PUBLIC POLICY AND PRODUCTIVE
TRANSFORMATION SERIES
N° 5 / 2012

Business Development in Brazil.

FINEP, SUPPORT TO INNOVATION AND ENTREPRENEURSHIP

BANCO DE DESARROLLO
DE **AMÉRICA LATINA**

Business Development in Brazil.

FINEP, support to innovation and entrepreneurship

Public Policy and Productive Transformation Series
N° 5 / 2012
João Eduardo Furtado

BANCO DE DESARROLLO
DE **AMÉRICA LATINA**

Business Development in Brazil.
FINEP, support to innovation and entrepreneurship.
Public Policy and Productive Transformation Series

Legal deposit: if4320126582722
ISBN complete work: 978-980-6810-77-8
ISBN Volume: 978-980-6810-67-9

CAF Publisher
This series is coordinated by the Vice-Presidency of Development Strategies and Public Policy of CAF

Luis Enrique Berrizbeitia
Executive Vice-President
Michael Penfold
Director of Public Policy and Competitiveness

Translator
James Weiskopf

Public Policy and Productive Transformation consists of a series of documents aimed at disseminating successful experiences and cases in Latin America as a tool for producing knowledge for the implementation of better practices in the field of business development and productive transformation.

Digital publication in English: March 2014
Publishing Producer: Cyngular

The digital version of this publication can be found at:
www.publicaciones.caf.com

Index

Index of boxes, graphs, tables and figures

Foreword

Productive transformation has been one of the areas that CAF, as the development bank of Latin America, has fostered as a necessary condition for reaching a high and sustainable level of development in the region.

The experience and expertise generated in each project over the last few decades have made the Institution a Latin American point of reference in areas of competitiveness, corporate governance, local and business development, and productive inclusion.

The public policies necessary to drive productive transformation are based on the development of those capabilities aimed at the implementation of good practices and specific supports for improving business management and productivity. Thus, CAF makes its knowledge and expertise available and offers efficient support to a variety of sectors while, at the same time, it creates documentation and does research on success stories that are relevant to the region.

"Public Policy and Productive Transformation" consists of a series of policy documents aimed at disseminating those experiences and success stories in Latin America as an instrument for spreading the knowledge that CAF makes available to the countries in the region so that better practices with respect to business development and productive transformation can be implemented.

L. Enrique García
Executive President

Executive Summary

An innovation system necessarily has the characteristics of a complex and evolutionary system. These are also the characteristics of the Brazilian innovation system which is the heir to lay institutions and only much later on received an incentive from institutions devoted to reflecting on the formation of a true system. This study deals with that subject, following in a rather concise manner, the guiding thread of the establishment of the FINEP, in its role as the central component of the Brazilian innovation system, up to a recent stage when it has updated its tools for action, including those of direct support to companies through non-repayable resources.

Key Words: FINEP, Innovation System, Brazil, Enterprise, Business Development

Introduction

Brazil has one of the most highly developed enterprise ecosystems in Latin America, with public programs and tools for training, innovation, finance, support for exports, the promotion of investments and others which, as a whole, stimulate the expansion and broadening of the activities of the private sector and the growth of micro and small companies.

To analyze this vast ecosystem, we have decided to study one institution and have chosen the case of the FINEP (Financiadora de Estudos e Projetos or Funding Authority for Studies and Projects), an agency of the Ministry of Science and Technology which promotes the subjects of innovation, science and technology in Brazil. The FINEP represents a starting point by means of which one can understand, in evolutionary terms, the development of the public institutional framework for the support of the private sector. Jointly with the SEBRAE (Serviço Brasileiro de Apoio às Micro e Pequenas Empresas or the Brazilian Service of Support for Micro and Small Enterprises) and the Brazilian Development Bank (BNDES), the FINEP represents one of the main axes of services for the development of the private sector and, particularly, for the encouragement of innovation and the dynamic growth of SMEs (small and medium enterprises).

In a concise manner, the present case study goes over the evolution, programs and institutional nature of the FINEP. In historical terms, it describes the establishment of the FINEP, as a central component of the Brazilian innovation system, up to a recent stage when it has updated its tools for action, including those of direct support to companies with non-repayable resources.

The case of the FINEP highlights the way in which financing has been integrated with innovation in companies through seed capital and risk capital and venture capital funds and, in turn, the relation between the FINEP´s services and the country´s economic development plans. In that regard, the study describes the diverse programs and tools which the FINEP has designed in the course of the past decade, as well as its links with other business institutions like the SEBRAE, BNDES and regional and local governments, aimed at driving innovation and enterprise through the use of mechanisms of investment and technical support.

General panorama – the creation of the FINEP and the FNDCT

An innovation system necessarily has the characteristics of a complex and evolutionary system. These are also the characteristics of the Brazilian innovation system which is the heir to lay institutions, such as the research institutions which arose in the 19th century (the Oswaldo Cruz Foundation, the Butantan Institute, the Ouro Preto Mining School, the Agronomical Institute of Campinas), which may be regarded as the embryonic elements of a system that was being formed and which only at a much later stage, in the 20th century, benefited from the incentive of institutions devoted to reflecting on the formation of a true system.

One might say that the creation of the National Council of Scientific and Technological Development in 1951 was a key factor in this process. However, the FINEP (Funding Authority for Studies and Projects) is without doubt the most important institution in the field of technology. In fact, that institution has done more to promote scientific and technological development than the Institutions of Science and Technology (ICTs), but without ceasing to support them. In the course of the years, as the agenda of scientific and technological development was being updated and acquiring new touches, focused on the subject of innovation and strongly influenced by the dimensions of the market and competitiveness, the FINEP was becoming more and more relevant to that field and related policies.

The FINEP is a public company linked to the Ministry of Science and Technology (MCT, in its Portuguese initials), created in 1965 as a Fund for the Financing of Studies, Projects and Programs, for the purpose of providing resources to finance the drafting of projects and programs for economic development (Decree No. 55.820). That Fund acted through financial agents, which meant that its operations were slow and cumbersome. To solve that problem, a legal entity was created in 1967 – the public company known as the Funding Authority for Studies and Projects, Ltd. – which acts as an agency whose aim is to support projects of pre-investment (consultancy on projects). In 1971, under Decree 68.748, it became the Executive Secretary of the National Fund for Scientific and Technological Research (FNDCT), with the aim of administering the resources assigned to that National Fund, to be directly applied to projects of science and technology (MELO, 2009).

In 1972, Decree 70.553 ordered that scientific and technological activities were to be organized in the form of a National System of Scientific and Technological Development (SNDCT). The National Council of Scientific and Technological Development (CNPq) was designated as the

central body of this National System, but responsibilities for its economic-financial aspects were entrusted to the Ministry for Planning and General Coordination (MPCG). In 1973, the First Basic Plan for Scientific and Technological Development (1 PBDCT) was approved, for the period 1973-1974, and in 1976 the second Plan was approved, by which time the National Council of Scientific and Technological Development had been linked to the Planning Secretariat of the Presidency, the successor of the Ministry for Planning and General Coordination. In its chapter on scientific and technological policy, the first National Development Plan had already foreseen the implementation of the Basic Plan for Scientific and Technological Development.

That Plan was drafted in coordination with the National Council of Scientific and Technological Development. The purpose of the Basic Plan was to strengthen the science and technology (C+T) infrastructure through the following actions: (1) the operation of a financial system aimed at technological development, (2) the revitalization of the career of researcher, (3) the implementation of a system of scientific and technological information, (4) the integration of industry and the universities, and 5) the modernization of research institutions and restructuring of the National Council of Scientific and Technological Development. Responsibility for preparing the Basic Plan was entrusted to a team coordinated by the president of the FINEP, the adjunct secretary of the Ministry for Planning and Central Coordination, three technicians from the FINEP and five sectorial consultants. The decision to prepare the first Basic Plan was delayed for a year and it was necessary to formulate it before the term of the then government ended in 1974.

As a result, the first Basic Plan barely covered the years 1973/1974. Despite such difficulties, the first Basic Plan came up with a broad survey, based on a sound knowledge, of the world of science and technology in Brazil, and its activities, programs, projects and then current developments. That is, it was able to obtain a panoramic view of activities related to science and technology at a given moment. The drafting of the 2nd Basic Plan in 1976 was an opportunity to correct the methodological flaws in the first one. Nevertheless, this did not occur and the second Basic Plan essentially followed the same guidelines as the previous one (FERRARI, 2002).

In 1975, the statutes of the FINEP were modified, which culminated in the creation of an Executive Directory made up of a president, a vice-president and four directors. According to Ferrari (2002), the new statutes laid down the principle of a collegiate board of directors, allowing each director to administer a part of the company´s activities. Starting in 1975, the FINEP strengthened and broadened its characteristics as a bank for scientific and technological development, supporting and financing all stages of a project: (1) basic research, (2) applied research, (3) experimental development, (4) economic feasibility study, and (5) final engineering. The link between research and enterprise was reinforced by the introduction of consultancy, which was a middling link of the chain (MELO, 2009; FERRARI, 2002). This point marked the institutional shaping of the national innovation system, with the perception that to finance that activity implied support for a broader process than that of Science + Technology.

In 1976, an Outline of Justifications (no. 252), prepared by the Ministry of Planning of the Presidency, created the program for the Support for the Technological Development of National Companies (ADTEN), pointing out the need to differentiate tangible from intangible investment. The FINEP had the autonomous power to define the allocation of the resources of the National Fund for Scientific and Technological Research, and decided to annually transfer 20% of the fund´s resources to the ADTEN fund (MELO, 2009).

The ADTEN program had not been created to deal with market problems, but to solve the difficulties faced by Brazilian companies. As Melo (2009) notes, in the face of the great uncertainty which characterized undertaking innovation investments in peripheral countries, due to a private-sector financial system uninterested in long-term investments, companies preferred to obtain technology licenses instead of investing in the development of technology. In that way, the ADTEN aimed at the creation of financing conditions which would provide incentives for investments in innovation by Brazilian companies.

An important characteristic of the ADTEN program was the investment of resources in companies under a scheme where risks would be shared, a forerunner of what is now known as venture capital (MELO, 2009). In that way, in addition to finance, the program foresaw the need for FINEP to help to provide managerial and technical assistance to the projects, with the purpose of aiding businessmen in developing existing new enterprises.

In this context, it can be seen that the establishment of the National Fund for Scientific and Technological Research included forms of financing which might be utilized for Science+Technology and innovation, such as the non-repayable financing of scientific development, subsidized credit and the sharing of risk[1].

In 1976, in line with Decree No. 76.409, which stipulated that public companies and federal joint venture ones which acquire capital goods had to give a priority to assets meant for development and goods manufactured in Brazil, the FINEP organized Nuclei for Linkage with Industry (NAIs), with the aim of nationalizing and standardizing equipment and components to thus facilitate domestic production in the following sectors: metro and railway material, automation technology, steel and electrical energy. By the end of 1978, 113 such Centers were in operation.

Some of the most significant projects financed by the FINEP, which ranged from basic research to product development, were begun in 1976: (i) the Biofirm project, presented by the Biobrás company and (ii) the project for and development of the TUCANO airplane for military training. These two projects were decisive landmarks in the history of the Brazilian innovation system (Box 1).

