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University governance type and bibliometric performance in the SCImago Institutions Rankings: evidence from Ecuador 2017-2026

Tipo de gestión universitaria y desempeño bibliométrico en el SCImago Institutions Rankings: evidencia ecuatoriana 2017-2026

Tipo de gestão universitária e desempenho bibliométrico no SCImago Institutions Rankings: evidências do Equador 2017-2026

Abstract

Introduction: the bibliometric performance of Latin American universities is rarely examined by differentiating the institutional funding models that coexist within the same national higher education system. **Objective:** to determine whether the type of institutional governance is associated with statistically significant differences in the global positioning of Ecuadorian universities in the SCImago Institutions Rankings. **Method:** a non-experimental longitudinal quantitative design was adopted using open secondary data. An unbalanced panel of 187 observations was constructed for 32 institutions classified into three governance types according to the Higher Education Council of Ecuador (CES): public, jointly funded private, and self-funded private. Intergroup analysis was performed using the Kruskal-Wallis test, while temporal trends were assessed through Spearman correlations. **Results:** no significant differences were found among the three governance types in any SIR dimension (maximum H = 5.639; p = 0.060). However, all three groups exhibited a statistically significant relative decline in global positioning (rho ranging from +0.706 to +0.817; p < 0.001). **Conclusion:** the type of funding is not a predictor of relative bibliometric positioning. The regulatory convergence generated by the Organic Law of Higher Education and the CEAACES/CACES evaluation and accreditation system appears to have equalized research incentives across institutional types.

Keywords: institutional performance, higher education, university ranking

Resumen

Introducción: el desempeño bibliométrico de las universidades latinoamericanas raramente se examina diferenciando los modelos de financiamiento institucional coexistentes en un mismo sistema nacional.

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Objetivo: determinar si el tipo de gestión institucional se asocia con diferencias estadísticamente significativas en el posicionamiento mundial de las universidades ecuatorianas en el SCImago Institutions Rankings. **Método:** se adoptó un diseño cuantitativo longitudinal no experimental con datos secundarios abiertos, construyendo un panel no balanceado de 187 observaciones para 32 instituciones clasificadas en tres tipos de gestión según el Consejo de Educación Superior del Ecuador (CES): pública, particular cofinanciado y particular autofinanciado. El análisis intergrupal empleó la prueba de Kruskal-Wallis y la tendencia temporal se evaluó mediante correlaciones de Spearman. **Resultados:** no se evidencian diferencias significativas entre los tres tipos de gestión en ninguna dimensión del SIR (H máximo = 5.639; p = 0.060). Sin embargo, los tres grupos exhiben un deterioro relativo en el posicionamiento mundial estadísticamente significativo (rho entre +0.706 y +0.817; p < 0.001). **Conclusión:** el tipo de financiamiento no es predictor del posicionamiento bibliométrico relativo. La convergencia regulatoria generada por la Ley Orgánica de Educación Superior y el sistema CEAACES/CACES habría nivelado los incentivos a la investigación entre tipos institucionales.

Palabras clave: desempeño institucional, educación superior, ranking universitario

Resumo

Introdução: o desempenho bibliométrico das universidades latino-americanas raramente é analisado considerando os diferentes modelos de financiamento institucional que coexistem em um mesmo sistema nacional de ensino superior. **Objetivo:** determinar se o tipo de gestão institucional está associado a diferenças estatisticamente significativas no posicionamento mundial das universidades equatorianas no SCImago Institutions Rankings. **Método:** adotou-se um desenho quantitativo longitudinal não experimental com dados secundários abertos, construindo-se um painel não balanceado de 187 observações para 32 instituições classificadas em três tipos de gestão segundo o Conselho de Educação Superior do Equador (CES): pública, privada cofinanciada e privada autofinanciada. A análise intergrupos utilizou o teste de Kruskal-Wallis, enquanto a tendência temporal foi avaliada por meio de correlações de Spearman. **Resultados:** não foram observadas diferenças significativas entre os três tipos de gestão em nenhuma dimensão do SIR (H máximo = 5,639; p = 0,060). No entanto, os três grupos apresentaram uma deterioração relativa estatisticamente significativa em seu posicionamento mundial (rho entre +0,706 e +0,817; p < 0,001). **Conclusão:** o tipo de financiamento não é um preditor do posicionamento bibliométrico relativo. A convergência regulatória gerada pela Lei Orgânica de Educação Superior e pelo sistema CEAACES/CACES parece ter nivelado os incentivos à pesquisa entre os diferentes tipos institucionais.

