the effect of indicator-based financing systems for research in national systems.

In the case of Norway, Aagaard et al. [19] analyzed the results of the implementation of the system of funding by research indicators to increase the publications numbers and impact in terms of citations. As a result, the number of researchers with a publication between 2004 (the year of policy implementation) and 2012 increased by 116%, although the R&D number of staff increased by only 5%. The average number of publications in the same period increased by 26%. As for the impact of publications, there was no drop in this metric. However, the authors do not imply that the simple implementation of the indicator is what caused the results achieved.

In the Czech Republic, Good et al. [20] showed the evolution of the national budget system to one based on quantitative results in research (e.g., articles, book chapters, and others) and application (patents, models, and others). Researchers’ evaluation of these policies varies by area of knowledge, with social science areas being more critical than natural science areas, but both with high rates of the perceived unfairness of the indicator. This unfairness is reflected because a book gives, for example, only 40 points versus a patent that gives 200. In turn, applying a policy of incentives for publications in journals indexed in WoS (Web of Science) caused academics to start producing proceedings papers (articles from conferences and congresses) since they had the same weight in the incentive as a full article. This behavior accounts for the adaptive capacity in the behavior of academics as a

function of monetary incentives [16,21]. The authors state that publications increased by 140% between 2008 and 2011, although the growth has moderated over time [20].

A similar situation was described by Butler [22] when publications in Australia increased despite expectations that they would decrease in the period. Among the explanations is the increase in the number of resources granted by the University, which, although they increased the number of publications due to the incentives paid, did not affect the publications' quality. This fact was rectified by Van den Besselaar et al. [23] who showed that, although the impact was initially negative, in the long term it was positive, increasing the number of Australian publications in the top 10% of the publications with the highest impact.

Butler's [22] approach is consistent with a study by Pouris [24], who explained that the significant growth in the number of WoS publications in South Africa was due to the incentive program paid by the South African state to each university (~US\$6,700) for each publication generated by its staff members.

Along the same lines, Muthama and McKenna [25] indicated that, while all universities use indirect incentives (e.g., linking promotion and probation to publication), the mechanisms in some South African universities have adopted a straightforward form, whereby authors are paid for publishing, a situation that has led to a significant increase in the production of publications along with a greater concern for quality.

In the case of Finland, an incentive system was designed that incorporated mechanisms to increase publications in English. This system implied an increase in the international collaboration and in the quartile of English-language journals from Q3 to Q2. The increase in incentives has led Finnish academics to be concerned about identifying optimal balances when choosing co-authors and where to publish, mainly to generate a balance between prestige and rigor [26].

Moreover, Sarthou [27] explained that, in Argentina, the bank of peer evaluators at the national level, along with distributing money and prestige among researchers, began to give power to the academics who received it. However, after two decades of its implementation (1994–2014), the monetary amount took a back seat (representing a minimal proportion of the teaching salary), and prestige and access to decision-making spheres took their place.

A similar nuance is shown in a study by Checchi et al. [28] based on 31 countries worldwide over the period 1996–2016, who demonstrated that, on average, performance-based funding systems increase the number of publications, although the effect is only temporary and declines after a few years.

In the Turkish system, some studies show that publication incentives do not reflect effective results in increasing the number of citations of researchers [29].

All of the above shows the tensions of moving from a system based on secure and stable funding (under the logic of the Humboldtian model on university education) to one where the new public management takes precedence in the allocation of resources. This allocation of resources implies that nothing is guaranteed, and those minor adjustments to the incentive indicators can completely change the university system [30].

Notwithstanding and independently of the research and perspectives around the incentive systems for publications, practically all Chilean state universities have implemented them. Therefore, the main objective of this work is to compare affinities and differences in the incentive policies for scientific publications in Chilean state universities ($n = 18$) in three areas: (i) type of publications incentivized, (ii) beneficiaries, and (iii) monetary amounts by type of publication. It is hoped that this information will support decision-making in these institutions, many of which are currently redesigning their incentive instruments to improve institutional performance in all disciplines. It is also expected to contribute to the construction of joint and integrated actions for this purpose, which will allow them to raise progressively, with the expected homogeneity, their standards of excellence, efficiency, and quality.

2. Methodology

The present research corresponds to a descriptive study based on literature review and analysis, using primary and secondary printed and electronic documentary sources, mainly scientific articles published in indexed journals. Likewise, we collected and analyzed the regulations governing the granting of economic incentives for scientific productivity by publications in 15 of the 18 state universities in Chile (Table 1), except for the universities of Chile, Aysén, and O'Higgins which do not have an institutional regulation or policy of this type. The reason for limiting this study to state (public) universities ($n = 18$), without considering private dependent and private independent universities ($n = 38$), is due to the state institutions represented 51% of the Chilean scientific output (WoS publications) in 2021 [31]. The 15 universities regulate their incentive policies through different administrative acts (e.g., decrees, resolutions, or ordinances). The regulations were collected from various sources, such as institutional web pages, direct requests to the directors responsible for the research units in each organization, and requests via the Chilean Government's Transparency Law, which grants permanent access to information through the websites of public agencies.

Table 1. Chilean state universities¹ with institutional policy of incentives for scientific publications.

Institution	Acronym
Universidad Arturo Prat	UNAP
Universidad de Antofagasta	UANTOF
Universidad de Atacama	UDA
Universidad de la Frontera	UFRO
Universidad de la Serena	ULS
Universidad de los Lagos	ULAGOS
Universidad de Magallanes	UMAG
Universidad de Playa Ancha	UPLA
Universidad de Santiago de Chile	USACH
Universidad de Talca	UTALCA
Universidad de Tarapacá	UTA
Universidad de Valparaíso	UV
Universidad del Bío-Bío	UBB
Universidad Metropolitana de Ciencias de la Educación	UMCE
Universidad Tecnológica Metropolitana	UTEM

¹: Council of State Universities of Chile (Consortio de Universidades Estatales de Chile, CUECH) (<https://www.uestatales.cl/cue/>) accessed on 1 March 2021.