1 FNDCT resources referred to financing aimed at technological and scientific development in Research Institutions and were non-refundable, FINEP's resources were aimed at financing innovation and investment in companies and was refundable.

BOX 1. CASES OF THE BIOFERM PROJECT AND THE TUCANO PROJECT

Biobrás and the Bioferm Project

In 1976, with investments from the BNDE, the Bioquímica do Brasil S/A was founded (Brazilian Biochemical Company – "Biobrás") in the enzymology laboratories of the Biochemistry Department of the Universidad Federal de Minas Gerais (Federal University of Minas Gerais - "UFMG"). The BNDE´s investments began in 1966 and culminated in the FUNTEC-66 and FUNTEC-69 projects. Biobrás spotted an opportunity for research and development in the field of the exploitation of cellulose wastes for the production of ethanol, with an emphasis on sugar cane bagasse, and submitted the Bioferm project to the FINEP. The latter not only offered resources for the development of the project, but also proposed becoming a partner in it. Between 1977 and 1978 Bioferm developed technology on a pilot scale for the transformation of bagasse into ethanol. However, an economic feasibility study, years later, showed that, despite the technological success of the project, it had failed in terms of economic yields, due to the high demand of energy and the high cost of the bagasse. Nevertheless, the experience Bioferm acquired enabled Biobrás to begin the production of recombinant proteins, like human insulin. This new project was also developed with the financial support of the FINEP. Eight years later, a U.S. patent for the discovery was granted (FERRARI, 2002).

EMBRAER and the Tucano project

Similarly, in the year 1976 EMBRAER, the Brazilian government aircraft manufacturer, sought the financial support of the FINEP to work on the project and development of the Tucano military training plane for the purpose of meeting the future needs of the Brazilian Air Force (FAB). The FAB thought that EMBRAER did not have enough experience to develop a military training plane with the required operational and flight standards. The FINEP signed a financing agreement which covered 10% of the project, which was sufficient to develop a prototype which would be presented to the FAB. As a result, the FAB made a technical evaluation of the prototype and agreed to finance the rest of the project (FERRARI, 2002).

Source: Management Report, FINEP (2010)

The funding from the resources of the FINEP and the FNDCT reached a peak between 1976 and 1979 by virtue of the investments under the Second National Development Plan (PND). With the creation of the Ministry of Science and Technology in 1985, the financing of the FNDCT and the FINEP increased, which nevertheless did not reach half of the resources reported for the period between 1976 and 1979, the period which marked the high point of investments in Science + Technology. In the late 1980´s, when the Cruzado Plan was in force (which involved price freezes and a fixed exchange rate), the National Development Fund (FND) was established to finance projects of long-tem investment. The resources of the FND derived from a mandatory savings account created from the taxes on a number of consumer goods. With that measure, the government tried to fit together its industrial development policy and its price stabilization measures.

The macro-economic instability resulting from the high indexes of inflation and external fragility which characterized the Brazilian economy from the end of Cruzado Plan to the start of the Real Plan in 1994 meant that stabilization policies were not compatible with a continued increase in the resources devoted to innovation. Between 1994 and 1998, the main objective of macro-economic policy was to prevent further price rises. Towards that end, the tools which economic policy adopted were an increase in interest rates and a strong revaluation of the currency, joined to an effort at trade liberalization. The privatization policy was an implicit industrial policy, meant to attract direct foreign investments. The effort to maintain high deficits in the trade balance and burn up reserves heightened the external fragility of the economy. In addition, the policy of high domestic interest rates also aggravated internal fragility as a consequence of the rise in internal debt.

Despite this situation, the FINEP managed to increase its resources through a loan granted by the IDB, which allowed it to detach the resources for financing companies from the resources of the National Fund which came from fiscal budget allocations. In addition to the IDB loan, the FINEP obtained resources from the Workers´ Protection Fund (FAT). The resources from the Protection Fund and from the FND came to supply the funds which the FINEP used to finance investments in companies.

The exchange crisis in 1998-1999 and the goal of reaching a primary surplus in the public accounts, set forth in the Fiscal Responsibility Law, made the macro-economic environment even more hostile to investments in innovation. Despite the macro-economic context, the creation of the World Trade Organization (WTO), which allowed innovation, regional development and environmental initiatives to be subsidized, created an opportunity to define a set of rules for the allocation of public resources for financing in the field of innovation. In an attempt to eliminate the tax restrictions, parafiscal contributions were created, modeled on the old Financial Transactions Tax, whose resources were destined for the area of health (Melo, 2009).

Thus it was that in 1997 the first fund for collecting resources meant for Science+Technology (C+T in Portuguese initials) arose in 1997, by assigning part of petroleum royalties for that purpose - the "CT-Petro"[2]. The resources collected by the sectorial funds, with the exception of the petroleum fund, could be applied to joint ventures between companies and non-profit teaching, research and extension institutions, so long as the resources were destined for those institutions. The legislation which created the sectorial funds defined the general guidelines for the operation of the funds: (1) to modernize and broaden the infrastructure of S+T, (2) promote a greater synergy among universities, research centers and the productive sector, (3) create new incentives for private investments, 4) encourage the creation of knowledge and innovations which provide social benefits, and (5) stimulate the linkage between science and technological development, with a reduction of regional inequalities and an interaction between universities and companies. With the exception of the Fund for the Technological Development of Telecommunications (FUNTTEL), administered by the Ministry of Communications, the resources

2 Sectorial funds are detailed in the next section.

for the other funds are from the FNDCT and administered by the FINEP, acting as the Executive Secretary, which in that manner strengthened its traditional mission.

Each managing committee of the sectorial funds is headed by a representative of the Ministry of Science and Technology and made up of representatives from ministries with similar responsibilities, regulatory agencies, academic and business sectors, agencies of the same Ministry, the FINEP and the National Council of Scientific and Technological Development. The managing committees define the guidelines, actions and investment plans of the funds. The operational policy for the resources of the FNDCT which come from the sectorial funds is no longer defined by the FINEP but by the managers of the sectorial funds. One problem in applying the resources from the sectorial funds which arises is that the political clout of the Ministry of Finance in outlining economic policies causes a strong contradiction between industrial policy and the macro-economic one for generating primary surpluses at any cost (Melo, 2009). This contradiction became evident with the significant restrictions on the resources of the FNDCT in the period between 1999 and 2006.

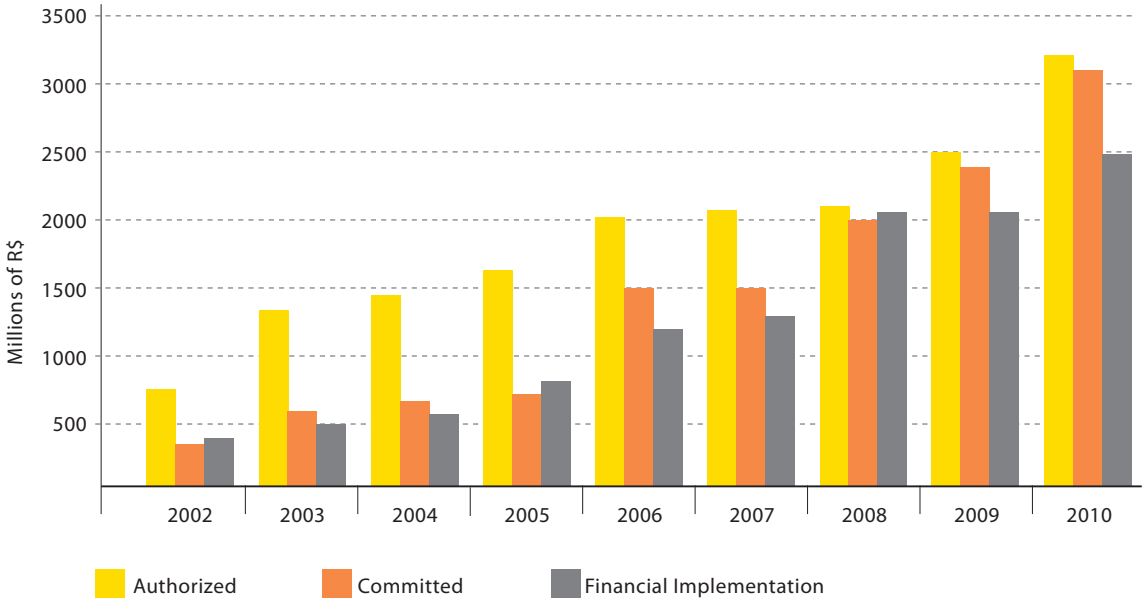
The restriction of resources took the form of a devolution to the National Treasury of the resources remaining in the account of the Fund at the end of each financial year. This process of restrictions was only eased at the end of the first term of president Luís Inácio Lula da Silva. Nevertheless, beginning in 2007, the restriction on resources had become less serious, insofar as the committed resources considerably increased and drew near to the total authorized resources, as is shown in graph 1.

At the beginning of 2002, the FINEP only had one program of repayable financing for the support of innovation in companies (ADTEN). In the course of the year 2000 the FINEP developed the "INOVAR"[3] (innovation) program, looking forward to activities for the training of innovative micro and small companies. INOVAR is made up of six integrated programs: the Brazil Risk Capital Forum, the INOVAR Incubators of Funds, the Brazil Innovation Forum, the Brazil Risk Capital Portal, the INOVAR Network for the Prospecting and Development of [new] Businesses, and the Development of Programs for Training and Teaching Risk Capital Agents. The creation of this fund marked a return to a concern for tools for risk capital which had been discarded since the mid-1980´s.

In 2002, with the change of government, the ADTEN program was reformulated, with a view towards strengthening the innovation component. The result of this reformulation was the PROINOVAÇÃO (Pro-Innovation) program, whose aim was to offer repayable credits for Research+Development, innovation and technological projects to Brazilian companies. Likewise, the tool for adjusting interest rates, created with resources from the Green-Yellow Fund, allowed for the reduction of overall payments of companies who sought financing for projects in sectors given a priority by the Industrial, Technological and Foreign Trade Policy (PITCE) and for companies who hired postgraduate researchers.

3 Further details on the INOVAR program are specified later on.

GRAPH 1. AUTHORIZED BUDGET COMPARED TO COMMITTED BUDGET BETWEEN 2002 AND 2010



Source: Management Report, FINEP (2010)

In the period between 1991 and 1998, the result of putting the scheme of repayable credits from the FINEP into practice was a high index of defaults, amounting to around 27% of the companies who took advantage of that kind of credit. In most of the projects financed in this period, the emphasis was on the management of quality, an aim which is only slightly related to technological development and even innovation, but, at a time when trade liberalization was paramount, gave the impression of being a means to strengthen the competitiveness of companies, vulnerable just then to foreign competition in the form of imported products.

From 2003 onwards, in that context, the FINEP intensified its efforts to recover credits and charges and renegotiate the debts of companies. In addition to these activities, the FINEP tried to establish a closer relation with companies forced into liquidation by coming to extra-judicial settlements. In that way, by 2006, the index of those in arrears, which is the sum total of delayed repayments and those subject to negotiation or legal proceedings, divided by the total liquidable assets, fell to 8.3%, and then fell in the following years, as seen in Table 1.