Palavras-chave: desempenho institucional, ensino superior, ranking universitário



Introduction

Evaluating the scientific performance of higher education institutions (HEIs) through bibliometric indicators has become central to both strategic university management and science and higher education policy. Such evaluation helps locate universities within the global ecosystem of knowledge production, largely by way of international rankings, among which the SCImago Institutions Rankings (SIR) stands out for relying strictly on bibliometric data drawn from Scopus (Carta et al., 2021; Santos, 2022).

Uncritical use of these indicators, however, often overlooks two methodological caveats. First, rankings are to a large extent measures of institutional wealth, because scientific output scales superlinearly with university income (Lepori et al., 2019). Second, as the list of ranked institutions keeps growing, existing institutions are pushed down the table even when their actual productivity has not declined.

Ecuador is a particularly interesting case in this respect. Its higher education system was restructured beginning in 2008, when the Constituent Assembly passed Mandate 14, followed in 2010 by the Organic Law of Higher Education (LOES), which established the regulatory bodies SENESCYT (Secretariat of Higher Education, Science, Technology, and Innovation), CES (Council of Higher Education), and CEAACES (Council for the Evaluation, Accreditation, and Quality Assurance of Higher Education), now called CACES (Council for Quality Assurance in Higher Education; the acronym CACES is used throughout this article) (Sisa et al., 2020; Gutiérrez et al., 2023).

Under this framework, research indexed in high-impact databases came to carry a 21% weight in the CACES institutional evaluation model, which exerted uniform regulatory pressure on all HEIs regardless of their source of funding (Sisa et al., 2024). In addition, the Prometeo Program, run by SENESCYT between 2010 and 2016, brought high-profile international researchers into Ecuadorian universities with the explicit aim of strengthening scientific output (Herrera-Franco et al., 2021; Pérez Anzardo et al., 2022; Rodríguez et al., 2022).

Ecuador's higher education system formally recognizes three types of HEIs by funding model, as defined in the LOES and categorized by the CES: (a) public universities, funded with fiscal resources; (b) co-financed private universities, which combine state contributions with their own tuition income; and (c) self-financed private universities, which operate exclusively on their own resources, without state transfers. This regulatory distinction raises an empirical question with direct implications for university management: whether differences in how universities are funded translate into systematic, observable differences in institutional bibliometric performance as measured by the SIR.

Global university rankings are now among the best known and most debated tools for institutional evaluation in higher education. Since the launch of the Shanghai Academic Ranking of World Universities (ARWU) in 2003, their number and reach have multiplied, and a wide range of actors use them: students choosing an institution, governments setting excellence policies, funding agencies allocating resources, and university managers drawing up strategic plans (de la Poza et al.,

2021; Nassa & Arora, 2021; Santos, 2022).

The SCImago Institutions Rankings differs from other rankings in that it relies solely on bibliometric indicators from Elsevier's Scopus database. Recent studies show that publication counts and citations received largely account for the standings in university rankings (Robinson-García et al., 2019). The composite indicator weights three dimensions: Research (50%), Innovation (30%), and Societal (20%). The variable used in this study is Global Rank, which is each institution's position among all the HEIs listed in a given annual edition.