Moreover, the study is exploratory since no similar studies analyze the conditions and particularities that each institutional regulation assumes concerning the following criteria for granting these incentives: type of scientific publications, beneficiaries, and the economic incentive per publication. Regarding the last criterion, the amounts were extracted from the most current regulations of each university at the date of data collection (March 2021). The figures were analyzed based on Chile's legal tender currency (Chilean peso, CLP\$), as well as conversions to other currencies (US dollar, US\$) or Chilean economic indicators (Monthly Tax Unit, UTM; Unidad de Fomento, UF). Their values were based on the figures reported by the Central Bank of Chile (<https://www.bcentral.cl/inicio>; accessed on 15 December 2021), as of 15 December 2021 (CLP\$846.43 = US\$1; 1 UF = CLP\$30,912 and 1 UTM = CLP\$54,171).

The textual quotations of the regulations were used to record and collect the information. The latter could correspond to a single document or a set of acts with various updates. The information was stored in ad hoc electronic devices, and the relevant data extracted were used to build an electronic spreadsheet (master database) in Microsoft Excel format.

3. Results and Discussion

3.1. General Background

The main results obtained from the analysis of the incentive policies for scientific publications of 15 state universities in Chile are presented below, focusing on: the type of publications encouraged, beneficiaries, and the economic incentive per type of publication. However, the policies examined exhibit other particularities that were not addressed in this study but which, in general, refer to:

- i. Criteria for publication selection: the requirement of strict standards for naming affiliations; authorship with a single affiliation; publication status (accepted, in press, or published); publications in all areas of knowledge or only in priority lines of the institution; restriction by predatory publishers; requirement to recognize internal funds that financially supported the research; the decision of payment only by related institutional units (research directorates or vice rector's offices) or these are supported by collegiate bodies.
- ii. Instances for requesting the benefit: open window or ad hoc calls with different periodicity (monthly, quarterly, semiannual, or annual); programs that package multiple incentives and support instruments for research development, which may also be non-financial.
- iii. Method of payment: single or multiple installments; distribution of payment to multiple authors; direct payment to authors or shared with their academic units; taxable payment as part of the remuneration or payment through fees.
- iv. Other particularities: according to budget availability; addition of a percentage of the benefit to the authors' academic units; additional bonuses for maternity, parental postnatal, and family co-responsibility.

3.2. Type of Scientific Publications Eligible for Incentives

The positive evaluation of scientific works with certain journal indexing predominates in all the universities, with the Web of Science (WoS), Scopus, and Scientific Electronic Library Online (SciELO) databases leading the way. To a lesser extent, books and book chapters are considered (Table 2).

It was found that there is no common basis for the criteria that each type of publication must meet to qualify for the benefit. Institutions such as UDA, ULS, UMAG, UTALCA, UTA, UMCE, and UTEM provide incentives for works indexed in WoS only if they are research articles, excluding conference proceedings, reviews, notes, letters, editorials, erratum, and discussions. The latter is considered in the UNAP incentives, while institutions do not explicitly state this type of categorization in their regulations. The same situation is observed when analyzing Scopus indexes, where institutions such as UDA, UMAG, UTALCA, UMCE, and UTEM specify that they only consider research articles.

Another difference is given by the indexes to which WoS publications belong, where universities such as UBB, UFRO, and UNAP make a positive distinction between works in the Social Sciences Citation Index (SSCI), Science Citation Index Expanded (SCI), and Arts & Humanities Citation Index (A&HCI). Only at UBB are incentives paid for papers in the WoS Emerging Sources Citation Index (ESCI).

Particular situations were also observed for publications indexed in SciELO, with a predominance of incentives for SciELO-Chile (UNAP, UDA, UTA, UMCE, and UTEM). Likewise, indexing in Latindex is valued in UBB, UPLA, UV, and UTEM, but there are cases where the allocation is extended to other databases such as ERIH Plus (UMAG and UV) or for other more particular situations (ULAGOS and UBB). There are also cases where the criteria for deciding which publications are eligible for incentives respond to the guidelines of external organizations (e.g., the Chilean National Science and Technology Research Fund, FONDECYT) as in UTALCA, or where cases are excluded due to self-publication (UV).

It is noteworthy that only 47% of universities analyzed in this study encourage the production of books and book chapters (UNAP, UFRO, ULAGOS, UMAG, UTALCA, UV, and UBB), regulating this assignment on the requirements of the editorial committee. This

situation is of interest since measures to recognize which types of scientific publications are promoted in the institutions and which are not can undoubtedly lead to unequal development between disciplines [32,33].

Table 2. Type of scientific publications subject to productivity incentive.

Institution	Indexation				Books	Book Chapters
	WoS	Scopus	SciELO	Other		
UNAP	√ ⁽¹⁾	√ ⁽²⁾	√ ⁽³⁾ (4)	—	√ ⁽⁵⁾	√ ⁽⁶⁾
UANTOF	√ ⁽⁷⁾	√ ⁽⁷⁾	√ ⁽⁷⁾	—	—	—
UDA	√ ⁽³⁾	√ ⁽³⁾	√ ⁽³⁾ (4)	—	—	—
UFRO	√ ⁽⁸⁾	√	√	—	√ ⁽⁹⁾	√ ⁽⁹⁾
ULS	√ ⁽³⁾	—	√ ⁽³⁾	—	—	—
ULAGOS	√	√	√	√ ⁽¹⁰⁾	√ ⁽⁵⁾	√ ⁽⁶⁾
UMAG	√ ⁽³⁾	√ ⁽³⁾	√ ⁽³⁾	√ ⁽¹¹⁾	√ ⁽⁵⁾	√ ⁽⁶⁾
UPLA	√ ⁽¹²⁾	√ ⁽¹²⁾	√ ⁽¹²⁾	√ ⁽¹²⁾ (13)	—	—
USACH	√ ⁽¹⁴⁾	√ ⁽¹⁴⁾	—	—	—	—
UTALCA	√ ⁽³⁾	√ ⁽³⁾	—	—	√ ⁽¹⁵⁾	√ ⁽¹⁵⁾
UTA	√ ⁽³⁾	—	√ ⁽³⁾ (4)	—	—	—
UV	√ ⁽¹⁶⁾	√ ⁽¹⁶⁾	√	√ ⁽¹⁷⁾	√ ⁽¹⁸⁾	√ ⁽¹⁸⁾
UBB	√ ⁽¹⁹⁾ (20)	√ ⁽²⁰⁾	√ ⁽²⁰⁾	√ ⁽²⁰⁾ (21)	√ ⁽⁵⁾	√ ⁽⁶⁾
UMCE	√ ⁽³⁾	√ ⁽³⁾	√ ⁽³⁾ (4)	—	—	—
UTEM	√ ⁽³⁾	√ ⁽³⁾	√ ⁽³⁾ (4)	√ ⁽³⁾ (13)	—	—

