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## **Business Incubation in Brazil: Creating an Environment for Entrepreneurship**

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**Abstract:** Business incubators, by providing timely help and support to new ventures, hold the potential to create and develop entrepreneurial talent at the micro-level and foster an environment for entrepreneurship at the macro level. Today, with approximately 400 incubators and a well-developed incubation ecosystem, Brazil leads one of the most successful incubation movements in Latin America, through innovation and adaptation of incubator models to suit indigenous needs. Brazilian incubation is very much a bottom up process with the university acting as a key catalyst and facilitator. Even though incubation as a business creation tool has not gained widespread currency, multiple levels of government and a rainbow coalition of partners from various spheres appear to be involved in supporting incubators. The government has clearly made incubators a policy priority as witnessed by the various initiatives to support incubators and incubatees alike. The emphasis in Brazil appears to be more on the “softer” services such as networking relative to the provision of physical space and hard infrastructure. In this sense, incubators in Brazil are indeed transitioning to the newer approaches to incubation that relies less on the hardware of incubation and more on the software of value adding services.

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**Keywords:** Business incubators, Brazil.

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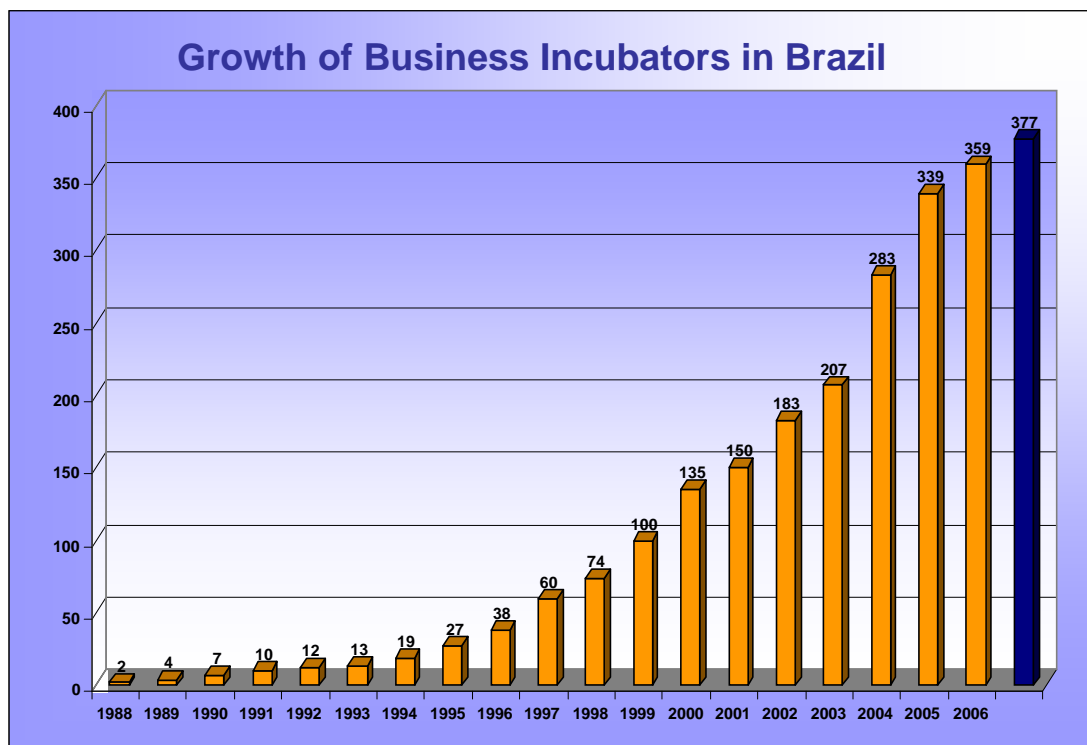
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Business incubation in Latin America is of relatively recent origin, since the concept of incubation did not gain currency until the late eighties and the early nineties. Brazil, Chile and Argentina are the leading incubation markets in Latin America. Even though Brazil ranks among the 10 most entrepreneurial countries in the world, the 2003 Global Entrepreneurship Monitor (GEM) report identified a high tax burden, bureaucracy; high unemployment rates, job or income shortage, an educational shortage mainly at the higher levels and difficult infrastructure access as the key barriers to business (GEM Report 2003). On a more positive note, the GEM report also identifies a declining trend in necessity based entrepreneurship and a steady rate of opportunity based entrepreneurship. Business incubators, by providing timely help and support to new ventures, hold the potential to create and develop entrepreneurial talent at the micro-level and foster an environment for entrepreneurship at the macro level. Today, with approximately 400 incubators and a well-developed incubation ecosystem, Brazil leads one of the most successful incubation movements in Latin America, through innovation and adaptation of incubator models to suit indigenous needs.