TABLE 1 – INDEX OF DEBT IN ARREARS BETWEEN 2006 AND 2009

Description	2006	2007	2008	2009
Arrears (a)	104.901	119.642	118.844	88.103
Total Liquidable amount (b)	1.269.624	1.474.914	1.941.778	2.450.922
Index of sum in arrears (a)/(b)	8,3%	8,1%	6,1%	3,6%

Source: Management Reports, FINEP - www.finep.gov.br

The year 2006 also saw the creation of a Risk Rating System for companies, which gave a numerical calculation of the risks and uncertainties of credit operations. The development of the Rating System allowed for the formulation of a new methodology for following up repayable credit operations, through a characterization of the portfolio in terms of risk, concentration per sector and the type of the companies (FINEP Report, 2003-2006).

The search for a solution to the problem of credits in arrears, which began with the change of government in 2003, was the first step the FINEP took to ensure that it would behave in a more active way to support enterprise based on innovation, by reformulating old programs, like the ADTEN, and creating new tools to support innovation. At the end of 2003, within this political panorama, the program for Support of Research in Companies (PAPPE)[4] was launched, based on direct non-repayable financing for the business sector. This program arose from a joint financial and managerial initiative between the FINEP and the Foundations for Aid to Research (FAPs). The PAPPE was set into motion on the basis of the joint use of public federal and state resources which thus sought a convergence between policies by strengthening national and regional innovation systems.

Through the PAPPE, the FINEP, though it continued to be a rather centralized federal institution, managed to operate in a more decentralized way, at the same time that the FAPs entered a field that was new for almost everyone, financial support for innovation. The exception to this surprising situation came precisely from the State of São Paulo´s Foundation for Aid to Research (FAPESP), which in 1997 started a program of financial support for technological innovation in companies, the Program for Technological Innovation in Companies (PIPE).

From 2004 onwards, with the creation of the Industrial, Technological and Foreign Trade Policy (PITCE), the FINEP became one of the main federal government agencies responsible for the implementation of the activities of that Policy. The FINEP´s actions were put into practice through public announcements and invitation focused on the action lines laid down by the PITCE:

4 Further details on the PAPPE program are specified in a following section.

a. Strengthening of the National Innovation System. In the period between 2004 and 2006, the FINEP invested R$47 millions to support the modernization of Scientific and Technological Institutions (ICTs), usually in the form of non-repayable financing.

b. Promoting innovation through programs of cooperation between the ICTs and companies for the development of products and processes. The main programs of technological support in this category are: COOPERA, APL, RBT and the Program of Support for Research in Companies (PAPPE). Likewise, the FINEP has also developed support activities for the structuring of metrology and quality control laboratories, as well as credit lines for innovation in companies.

c. Promoting sectors regarded as strategic under the PITCE, through the priority given to public announcements of the FINEP programs, or the launching of specific appeals in areas regarded as promising for the future under the PITCE, such as capital goods, software, micro-electronics, pharmaceuticals and medicaments, nano-technology, bio-technology and renewable energies.

d. Defining a minimal share of resources destined for micro and small-sized companies in public offerings.

In 2005, the FINEP signed a General Cooperation Agreement with SEBRAE, for the purpose of defining joint actions for the promotion of innovation in micro and small companies. At the end of 2005, the FINEP launched the "INOVAR Semente" (Innovate Seed) program, meant to support companies who are in a pre-operational stage. In accordance with current legislation, only the Green-Yellow Fund is authorized to provide resources to companies, even through risk capital. In that way, the INOVAR program also faced limitations, due to the restricted resources of that Fund.

The FINEP launched another program in 2005, the "Juro Zero" (Zero interest rate), created to make a special repayable credit line available to small, innovative companies, through local partnerships which promote decentralized operations. The objective of this program is to reduce financing costs and arrange that the borrowed capital be repaid in 100 installments and also reduce the bureaucratic procedures for soliciting the credits.

Acting as the Executive Secretary of the FDNDCT, the FINEP is remunerated for this task with an administration tax which does not even cover 40% of its total expenses. For that reason, and so that its credit operations are maintained, as well as its scheme for repayable financing, it must obtain resources from other funds like the FAT and the FND. In 2006 the former was authorized to contribute a capital of R$400 millions to the FINEP, that is, 100% more than the amount for 2005. In 2001, it received a capital contribution of R$320 millions from the latter at a time when the FINEP faced high arrears from its debtors.

FINEP´s schemes of financing

The FINEP counts on a wide variety of instruments, from non-repayable or subsidized-interest rate financing, to ordinary credit, or even a share-holding in companies with a high technological component, such as: Tectronic S/A – Empresa Brasileira de Tecnologia Eletrônica (the Brazilian Electronic Technology Company); Sulfab – Companhia Sulfo Química da Bahia (the Sulfur Chemical Company of Bahia); Bioferm – Pesquisa e Desenvolvimento S/A (Research and Development, Ltd); Digibrás – Empresa Digital Brasileira S/A (the Brazilian Digital Company Ltd.); Microlab S/A; Cemag – Ceará Máquinas Agrícolas S/A (Ceará Agricultural Machinery, Ltd.); and Propar – Promoções e Participações da Bahia S/A (Bahia Promotions and Holdings, Ltd.) The financing schemes for Science+Technology activies are detailed, as follows:

a. Non-repayable financing: undertaken with resources from the FNDCT, especially the Sectorial Funds, as well as resources from other ministries. It is granted to non-profit institutions and is meant for the realization of projects for scientific, technological or innovation research, as well as events whose aim is the exchange and dissemination of knowledge. Up to 2006, this modality was only applied to public or private universities and teaching and research institutions. In 2006, it began to to be applied to companies, through the awarding of economic subsidies (FINEP Report, 2003-2006).

b. Repayable financing: the granting of credits to finance companies´ projects. Under this scheme, the resources are collected from third parties, like the National Development Fund (FND), the Workers´ Protection Fund (FAT) and the FNDCT. This scheme also includes a mechanism for adjusting interest rates, with the aim of reducing the total payments which each company must make.

c. Investment (risk capital): investment in risk capital (enterprise capital) funds, of the venture capital and seed capital type, aimed at providing support to innovative companies with a high growth potential.

d. Credit operations for the financing of companies which develop Research+Development projects and activities which are undertaken with their own resources, the resources of third parties – mainly the Workers´ Protection Fund (FAT), the National Development Fund (FND) and the Telecommunications Fund (FUNTTEL) – and the FNDCT itself. These operations are generally carried out through the instrument for adjusting interest rates, with resources from the latter Fund. The evolution of the resources gathered by the FINEP between 2007 and 2007 is outlined in Table 2.

TABLE 2. FINEP: EVOLUTION OF THE GATHERING OF RESOURCES
AMOUNTS IN MILLIONS OF R$

Sources of Resources	2007	2008	2009
FAT	230	180	180
FND - National Development Fund	120	120	0
FNDCT- National Fund for Scientific and Technological Research	38	225	619,2
Total	**388**	**525**	**799,2**
Adjustments of interest rates	**78,8**	**89,6**	**97,8**

Source: Management Report, FINEP (2009)

Under the modality of Repayable Financing we find the credit operations, which involve loans directly granted by the FINEP, to companies of any type, for the development of innovation projects and plans. As a non-dependent public company, the self-sufficiency of the FINEP is guaranteed by the repayable credit operations it engages in with Brazilian companies, as well as its operations of risk capital investment. Table 3 shows the evolution of the number of direct operations undertaken by the FINEP, that is, the operations whose capital contributions are directly made by the FINEP and thus are not associated with private investment funds.

The preceding table includes credit operations and non-repayable operations, but excludes investment operations, since these are effected through the share of risk capital provided, indirectly, through partnerships with private investment funds.

From 2002 onwards, despite a reduction in the number of credit operations, the total capital of such operations was significant and went to finance projects with a high technological component. With regard to non-repayable financing, in addition to an increased number of operations, the companies which were involved were devoted to fields which, in accordance with the later definition of the PITCE, are regarded as "areas of the future" and therefore, are a priority for stimulating the technological development of Brazil. Table 4 sets forth some of the main projects and the resources found in the credit and non-repayable operations in 2002.

TABLE 3. EVOLUTION OF DIRECT OPERATIONS OF THE FINEP; FROM 1994-2008

Year	Nº credit operations	Nº non-repayable operations*	Total
1994	109	557	666
1995	203	651	854
1996	204	866	1.07
1997	403	798	1.201
1998	434	358	792
1999	109	300	409
2000	34	382	416
2001	40	681	721
2002	54	621	675
2003	26	437	463
2004	17	1.38	1.401
2005	49	1.021	1.07
2006	67	1.211	1.278
2007	77	725	802
2008	64	609	673

Source: Management Report, FINEP (2008)

*Investment operations are not included

TABLE 4. CREDIT AND NON-REPAYABLE OPERATIONS IN 2002

Company	Repayable Projects	Amount*
Marcopolo	Marcopolo Program for Technological Training	30,8
WEG	Research and Development of New Products and Processes	12,0
Brasilata	R+D of New Kind of Packaging for Foodstuffs	6,6
Ambev	Ambev Innovation Program 2002	80,9
Braspelco	Explora Valor Project	9,9
Company	**Non-repayable Projects Portfolio of Projects**	**Amount***
Biossintética	Portfolio of 3 projects in the pharma-chemical sector	5,5
Embraco	Portfolio of 4 projects in the metallurgical sector	4,5
CST	Portfolio of 7 projects in the steel sector	2,6
Politeno	Portfolio of 6 projects in the petrochemical sector	1,4
Embraer	Projects in the field of aviation	0,3
Oxiteno	Portfolio of 10 projects in the field of catalysts/chemistry	2,1

* Amounts in millions of R$

Source: Management Report, FINEP (2002)

In 2006, the FINEP created financing schemes for innovative activities:

a. Programs based on repayable financing and investment: PROINOVAÇÃO, INOVAR and JURO ZERO.

b. Programs aimed at cooperation between companies and Scientific and Technological Institutions, based on non-repayable financial support for those Institutions: COOPERA and its sub-programs, the Brazilian Technology Network and the "PPI-APL" (Program for the Support of Research and Innovation in Local Productive Systems).

c. Programs of non-repayable direct financial support to companies: PAPPE and Economic Subsidy Program

In 2005, the Granting of Economic Subsidies to companies was approved, based on the Law of Innovation[5].

In 2006, with the launching of three public invitations, the FINEP made R$510 millions of non-repayable resources available for the period between 2006 and 2008. The resources were allocated in the following way:

I. R$300 millions in financial resources aimed at projects of Brazilian companies of any size for the development of processes and products which give a priority to projects related to areas mentioned in the PITCE, such as: pharmaceuticals and medicaments (AIDS and hepatitis); semiconductors and software (Digital TV, distance learning, e-government, tracking systems); capital goods focused on the productive chain of bio-fuels and solid fuels, nano-technology, biomass and renewable energies and the further development of the aerospace chain.

II. R$150 millions in financial resources destined for micro and small companies, for the decentralized implementation of economic subsidies, through operations with local, state or regional partners.

III. R$60 millions in financial resources for companies to hire researchers with a Master´s or Doctorate who are devoted to innovation activities. 60% of these resources were meant for companies located in the zones covered by the Agency for the Development of the Amazon (ADA) and the Agency for the Development of the Northeast ADENE), and the remaining 40% for other companies.