One methodological feature of the SIR bears directly on any longitudinal analysis of changes in institutional rank: each annual edition is calculated over a cumulative five-year moving window that ends two years before the edition year. Combined with the minimum inclusion threshold, this means that the universe of ranked institutions expands over time. Carta et al. (2021) document how the SIR grew from roughly 3,300 entities in 2010 to more than 8,000 from 2020 onward, and the expansion has continued: the 2026 edition already exceeds 11,000. This growth pushes Global Rank values systematically upward. The bias is structural and does not necessarily reflect any real decline in the absolute productivity of the institutions involved.

Lepori et al. (2019) provide key evidence on this point. Their data on the scientific output of more than 2,400 universities in the United States and Europe show that output scales superlinearly with institutional income: a 10% increase in budget translates into an increase of more than 10% in publications and citations. This agrees with studies reporting strong correlations between bibliometric indicators and positions in international rankings (Szluka et al., 2023). Taylor et al. (2021) extended the finding to the US university system as a whole, describing scaling regimes that differ by institutional type. Taken together, the two studies suggest that management type is, in effect, a proxy for the volume of resources available for research.

International evidence on the relationship between management type and scientific productivity is mixed. De la Flor-Martínez et al. (2017) analyzed the scientific output of Spanish universities and concluded that public universities do better in total production and impact indices, despite the better production figures posted by private universities. Javed et al. (2020) report that, in a sample of Pakistani universities, 92% of Scopus publications come from public institutions, which employ the largest numbers of full-time researchers.

This advantage is not universal, however. Nguyen et al. (2021) found that in Vietnam management type mattered less than institutional size and geographic location. Fu et al. (2023) showed that in Indonesia incentive reforms raised output across all types of institutions, and management type did not explain differences in growth. In Colombia, Moreno-Gómez et al. (2019) found that although public universities outperform private ones in teaching efficiency, research efficiency does not differ significantly between the two.

In the Ecuadorian context, Sisa et al. (2024) found that private universities led absolute biomedical output in Scopus over a hundred years of production, and

they attributed this result to the pressure effect of the CACES model. The finding contrasts with comparable Latin American systems, where management type likewise ceases to be decisive once institutional research policies are controlled for (Millones Gómez et al., 2021). Gutiérrez et al. (2023) confirmed that each CACES evaluation cycle (2012, 2015, 2019) coincided with a visible jump in output published in indexed journals, regardless of management type. Herrera-Franco et al. (2021) found that 85% of Ecuador's historical Scopus-indexed output was produced in the last decade.

The literature review points to two competing hypotheses for the Ecuadorian case.

H1: Regulatory convergence under the LOES/CACES framework has leveled research incentives across management types, so that no significant differences in bibliometric performance exist when it is measured relatively through the SIR Global Rank.

H2: Structural differences in resource availability across management types would produce observable differences in relative standing, probably favoring public universities because of their greater access to research funding.

No study in the literature systematically compares the three management types established in Ecuadorian regulation using the SIR Global Rank as a measure of relative standing in a longitudinal panel of ten editions. This empirical gap defines the aim of the present article: to determine whether statistically significant differences exist in the SIR Global Rank across the Overall, Research, Innovation, and Societal dimensions among public, co-financed private, and self-financed private universities in Ecuador during 2017-2026, and to analyze the temporal trajectory of each group's standing.

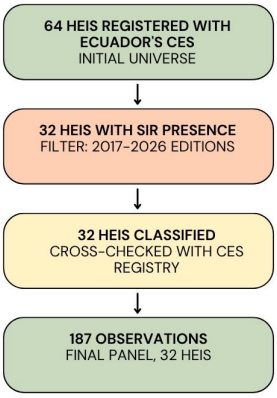
Methods and materials

The study adopted a non-experimental, longitudinal, comparative quantitative design. The unit of analysis was the institution-edition: each observation corresponded to one Ecuadorian university in one annual edition of the SIR.