The key objectives of Brazilian incubators are economic development, employment generation and technology commercialization (Lalkaka and Shaffer 1999). Many leading universities in Brazil now offer entrepreneurial education as a means of educating entrepreneurial talent to support new venture creation; incubation offers the logical next step after entrepreneurial education by co-locating the resources and capabilities needed for the support of new ventures. The incubator is premised on the

assumption that new venture creation can be organized as an educational process, with formal and informal aspects (Etzkovitz 2002). New venture failure in a vast majority of cases is due to lack of financing, weak management skills and poor understanding of market needs (Lewis 2001).. Business incubators fill an important gap by providing fledgling firms help in navigating these pitfalls, while providing a safe environment for new venture survival and growth. As seen in Figure 1, incubators in Brazil have witnessed meteoric growth starting in with just two in 1988 and growing to nearly 400 in 2006 (ANPROTEC Panorama 2006 and ANPROTEC Interview, Brasilia).

Figure 1



Source: ANPROTEC Annual Report 2006

Brazil ranks 8<sup>th</sup> in the world economy with a population of 170 million people, a dynamic economy and a per capita income of US \$ 4,500 (SEBRAE web site 2007).

Brazil was chosen for this study because it is a fast growing market with the fourth ranking business incubation market in the world. Brazil has experienced extensive changes in its institutional and financial infrastructures, especially in terms of market development by opening up to global competition, and deregulating many of its markets thereby reducing the predominant role of the State. However, the retreat of the state could potentially lead to a variety of market failures in a context where financial intermediaries, such as venture capitalists, banks and stock markets are either weak, or not fully evolved. This increases the transaction costs of doing business in general, while creating unique hardships for new businesses that are most vulnerable to these market failures. Incubators are economic development tools and crucibles of entrepreneurship and innovation that could serve as engines of growth in a fast growing economic environment by fostering new business growth in a safe environment in the early stages.

The business incubation landscape in Brazil is vast, varied and complex with a plethora of incubation models, some of which have evolved in response to unique local needs, such as the need for poverty alleviation. Today, the Brazilian incubator model is a creative reinterpretation of imported models with a unique local flavor and potential for retransfer to the source countries (Etzkowitz, Mello and Almeida, 2005). Regional and national incubator networks are highly evolved and play a significant role in influencing government policy directed at the growth of business incubators. A multitude of government organizations at the federal, state and local levels are involved in assisting incubation efforts.

The paper is organized into three parts: the first section provides a literature review of key concepts from the business incubation literature as it pertains to this study. The second section provides a description of the data collection methods used in this study. The last section provides an overview of the incubation models in Brazil and identifies the key dimensions that emerged from a qualitative analysis of the interview data as well as the archival literature gathered from the incubators and situates it in literature pertinent to the study. Findings regarding the growth and impact of incubators in Brazil are discussed with emphasis on the roles of government, university and industry in incubator financing and financial services provided by incubators to their client firms.

