

## Finance from start to finish

### Rio de Janeiro

FINEP, the Agency for Financing Studies and Projects, is an unconventional mix of a conventional research foundation and a conventional development bank. In principle, this gives it a unique power to take a project from the basic research stage, when a government grant is required, through to the development stage when venture capital or low-interest credit becomes important. In practice, things do not work out quite so neatly: FINEP finances a heterogeneous brew of projects, all at different stages, ranging from university research on AIDS to an industrial company's attempt to develop the first fully Brazilian automobile.

FINEP is one of the few federal agencies to have avoided the move to Brasília, something which clearly pleases its staff. Its offices are in downtown Rio de Janeiro.

Support for basic research comes principally through FINEP's role as executor of the National Science and Technology Development Fund (FNDCT), worth \$107 million in 1987. The fund provides for infrastructure, new buildings and new equipment. Significant extra help comes through \$180 million of World Bank funds, most of it matched by Brazilian funds, in the Programme of Support for Scientific and Technological Development (PADCT). Grants are given to support projects, to upgrade and build new facilities and to support university graduate courses. Support for individual re-

searchers is left to the National Research Council, CNPq.

"Earthquakes and turmoil" is how 1989 was described at FINEP. Thanks to the savage cuts of the Summer plan and the temporary disappearance of the Ministry of Science and Technology, to which FINEP is answerable, the agency will be lucky to receive 60 per cent of its 1987 budget. The World Bank has also been frank in its criticism of the slow progress in giving out PADCT funds. Of the \$180 million loaned to Brazil in 1983, less than half had been disbursed by 1989. Import regulations and excess bureaucracy — little of it of FINEP's making — have been the major problems.

FINEP claims a good track record. When it was set up in 1967 to develop Brazil's engineering industry, there were very few companies, foreign or Brazilian. According to João Luiz Coutinho de Faria, president of FINEP, "twenty-two years later we have 200 companies; most are Brazilian with an annual turnover of \$1,450 million".

FINEP has 700 staff, more than 100 with doctoral or masters' degrees, and last year supported 1,840 projects split almost equally between scientific research and technological development.

Coutinho de Faria points out that demand for the technological component was more than \$1,000 million last year. He hopes to see FINEP's funds return to their 1987 level of \$300 million next year and climb quickly to the \$800 million mark. □

### CAPEX

## Supporting graduates by algorithm

### Brasília

POSTGRADUATE programmes throughout Brazil are coordinated by a Ministry of Education agency called CAPES; not surprisingly, few know the agency by its lengthy title of "Coordinating Agency for Advanced Training of High-Level Personnel". CAPES gives grants and fellowships to 14,000 students at Brazilian universities and to 2,000 students in North America and Europe.

Overall, CAPES provides backing for 700 graduate courses; two-thirds of all the courses in Brazil. It also runs a programme to help build up institutions so that they can offer new courses.

The graduate-training system grew rapidly in the 1970s during the expansion of the university system. At that time, many young and inadequately-trained staff obtained jobs. Today, the boom is over but there are still many unproductive faculty and graduate courses are of very uneven quality. CAPES makes sure it helps the good courses but is sometimes criticized for not being tough enough on the bad.

CAPEX' director, José Ubirajara Alves, says that graduate courses are now the "best-evaluated sector in the science and technology system". He is a rare type in Brasília, describing himself as just a "technician" who has come up with an "algorithm" to ensure that money goes to the courses that deserve it. In fact, Alves is a very well-respected mathematics professor with plenty of experience of starting graduate courses from nothing. When he joined the university at Fortaleza in his home state of Ceará in 1965 he was the only person on the staff with a doctorate (from the University of California, Berkeley). He established its first graduate course — the first at a university north of Brasília. Fortaleza now has twenty courses.

Alves' algorithm takes into account the standard of the course, the numbers and types of professors and students, and the area (some types of research are more expensive than others). When the calculation is complete the budget goes to the university to provide for a quota of students, selected by the university. □

## Fast forward for grants

### São Paulo

WHEN scientists complain that the National Research Council (CNPq) is too slow, or too bureaucratic, or too opaque, or too arbitrary, they often end by saying, "Why can't it be like FAPESP?" FAPESP is São Paulo state's own research foundation, receiving by law 0.5 per cent of state income each year to spend on scientific research.

FAPESP is fast: it normally makes decisions on grants within ten weeks of application, less than half the time required by CNPq (or by US NSF).

To ensure openness, applicants are given as much information about the progress of their grants as needed, a job which keeps a couple of secretaries busy full time. And once a grant is given, FAPESP will help to compensate for changes in exchange rate that push up the cost of imported materials. The foundation runs on 50 staff, against CNPq's 1,000.

Alberto Carvalho da Silva, FAPESP's director, is modest about the foundation's reputation, pointing out that CNPq has a budget twelve times as big as FAPESP's \$42 million, and has to deal with unexpected cuts and political uncertainties. But he is critical of CNPq's staff numbers, saying that there are so many employees that it has to create something for them to do. Carvalho da Silva has been a victim of the workings of bureaucracy himself; he was purged by the military from his university post in 1969.

FAPESP's operations are much the same as those of research councils everywhere. Support goes to scholarships (not more than 50 per cent of the total), research awards, a small number of large long-term projects (most recently, support for participation in BITNET), visiting professorships, publications, meetings and so on. One novel programme provides 500 scholarships a year to encourage students to move into research by providing support for a pre-graduation research project.

Expansion and change are on the way. The new state constitution increases FAPESP's budget to one per cent of state tax income and gives it new responsibility for the support of technological research. Until now, 90 per cent of the budget has gone to basic research at the universities. In the future there will be a new commitment to the private sector on training and pre-competitive research. "Thus far, we've been run by scientists", says Carvalho da Silva, "now we'll be looking for international advice. We will use our contacts with the United States and the United Kingdom to look at science parks and adapt their models to our realities". □