The panel covered the 2017 to 2026 editions (total N = 187 observations; 32 distinct institutions; unbalanced panel because of the SIR inclusion threshold). Because it relied on open secondary data with no primary data collection, the design is documentary-bibliometric, in line with the growing body of research that uses the SIR as a data source for analyzing regional university systems (Vargas-Cuentas & Roman-Gonzalez, 2021; Carta et al., 2021). Figure 1 shows the sample selection process, from the initial universe of institutions registered with the CES to the final panel of institution-edition observations.

Figure 1

Sample selection process



Source: Author's own elaboration.

The main source was the SCImago Institutions Rankings, annual editions 2017-2026, Higher Education sector, filtered by country (Ecuador, code ECU). The CSV files for each combination of year and ranking dimension (Overall, Research, Innovation, Societal) were downloaded directly from the public SCImago repository (www.scimagoir.com). All the downloaded files contain the following columns: Rank, Global Rank, Institution, Country, Sector and, in the 2026 edition only, Best Country Quartile.

The SIR applies two inclusion criteria that make the panel unbalanced: (a) a minimum of 100 Scopus documents in the last year of the reference period, and (b) at least 75% citable documents out of total output. As a result, the 2017 and 2018 editions include only 6 and 8 Ecuadorian universities, respectively, whereas the 2026 edition includes 30. The number rises steadily across editions, reflecting the growth of Ecuadorian indexed scientific output documented by Herrera-Franco et al. (2021) and Gutiérrez et al. (2023). The statistical analysis treats this imbalance as a limitation.

Institutions were classified by management type by cross-referencing the SIR list with the CES Register of Institutions (www.ces.gob.ec), which distinguishes three categories: (1) public, (2) co-financed private, and (3) self-financed private. This distinction is consistent with the management indicator frameworks used in comparative studies of university accreditation in Latin America (Gerón-Piñón et al., 2021). All 32 institutions identified were coded, with no unclassified cases.

The dependent variable was the SIR Global Rank in four independent dimensions: Overall (weighted composite indicator), Research (11 research indicators, 50% of the composite index), Innovation (3 technology transfer and patent indicators, 30%), and Societal (6 web and social impact indicators, 20%). Global Rank is a discrete ordinal variable; a lower value indicates a better relative standing within the SIR's worldwide universe. The main independent variable was CES management type (three nominal categories). The time-trend variable was the SIR edition year (continuous, range 2017-2026).

Because Global Rank does not meet normality assumptions in small, heterogeneous groups, only nonparametric tests were used. The three groups were compared with the Kruskal-Wallis test (the nonparametric equivalent of one-way ANOVA), whose null hypothesis states that Global Rank distributions are identical across the three management types. Effect size was quantified with epsilon-squared (epsilon^2), using thresholds of epsilon^2 ≥ 0.06 (moderate effect) and epsilon^2 ≥ 0.14 (large effect), in line with the nonparametric methods literature. Because no result reached statistical significance ($p < 0.05$), Dunn's post hoc test with Bonferroni correction was not applicable in any case.

For the temporal trend analysis, Spearman correlations were computed between edition year and Global Rank Overall for each management group, using institution-edition data rather than annual medians so as to preserve within-group variance. A positive correlation indicates that Global Rank rises over time (a relative decline in worldwide standing), whereas a negative one would indicate sustained improvement. All analyses were run in Python 3.11 with the scipy.stats library on the consolidated panel dataset of 187 observations.

Results and discussion

The consolidated panel comprises 187 observations from 32 Ecuadorian universities with at least one appearance in the SIR during 2017-2026. Table 1 shows the distribution by CES management type. Public universities are the largest group, both in institutions (18; 56.3%) and in observations (96; 51.3%), followed by co-financed private universities (7 institutions; 52 observations; 27.8%) and self-financed private universities (7 institutions; 39 observations; 20.9%).

