

On Science and Technology Investment and Academic Production. More Questions than Answers

WILSON LÓPEZ LÓPEZ
Pontificia Universidad Javeriana, Colombia

According to the RECyT (Specialised Meeting on Science and Technology), the GDP of Latin American economies grew by 70% between 2005 and 2014, and their investments on science and technology increased to 62 billion dollars, from 30 billion dollars – a growth of over 107%, 87% if Spain and Portugal are included in the figure. However, 91% of that investment was made by Brazil, Mexico, and Argentina.

The number of researchers also increased from 359,381 to 450,379, and 56% of them worked at universities by 2014. Graduate trainees went from 1.7 million in 2005 to 2.42 million in 2014, and most (57%) of them come from social sciences. In 2005, 21 thousand people had a doctoral degree, and this figure increased to 39 thousand in 2014 – an 85% increase. They produced 123% more papers in the same period (reaching 7.4% of the world's output), and 66% more patents, excluding Spain. Chile and Colombia have quadrupled their patent filings, although 91% of them were filed by foreign companies.

Out of those countries with less investment, Colombia and Chile grew theirs by 76% and 54%, respectively. Despite that number, the investment levels in Colombia are quite low in the context of the region, its size, economy, and population – only 0.25% of its GDP. The design of the Colombian educational system has generated an increase in output that does not match the low levels of R&D investment in the country.

This illusion of growth has been promoted by universities, especially private ones, through accreditations, course creation and ranking-related marketing; and it has led to an increase in the number of books, journals, and papers. The positive effects of this are surely related to the transition that our researchers have experienced, from spoken transmission of knowledge brewed in the classroom, to doing research and publishing results. The universities have contributed to this by tuning their incentive systems and goals to promote

training quality and a strong relationship between training and knowledge creation.

However, ambiguities toward this relationship, held by actors responsible for strategic directions of the national science and technology systems, and for quality assessment systems and their impact on university policies, often create instabilities in the growth of this output and uncertainty regarding the rules by which researchers need to play. Nowadays, it is clear that lecturers and researchers need to conduct research that leads to publications, patents, and registries to impact society with their knowledge, and, of course, to continue providing quality training to students.

On a related note, reflecting on the impacts created by some academic dynamics of our communities is important; for instance, the fact that the majority of the doctoral programmes in Ibero-America (43%) are in social sciences and humanities, which is, however, unmatched by the corresponding knowledge output in these areas. This proportion rises a certain set of questions about the impact of this regional bias and about the answers that these fields are providing to the problems faced by our societies.

On the other hand, it is also important to ask ourselves about the efficiency of the current system of incentives for academic production, and whether we need to think about other devices that better reflect the relationship between research investment and scientific output. This relationship should probably be taken into account in order to determine more appropriate criteria for ranking assessment.