## **Literature Review**

### **Business Incubators and Services**

At a macro level, incubators seek to promote job creation and economic development by linking talent, technology, capital, and know-how in an effective framework to foster the growth of new businesses (Smilor, Gibson, & Dietrich 1990). At the firm level, the incubator provides a value-adding support system for leveraging entrepreneurial agency, which typically includes a raft of tangible and intangible services to help the new venture get off the ground. Tangible services include shared, subsidized rental space, and office infrastructure, such as secretarial services and business/office equipment. Value added services in the form of in-house consulting and access to a network of support businesses specializing in marketing, business planning, legal, accounting, and other services are typically provided as intangible services.

Incubators provide three main sources of support for new ventures – an entrepreneurial and learning environment, ready access to mentors and investors, visibility in the marketplace (NBIA 2005). “A business incubator is an organization that accelerates and systematizes the process of creating successful enterprises by providing them with a comprehensive and integrated range of support, including: Incubator space, business support services, and clustering and networking opportunities” (Benchmarking of Business Incubators 2002). Business incubation is especially important in fostering young firms through their most vulnerable phase (Aernoudt, 2002; Kuratko & LaFollette, 1986) when early demise is attributed to a lack of funding in a majority of cases. By providing a single point of contact for help and support business incubators improve the growth prospects of new ventures.

Services provided by incubators in Brazil range from general assistance, shared facilities, financial and legal consulting, and information systems support (Scaramuzzi 2002). Services provided by incubators include a selection process, subsidized space, shared services, mentoring and training, networking with service providers as well as risk capital sources (Etzkowitz 2002). Business incubators in Brazil provide the usual raft of services, tangible and intangible with an emphasis on networking.

### **Business Incubator Funding Sources**

In the United States, incubatee firms have access to a wide array of financial resources from government, private and public financial institutions, angels, stock market, venture capitalists, and incubators either in the form of debt or equity. In the United States, government grants as well as private foundation / university / corporate support add to the financial infrastructure available for incubators. A majority of

incubators in the United States are run as non-profit entities; they operate under a business model that generates additional revenue from rental income and consulting services.

Incubators in Brazil are generally linked to universities and funded by plural government and non-government sources. Financial support for incubators comes from programs such as the PNI (National Incubation Support Program) which is designed to support new incubator creation and the expansion of existing ones. The PNI program is supported by a coalition of government, industry and incubator associations, such as the Brazilian Ministry of Science and Technology, the CNPq (National Council for Scientific and Technological Development) and FINEP (Financing of Projects and Studies), SEBRAE (Brazilian Support Services for micro and small enterprises) and ANPROTEC (National Association of Incubators and Science Parks) (Scaramuzzi 2002). A major feature of incubation in Brazil is the degree of private involvement – for instance, the Federation of Industries for the State of Sao Paulo (FIESP) operates a dozen incubators. The largest sponsors of incubators are not-for profit and for-profit organizations accounting for 40% of the total (Lalkaka and Shaffer 1999).

### **Business Incubation and Government / University / Industry Involvement**

Though incubator models vary widely around the world, most of them have some degree of government involvement. Many are affiliated to universities and receive a large part of their support from the parent university. Industry involvement could be limited to corporate incubators in some cases, or industry may serve as a partner along with government and / or the university in supporting incubators. In the United States, for example, incubators are funded by plural government and non-

governmental sources, although many of them may receive a majority of funding from the federal, state or local governments. Government grants as well as private foundation / university / corporate support add to the financial infrastructure available for incubators. A majority of incubators in the US are run as government or university – supported non-profit entities; they operate under a business model that generates additional revenue from rental income and consulting services.

Universities played a pivotal role in the creation of incubators in Brazil. Incubators emerged in Brazil with the end of the military regime in the mid 1980s in a grass roots movement that included individuals from several sectors of society, particularly from the university. Import substitution and technological self-sufficiency were the norm in the military government's Science & Technology policy in the context of a hierarchical, centrally planned system. During the military era, innovation happened by central government mandate which directed resources to selected industries related to national security. At this time, the private sector primarily sought technologies from foreign sources in lieu of home grown R&D (Coutinho and Ferraz 1995). By 1986, the National research Council, CNPq had created five technology parks and two incubators, one in Sao Paulo with the state government and one with the Federal University of Santa Catarina (Hoeser 2003). After the fall of the military regime in the mid 1980s, the nexus of innovation shifted from a top-down approach to a bottom-up grass roots approach with the incubator playing a key role in facilitating new venture creation at a local or regional level (Etzkowitz et al 2005).