⁽¹⁾: Only articles, letters, editorials, corrections, discussions, notes, reviews, and proceedings papers of the SCI, SSCI, and A&HCI indexes, based on the procedure of the Direct Public Subsidy (Aporte Fiscal Directo, AFD) for universities of the Chilean Council of University Rectors (CRUCH). ⁽²⁾: Only articles, conference papers, and reviews based on AFD procedure for CRUCH universities. ⁽³⁾: Only scientific articles. ⁽⁴⁾: Only SciELO Chile. ⁽⁵⁾: With the national university editorial board or international editorial board. ⁽⁶⁾: With a national or international editorial board. ⁽⁷⁾: Excludes conference proceeding. ⁽⁸⁾: Only WoS main collection (SCI, SSCI, and A&HCI). ⁽⁹⁾: With the editorial board, edited by publishers of recognized national or international prestige. ⁽¹⁰⁾: Consider journal with the editorial board. ⁽¹¹⁾: Only ERIH Plus. ⁽¹²⁾: Only scientific articles, short communication, research article, and theoretical review article. ⁽¹³⁾: Only Latindex Catalog. ⁽¹⁴⁾: Excludes letters to the editor, editorials, publication guidelines or instructions, or similar. ⁽¹⁵⁾: Only publishers recognized by FONDECYT study groups. ⁽¹⁶⁾: Considers proceedings only if they are published in WoS or Scopus journals and in full-text form. ⁽¹⁷⁾: Only ERIH Plus and Latindex Catalog. ⁽¹⁸⁾: Considers any of the following requirements: publisher of recognized international or national prestige, refereed publisher, or publisher with an editorial committee. Excludes self-publication and publications in predatory publishers. ⁽¹⁹⁾: Only for WoS SSCI, SCI, A&HCI, and ESCI indexes. ⁽²⁰⁾: Excludes letters to the editor, editorials, obituaries, news, opinion columns, response to an article already published by the same author, abstracts or summaries of conferences or seminars, book reviews, and forewords, short communications, and presentation of publications. ⁽²¹⁾: Consider Latindex, DOAJ, Redalyc, and other mainstream and non-indexed UBB internal journals.

3.3. Beneficiaries

Each university defines which members of its community can access incentives for scientific publications (Table 3), considering that this universe could include academic, non-academic, and student bodies. Different alternatives were observed, but all the institutions direct their incentives primarily to their academic staff, given the nature of their function, with discrepancies by type of working day (full, three-quarter day, half-day, or hourly), as is the case in eight universities (53%). Likewise, seven institutions discriminate by the contractual modality of their academics (staff, contract, or honorary), three by status (regular and non-regular staff), two by academic hierarchies (tenured, associate, and others.) and three do not express any distinction (ULAGOS, UPLA, and UBB). It should be noted that five universities explicitly state that the benefit can be granted to “researchers,” and only UTALCA considers postdoctoral researchers.

Table 3. Beneficiaries with access to the incentive grant.

Institution	Beneficiaries		
	Academic Staff	Non-Academic Staff	Special Definitions
UNAP	Full time and half full-time.	—	—
UANTOF	Full time, half full-time, and for fees.	—	—
UDA	Permanent and contract, regular and non-regular employees.	—	Members of the non-regular academic staff have the status of: Professor Emeritus, Researcher, Visiting Professor, Lecturer, Practice Teacher, or Teaching Assistant [34].
UFRO	Researchers affiliated to the University.	—	Persons with permanent relationship with the University (property or contract paid or ad honorem) or hired on a fee basis (non-official).
ULS	Full time or half full-time. Employed on property, contract or interim basis. Researchers affiliated to a recognized unit in the academic structure.	—	—
ULAGOS	Without express distinction.	—	Those who are on a fee contract. External professionals or academics in R&D projects.
UMAG	As indicated in the academic regulations.	—	Researchers with fee contracts that stipulate it. For contracts of at least a quarter workday per day.
UPLA	Without express distinction.	Executive and professional scales (management positions).	—
USACH	Hierarchical. Full-time, three-quarters and half full-time.	—	—
UTALCA	Regular Academic Staff. Lecturers (minimum contract 22 h). Contract fee professors.	—	Postdoctoral researchers with external funding. Undergraduate and graduate students (single affiliation).
UTA	Staff or contract. Full or half full-time.	—	—
UV	Staff or contract, regardless of the workday.	—	—
UBB	Without express distinction.	—	—
UMCE	Full-time and half full-time. Tenured, associate or assistant. Staff, contract or contract fees.	—	Researchers of all levels.
UTEM	Staff and contractual.	Staff and contract professionals.	Fee-based teachers.

Additionally, only six universities (40%) grant incentives to non-academic employees, where three require working hours (UANTOF, UTA, and UV) and two types of contracts (UTA and UV); other cases only recognize the managerial and professional ranks (UPLA), non-academic professionals (UTEM), or no distinction (ULAGOS).

Particular emphasis is given to the Universidad de Talca, the only state institution that includes undergraduate and graduate students in its incentives for scientific publications. This particularity is highlighted since such a decision can positively impact the teaching–research relationship and the formative nature of academic work [35,36]. In this sense, it is essential to consider the implications of having incentive policies only for research, leaving aside teaching, since both tasks are central to the mission of universities. Incentive structures should ensure that each task offers academics the same performance, avoiding the marginalization of efforts by targeted interests [37,38].