5 The Law of Innovation and its effects on innovation-based entrepreneurship are discussed in section 5.

The creation of the sectorial funds for Science + Technology

At the end of the 1990´s the policy of sectorial funds was implemented. With the creation of those funds, the revenues of the National Fund for Scientific and Technological Research were strengthened and became permanent, allowing for the expansion of the FINEP´s actions and programs. The revenues of the sectorial funds come from the following sources: (a) part of the royalties on the production of petroleum and natural gas, (b) payments by companies from the profits from the exploitation of natural resources owned by the nation – mining and electrical energy, (c) 0.5% of the billing of companies which benefit from the Law on Informatics, and d) Payment of the tax known as the "Contribution of Intervention in the Economic Domain" (CIDE), charged on remittances to foreign countries for the payment of royalties and services of technical assistance, at a rate of 10%. The revenues from the funds are assigned to the FNDCT and administered by the FINEP (as the Executive Secretary of the Funds) and the CNPq.

A characteristic which distinguishes the sectorial funds from other sources of financing is shared management. The regulatory framework of the FNDCT establishes a managerial model based on Management Committees (CGs) for each sectorial fund. Each Committee is made up of representatives of the Ministry of Science and Technology, its agencies (the FINEP and the CNPq), the regulatory agencies responsible for directing the policy of the sector, the academic community and the productive sector. The Committees are in charge of defining the guidelines and priorities, selecting and approving the projects, and follow-up and evaluation. For the integrated management of the jobs done by all of these agents, a Coordinating Committee for the Sectorial Funds (CCF) was created. This Committee is made up of the presidents of each Management Committeee and the presidents of the FINEP and CNPq, and is presided over by the Executive Secretary of the Ministry of Science and Technology. In 2003, the model of shared management was dropped and the decisions formerly taken by the committees were assumed by the said Ministry.

There are currently 17 sectorial funds, 15 of which are directly linked to the FNDCT and two administered by other agencies of the Federal Government (the Fund for the Technological Development of Telecommunications – FUNTELL, and the Audiovisual Sectorial Fund -FSA). The FINEP acts as the financial agent for those funds in the allocation of resources. Of those 15 sectorial funds which were established to provide revenues related to the FNDCT, 13 allocate resources to specific sectors and are known as "Vertical Actions". Two of these funds which are linked to the FNDCT are known as "Tranversal Actions" funds, since they may support projects in any sector of the economy: (i) the Science+Technology Research Infrastructure Fund, whose purpose is to improve the infrastructure of Scientific and Technological Institutions, and (ii) the Green-Yellow Fund (FVA), oriented towards the support of interactions between universities and companies.

TABLE 5. NATIONAL FUND FOR SCIENTIFIC AND TECHNOLOGICAL RESEARCH (FNDCT) – REGULATORY FRAMEWORK

Fund/sector	Origin of resources
FNDCT	Law nº 11.540, of 12/11/2007, Decree nº 9.638, of 13/08/2009
CT*-PETRO – Petroleum and Natural Gas	Law nº 9.478, de 6/08/1997, Decree nº 2.705, of 03/08/1998
CT-ENERG - Energy	Law nº 9.991 of 24/07/2000, Decree nº 3.867, of 16/07/2001
CT-TRANSPORTE- Land Transport	Law nº 9.992, of 24/07/2000, Decree nº 4.324, of 06/08/2002
CT-HIDRO Water Resources	Law nº 9.993, of 24/07/2000, Decree nº 3.874, of 19/07/2001
CT-ESPACIAL Space Activities	Law nº 9.994, of 24/07/2000, Decree nº 3.915, of 12/09/2001
CT-MINERAL Mineral Resources	Law nº 9.993, of 24/07/2000, Decree nº 3.866, of 16/07/2001
FUNTTEL (1) Telecommunications	Law nº 10.052, of 28/11/2000, Decree nº 3.737, of 30/01/2001
FVA - Integration Universities and Companies (Green-Yellow)	Law nº 10.168, of 29/12/2000, Law nº 10.332, of 19/12/2001, Decree nº 4.195, of 11/04/2002, Resolution nº 173, of 23/04/2004
CT-AMAZÔNIA Amazon Region	Law nº 8.387, of 30/12/1991, Law nº 10.176, of 11/01/2001, Decree nº 4.401, of 01/10/2002, revoked by Decree nº 6.008, of 29/12/2006, Law nº 11.077, of 30/12/2004
CT-INFRA-Research Infrastructure	Law nº 10.197, of 14/02/2001, Decree nº 3.807, of 26/04/2001
CT-SAÚDE – Health	Law nº 10.332, of 19/12/2001, Decree nº 4.143, of 25/02/2002
CT-BIOTEC – Biotechnology	Law nº 10.332, of 19/12/2001, Decree nº 4154 of 07/03/2002

Continues

Continuation

CT-AERO – Aviation	Law nº 10.332, of 19/12/2001, Decree nº 4.179, of 02/04/2002
CT-AGRO – Agro-businesses	Law nº 10.332, of 19/12/2001, Decree nº 4.157, of 12/03/2002
CT-AQUAVIÁRIO Fluvial-maritime and Naval Construction	Law nº 10.893, of 13/07/2004, Decree nº 5.252 of 22/10/2004
CT-INFO – Information Technology	Law nº 11.077, of 30/12/2004, Decree nº 5.906, of 26/09/2006, Resolution MCT nº 97, of 27/02/2007, Interministerial Resolution MCT/MDIC/MF 148, of 19/03/2007, Resolution MCT 178, of 23/03/2007, Law nº 10.176, of 11/01/2001
FSA (2) – Audiovisual	Law nº 11.437, of 28/12/2006, Decree nº 6.299, of 12/12/2007

Note: CT=Science and Technology
(1) The resources of the FUNTELL come from the budget of the Ministry of Communications and not from the FNDCT, like the other funds
(2) - The Fund pertains to a specific category of the National Culture Fund (FNC).
Source: Management Report, FNDCT (2010). www.finep.gov.br

In the opinion of Morais (2008), the period when the first funds were created was marked by a growing scarcity of funds for Science+Technology, with a low participation of the private productive sector in the resources available for research in the public sector, and, consequently, a lack of interaction between the productive sector and the public infrastructure for supporting science and technology.

The process of defining the Sectorial Funds coincided with that of privatizing and deregulating infrastructure activities in Brazil. In its original conception, the resources deriving from the sale of state companies would have been directly applied to the research and development activities of the privatized sectors. According to Pacheco (2007), that initial idea became of secondary importance due to the urgent need to use such resources to reduce public debt and obtain a fiscal balance in the public accounts. Nevertheless, the successful technological initiatives of public infrastructure companies (electrical energy, gas, petroleum and telecommunications), such as deep-water exploration and the development of digital telephone exchanges, led to a broad discussion of the need to consolidate and enlarge Research and Development efforts in those fields.

In the opinion of Pacheco, who participated in the creation of the Sectorial Funds as parafiscal resources for financing Research and Development, those funds had the advantage of being a new revenue which were free from the need for a fiscal adjustment at the end of the 1990´s. The generalization of the sectorial funds in the course of 1999 was defined by the Pluriannual Plan (PPA) of the Ministry of Science and Technology (MCT) and inspired by the creation of the "CT-Petro" (Science+Technology Petroleum Tax) in 1997. The initial proposal foresaw the creation of 11 Funds in addition to the Petroleum Fund: Informatics, Telecommunications, Energy,

Water Resources, Transport of Minerals, Civil Aviation, Health, Aerospace, Software, Vehicular Inspecion. The latter never came about, since it was replaced by the Biotechnology Fund, while the Software Fund gave rise to the Green-Yellow Fund.

The latter Fund is the main source of resources to support innovation in micro and small companies through policy instruments established in the ambit of the FNDCT: (i) The Program for Incentives to University-Company interaction for the support of innovation and (ii) The Program of Innovation for Competitiveness. The guidelines of the Incentive Program consist of support for the creation and consolidation of incubators and technology parks, as well as support for the organization and consolidation of local productive clusters. In turn, the Innovation Program has the following aims: (a) to adjust the financial charges of the financing lines to the FINEP´s innovation programs, and (b) by means of the FINEP, obtain a minority stake in the capital of the technology-based micro and small companies and investment funds. These two policy instruments have become sources of resources for different activities undertaken by the FINEP and gave rise to the PROINOVAÇÃO, JURO ZERO and INOVAR Programs.

In 2001, during the 2nd National Conference on Science, Technology and Innovation, the Center for Management and Strategic Studies (CGEE) was created, in line with a proposal by the Ministry of Science and Technology to establish a new agency for the National System of Science+Technology+Research. The Center would be responsible for undertaking prospective studies in science and technology and defining strategic areas. Although this National System counted on the support of the CNPq, the FINEP and other institutions, the Ministry of Science and Technology saw a need to establish a closer relation with research institutions and universities in order to define strategies, critical areas and opportunities for Brazil. The Center then took charge of the work of the Technical Secretary of the Sectorial Funds. According to Pacheco (2009, p. 26):

"When the federal system was established, at the end of the 1970´s, the CNPq and the FINEP had an important technical corps which defined the strategies in a centralized way. However, that reality was overtaken by the enormous complexity which the Brazilian system of research acquired. The Center was thus charged with the task of mobilizing the public and private capacity found in the universities, research institutes and the private sector, with the aim of discussing strategies for the different areas".

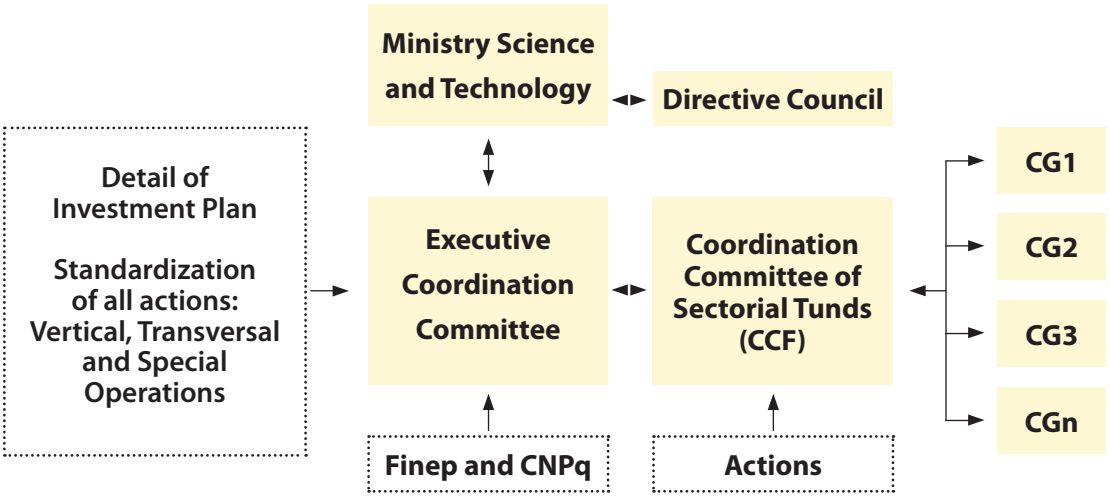
In 2003, with the change of government, the CGEE no longer acted as the Technical Secretary of the Funds. In that context, the Ministry of Science and Technology established a new model of integrated management for the Sectorial Funds, centralizing the decisions formerly taken in the committees. In 2004, with the government´s declared aim of meeting the objectives of the PITCE, a management system based on "Transversal Actions" was developed, which covered around 50% of the resources of the funds. Part of those resources were destined for projects that would be consistent with the PITCE, like support for cooperation between research institutes and companies, basic industrial technologies, support for the development of incubators and technology parks, as well as sectorial actions (nano-technology, software and pharmaceuticals). The rest of those resources were aimed at

the modernization of academic research, equipment for the new campuses of the Federal Universities and programs for social inclusion, fish farming, basic sanitation and electronic government, among others. The objective of these Transversal Actions was to integrate the investments of the different Funds and honor the priorities of the government and the PITCE, thus avoiding the duplication of initiatives. In the opinion of Pacheco (2009), such actions amounted, in fact, to measures to enlarge the role of the government in the decision-making process, weakened the capacity of the management committees to define how the resources would be allocated and thus caused the job of allocating those resources to become more dispersed.