The Brazilian incubator movement did not start as a top down process driven by government mandate as in China; it was very much a bottom-up product of multi polar

initiatives by key individuals in academia, industry and government. At a macro-level, interaction and synergies amongst university-industry-government helped catalyze the growth of incubators. The three stakeholders have worked synergistically to grow this movement amidst a challenging economic and political environment. Today, the incubator is viewed as a hybrid organization that facilitates interaction between the triple helix of university – industry – government spheres (Almeida 2005).

### **Business Incubators and Networking**

Apart from providing basic services and resources to the fledgling venture, the incubator plays a critical networking role (Smilor & Gill, 1986). Organized networking or preferential access to a network of companies was identified as a significant differentiating factor that distinguished incubators from those that merely provided office space and basic services (Hansen, et al, 2000).

In general, incubators provide a varying mix of administrative/physical, consulting/training and networking services. The service mix could vary depending on the incubator's sponsorship / government involvement and strategic focus. However, there is increasing recognition in the literature that the incubator is much more than a provider of space and administrative support services. The incubator is viewed as a network of individuals and organizations such as the incubator manager and support staff, incubatee firms and employees, local universities, industry contacts, and professional service providers, that is, accountants, lawyers, consultants, marketing specialists, venture capitalists and angel investors (Hackett and Dilts 2004). O'Neal (2005) argues the importance of networking over the provision of physical space as a key determinant of successful incubation. Some studies have pointed out that this shift

in focus to higher value added, more intangible services— such as access to competencies, learning, networking, and synergies—adds more value to the incubation process (Lichtenstein 1992) and has resulted in the emergence of a new incubation model (Grandi & Grimaldi, 2004). Allen & Weinberg (1988) provide empirical evidence to illustrate the shifting nature of the service mix toward higher, value-added services, such as networking.

National incubator associations, such as ANPROTEC (Brazilian Association of Incubators and Science Parks) and regional networks, such as RMI (Network of Incubators in Mina Gerais) in Brazil play a key role in linking different kinds of incubators in vast nationwide associative networks. ANPROTEC plays a disseminating and linking role by encouraging participation from universities and research institutes while persuading different entities to support incubators (Almeida 2005: Anprotec 2002).

### **Method:**

The paper is based on research that represents findings from structured, on-site interviews (N = 12) conducted with key stakeholders in four cities in Brazil—Brasilia, Rio de Janeiro, Belo Horizonte and Sao Paulo. Incubator managers, incubator association representatives, incubated entrepreneurs, policy makers and academics were interviewed for this study. An extensive literature review on Brazilian incubation as well as earlier incubator studies also underpins the study. In addition, the author's experience in visiting and studying incubators in China, India and United States informs the study and provides a basis for comparison.

The interview instrument for the semi-structured, in-depth interviews was developed after a thorough literature review and revised on the basis of pilot interviews conducted in the United States, as well as the author's experience gained from similar interviews in the United States and China. The pilot interviews served as a pre-test for instrument validation and changes were made to the interview instrument based on the findings and comments. The instrument was pre-tested and adapted to the Brazilian environment by scholars and consultants with extensive experience in Latin America. The instrument was first translated and back translated from English into Portuguese and vice versa by a Portuguese-speaking colleague and then proofread and modified by another native Portuguese speaker from an academic environment to ensure the accuracy of translation. The semi-structured interview format was selected, since this modality provided for focused and systematic information collection, while allowing the interviewee to provide relevant contextual information appropriate to each case.