3.4. Financial Resources by Type of Publication

This criterion deserves special care, given that it may be intended as the main driving force for generating scientific publications against an economic benefit. It is well known that quantitative metrics that reward results can harm the achievement of socially relevant scientific contributions. Thus, incentives could become perverse instruments that can induce unethical behavior and where science ceases to be a public good [39]. This transformation is why institutions should support “better science” and generate incentive structures that promote scientific progress in its different disciplines and on standards of “quality” rather than “quantity.” This distinction is relevant since incentive systems can become manipulable, misleading, and counterproductive instruments [39].

The amounts allocated by Chilean state universities to encourage scientific publications in journals with a certain indexation or books and book chapters, considering this context, are analyzed below.

3.4.1. Publications Indexed in Web of Science

The 15 universities encourage WoS publications but with a wide range of criteria in their figures (Table 4). The minimum and maximum amounts are given by the Universidad de Talca, with values of ~CLP\$270,000 (US\$320) and ~CLP\$3,000,000 (US\$3,520), respectively. The minimum observed at UBB was not considered because it applies to ESCI work (see the footnote in Table 4). The main differences in amounts are given by the quartile (Q) of the journal, where eight universities (53%) respond to this criterion. Other institutions discriminate the amount by the Impact Factor (IF) of the WoS journal (ULAGOS case), or this provides increments on a base amount (UNAP and UFRO). The amount also has additional amounts according to the type of authorship (1st/2nd author or corresponding author), as in UNAP, UFRO, UMAG, and UV, or in the case of foreign co-authorship (UFRO) where quartile is also required (UTALCA). Other institutions increase the benefit with the number of WoS papers published in a period (UDA and UBB).

Two institutions stand out for other particularities. ULS establishes a maximum annual ceiling of incentives to be received per academic. The amount to be granted per WoS publication is based on a formula dependent on the total amount designated to the allocation and the number of WoS and SciELO publications that benefited. UTALCA adds an increase per quartile (Q1/Q2) and the presence of an academic co-author affiliated with one of the first 150 universities of the Shanghai Ranking.

Considering that WoS publications are those that provide the most significant monetary benefit in all the universities studied, it is reasonable to assume that these works are a target for these institutions for different reasons: (i) their impact on the economic contributions (Direct Public Subsidy, Aporte Fiscal Directo [AFD]) received by the universities from the Chilean Council of University Rectors (Consejo de Rectores de Universidades Chilenas, CRUCH), the body to which the state universities belong [40,41], (ii) being one of the variables considered by the National Accreditation Commission (CNA) in the accreditation processes of institutions in the area of research or for their graduate programs [42], and (iii)

being one of the leading scientific products valued in the awarding of FONDECYT funding, Chile's main instrument for developing individual and collective research based on quality and excellence [10,43].

Likewise, it could be considered that WoS publications are the ones that most often assume "quality" criteria in institutions when discriminating the economic benefit by quartile or impact factor. However, institutional performances by publication productivity should be based on multiple metrics that provide robust analyses applicable to various disciplinary fields [44,45]. Therefore, the incentive policies of all institutions should assume the "quality" and "impact" of the research it publishes, where metrics focused on the number of publications and citations are a useful tool for assessing the quality of scientific activity in most fields of science [46–49].

Other scientometric indicators deepen the institutional performance analysis (e.g., citations per publication, field-weighted citation impact, field-weighted output in top 10%-citation percentiles, publications in top 10%-journal percentiles, international collaboration, and academic-corporate collaboration) can also be applied as reported in a recent Australian study [50]. It should be remarked that international collaboration has positive effects on research productivity and quality [51], while publications with corporate co-authors (industry or non-academic organizations) are relevant evidence for understanding the impacts of research outside their field [50,52].

Table 4. Incentive amounts for publications indexed in the Web of Science database.

Institution	Category (*)	Financial Incentive (CLP\$)	(US\$) (**)	Comment
UNAP	WoS Q1	1,200,000	1,418	WoS base CLP\$1,000,000. Adds increment for authorship with disciplinary exception (1st author: CLP\$100,000; 2nd author: CLP\$25,000) and IF (IF < 1: CLP\$25,000; 1 < IF < 4: CLP\$100,000; IF > 4: CLP\$200,000).
	WoS Q2	1,100,000	1,300	
	WoS Q3	1,050,000	1,241	
	WoS Q4	1,025,000	1,211	
UANTOF	WoS Q1	1,500,000	1,772	Other WoS considers Q2, Q3, and Q4 and/or without IF in the area of knowledge.
	Other WoS	1,126,231	1,331	
UDA	WoS (case 1)	1,050,000	1,241	Case 1: 1st publication of the year; Case 2: 2nd publication of the year; Case 3: 3rd publication of the year.
	WoS (case 2)	1,170,000	1,382	
	WoS (case 3)	1,290,000	1,524	
UFRO	WoS Q1	948,330	1,120	WoS base CLP\$737,590. Adds increment for Q (Q1 = CLP\$210,740; Q2 = CLP\$105,370; Q3 = CLP\$52,685) and IF (IF < 1 = CLP\$737,590; IF = 1 = CLP\$811,349; IF > 1 = CLP\$7,376 for each 0.1 point of IF; IF ≥ 10: \$1,369,810). Adds increment (CLP\$121,176) if UFRO researcher is 1st author or corresponding with IF ≥ 1 in foreign co-authorship.
	WoS Q2	842,960	996	
	WoS Q3	790,275	934	
	WoS Q4	737,590	871	
ULS	WoS	Maximum 1,000,000	Maximum 1,181	Variable value according to budget/year, capped at CLP\$1,000,000/publication. Allocation with a maximum of CLP\$4,000,000/year for each academic. The amount to be paid per ISI publication will be: (Total amount designated to the allocation)/[N° ISI publications benefited in period + (N° SciELO publications benefited in period/3)].
ULAGOS	WoS (IF > 1,5)	1,200,000	1,418	—
	WoS (IF < 1,5)	900,000	1,063	
UMAG	WoS Q1	587,329	694	WoS base 15 UF. Adds increments for Q (Q1: 4 UF; Q2: 3 UF; Q3: 2 UF; Q4: 1 UF) and if UMAG researcher is 1st or corresponding author (4 UF).
	WoS Q2	556,417	657	
	WoS Q3	525,505	621	
	WoS Q4	494,593	584	
UPLA	WoS	1,200,000	1,418	—

Table 4. Cont.