In 2007, the Law of the FNDCT (11.540/07) created the Directive Council, headed by the Ministry of State for Science and Technology. In addition to defining policies and norms, the Directive Council is responsible for approving the norms for the use of the resources of the FNDCT (Management Report, FNDCT, 2001).

Figure 1 outlines the relations of the different agencies in the current managerial model.

FIGURE 1. DECISION-MAKING PROCESS OF THE FNDCT



Source: Management Report, FNDCT (2010). www.finep.gov.br
Note: CG = Management Committee

Although the Directive Council defines the policies, guidelines and norms for the use of the resources of the FNDCT, its activities must be in harmony with the objectives of the Ministry of Science and Technology, and especially those of the PITCE. The policies defined by the Directive Council are implemented through the agencies of the Ministry (the FINEP and the CNPq) and are in agreement with the guidelines and priorities defined by the Management Committees and integrated by the Coordinating Committee for the Sectorial Funds.

The law of innovation, the creation of the NITs and economic subsidies

The Law of Innovation was created under Decree No. 5.563 of 11/10/2005 and its purpose is to stimulate research into and the development of new processes and products in companies, based on the integration of the efforts of universities, research institutions and technology-based companies. It also authorizes the awarding of economic subsidies to companies for the realization of innovation projects, encourages companies to hire researchers and sets aside a minimum percentage to be applied to less privileged regions of the nation and micro and small companies.

The Law of Innovation allows for actions to be aimed at promoting collaboration between Scientific and Technological Institutions and the private sector. A report of the REPICT (Rio de Janeiro Network of Technology and Innovation, 2006) sums up the main mechanisms of the Law of Innovation:

I. The formation of strategic alliances and cooperative agreements between Scientific and Technological Institutions and companies.

II. The shared use of the country´s scientific and technological laboratories, with the aim of facilitating exchanges of knowledge. The Scientific and Technological Institutions may share their laboratories with the incubated micro and small companies, in activities geared to technological innovation, through remunerated contracts or agreements.

III. Support for technological services, such as: the certification of compliance, technological information (technology prospecting and competitive intelligence), courses of continuing education and technological consultancy.

IV. Authorizing public institutions to have a minority share-holding in the capital of companies with a specific objective, for the purposes of developing scientific and/or technological projects to obtain innovative products and processes.

V. The ending of public bid offers for the process of obtaining licenses or technology transfers, through the modification of Article 24, heading XXV of Law No. 8.666. The establishment of technology transfer contracts without public bid offers.

VI. Remuneration of researchers, who may benefit from three payment schemes: a fellowship for stimulating innovation, a share in payments for activities for the provision of services and a share in profits arising from the exploitation of the discovery protected by intellectual property rights.

VII. License for researchers in that which concerns the establishment of companies, allowing them to leave the Scientific or Technological Institutions to create their own company for a term of three years, renewable for a further three years, or to enter into a partnership association with another such Institution.

VIII. The Law of Innovation regulates the the role of the Foundation for Support to Research, by destining 5% of the total amount of financial resources to the execution of Research+ Development projects. The Aid Foundation may also grant fellowships for the encouragement of innovation.

IX. The Technological Innovation Nucleus (NIT) is made obligatory. The purpose of the NIT is to come up with policies and organize research activities, and it is also responsible for the results of the economic exploitation derived from the use of an intellectual property or the use of public resources or an infrastructure financed by public resources.

X. Incentive for independent inventors, offering them the possibility of requesting an evaluation of their inventions, through the confirmation of the deposit for a patent application. The Law also provides incentives for Scientific or Technological Institutions to offer services to the citizen.

XI. The differentiated treatment guaranteed to micro and small companies. Support for incubators and technology parks is one of the mechanisms of this differentiated treatment.

XII. The granting of tax incentives for innovation restores and perfects a set of already existing incentives. In addition, a direct economic grant to companies is established, with the aim of providing incentives for the development of innovative products and/or processes. The Law of Innovation establishes a public subidy of 50% of the expenses of companies for the salaries of researchers with Masters and Doctorates, thus encouraging companies to associate with small-sized companies as well as Scientific or Technological Institutions or independent researchers.

Section II of the Law of Innovation provides for "actions of technological entrepreneurship and the creation of an environment of innovation, including company incubators and technology parks". The Law of Innovation creates three schemes of support related to the financial resources for research, development and innovation: (a) economic subidies, (b) credits and (c) a stake in the ownership of the companies.

The law of innovation

The Law of Innovation made it obligatory to have a Nucleus of Technological Innovation (NIT) in all Scientific and Technological Institutions. According to a REPICT report (2006), the NIT is regarded as the official interlocutor for the Institutions with the corporate sector with regard to questions linked to intellectual property and innovation. Prior to the Law of Innovation, the researcher assumed this responsibility in most cases. The function of the Nucleus is to spread a culture of protecting the results of research and encourage researchers to participate in the innovation process through partnerships with companies, and thus transfer the results of research to society. It is widely accepted that well-qualified human resources are essential for realizing the activities proposed under the NITs, maintaining the policy of innovation in the Nucleus and, thus, in the Scientific and Technological Institution. Nevertheless, the reality is that these human resources are not institutionalized to work in the Nuclei and most times the functions they acquire are exercised within the Institutions.

The Law of Innovation provides for the development of contracts for the provision of services between the NITs and the companies, thus providing the possibility of a complementary salary for researchers. Likewise, the share of inventors in royalties may vary between 5% and 33%. According to the Innovation Bulletin of the UNICAMP (State University of Campinas, 2009), some of the actions promoted by the NITs in 2006, such as the granting of technology licenses, partnerships in research projects and the provision of technological services, generated total revenues of R$810 thousand for Brazilian universities and institutes as a whole. In 2008, with the expansion of the Nuclei, which rose from 19 in 2006 to 75 in 2008, the revenues rose to R$13,1 millions. A number of Innovation Agencies were created in Brazilian universities, among them the Unicamp, UFSCar, USP, UFRJ and UFF.

To promote innovation policies and activities related to the intellectual property and technology transfer of the Institutions, the National Forum of Innovation and Technology Transfer Managers (FORTEC) was created in May, 2006. This Forum is an organization which represents the persons responsible for such matters in universities, research institutes, institutions which manage innovation and individuals in those fields, and is concerned with the management of innovation policies for the activities undertaken in the ambit of the NITs. The FORTEC arose from a joint innovation among knowledge-producing institutions throughout the country. The Statute of the FORTEC sets forth the following main objectives:

a. To spread the culture of innovation, intellectual property and technology transfer.

b. To strengthen and disseminate the role of universities and research institutions in activities of cooperation with the public and private sectors.

c. To help in the creation, institutionalization and consolidation of the NITs.

d. To help in the professional training of the human resources who play a role in the Nuclei. Mapear y divulgar las actividades e indicadores de los NIT.

e. To map out and disseminate the activities and indicators of the Nuclei.

f. To establish, promote and disseminate the best practices of the Nuclei.

g. To support the Nuclei in their dealings with public agencies and other organizations of the civil society.

h. To support events which are of interest to their leaders.

i. To promote linkage and exchange among their members.

j. To promote cooperation with Brazilian and foreign institutions.

k. To contribute to the proposal of public policies related to technological innovation, entrepreneurship, intellectual property and technology transfer (www.fortec-br.org).

The Executive Directory of the Forum is made up of three members: (i) the President, (ii) the Vice-President and (iii) the Administrative Director. To facilitate the running of its activities, the FORTEC has regional coordinators, made up of a coordinator, a vice-coordinator and a deputy. The function of regional coordination is to implement actions of regional interest, direct the studies and technical discussions of the region and keep in contact with the managers of the Nuclei in their region to secure a constant updating and exchange of information. In addition to the regional coordinators, the FORTEC counts on the support of Thematic Commissions, with the aim of undertaking studies and analyses of specific themes, defined by the National Directorate or the Executive Directorate. The Thematic Commissions are of a temporary nature and may call on external collaborators.

Among the Innovation Agencies, the INOVA Unicamp stands out, created in July, 2003 for the purpose of establishing a network of relations between universities and society. The INOVA is responsible for the management of intellectual property created in the ambit of the Unicamp: the protection of trademarks, products, processes and licensing contracts. The INOVA also helps researchers with the granting of licenses for innovations, the drafting of patent applications and patent fees, the registration of software and other forms of intellectual property, as well as the identification of products and processes which may be patented and whose licenses may be granted, all with the aim of strengthening the culture for the protection of technology and simplifying the procedures for the commercialization and registration of intellectual property.

Another important aspect of the INOVA Unicamp is support for the creation of budding innovative companies on the basis of technologies developed in the University, seeking opportunities and

new investors for those companies. In addition to those activities, the Agency stimulates and supports the establishment of strategic alliances and the development of cooperation projects in which both the companies and the Unicamp participate, always provided that they concern activities oriented towards research and development and their purpose is to create innovative products and processes. That support covers actions for technological entrepreneurship and the creation of a suitable ambit for innovation, and includes company incubators and technology parks. Some examples of the initiatives arising directly from the INOVA Unicamp are: (i) Incamp – the Incubator of Technology-Based Companies of the Unicamp, (ii) InovaSoft – the Software Innovation Center, (iii) Inova-Semente – the preincubation of projects, and (iv) the Unicamp Pole of Research and Innovation. Since its creation, INOVA Unicamp has established 221 registered branches and 7,964 collaborators

The Incamp was created in 2001 and incorporated into the Innovation Agency of the Unicamp in 2003, with the aim of developing a structure that would help new technology-based companies to emerge on the basis of a joint effort of the Unicamp, SEBRAE-SP, the CNPq and the FINEP. At the current time there are ten incubated companies and 30 graduated companies (companies which have already gone through the incubation process).

The InovaSoft – Software Innovation Center – was created for the purpose of encouraging entrepreneurship and the development of information technology business ventures. The management of InovaSoft is coordinated by INOVA Unicamp, which promotes the formation of partnerships, selects projects for temporary housing at its installations and promotes the interaction between the University and associated bodies.

The purpose of the Unicamp Pole of Research and Innovation is to broaden the interaction between the University and the National and Regional Systems of Science, Technology and Innovation, through the undertaking of research projects in collaboration with public and private organizations devoted to scientific and technological research.