Table 1

Composition of the panel by CES management type (2017-2026)

CES management type	N institutions	% of total	N observations	% of total
Public	18	56.3%	96	51.3%
Co-financed private	7	21.9%	52	27.8%
Self-financed private	7	21.9%	39	20.9%
Total	32	100.0%	187	100.0%

Source: SCImago Institutions Rankings, 2017-2026 editions, and CES Register, Ecuador (www.ces.gob.ec).

Temporal coverage grows over the period: the 2017 and 2018 editions include only 6 and 8 Ecuadorian universities, respectively, in both cases those with the longest presence in Scopus. From 2019 onward, the number of HEIs in the SIR rises steadily until it reaches 30 institutions in the 2026 edition. This growth reflects the expansion of Ecuadorian scientific output documented by Herrera-Franco et al. (2021) and Gutiérrez et al. (2023), and it is uneven across management types: public universities show greater variability in temporal coverage, whereas the largest co-financed ones have been present continuously since the early editions.

Descriptive statistics for Global Rank by management type

Table 2 summarizes the descriptive statistics for Global Rank across the four SIR dimensions by CES management type over the full 2017-2026 period. On Overall, the medians are comparable across the three groups (range 6,087-6,984); dispersion is greatest among self-financed private universities (SD = 1,779), which reflects the heterogeneity within that segment.

On Research, self-financed private universities show the most favorable median (5,484), a result probably influenced by the track record of institutions such as Universidad San Francisco de Quito. On Innovation, by contrast, co-financed universities have the best median (6,241) and self-financed ones the worst (7,572), a reversal of the Research pattern that suggests differentiated institutional profiles. On Societal, differences are minimal, with medians between 4,687 and 5,379.

Table 2

Descriptive statistics for Global Rank by CES management type and SIR dimension (2017-2026)

Dimension	Management type	N	Median	Mean	SD	Min.	Max.
Overall	Public	96	6,935	6,878	1,343	3,476	10,283
Overall	P. Co-financed	52	6,984	6,713	1,308	3,821	9,572
Overall	P. Self-financed	39	6,087	6,804	1,779	3,908	10,026
Research	Public	96	6,621	6,426	1,705	3,476	9,696
Research	P. Co-financed	52	6,804	6,343	1,646	3,821	9,460
Research	P. Self-financed	39	5,484	5,949	2,006	3,908	9,805
Innovation	Public	96	6,587	6,937	1,709	4,332	10,505
Innovation	P. Co-financed	52	6,241	6,580	1,608	4,814	10,410
Innovation	P. Self-financed	39	7,572	7,391	1,637	4,334	10,026
Societal	Public	96	4,735	4,820	1,414	2,220	7,711
Societal	P. Co-financed	52	4,687	4,988	1,404	3,188	6,500
Societal	P. Self-financed	39	5,379	5,045	1,851	3,390	8,906

Note. Global Rank: lower value = better worldwide standing. SD = standard deviation. P. = Private. Min. and Max. correspond to the Global Rank observed in the group for each dimension during 2017-2026.

Kruskal-Wallis test: between-group comparison

Table 3 reports the Kruskal-Wallis results. In none of the four SIR dimensions are there statistically significant differences among the three management types (all p values ≥ 0.059). The highest H statistic corresponds to Innovation (H = 5.639; p = 0.060), which comes close to the conventional significance threshold without reaching it. Effect sizes (epsilon^2) are very small in all dimensions (range: -0.007 to

+0.020), indicating no practically relevant association between management type and global standing in the SIR. Because no test reached statistical significance, Dunn's post hoc test with Bonferroni correction was not applicable.

Table 3

Results of the Kruskal-Wallis test for Global Rank by CES management type

SIR dimension	Total N	H (df=2)	p-value	Sig.	epsilon²	epsilon² interpretation
Overall	187	0.810	0.667	n.s.	-0.007	No effect
Research	187	2.560	0.278	n.s.	+0.003	Small
Innovation	187	5.639	0.060	n.s.	+0.020	Small
Societal	187	0.797	0.671	n.s.	-0.007	No effect

Note. df = degrees of freedom. n.s. = not significant ($p \geq 0.05$). epsilon² = epsilon-squared (effect size). Interpretation thresholds: epsilon² ≥ 0.06 = moderate effect; epsilon² ≥ 0.14 = large effect. Dunn's post hoc test (Bonferroni correction) not applicable because no Kruskal-Wallis result was significant.