Institution	Category (*)	Financial Incentive (CLP\$)	(US\$) (**)	Comment
USACH	WoS Q1	1,300,000	1,536	Values based on base amount (CLP\$300,000), Q bonus (CLP\$400,000) and quality bonus factor according to Q (Q1: x2.5; Q2: x1.0). WoS Arts and Humanities journals without quartile are considered Q4.
	WoS Q2	700,000	827	
	WoS Q3	300,000	354	
	WoS Q4	300,000	354	
UTALCA	WoS Q1	2,979,405	3,520	Amounts in UTM and according to Q (Q1: 55 UTM; Q2: 25 UTM; Q3: 12 UTM; Q4: 5 UTM). Add increments according to: (i) 10% per Q1 article and 1st or corresponding author and (ii) 10% per Q1/Q2 article with participation of academic from a university in the top 150 of the latest available version of the Shanghai Ranking.
	WoS Q2	1,354,275	1,600	
	WoS Q3	650,052	768	
	WoS Q4	270,855	320	
UTA	WoS Q1	2,000,000	2,363	WoS Q1 according to Scimago. Other WoS for journals not considered Q1 in Scimago.
	Other WoS	1,500,000	1,772	
UV	WoS Q1	1,200,000	1,418	Increase of the incentive by 20% in case of 1st author or corresponding author.
	WoS Q2	1,100,000	1,300	
	WoS Q3	800,000	945	
	WoS Q4	700,000	827	
UBB	WoS (case 1)	1,200,000	1,418	Case 1: 1st publication of the period; Case 2: 2nd publication of the period; Case 3: 3rd publication of the period and following periods; Case 4: ESCI publication(***)
	WoS (case 2)	1,320,000	1,559	
	WoS (case 3)	1,480,000	1,749	
	WoS (case 4)	150,000	177	
UMCE	WoS	1,000,000	1,181	The value may vary each year.
UTEM	WoS	1,792,617	2,118	According to indexation, the incentive applies as a % of the total salary value of grade 4 of the Single Salary Scale (EUS) UTEM (54% for WoS). Amount grade 4 EUS UTEM 2021=CLP\$3,319,661.
Minimum financial incentive:		270,855	320	
Maximum financial incentive:		2,979,405	3,520	

(*): Q = quartile; IF = impact factor. (**): Money exchange rates are described in the section Methodology. (***) The objective of the ESCI of Web of Science is to provide early visibility for titles under evaluation for inclusion in the classical citation indexes (i.e., SSCI, SCI, and A&CI) [53].

3.4.2. Publications Indexed in Scopus

Scopus publications are financially incentivized in 13 institutions (Table 5), except for the universities of La Serena and Tarapacá. The minimum and maximum payment amounts are CLP\$150,000 (US\$177) at UBB and ~CLP\$3,000,000 (US\$3,520) at UTALCA, respectively. Unlike the case of WoS, only three incentive policies (UNAP, UTALCA, and UV) differentiate the benefits delivered by the quartile of the Scopus journal, with Q1 always being the best paid. However, similarities were observed in differentiations according to IF, in ULAGOS, where the break in the amount occurs at an IF value above or below 1.5, or UNAP, where increases are provided as the IF increases (IF < 1; 1 < IF < 4; IF > 4) (ranges of IF as textually described in each institutional policy). At this point, the authors of this work must point out the error of concepts in the two universities mentioned above, given that, for the Scopus database (Elsevier), the metric that refers to the measurement of the citation impact of journals is the CiteScore, pseudo-equivalent to the WoS Impact Factor (Clarivate Analytics) [54]. This mistake is clarified to avoid confusion among readers. In any case, the differentiation of payment by journal metrics may be an erroneous allocation mechanism, given that there may be important differences between areas of knowledge. Indeed, a Chilean study reported that the differences in impact factors between the areas of “Natural Sciences” and “Social Sciences” is 1.6 points (3.12 vs. 1.54), suggesting the standardization of this factor when comparing areas of knowledge [13].

Table 5. Incentive amounts for publications indexed in the Scopus database.

Institution	Category (*)	Financial Incentive (CLP\$)	(US\$) (**)	Comment
UNAP	Scopus Q1	1,200,000	1,418	Scopus base CLP\$1,000,000. Adds increments for authorship with disciplinary exception (1st author: CLP\$100,000; 2nd author: CLP\$50,000) and for IF (IF < 1:CLP\$50,000; 1 < IF < 4:CLP\$100,000; IF > 4:CLP\$200,000).
	Scopus Q2	1,150,000	1,359	
	Scopus Q3	1,100,000	1,300	
	Scopus Q4	1,050,000	1,241	
UANTOF	Scopus	450,492	532	—
UDA	Scopus (case 1)	350,000	414	Case 1: 1st publication of the year; Case 2: 2nd publication of the year; Case 3: 3rd publication of the year.
	Scopus (case 2)	400,000	473	
	Scopus (case 3)	450,000	532	
UFRO	Scopus	273,962	324	—
ULAGOS	Scopus (IF > 1,5)	1,200,000	1,418	—
	Scopus (IF < 1,5)	900,000	1,063	
UMAG	Scopus	463,681	548	Scopus base 15 UF.
UPLA	Scopus	700,000	827	—
USACH	Scopus	225,000	266	Value established on base amount (CLP\$300,000) and quality bonus factor (x0.75).
UTALCA	Scopus Q1	2,979,405	3,520	Amounts in UTM and according to Q (Q1: 55 UTM; Q2: 25 UTM; Q3: 12 UTM; Q4: 5 UTM). Add other increments: (i) 10% per Q1 article and 1st or corresponding author, and (ii) 10% per Q1/Q2 article with participation of an academic from a university in the first 150 places of the latest available version of the Shanghai Ranking.
	Scopus Q2	1,354,275	1,600	
	Scopus Q3	650,052	768	
	Scopus Q4	270,855	320	
UV	Scopus Q1	700,000	827	20% increase in case of 1st author or corresponding author.
	Scopus Q2	600,000	709	
	Scopus Q3	500,000	591	
	Scopus Q4	400,000	473	
UBB	Scopus	150,000	177	—
UMCE	Scopus	1,000,000	1,181	The value may vary each year.
UTEM	Scopus	896,309	1,059	Scopus Indexation is equivalent to 27% of the total value of the UTEM EUS grade 4 salary. The amount indicated applies to the value of grade 4 EUS UTEM 2021 (CLP\$3,319,661).
Minimum financial incentive:		150,000	177	
Maximum financial incentive:		2,979,405	3,520	