In 2008, the Unicamp and the Government of the State of São Paulo signed three agreements aimed at structuring the Unicamp Pole of Research and Innovation. The project was carried out at the campus of the Unicamp in Campinas, where laboratories were built that may serve for collaborative research projects between the University and companies, as well as an incubator with a capacity of 75 companies. The three agreements thus signed form part of the Program for the Support of Technology Parks accredited by the Paulista System of Technology Parks (SPTec). The first agreement, for an amount of R$5.218.220,00 was devoted to the construction of the incubator building. The second, for an amount of R$416.090,61 was for the realization of the Pole´s Urbanistic and Executive Project. The third agreement, for an amount of R$643.705,00, was devoted to the execution of the Science, Technology and Innovation project of the Pole and the region of Campinas. The Research Pole also plans to build a Biofuels Innovation Laboratory (LIB), with resources of R$1,5 millions from the infrastructure portfolios of the FINEP.

Economic subsidy scheme

The economic subsidy scheme provides for the non-recoverable financing of research, development and innovation activities in companies. 40% of the resources FNDCT destines for the subsidy must be assigned to micro and small companies. To ensure that the resources are devoted to such companies throughout Brazil, the Law of Innovation decrees that the FINEP should establish agreements and set up promotional agencies on the regional, state and local levels for the granting of resources, as well as define simplified procedures for the presentation of projects by companies.

Subsidies for private efforts are mainly used in policies which encourage selected sectors and are thus associated with specific objectives and sectors which promise significant linkages within the country´s productive structure, as well as sectors with a strong interaction between public and private research but which require a long time to show results. According to Pacheco (2007), the biggest criticisms of this kind of instrument have to do with the inherent risk of policies of the "picking winners" kind. In addition, this kind of policy implies high administrative costs and a need for the agencies which provide such support to be technically qualified.

There are two kinds of economic subsidies to companies: one is related the Law of Innovation and the other is related to the Law on Assets. The economic subsidy established by the Law of Innovation is devoted to covering the financing of such costs as personnel, raw materials, services provided by third parties and patents, as well as the upkeep and adaptation of real estate specifically used for innovative activities. In turn, the subsidy related to the Law on Assets is meant to cover part of the costs of the salaries of researchers with Masters or Doctorates who may be hired by the company. The total amount provided by the FINEP´s economic subsidy program wavers between R$500.000 and R$10.000.000 and is defined in the Program´s instrument for dissemination and selection. The FINEP´s share is limited to the expenses related to the financing of the contracted projects, while the beneficiary will be responsible for capital outlays, as a form of counterpart funding[6]. The Law of Innovation decrees that the granting of a subsidy must necessarily involve the presentation of some counterpart funding by the benefited company. The minimum percentages required for counterpart funding are determined in accordance with the size of the company and its invoicing. (Subsidy Manual – FINEP, 2010).

In 2006, the FINEP began its Economic Subsidy program, through three public announcements for the choosing of projects: (a) subsidies to companies for an amount of R$300 millions, (b) grants to micro and small companies, for an amount of R$150 millions, and (c) grants for companies to hire researchers, for an amount of $60 millions. The PAPPE Programme for Support of Research in Enterprise is especially relevant, insofar as it is meant to encourage innovation activities in small companies selected and accredited by regional, state or local institutions.

6 The restriction to providing non-repayable funds for permanent asset elements, established in a higher law, is gradually being suppressed.

In mid-2010, the FINEP made a public announcement for applications for Economic Grants for Innovation, for an amount of R$500 millions. The allocation of resources per area is shown in Table 6.

TABLE 6. AREAS OF ECONOMIC SUBSIDY AND AMOUNTS OF SUBSIDY: PUBLIC BIDDING OFFER 01/2010

Area	Allocation*
Information Technology and Comunications (TIC)	90
Biotechnology	90
Health	90
National Defense and Public Security	90
Energy	90
Social Development	50
Total	**500**

* Amounts in millions of R$
Source: Management Report, FNDCT (2010) - www.finep.gov.br

The PAPPE program and its relation with the Foundation for Support to Research (FAPS)

The PAPPE Programme for Support of Research in Companies was launched at the end of 2003, with the intention of supporting innovative activities among Brazilian enterpreneurs and widening the operational scope of the FINEP. The PAPPE was created to support projects for the research and development of products and processes on the part of small technology-based companies. Towards that end, the premise of the proposed operational model is the joint utilization of public federal and state resources, that is, federal resources are transferred to the states and their FAPs, which administer them in accordance with rules previously and jointly agreed on by the two bodies (federal and state).

According to the FINEP´s Management Report (2003-2006), the National Council of Secretaries of Science+Technology established rules for the financial participation of each State in terms of its level of development and average revenues: the more highly developed states are obliged to provide a higher counterpart funding and the ones with lower average revenues a smaller funding. With the aim of decentralizing the operations of economic subsidies to micro and small companies, the FINEP tried to establish new collaborative partnerships on a state level, which gave rise, in 2006, to the PAPPE Subvenção program and in 2010, the PAPPE Integração program. In 2006, the FINEP chose its collaborators, through a public announcement of the implementation of the PAPPE Subvenção program in several Brazilian States and facilitated resources of R$150 millions for the program.

According to Morais (2008), during the first stage of the program (April 2007) 85 proposals were received from research institutions seeking accreditation. Out of this total 17 institutions were chosen, with counterpart funds for an amount of R$95 millions, which, added to the R$150 millions provided by the program, came to a total of R$245 millions which were applied over three years. The institutions devoted to research are charged with the task of choosing the companies which apply for the economic subsidy and comply with the guidelines of the PITCE. Companies which invoice up to R$10,5 millions per year may benefit, with a financing which varies between R$200.000 and R$400.000. The PAPPE Subvenção program contracted 14 partners in the following states: Amazonas, Maranhão, Ceará, Pernambuco, Bahía, Río Grande del Norte, Distrito Federal, Río de Janeiro, Espírito Santo, Minas Gerais, Santa Catarina, Río Grande del Sur, Paraná and São Paulo. Of those states, only São Paulo failed to present a project. The States of Maranhão and Paraná published bidding offers but did not contract any companies. The results of the PAPPE Subvenção program in each State are shown in Table 7.

TABLE 7. PAPPE SUBSIDY PROGRAM (PAPPE SUBVENÇÃO)
ESTIMATED RESULTS UP TO 2010

UF	Nº of contracted proposals	Amount approved
AM	35	5.4
BA	38	13.9
CE	21	8.9
DF	18	7.5
ES	8	1.9
MG	69	19.5
PE	44	14.8
RJ	57	24.0
RN	34	3.4
RS	45	14.7
SC	35	9.0
Total	**404**	**123.2**

*Amounts in millions of R$
Source: Management Report, FNDCT (2010) - www.finep.gov.br

In March, 2010, the PAPPE Integração program was launched, with the aim of choosing partners for the decentralized operation of the program for subsidizing research in the micro and small companies of the North, Northeast and Central-West regions, for which 30% of the resources the FNDCT were earmarked. The main difference between this program and the PAPPE Subvenção one is that it offers the state partners the possibility of operating at between R$1 million and R$2 millions without the need for counterpart funding. For state collaborators who apply for resources of more than R$2 million, a counterpart funding is defined in accordance with the GDP of each State. In addition to undertaking the financial transference of resources, the FINEP also guides and trains the managers of the PAPPE Subvenção in each State.

According to the Management Report of the FNDCT (2010), the 18 institutions which registered as institutions for the transfer of PAPPE Subvenção funds were chosen and contracted in 2010, which amounts to a total of R$88 millions in non-repayable resources and R$34 millions leveraged as counterpart financing from the chosen institutions in order to support around 500 enterprise ventures over a period of three years. The states included in the program, by region, were; in the Central-West region: the Distrito Federal, Mato Grosso, Goiás and Mato Grosso del Sur; in the Northern region: Pará, Acre, Amazonas, Rondônia, Tocantins; and in the Northeast region: Pernambuco, Piauí, Ceará, Bahía, Paraíba, Sergipe, Río Grande del Norte, Maranhão and Alagoas. Table 6 lists the projects and the PAPPE´s budget allocations in 2010.

All of the resources were transferred to the institutions responsible for the public announcements, for the purpose of choosing the projects in the regions covered by the program, so long as they are aligned with the PITCE and the priorities of each state. The follow-up of each project is the responsibility of the collaborating institutions in each state, under the supervision of the FINEP. Table 8 shows some of the projects appoved by the FAPs and financed with resources from the PAPPE Integração.

TABLE 8. OUTLINE OF PAPPE INTEGRAÇÃO AND FAP PROJECTS BETWEEN 2010 AND 2011

Institution	Year	Title	Company	Amount (R$)
Pernambuco State Foundation for Aid to Science and Technology	2011	Containerview	AMBS - Tecnologia, Industria e Comércio Ltda.	399.974
	2011	Development of a kit Serological diagnosis of Ehrlichia canis, using recombinant antigens	Biogene Ind. e Com. Ltda	215.692
	2011	Diagnosis of Leifsonia XYLI SUBSP XYLI in sugar cane, based on the ELISA method (enzyme-linked immunosorbent assay)	Biogene Ind. e Com. Ltda	102.500
	2011	Eucalyptus biomass for calcination and technological improvement of the production of articles by the Gesso Aliança industrial firm.	Gesso Aliança del Araripe Ltda.	291.252
	2011	Robotic platform	Mix Tecnologia Ltda	270.000
	2011	Electrocardiogram monitoring through cell phones	QualiHouse Automação	380.000
	2011	Inclusion of Music: Educational Technology	SCAE Sistemas Construtivos de Informática Ltda.	319.280
	2011	Integration into Broadband access platforms	SiliconReef Consultoria Pesquisa e Proyetos em TIC, Ltda.	400.000
Bahia State Foundation for Aid to Research	2010	Gas Motor	Fluidotecnica Comercio e Serviços Ltda.	399.500
	2010	Gauge of thickness of water laminae	Danitec Engenharia e Consultoria Ltda.	397.800
	2010	Desktop Premium : Intelligent platform for the generation and production of content for Internet portals	Convergence Desenvolvimento de Sistemas Ltda.	343.440
	2010	Innovative system for extracting bee honey (SISMEL)	Fabiusi Indústria e Comércio Ltda	212.874
Technology Foundation of the State of Goiás	2010	Electonic labeling system /SEE	Maqhim Soluções Tecnológicas Ltda ME	74.989
	2011	High performance nanostructured vegetal inputs for cosmetics	Advance Pharma	399.900
	2011	Innovative therapeutic device for the topical treatment of Herpes labialis	Advance Pharma	400.000
	2011	Generation of animal biomaterial for sequencing of the human blood coagulation Factor IX in central-western Brazil	Bryos Ltda.	400.000