Spearman correlation

The Spearman correlation between edition year and Global Rank Overall, shown in Table 4, points to a consistent and notably robust pattern. All three management types show high, highly significant positive correlations (rho between +0.706 and +0.817; $p < 0.001$ in each), which indicates that the Global Rank of Ecuadorian universities trends upward over time in public, co-financed private, and self-financed private universities alike. The correlation is strongest for public universities (rho = +0.817), followed by co-financed private universities (rho = +0.787) and, last, self-financed private universities (rho = +0.706). The differences in correlation size between groups are modest and do not support claims of divergent trajectories.

Table 4

Spearman correlation between edition year and Global Rank Overall by management Type

Management type	N observations	Spearman's rho	p-value	Trend interpretation
Public	96	+0.817	< 0.001	Significant relative decline (upward trend in rank)
Co-financed private	52	+0.787	< 0.001	Significant relative decline (upward trend in rank)
Self-financed private	39	+0.706	< 0.001	Significant relative decline (upward trend in rank)

Note. Positive rho: Global Rank increases over time (the institution falls in relative worldwide standing). Analyses were run on individual institution-edition data (N per group, not annual medians). $p < 0.001$ in all three cases.

Change in median Global Rank Overall by group (2017-2026)

Table 5 breaks down the temporal evolution of standing by edition year. The median Global Rank values of the three groups start from similar levels in 2017 (between 4,134 and 4,814) and rise to substantially higher values in 2026 (between 8,140 and 9,160), with no group holding a consistently superior position throughout the period. In terms of temporal dynamics, self-financed private universities follow the most irregular trajectory: they have the best median standing in 2017, 2018, and 2020 but the weakest in 2025 and 2026. Co-financed universities show the best relative median performance in the 2024 and 2025 editions. Public universities follow the most stable trajectory, with smaller year-to-year fluctuations.

Table 5

Median Global Rank Overall by management type and SIR edition year

SIR year	Public	P. Co-financed	P. Self-financed	Total N
2017	4,590	4,814	4,134	6
2018	4,668	4,994	4,888	8
2019	5,294	5,268	5,197	12
2020	5,883	5,778	4,921	16
2021	6,113	6,401	5,144	21
2022	6,832	7,014	6,087	24
2023	7,711	7,562	7,243	21
2024	7,532	7,078	7,826	22
2025	7,947	7,437	8,130	27
2026	8,526	8,140	9,160	30

Note. Values are medians of the Global Rank Overall of the group's institutions in each edition. Total N = number of Ecuadorian institutions included in the SIR in each edition. Lower value = better worldwide standing. P. = Private.

Bibliometric parity across management types: regulatory convergence

The data do not support the hypothesis of significant differences between management types. This result may seem counterintuitive given the advantage private universities show in absolute biomedical output (Sisa et al., 2024), but it fits the regulatory convergence argument: the LOES and the CACES evaluation model impose requirements for indexed scientific output with equal weight on all types of HEIs, whatever their source of funding (Sisa et al., 2020; Gutiérrez et al., 2023). This uniform regulatory pressure would have acted as a leveling mechanism on institutional research incentives, narrowing preexisting gaps between management types.

International evidence supports the regulatory convergence argument well. Fu et al. (2023) showed that in Indonesia the 2014 and 2017 reforms raised output

in all types of universities without producing growth differences between groups. Gutiérrez et al. (2023) observed the same pattern in Ecuador, where every CACES evaluation cycle coincided with output increases in both public and private institutions.

