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Statistical conventions adopted in this publication

- Zero (exact value, not rounded)
.. Numerical data not applicable
... Numerical data not available
x Numerical data omitted to avoid individualizing information
0.0 Zero resulting from rounding
* Missing data

Foreword

Celso Lafer
President of FAPESP

São Paulo was the first Brazilian state to recognize the vital role of science and technological research as a matter of public policy. In Article 123 of the State Constitution, the 1947 State Constituent Assembly established that a foundation would be created to pursue this mission and that it was to be funded by "not less than half of one per cent of the state's total ordinary revenue". Federal agencies with a similar mission were not to be set up until the 1950s.

Thus in the words of Miguel Reale "scientific research became a *primordial duty of the state* [original emphasis], whose effective performance was immediately assured by the laudable idea of setting up a foundation endowed with the necessary autonomy, starting with the appropriation of adequate funds."

São Paulo has remained conscious of the importance of science and technological research to society – an importance that only increased throughout the second half of the twentieth century, so much so that the 1989 State Constituent Assembly augmented FAPESP's funding from half of one per cent of ordinary revenue to a full one per cent, explicitly including technology in the foundation's remit.

Article 1.VI of FAPESP's charter, approved in 1962, states that the core activities to be performed by the foundation in order to achieve its objectives include "periodically carrying out surveys of the overall status of research in São Paulo and Brazil, and identifying the fields to be prioritized in terms of funding".

This is the context for the publication of these Indicators, which constitute a highly valuable input for the formulation of public policy relating to science and technological research. Previous editions were published in 2002 and 2004.

The conceptual framework for the Indicators includes a selection component. From an economic standpoint it is possible to distinguish between inputs and outputs. Chapters 1, 2 and 3 deal with inputs. The first two chapters focus on the formation of human resources in São Paulo State through both basic education and higher education (undergraduate university and technology courses, as well as postgraduate courses). The third presents data and analysis on research and development (R&D) expenditure in São Paulo, whether public (federal and state) or private, as well as useful comparisons with the rest of Brazil and selected countries worldwide.

The other chapters of this important book address what may be called the "outputs" of science and technological research in São Paulo State today. Chapter 4 analyzes scientific production in terms of articles and papers published by journals at home and abroad. São Paulo and Brazil are again compared with the rest of the world, and emphasis is placed on national and international scientific collaboration, which globalization is increasingly making a priority. Chapter 5 deals with patenting both in Brazil and abroad.

Assessment of the impact of S&T activities on the production chain, among other dimensions, begins in this edition with Chapter 6, which focuses on the technology balance of payments. The chapter opens with a fundamental discussion of the TBP concept and its difficulties, proceeding with an analysis of trade in goods with embodied technology by São Paulo State and Brazil.

Chapter 7 analyzes technological innovation by business in São Paulo State based on the findings of a survey of innovation conducted nationwide by the government (IBGE's PINTEC). This matches the technology dimension included in FAPESP's remit by the new State Constitution.

Chapter 8 highlights the regional dimension of ST&I efforts in São Paulo, while Chapter 9 focuses on information and communications technology (ICT).

The impact of ST&I on agriculture and agribusiness is the theme of Chapter 10. Chapter 11 analyzes ST&I in health, one of the sectors most benefited by research funding from FAPESP in São Paulo State.

Finally, Chapter 12 presents an interesting survey of public perception of S&T in São Paulo State. To some extent this is the culmination of all the work done by FAPESP, since society is its essential audience, as intended by the drafters of the 1947 and 1989 constitutions, which guarantee the material conditions for it to function.

We hope the efforts of the researchers who have contributed to this comprehensive and impressively detailed publication are useful to the entire São Paulo community.