Continues

Continuation

Institution	Year	Title	Company	Amount (R$)
Technology Foundation of the State of Goiás	2011	Intelligent management network for the modern street seller.	Canyon	347.956
	2011	Individualized radiotherapy, according to the genetic profile of the patient.	Centraf	399.996
	2011	Ready-made clay panels	Ceramikalys	400.000
	2011	Integration of managerial assets to improve competitiveness strategies	Advance Pharma	399.931
	2011	Geo Smart –Intelligent Geographical Business System for the strategic management of geomarketing in retail trade	Condex Tecnología em Software	400.000
	2011	Study and definition of software testing processes for micro and small IT companies	Decisão Sistema	399.999
	2011	System for management and safeguarding of digital documents with digital certification and legal authority	Diginotas Documentos Eletrônicos	214.200
	2011	Support system for decision-making in the handling of risks in Clostridium Estertheticum in a refrigerated slaughterhouse for bovines.	Dorive Tecnologia	400.000
	2011	Software for Active Marketing	Ensis Informática	399.976
	2011	Development of biotechnological processes for the production of plant shoots and stimulation of growth of palmaceae of interest to the gardening, landscape and biofuel markets.	Flora Vivo	188.642
	2011	Project for real time Transit	Geinova	370.895
	2011	Global Hold, environment-friendly glue diffuser	Global Química	329.940
	2011	UMST - Mobile unit of technological services	IGMETRO	343.109
	2011	Milk quality panel - PQL	Implanta Solutions	399.999
	2011	Develpment of an innovative composition based on the mixture of recycled low-density polyethylene with polyethylene glue	Inapla	399.500

Continues

Continuation

Institution	Year	Title	Company	Amount (R$)
Technology Foundation of State of Goiás	2011	Easy mock-up	Instituto Moriá	368.634
	2011	Georeferenced Digital communication applied to freight haulage on roads	Integra Inovação em Sistemas de Negócios	399.992
	2011	Rules engine: greater efficiency in business processes, increased competitiveness of Brazil	Interagi Tecnologia	400.000
	2011	Development of snacks on the basis of the by-products of rice and beans	Miliopã Goiânia Produtos Alimentícios Ltda	398.150
	2011	Development of biodegadable modular trays made of coconut fiber	Mini Erva	399.654
	2011	Technological innovation in the production of seedlings of forestry essences inoculated and microrhyzomed in blocks of industrial wastes	Monzane Paisagismo Ltda.	109.046
	2011	System of collecting, gathering, transporting, storing and processing used kitchen oil	MPI Montagens e Projetos Industriais	399.900
	2011	Process for the sustainable production of calves	Nova Engenharia de Sistemas	400.000
	2011	System of building structural walls of the alveolar ridge, molded in situ	Oficina de Art Gesso	399.951
	2011	Safe system for the intergration of Brazilian electronic building into the supplies chain.	OOBJ	397.901
	2011	Environmental management system – Sustainability and Education	Orientec Negócios	234.000
	2011	Telephonic recorder with several Ethernet/Wifi lines	PCTEL	217.500
	2011	Expro - Automation and sustainability in the production of planed furniture in micro and small industrial companies.	Pontta Tencologia	399.652
	2011	Collection and processing of multi-spectral images for the creation of maps for precision agriculture, using unmanned aerial vehicles.	Primegeo	399.960
	2011	System for monitoring patients in hospital beds.	Promedico	390.110

Continues

Continuation

Institution	Year	Title	Company	Amount (R$)
Technology Foundation of State of Goiás	2011	Production of frog oil for use in the cosmetics industry	Ranajax	358.575
	2011	Application of artificial intelligence for the discovery and guidance of elite athletes. Creation of Brazilian protocols for the discovery and guidance of elite athletes.	Requisito Tecnologia	399.840
	2011	Electronic games adaptable to raising awareness in health and sports	Requisito Tecnologia	399.360
	2011	Individual tracking of medicaments	Simber Tecnologia	399.840
	2011	Electronic production payroll	Simber Tecnologia	400.000
	2011	Electric vehicle with an isolated aerial basket for maintaining high tension electricity cable networks	Tecmarques	399.969
	2011	Robotic aerial arm for pruning trees	Tecmarques	399.960
	2011	Adhara – restricted-use residential elevator	Titã	299.662
	2011	Sistema MBR - Membrane bioreactors	Top Automação	392.475
	2011	System of Tablets for documenting civil works and structures	Top Automação	210.000
	2011	Intelligent Sun Protector	Vitalife Beleza Natural	400.000
	2011	Nanostructured cosmetics which contain organic and biotechnological active ingredients drawn from Brazilian biodiversity.	Vitalife Beleza Natural	400.000

Training of risk capital agents

FINEP and SEBRAE

The Brazilian Service of Support for Micro and Small Enterprises (SEBRAE) exists as an institution since 1972. Nevertheless, in 1964 the creation of the Financing Program for Small and Medium Companies (Fipeme) by the Brazilian Development Bank (the BNDE, now the BNDES) marked the start of the activities of the institution which was to be known as the SEBRAE. In addition to creating the Fipeme, the BNDE also created the Fund for Scientific Technical Development (Funtec), which turned into the FINEP.

The Fipeme and the Funtec formed the Special Operations Department of the BNDE, which organized a system of managerial support for micro and small companies. This Department discovered that poor management of business ventures was directly related to the high indexes of arrears in the financing contracts signed by the BNDE. As a result, in 1967, the Superintendency of Development for the Northeast (SUDENE) was established, in the States of the region, the Nuclei of Industrial Assistance (NAI) with the aim of providing managerial consultancy to small-scale companies. Those NAI were the starting points of the work which the SEBRAE would later undertake.

In 1972, on the initiative of the BNDE and the Planning Ministry, the Brazilian Center for Managerial Assistance to Small Companies (CEBRAE) was created. The partners of the Advisory Council of the CEBRAE were the FINEP, the Association of Development Banks (ABDE) and the BNDE itself. Their work began with the setting up of associated entities in the States. By 1974, the CEBRAE had 230 collaborators.

In 1990, under Decree No. 99.570, the CEBRAE became the SEBRAE, and ended its links with the public sector, becoming a private, non-profit institution of public utility. The SEBRAE functions with funds transferred from Brazilian companies, proportional to their payrolls.

In 2005, the FINEP signed a General Cooperation Agreement with the SEBRAE, whose aim was to promote joint actions for the support of innovation in micro and small companies. The resources committed under the agreement totaled more than R$70 millions, devoted to the support of joint projects between micro and small companies and institutions of science and technology.

In 2011, the FINEP and the SEBRAE announced a program for the support of innovation, based on the reformulation of the Program of Support for Start-ups (PRIME), oriented towards small-scale enterprise ventures. The new program, called the Program for the Support of Innovation in Micro and Small Companies, counted on an investment of R$270 millions, and will be set into motion through operational agents accredited by the FINEP, such as the Foundations for Aid to Research, Incubators of Companies and Development Agencies. Of the total resources of the new program, the FINEP contributes R$220 millions and the SEBRAE R$50 millions. The companies which participate in the program will be required to provide counterpart funding.

FINEP and FAPESP

The Foundation for Support to Research of the State of São Paulo (FAPESP) was formally created in 1960, but its activities began in 1962. The constitutional authorization of a budget of its own for that foundation, based on the transference of 0.5% of the total fiscal revenues of the State of São Paulo -- which the 1988 Constitution later increased to 1% -- was the tool which enabled the FAPESP to transform itself into an autonomous body to support research.

In addition to the budget resources, the government of the State of SP destined an initial sum of R$2,7 millions for the formation of the assets of the FAPESP. Since the coming into force of the 1988 Constitution, these Treasury resources are transferred on a monthly basis. The revenues deriving from the patrimony of the FAPESP ensure stability in the Regular (budget) Lines for promotion and research, and facilitated the creation of the Special Programs.

The Regular Line covers the proposals for projects presented on the initiative of undergraduate and postgraduate students and researchers with a Ph.D. In 2008, the institution devoted around R$92 millions to financing Regular Fellowships in the country and abroad and nearly R$190 millions to Regular Aid to Research.

The aim of the Special Programs is to stimulate the development of research projects which promote the advancement of the frontier of knowledge and respond to the requirements of the Science and Technology System of the State of São Paulo and Brazil. Among them there stand out the Young Researchers, Public Teaching and Infrastructure Support programs, which received more than R$72 millions in 2008.

In addition to these modalities of support, the FAPESP develops Research programs for Technological Innovation, which support research projects which have the potential to develop new technologies and practical applications in the different fields of knowledge, aligned with the Scientific and Technology Policy of the State of São Paulo. Among the programs which have been financed there are: Biota, Public Policies, Partnership for Technological Innovation (PITE), Innovative Research in Small and Medium Companies (PIPE), and Information Technology in the Development of Advanced Internet (TIDA).

The FAPESP Program for Innovative Research in Small Companies (PIPE) was created in 1997 and is aimed at support for the development of innovative research projects undertaken by small companies headquartered in the State of São Paulo. To receive support from the PIPE, the chosen research projects must be carried out by researchers who are employed by small companies or work in association with them on the projects.

The Program for Support to Research in Companies (PAPPE), undertaken by the FINEP in association with the state Foundations for Aid to Research (FAP), basically have the same aims as the PIPE, that is, support for research and development in technology-based companies but ones with a national scope. However, in contrast with the FINEP, the FAPESP not only finances costs, but also permanent equipment.

In this way, the State of São Paulo, by virtue of the existence of the PIPE, FAPESP and FINET agreed on a format with differentiated characteristics for the implmentation of the PAPPE, which gave rise to the PAPPE-PIPE III Program. Participation in this Program is only open to companies whose projects are approved by the PIPE Program and whose report at the end of the year of Stage II of the PIPE Program have been guided or approved by the consultants of the FAPESP.

The Inovar program

In May, 2000, the FINEP created the INOVAR Program, aimed at the creation of an institutional scheme to stimulate the culture of investment of risk capital in nascent and emergent technology-based companies. The implementation of the project counted on the partnership of the BID, SEBRAE, Petros, Anprotec, Softex, CNPq and the Brazilian Confederation of Industry. The initial activities of the Program were comprised of the following : (i) The Brazil Opening Capital Forum and (ii) the INOVAR Incubator of Funds. Currently, INOVAR has been incorporated into the following sub-programs: INOVAR Fundos, INOVAR Semente, FINEP Venture Forum and FINEP Seed Forum.

The INOVAR Program was established for the purpose of meeting the following aims: (a) contribute to the growth and consolidation of technology-based companies in Brazil, through the establishment of an active capital market in the country, (b) increase private investment in technology-based companies, and (c) stimulate the creation of new technology-based companies in Brazil. According to Morais (2008), actions of this kind were already being implemented in the developed countries since the 1970´s, leading to the creation of technology parks, business incubators and seed capital funds.

The Brazil Opening Capital Forum consists of events staged in collaboration with the FINEP and BOVESPA with the aim of offering companies the opportunity to present growth strategies to investors. Of the 21 companies which have participated in those events, six entered the Stock Exchange: Company, Lupatech, CSU Card System, Datasul, Totvs and Bematech. In more than one case, these companies had been founded some time before and had benefited, directly or indirectly, from other resources from the innovation system before they reached the stage of attracting investors.

The INOVAR Incubator of Funds was created by the FINEP to stimulate the development of venture capital funds in Brasil. Up to 2006, around R$90 millions were committed, in seven funds: GP Tecnologia, Stratus VC, Stratus VC II, SPTec, Rio Bravo Investech II, Novarum and CRV Venture VI. These funds provided resources to 27 innovative companies. The Incubator was born through a partnership between the FINEP, the Multilateral Investment Fund (Fumin), the Inter-American Development Bank (BID), SEBRAE and Petros.

In 2010, in the sphere of the INOVAR Funds Program, three new funds were approved: a Venture Capital Fund, a Private Equity Fund and a Fund of Funds.

