

PRESS RELEASE

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What is the economic value of innovation?

Trying to assess the effects of research and innovation is a recurring topic in science worldwide. A macroeconomic impact study by Fraunhofer IPK and Fraunhofer ISI now confirms that a national research network in Brazil contributes to 0.66 percent of the country's gross domestic product (GDP).

With a gross domestic product of almost 2.2 trillion dollars, Brazil is not only the largest economy in South America, but also a major player on the global stage. Although the country is big on raw material exports and the oil and gas industry, it has potential for greater value creation in technological sectors essential for sustainable growth. Therefore, in 2011 the Brazilian National Confederation of Industry (CNI) tasked SENAI, the National Service for Industrial Training with creating a nationwide network of applied research institutes. SENAI decided to follow, among others, the role model of Germany's Fraunhofer-Gesellschaft and sought support from 18 of its institutes, with the Fraunhofer Institute for Production Systems and Design Technology IPK in the lead to assist SENAI in strategically planning and implementing the network. Today, 26 SENAI Innovation Institutes (ISI) are operational, employing around 1,500 researchers to provide the Brazilian industry with cutting-edge research and technological developments. Backed by an initial investment from SENAI and the Brazilian Development Bank (BNDES), the SENAI Innovation Institutes have executed approximately 3,350 R&D projects with 1,325 companies, totaling around 2.5 billion Brazilian reais over the past 12 years. More than 56 percent of these projects have involved SMEs, and the network has helped connect 185 startups with 90 large companies.

To analyze the economic impact of the SENAI Innovation Institutes and to prove the return on the initial investment, Fraunhofer IPK together with the Fraunhofer Institute for Systems and Innovation Research ISI conducted a macroeconomic impact study on behalf of SENAI. The researchers compared the GDP growth over time in regions where SENAI institutes were established with the GDP growth in regions without those institutes. The result: The SENAI Innovation Institutes have induced 0.66 percent of Brazil's entire GDP. GDP per capita increased from 985 to 1,210 Brazilian reais in the regions where the institutes are active. These effects are robust, statistically significant, and show a consistent pattern over time. Prof. Dr. Torben Schubert, deputy head of the department of Innovation and Knowledge Economy at Fraunhofer ISI and co-author of the SENAI Macro Impact study: »The analysis of the economic effects of the SENAI Innovation Institutes is based on an exceptional quasi-experimental research design that leverages the founding events of the individual institutes over time. This ensures a causal interpretation of the results. Our study has been peer-reviewed by independent reviewers and published in a leading international journal.«

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The study also reveals that, while technical services and consultancy do play a role, it is mainly research-intensive projects that drive this growth. »This confirms the transformative aspect of applied research and innovation,« says Prof. Dr. Holger Kohl, deputy director of Fraunhofer IPK. »With this level of impact, the SENAI Innovation Institutes, much like Fraunhofer, are not just a research success story. They are a blueprint for how targeted investment in applied science can unlock broad-based economic value.« Kohl will present the study's executive summary on September 19, 2025 at a conference in São Paulo. In front of CEOs from Brazil's 500 largest R&D-driven companies, he will also point out that, as the German benchmark shows, there is potential for further innovation-driven economic growth. According to previous studies, the Fraunhofer-Gesellschaft contributes to approximately 1.6 percent of the German GDP, while all national universities together account for 8 percent of the country's value creation.

Therefore, SENAI is planning to expand its network of Innovation Institutes to address key challenges facing the Brazilian industry, such as achieving a fully digitalized, low-carbon economy and sustain-able food production. The network will also address smart cities and mobility. »We are very proud that the SENAI Innovation Institutes have become a powerful driver of innovation and competitiveness for the Brazilian industry, contributing 0.66 percent to Brazil's GDP. To achieve this result in just ten years of operation, the methodological support from Fraunhofer IPK and various Fraunhofer technology partners was decisive. For the future, we intend to increase this impact significantly based on a clear and robust strategy of our R&D network for the next five years,« says Gustavo Leal, General Director of SENAI.

Further information:

Kohl, H., Schubert, T., et al. (2025). What is the Economic Value of Innovation? The SENAI Innovation Institutes' Impact on the Brazilian Economy. Macroeconomic Impact Study, Executive Summary. <https://doi.org/10.24406/publica-4902>

Schubert, T., Darold, D., & Will, M. (2025). Measuring the causal economic effects of scientific research—Evidence from the staggered foundation of the SENAI innovation institutes in Brazil. Socio-Economic Planning Sciences, <https://doi.org/10.1016/j.seps.2025.102287>

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