From the standpoint of scientific production theory, the result is also consistent with Lepori et al. (2019), who argue that scientific output scales fundamentally with institutional resources; this may reflect convergence in the availability of research resources across the three types of Ecuadorian HEIs. The divergence from Sisa et al. (2024) is explained by the fact that the present study is methodologically based on the SIR Global Rank as a relative measure of standing that incorporates impact and excellence indicators, not just volume, and covers all disciplines.

Ranking expansion or real slowdown

The second finding, the strong positive correlation between edition year and Global Rank in all three groups (rho = 0.706-0.817; $p < 0.001$), has to be interpreted in light of two phenomena that may or may not overlap: the displacement effect produced by the growth of the ranking, and a presumed real deterioration in the relative position of Ecuadorian universities.

On the first point, as explained earlier, the expansion of the SIR is easy to document: the total number of institutions included has risen from roughly 3,300 in 2017 to more than 11,000 in 2026, an increase of over 230% in ten years (Carta et al., 2021; SCImago, 2026). This structural growth pushes every institution's Global Rank to a higher number even when its absolute output has increased, held steady, or fallen.

The expansion effect alone, however, does not account for the whole phenomenon. Rodríguez et al. (2022) found signs of a slowdown in Ecuador's scientific output beginning in 2017, compared with the momentum of the previous decade. Gutiérrez et al. (2023) also noted that 2019 to 2021 were especially affected by the slowing of the CACES evaluation cycles and by the impact of the COVID-19 pandemic. The Prometeo Program, which had acted as a catalyst for high-impact output between 2011 and 2015, was gradually wound down between 2016 and 2018, removing a powerful stimulus (Sisa et al., 2020).

Both factors together produce the observed positive correlation. Separating the two effects precisely would require comparing the Global Rank trajectory of Ecuadorian HEIs against a baseline simulating the purely structural displacement expected from the growth in the total number of institutions. Such an analysis lies beyond the scope of this study but represents a relevant line for future research. From a university management perspective, the relative decline shared by all three groups indicates that the gap in global standing is a systemic challenge for the Ecuadorian university system as a whole, not a problem specific to one management type.

Conclusions

This study examines the association between institutional management type and the bibliometric performance of Ecuadorian universities in the SCImago Institutions Rankings during 2017-2026, using an unbalanced longitudinal panel of 187 observations for 32 HEIs classified into three types under CES regulations.

First, there are no statistically significant differences among Ecuadorian public, co-financed private, and self-financed private universities in any of the four SIR Global Rank dimensions evaluated (Overall, Research, Innovation, Societal); the H statistics fall short of the conventional significance threshold in every case, and effect sizes are very small (epsilon^2 ≤ 0.020). This parity is consistent with the regulatory convergence argument. Evaluation under the CACES system would have equalized institutional research incentives across management types, leaving funding type with little predictive weight for relative bibliometric standing.

Second, all three management types show a solid relative decline in worldwide standing, and a homogeneous one across groups (rho from +0.706 to +0.817; $p < 0.001$). This homogeneity is linked to the combination of two things: the structural displacement caused by the expansion of the universe of institutions in the SIR, and the relative slowdown of Ecuadorian scientific output after the Prometeo Program ended and the CACES evaluation cycles slowed. As shown above, the decline is not specific to any management type, which reinforces its interpretation as a systemic phenomenon.

Third, the implications for university policy are that interventions seeking to improve the bibliometric standing of Ecuadorian HEIs in global rankings should operate at the system level rather than be segmented by management type. The priorities would be: (a) achieving a sustained increase in the number of highly productive researchers across all HEIs; (b) strengthening active international collaboration, especially coauthorship with authors at institutions ranked higher in the SIR; and (c) reinstating talent-attraction programs equivalent to Prometeo, with medium- and long-term evaluation of bibliometric impact.

The study has several limitations: the unbalanced panel over-represents the most recent editions and the most productive HEIs; country quartile data are available only for the 2026 edition; and disaggregated financial data are lacking for each HEI. These limitations can be read as agendas for future research.

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Declaration of author responsibility

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