(*): Q = quartile; IF = impact factor. (**): Money exchange rates are described in the section Methodology.

It was also observed that there are additional incentives according to the authorship leadership, as in UNAP, UV, and UTALCA, where the latter replicates the addition in the presence of foreign co-authorship from one of the first 150 universities of the Shanghai Ranking. In the case of the UDA, variable amounts are also paid based on the number of publications the researcher generates per year, increasing its value after the second and third publications.

On the other hand, eight institutions pay a fixed economic incentive per Scopus publication, UANTOF, UFRO, UMAG, UPLA, USACH, UBB, UMCE, and UTEM. Among them, the average amount is approximately CLP\$520,000 (US\$614), between a minimum of CLP\$150,000 (US\$177) at UBB and a maximum of CLP\$1,000,000 (US\$1,181) at UMCE.

Of interest are the cases that do not assign incentives for this indexing, as in the Universidad de Tarapacá and Universidad de La Serena, although they do for SciELO. This restriction may be since the WoS and SciELO-Chile databases have been recognized by the Ministry of Education of Chile (MINEDUC) for access to the 5% AFD. However, since 2012, MINEDUC has broadened its scope by recognizing articles with Scopus indexation

in other funding mechanisms (Fondos Basales por Desempeño, Convenio Marco de las Universidades Estatales and Plan de Fortalecimiento de las Universidades Estatales). This broadened scope provided the country's university community with an opportunity to expand the options of journals to disseminate their scientific work and improve their visibility and impact on the national and international scene [55]. As of June 2020, the WoS and Scopus databases had ~13,600 and ~40,300 indexed journals, respectively, with similar coverage in different disciplines [56].

3.4.3. Publications Indexed in SciELO

As for Scopus, scientific publications with SciELO indexing are financially incentivized in 13 universities (Table 6), except for USACH and UTALCA, which focus their attention on WoS and Scopus. The minimum and maximum payment amounts are ~CLP\$185,000 (~US\$220) at UMAG and CLP\$670,000 (~US\$790) at UTA for the Q1 quartile, respectively. However, the average amount granted by institutions to this category is ~CLP\$425,000 (~US\$500), with seven cases granting higher amounts (UNAP, UANTOF, ULAGOS, UPLA, UTA, UBB, and UTEM).

Table 6. Incentive amounts for publications indexed in SciELO.

Institution	Category	Financial Incentive (CLP\$)	(US\$) (*)	Comment
UNAP	SciELO	500,000	591	SciELO base CLP\$500,000. Increase per authorship with disciplinary exception (1st author: CLP\$100,000; 2nd author: CLP\$50,000).
UANTOF	SciELO	450,492	532	—
UDA	SciELO (case 1)	350,000	414	SciELO Chile only. Case 1: 1st publication of the year; Case 2: 2nd publication of the year; Case 3: 3rd publication of the year.
	SciELO (case 2)	400,000	473	
	SciELO (case 3)	450,000	532	
UFRO	SciELO (case 1)	273,962	324	Case 1: SciELO Chile; Case 2: SciELO from a country other than Chile.
	SciELO (case 2)	210,740	249	
ULS	SciELO	Maximum 333,000	Maximum 393	Variable value according to annual budget, capped at CLP\$333,000/publication. Allocation with a maximum of CLP\$4,000,000/year per academic. Amount to be paid for SciELO publication will be: SciELO Journal=ISI Journal/3, being: ISI Journal = (Total amount designated to the assignment)/[N° ISI publications benefited in period + (N° SciELO publications benefited in period/3)].
ULAGOS	SciELO	600,000	709	—
UMAG	SciELO	185,472	219	Amount of 6 UF.
UPLA	SciELO	500,000	591	—
UTA	SciELO (case 1)	670,000	792	Case 1: SciELO-Chile Q1, quartile Q1 according to SCImago; Case 2: SciELO-Chile Q2, Q3 and Q4, for journals not considered Q1 in SCImago.
	SciELO (case 2)	500,000	591	
UV	SciELO	400,000	473	—
UBB	SciELO (case 1)	400,000	473	Case 1: 1st publication of the period; Case 2: 2nd publication of the period; Case 3: 3rd publication of the period and subsequent periods.
	SciELO (case 2)	450,000	532	
	SciELO (case 3)	500,000	591	
UMCE	SciELO Chile	300,000	354	The value may vary each year.
UTEM	SciELO Chile	597,539	706	SciELO Indexation is equivalent to 18% of the total value of the UTEM EUS grade 4 salary. The amount indicated applies to the value of grade 4 EUS UTEM 2021 (CLP\$3,319,661).
Minimum financial incentive:		185,472	219	
Maximum financial incentive:		670,000	792	

(*): Money exchange rates are described in the section Methodology.

The first point to highlight is the discrimination made by the institutions according to the country of origin of the SciELO indexing. Institutions such as UNAP, UDA, UTA, UMCE, and UTEM only encourage SciELO-Chile work, which may be due to the relationship between this base and the 5% AFD competitive funding received by CRUCH universities [31]. The rest of the SciELO network receives work from the entire SciELO network, although the Universidad de La Frontera gives a greater economic contribution to SciELO-Chile.