Between 2003-2006, through the National Program of Incubators and Technology Parks, 113 company incubator projects were approved. In the same period, the portfolio of the FINEP counted on 26 approved projects for parks.

Innovar incubator of funds– main characteristics

The process of choosing the funds began with a public invitation to venture capital funds interested in technology-based companies to present their capitalization proposals to the Incubator of Funds.

The FINEP makes a short-list of the funds which will be invited to present their proposals to the Evaluation Group of the Incubator, made up of representatives of each partner.

After that group analyzes the proposals and selects the funds given priority, the Incubator issues a "Letter of Investment Intention" which contains an evaluation of the strong and weak points of each fund. The goal of the partners in the Incubator is to jointly invest R$100 millions per year over three years, with the aim of capitalizing the chosen investment funds. Thus, through the Incubator of Funds, the venture capital resources of the FINEP will be invested in nascent and emerging technology-based companies.

Inovar Semente

The INOVAR Semente program was launched by the FINEP in 2005, with the objective of leveraging venture capital resources for micro and small technology-based companies during the pre-operational stage. This program currently has ten approved seed capital funds. According to Morais (2008), the funds must favor innovative companies, with annual revenues of up to R$ 2.4 millions, which are located in regions with a high technological dynamism and a maximum radius of action of 100 km. The favored companies will receive capital contributions which vary between R$500,000 and R$ 1.5 million, as well as managerial training to consolidate their business. With regard to the investment structure of the funds, the FINEP is responsible for a maximum of 40% of the assets of each fund, the private investors a minimum of 20% and the rest is accounted for by other investors.

In 2010, after the fifth public announcement of Inovar Semente, four funds were approved for visits and due diligence, two of which received approval to begin operations. Up to the end of 2010, 18 editions of the FINEP Venture Forum were held and 9 editions of the FINEP Seed Forum, in which a selection panel evaluated 114 companies, of which 46 went through a six-weeks training programming before presenting their proposals to investors.

The PRIME program

The Innovative Start-up Company Program (PRIME) resembles the Inovar Semente Program, because it is also focused on support to budding innovative companies. The difference between the two is that the PRIME is based on the decentralization of promotion activities, which operate through the direct and indirect transference of financial resources to state administration bodies. It thus follows the same guidelines as the PAPPE Integração and PAPPE Subvenção programs, which operate through state institutions, like the FAPs. In that way, the PRIME Program supports technology-based micro and small companies in their pre-operational stage, through a partnership with anchor company incubators (Management Report, FNDCT, 2010).

The PRIME was implemented in 2009 and up to the end of 2010, 17 anchor incubators associated and subject to agreements with the the FINEP contracted 1,380 projects. Some of the results of this program, up to the end of 2010, are described in Table 9.

TABLE 9. PRIME PROGRAM – RESULTS FOR THE 2009-2010 PERIOD

Institution	Headquarters of the incubator	Nº of companies contracted	Amount destined for the companies*
CIDE	AM	67	8
FVE	SP	90	10,8
FAURGS	RS	98	11,8
PUC-RJ	RJ	64	7,7
CIETEC	SP	106	12,7
BIO-RIO	RJ	65	7,8
GENE-BLUMENAU	SC	120	14,4
COPPETEC	RJ	38	4,6
BIOMINAS	MG	79	9,5
FUMSOFT	MG	117	14,0
CERTI	SC	118	14,2
PAQTC-PB	PB	98	11,8
FIPASE	SP	89	10,7
UBEA (PUC-RS)	RS	58	7,0
CISE	SE	32	3,8
CESAR	PE	75	9,0
FINATEL	MG	66	7,9
TOTAL		**1380**	**165,6**

Brazil Venture Capital Portal

This involves the development of a website devoted to the subject of venture capital, whose aim is to instruct and inform investors and thus stimulate this activity in Brazil. The system also serves as a virtual place where investors and companies can meet. Up to 2010, 67 of the proposals registered on the portal received some kind of financing.

FINEP venture forum

The FINEP organizes business rounds or round tables, that is, networking meetings between entrepreneurs and investors interested in venture capital. The Venture Forum consists of a permanent agenda of such business rounds, where entrepreneurs present their business plans to selected investors. Those investors are managers of venture capital funds, corporate investors, investment banks and pension funds.

On the basis of the information sent to the Venture Capital Portal by the business owners interested in such capital, the FINEP makes a short-list of the candidates, who will be evaluated in accordance with the innovative characteristics of their projects, the production process, the potential profitability of the business venture and their managerial capacity. The purpose of this stage is to find out which businesses have the strongest potential for presenting their business plans to investors. Up to the end of 2007, 42 technology-based companies received nearly R$ 160 millions in resources.

Training of Venture Capital Agents

This is a program for training professionals who work in the venture capital industry. The public objective of the first flank of this program are the Inovar Agents, that is, professionals whose ambition is to work in prospecting and evaluating budding and emerging technology-based companies. The second flank is focused on the managers of venture capital funds. In the latter case, the aim of the training program is to equip those professionals with a throrough understanding of business ventures in technology.

Evaluation

The role of the FINEP in supporting innovation-based entrepreneurship in Brazil was strengthened on the basis of initiatives like the creation of the Sectorial Funds, at the end of the 1990´s, and the development, beginning in 2000, of new financing and investment programs, like INOVAR, PROINOVAÇÃO and PAPPE, among others.

The development of the Industrial, Technological and Foreign Trade Policy (PITCE) and the creation of the Law of Innovation in 2005 were some of the fundamental advances which brought about more effective actions for the support of science and technology activities. They rested on a diagnosis of such problems as the lack of interaction between companies and Scientific and Technological Institutions (ICT), the absence of an institutional scheme to stimulate the investment of venture capital in the country and the over-centralized approach of institutions responsible for promoting innovation, like the FINEP; and they outlined some policy changes to mitigate those problems.

In that regard, the actions that most stood out were the decentralized operations undertaken through collaborative partnerships between the FINEP and the Foundations for Support to Research (FAPs), cooperation agreements between universities and companies in the ambit of the Nuclei for Technological Innovations (NITs) and the maintenance and deepening of the INOVAR Program.

Thanks to the NITs and Incubators of Companies associated with them, the actions for financing Science+Technology were enlarged, insofar as the companies acquired a managerial support for the development and maintenance of their business ventures.

Although the FINEP fulfills an important function within the national innovation system, some limitations prevent the institution from fully carrying out its role of supporting innovative enterprise, like the focus of its financing schemes on costs, which excludes the financing of permanent equipment.

With regard to an assessment and consequent modification of the FINEP´s programs, it is important to mention that the absence of a formal and systematic system of evaluation does not prevent the institution from implementing constant changes, either through internal evaluations of an informal nature or due to changes prompted by its upper management and the Ministry in charge.

Bibliography

CORDER, S. M. Financiamento e Incentivos ao Sistema de Ciência, Tecnologia e Inovação: quadro atual e perspectivas. Tesis de doctorado. IE-UNICAMP, Campinas, 2004.

FERRARI, A. F. O Fundo Nacional de Desenvolvimento Científico e Tecnológico – FNDCT e a Financiadora de Estudos e Projetos – FINEP. Revista Brasileira de Inovação. Volumen 1. Número 1. Enero/Junio, Río de Janeiro, 2002.

MELO, L. M. Financiamento à Inovação no Brasil: análise da aplicação dos recursos do fundo nacional de desenvolvimento científico e tecnológico (FNDCT) e da financiadora de estudos e projetos (FINEP) de 1967 a 2006. Revista Brasileira de Inovação. Volumen 8. Número 1. Enero/Junio. Río de Janeiro, 2009.

MORAIS, J. M. Uma Avaliação de Programas de Apoio Financeiro à Inovação Tecnológica com Base nos Fundos Setoriais e na Lei de Inovação. En: NEGRI, J. A. KOBOTA, L. C. (orgs.). *Políticas de Incentivo à Inovação Tecnológica no Brasil*. Brasilia, IPEA, 2008. Disponible en: http://www.ipea.gov.br/portal/images/stories/PDFs/livros/capitulo02_27.pdf>

PACHECO, C. A. A Criação dos Fundos Setoriais de Ciência e Tecnologia. Revista Brasileira de Inovação. Memória. Volumen 6. Número 1. Enero/Junio. Río de Janeiro, 2007.

PACHECO, C. A. Desafios da Inovação e Incentivos para Inovação: o que falta ao Brasil? Instituto de Estudos para o desenvolvimento Industrial. San Pablo, 2010. Disponible en: http://www.iedi.org.br/admin_ori/pdf/20100211_inovacao.pdf>

PACHECO, C. A.; CORDER, S. M. Mapeamento Institucional e de Medidas de Política com Impacto sobre a Inovação Produtiva e a Diversificação das Exportações. Documento del proyecto. Comisión Económica para América Latina y el Caribe (CEPAL), Santiago, 2009.

RIVAS, G. La Experiência de CORFO Apoyando el Desarrollo Empresarial: evolución, aprendizaje y lecciones.

Reports and articles in periodicals:

Inovação Unicamp – Boletim dedicado à Inovação tecnológica. Expansão de núcleos de universidades e institutos que são porta de entrada para empresa faz disparar receita vinda de parcerias. Publicado el 11 de mayo de 2009. Publicado en el sitio web: http://www.inovacao.unicamp.br/report/noticias/index.php?cod=522>

Reports which may be consulted at the FINEP´s website: www.finep.gov.br

Informe de Gestión de FINEP – 2003 a 2006

Informe de Gestión de FINEP – 2004

Informe de Gestión de FINEP – 2005

Informe de Gestión de FINEP – 2006

Informe de Gestión de FINEP – 2007

Informe de Gestión de FINEP – 2008

Informe de Gestión de FINEP – 2009

Informe de Gestión de FINEP – 2010

Informe de Gestión del FNDCT – 2009

Informe de Gestión del FNDCT – 2010

Informe del Proyecto Inovar – FINEP – 2001

REPICT. Estudo sobre a Aplicação da Lei de Inovação – Lei n. 10.973/2004. Rede Temática de Propriedade Intelectual, Cooperação, Negociação e Comercialização de Tecnologia – REPICT, Río de Janeiro, 2006.

FINEP. Manual de Subvenção. Consultado el 11 de febrero de 2012. Disponible en: http://www.finep.gov.br/arquivos/manuais/manualSubvencao2010.pdf

This article was printed in Spanish
in September 2012.

An innovation system necessarily has the characteristics of a complex and evolutionary system. These are also the characteristics of the Brazilian innovation system which is the heir to lay institutions and only much later on received an incentive from institutions devoted to reflecting on the formation of a true system. This study deals with that subject, following in a rather concise manner, the guiding thread of the establishment of the FINEP, in its role as the central component of the Brazilian innovation system, up to a recent stage when it has updated its tools for action, including those of direct support to companies through non-repayable resources.

Public Policy and Productive Transformation Series

"Public Policy and Productive Transformation" for Latin America consists of a series of policy documents whose purpose is to disseminate these experiences and successful cases in Latin America as a tool to spread knowledge for the implementation of better practices in the field of business development and productive transformation. The series is aimed at policy-makers, public sector agencies, business chambers, political leaders and concerned agents who participate in the process of designing and executing public policies linked to productive development in the countries of the region.

BANCO DE DESARROLLO
DE **AMÉRICA LATINA**