Other mechanisms for assigning the amount of the incentive are reiterated and may depend on the journal quartile (UTA; higher value Q1 vs. Q2–Q4 SCImago), the leadership of the authorship (UNAP), the number of publications previously generated in a period (UDA and UBB) or the existence of a maximum annual ceiling to be received per beneficiary and with a variable amount per work (ULS).

3.4.4. Publications in Journals with Other Indexing

Only six universities encourage publications in databases other than WoS, Scopus, and SciELO; these universities are ULAGOS, UMAG, UPLA, UV, UBB, and UTEM (Table 7). The average amount allocated is ~CLP\$187,000 (~US\$220), with a minimum of CLP\$50,000 (~US\$60) at UBB for papers in its internal non-indexed journals and a maximum of ~CLP\$460,000 (~US\$545) at UMAG for ERIH publications.

Table 7. Incentive amounts for publications in other indexes excluding WoS, Scopus, and SciELO.

Institution	Category	Financial Incentive		Comment
		(CLP\$)	(US\$) (*)	
ULAGOS	Journal with editorial committee	100,000	118	—
UMAG	ERIH	463,681	548	Amount 15 UF. Only for articles.
UPLA	Latindex (Catalog)	100,000	118	—
UV	ERIH Plus	400,000	473	—
	Latindex (Catalog)	100,000	118	—
UBB	Latindex, DOAJ, Redalyc and other mainstream journals.	150,000	177	Mainstream journal: with international editorial board and international circulation (>10 years).
	Non-indexed internal journals	50,000	59	—
UTEM	Latindex (Catalog)	132,786	157	Indexation is equivalent to 4% of the total value of the UTEM grade 4 EUS UTEM. The amount indicated with reference to the value of grade 4 EUS UTEM 2021 (CLP\$3,319,661).
Minimum financial incentive:		50,000	59	
Maximum financial incentive:		463,681	548	

(*): Money exchange rates are described in the section Methodology.

Except for ULAGOS and UMAG, the rest have incentives for the Latindex base (i.e., regional cooperation network for disseminating Ibero-American scientific publications), but a distinction was observed concerning their primary information services: Catalog and Directory. The former includes the journals with the highest quality standards [57], and three institutions (UPLA, UV, and UTEM) provide incentives to this category, while UBB does not differentiate.

Another particularity was seen in UMAG and UV, the only institutions that benefit from publications with ERIH indexing (European Reference Index for the Humanities) or ERIH Plus (includes Social Sciences), a resource created to make the best works in journals in the humanities and social sciences visible. In these cases, the average incentive is CLP\$430,000 (US\$508), which is even higher than the minimum benefits obtained for WoS, Scopus, and SciELO publications.

Some institutions benefit from publications in any journal with an editorial board (ULAGOS; CLP\$100,000/US\$118) or in DOAJ, Redalyc, and other mainstream publications, even in their journals without being indexed, as is the case at UBB (CLP\$150,000/US\$177).

3.4.5. Books and Book Chapters

In this category, it was found that only seven universities (UNAP, UFRO, ULAGOS, UMAG, UTALCA, UV, and UBB) economically encourage the production of books and book chapters (Table 8), which is striking given that the dissemination of knowledge varies between disciplines. In particular, the Social Sciences and Humanities (SC&H) use a varied set of publication channels (books and monographs), even with a predominance of local languages, and where WoS and Scopus journals are not sufficient or the main channel to communicate research results [33,58,59]. In the case of books, the average benefit amount is ~CLP\$700,000 (~US\$830), with a minimum of CLP\$350,000 (~US\$410) at UBB, and a maximum of ~CLP\$1,300,000 (~US\$1,530) at UTALCA.

Table 8. Incentive amounts per book and book chapter.

Institution	Category	Financial Incentive (CLP\$)	(US\$) (*)	Comment
UNAP	Book	400,000	473	With editorial committee. Base CLP\$400,000. Adds increment for authorship with disciplinary exception (1st author: CLP\$100,000; 2nd author: CLP\$50,000).
	Book chapter	250,000	295	With editorial committee. Base CLP\$250,000. Adds 1st author increment with disciplinary exception of CLP\$50,000.
UFRO	Book	416,212	492	With editorial committee, edited by nationally or internationally recognized publishers.
	Book chapter	142,250	168	
ULAGOS	Book (case 1)	1,000,000	1,181	With international editorial board.
	Book (case 2)	500,000	591	With national university editorial board.
	Book chapter	100,000	118	With editorial board.
UMAG	Book	587,329	694	With editorial committee. Amount of 19 UF.
	Book chapter	123,648	146	With editorial committee. Amount of 4 UF.
UTALCA	Book	1,300,104	1,536	Amount 24 UTM. Only books from publishers recognized by FONDECYT study groups.
	Book chapter	650,052	768	Amount 12 UTM. Only book chapters issued by publishers recognized by FONDECYT study groups.
UV	Book	1,000,000	1,181	Book with ISBN registration. Additionally, it must meet one of the following publication requirements, alternatively: (i) publisher of recognized prestige internationally or nationally, (ii) publisher with a referee, or (iii) publisher with an editorial board. Self-publication and works published by plundering publishers are excluded.
	Book chapter	300,000	354	Book chapter with ISBN registration. In addition, some of the requirements for book authors must be met. Consider a maximum of two chapters per book. Self-publication is excluded.
	Book editor/coordinator	100,000	118	Book with ISBN registration. It must also comply with the requirements for book authors.
UBB	Book	350,000	414	With internal, national, or foreign publishing services.
	Book chapter	150,000	177	In book form with internal, national, or foreign publisher and editorial committee.
Minimum financial incentive/Book:		350,000	414	
Maximum financial incentive/Book:		1,300,104	1,536	
Minimum financial incentive/Book Chapter:		100,000	118	
Maximum financial incentive/Book Chapter:		650,052	768	

(*): Money exchange rates are described in the section Methodology.

All the institutions condition the economic benefit for books against restrictions of the editorial committee, with some cases adding other requirements. For example, UMAG and UNAP only mention that this body must exist to treat the work, although UNAP adds increments for the type of authorship. Other cases benefit books from publishers of recognized national or international prestige (UFRO and UV) or an internal, national,

or foreign publisher (UBB). There is also the case of ULAGOS, which differentiates the amount granted between books with an international editorial committee and those with a national university editorial committee, where the latter receives a 50% lower benefit than the former. On the other hand, there is the case of the Universidad de Valparaíso, which establishes as the primary filter that the book must have ISBN registration and then adds other requirements related to those already mentioned.

Special mention should be made of the Universidad de Talca, which grants the highest economic incentive for books from publishers recognized by the study or evaluation groups of FONDECYT, Chile's leading fund for the development of research in all areas of knowledge [10,43]. The decisions adopted by this instrument concerning the evaluation of scientific productivity of researchers based on quality and excellence are used to measure their impact; an example stands out that may justify, to some extent, the measures adopted by the universities. In the last FONDECYT Regular 2022 competition, of the 30 evaluation groups, only 12 considered books and book chapters in the evaluation, all of them generally associated with the SC&H. In six of them, higher scores were given to books than to journal publications, but in all of them, book chapters had the lowest score [60].

Regarding chapters, it was observed that the seven universities (Table 8) openly state that the incentive applies to books with an editorial board, except for the particularities already mentioned. For example, the UBB requires an internal, national, or foreign publisher, and FONDECYT criteria again govern UTALCA. UNAP also adds increments for authorship, while the rest of the institutions pay a fixed amount, whose average is ~CLP\$245,000 (~US\$290), with a minimum of CLP\$100,000 (US\$118) in ULAGOS, and a maximum of ~CLP\$650,000 (~US\$765) in UTALCA.

Finally, it is pertinent to indicate that incentive policies for scientific publications in universities should also consider the obsolescence of the information transmitted in each discipline and the relevant communication vehicles. The SC&H produces information of prolonged usefulness over time and, therefore, resources such as books or monographs are widely used. A different situation occurs in other areas of knowledge, where research results require rapid communication due to their high degree of obsolescence and where the writing of a book may slow down their dissemination compared to a journal article [33]. This differentiation is a point that can also help to discriminate the preferred scientific publications by area, contributing to the construction of measures that are more adjusted to each disciplinary reality.

4. Conclusions

Of the 18 state universities in Chile, 15 have incentive policies for publications to promote their scientific productivity without uniformity of criteria or associated amounts in their application. This fact demonstrates the lack of common references and criteria for joint decision-making that promotes synergies in a systemic vision.

The incentives for publications preferentially recognize scientific articles indexed in WoS (15 institutions) and Scopus and SciELO (13 universities), although, in general, the former provide the most significant economic contribution. These criteria may be due to the contributions received by these institutions from MINEDUC (AFD or others), being part of the research accreditation variables of the universities or their graduate programs by the CNA, or because they are the main products valued in the instruments that finance national research. There were also cases ($n = 6$) where incentives for scientific publications were extended to other types of journals (Latindex, ERIH Plus, and others).

Nevertheless, the incentives are mainly paid to the academic staff of the universities, although with a diversity of considerations, with six institutions also accepting their non-academic staff and the case of UTALCA, which is open to undergraduate and graduate students. It should be mentioned that the University of Talca is the one with the most sophisticated and meticulous policy of incentives for scientific publications.

Another important finding is that less than half of the universities ($n = 7$) pay incentives for books and book chapters, a decision that could undermine the stimulus for the generation of relevant scientific products in areas such as Social Sciences and Humanities.

All in all, this study hopes to provide more information for university decision-making for the redesign or construction of their incentive instruments to strengthen their scientific-technological performance and also to contribute to the construction of joint and integrated actions for this purpose that, progressively, tend to greater homogeneity in the incentive systems on standards of excellence, efficiency, and quality, and considering the reality in all areas of knowledge.

In subsequent works, the analysis should be extended to the entire Chilean university system and other Latin American countries to have a comprehensive overview of this matter in the region. Complementarily, research should be done on the impact of incentive policies on the sciences of universities and countries, both from a quantitative and qualitative point of view.

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Abbreviations

A&HCI	Arts & Humanities Citation Index
AFD	Direct Public Subsidy
ANID	National Agency for Research and Development
CNA	National Accreditation Commission
CONICYT	National Commission for Scientific and Technological Research
CRUCH	Chilean Council of University Rectors
CUECH	Council of State Universities of Chile
DOAJ	Directory of Open Access Journals
ERIH	European Reference Index for the Humanities
ERIH Plus	European Reference Index for the Humanities and the Social Sciences
ESCI	Emerging Sources Citation Index
EUS	Single Salary Scale
FONDECYT	National Fund for Scientific and Technological Research
IF	Impact factor
ISBN	International Standard Book Number
ISI	Institute for Scientific Information
MINEDUC	Ministry of Education of Chile
OECD	Organization for Economic Cooperation and Development
Q	Quartile
Q1	Quartile 1 or first quartile
Q2	Quartile 2 or second quartile
Q3	Quartile 3 or third quartile
Q4	Quartile 4 or fourth quartile

Redalyc	Network of Scientific Journals of Latin America, the Caribbean, Spain and Portugal
SC&H	Social Sciences and Humanities
SCI	Science Citation Index Expanded
SciELO	Scientific Electronic Library Online
SSCI	Social Sciences Citation Index
UNAP	Universidad Arturo Prat
UANTOF	Universidad de Antofagasta
UDA	Universidad de Atacama
UF	Unidad de Fomento
UFRO	Universidad de la Frontera
ULS	Universidad de la Serena
ULAGOS	Universidad de los Lagos
UMAG	Universidad de Magallanes
UPLA	Universidad de Playa Ancha
USACH	Universidad de Santiago de Chile
UTALCA	Universidad de Talca
UTA	Universidad de Tarapacá
UTM	Monthly Tax Unit
UV	Universidad de Valparaíso
UBB	Universidad del Bío-Bío
UMCE	Universidad Metropolitana de Ciencias de la Educación
UTEM	Universidad Tecnológica Metropolitana
WoS	Web of Science

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