For each incubator visited, the president, vice president, or director/manager in charge of corporate affairs was interviewed. They were selected as key informants, since they were in the best position to provide an overview of the incubator's strategic direction, as well as its history and background. For incubator associations, such as ANPROTEC or RMI, the manager/director of the organization was interviewed. Academics interviewed were professors involved with entrepreneurship from Brazil's leading universities. Entrepreneurs in incubators in Rio de Janeiro and Belo Horizonte were interviewed. At the federal level, a person from the Ministry of Science and Technology in Rio de Janeiro was interviewed. Most of the interviewees spoke fluent English; only in two cases when the interviewees did not feel comfortable

communicating in English, a translator was used. The interviewees were provided a copy of the instrument in Portuguese either prior to the interview by e-mail, or handed a copy of the interview instrument at the beginning of the interview in Portuguese as well as in English. All interviews were digitally recorded with the interviewee's permission and transcribed for analysis. On average each interview lasted for 1.5 hours.

## **Results**

Based on the analysis of the interview data and a literature review, five key environmental and incubator-level dimensions emerged:

1. Environment for entrepreneurship
2. Incubator financial support model
3. Incubator service mix, including financial services
4. Government / university /industry involvement
5. Role of Incubator networks

To set the context the major Brazilian incubation models are described, followed by analysis of key findings under each of the major dimensions identified from the interview data.

### **Incubation Models:**

Brazilian incubators exhibit the broadest scope in incubation models in comparison with other countries, such as China where incubator models tended to be more monolithic and technology-focused. The Brazilian incubation environment offers a plurality of approaches and configurations to incubation ranging from the traditional, design, cultural, social, and high-technology oriented incubators, with indigenous models, such as the "social" incubator that is unique to Brazil. The incubation

approaches are a blend of global and local models that have evolved in response to local needs, particularly the need to alleviate poverty and create jobs for the economically disadvantaged.

- *Technology Incubators:* Technology focused incubators were primarily associated with and supported by the universities, Federal / State governments and related industries, with students and professors as key founders of businesses. Two of the first incubators of this kind were created in 1986 in Sao Carlos and in Santa Catarina in the South as partnerships between the universities and Federal / State governments. Technology incubators are further specialized by area, such as biotechnology (Biominas) or software (FUMSOFT).
- *Traditional Incubators:* The traditional incubators were created in response to the social problems of unemployment with the goal of regional / local development. The private sector / industry associations along with various levels of government acted in concert to create new firms in industrial sectors traditional to that particular region, such as shoes, furniture, fashion or agricultural equipment. Financing of these incubators came largely from institutions such as FIESP (Federation of Industries of the State of Sao Paulo), SEBRAE (Brazilian Micro and Small Business Support Service) and the municipal governments (ANPROTEC Database). Universities were not active participants in the traditional incubators; instead most of the knowledge transfer came from the affiliated industries. The first traditional incubator was

established in 1991 by FIESP in conjunction with a private entity (Almeida 2005).

- *Cooperative/ Social Incubator*: Social problems related to unemployment in the Brazilian economy were exacerbated by the opening up of the economy to foreign competition after 1990. A series of initiatives by universities and concerned citizens attempted to combat poverty and related ills by transferring the incubator model to the social sphere in order to create jobs and growth. Funding for these incubators came from the university and state and municipal governments interested in economic development at the local and regional levels with the university serving as the primary source of knowledge and training to the cooperatives (Almeida 2005). Due to historically weak economic conditions, Brazil has a relatively high degree of “necessity” entrepreneurs compared to “opportunity” entrepreneurs. Social or cooperative incubators are designed to help these necessity entrepreneurs take their idea to market. While technological entrepreneurs take advantage of opportunity, the social entrepreneurs do it out of necessity. Social incubators try to create an entrepreneurial environment in the community, through workshops and individualized assistance in design, production and marketing (Interviews in Rio de Janeiro and Brasilia 2006).
- *Cultural Incubator*: This type of incubator is aimed at fostering entrepreneurship in the field of culture, i.e. music, arts, sculpture, photography, cinema among others (Scarramuzzi 2002). Cultural incubators are unique to Brazil: incubators at University of Brasilia and one of the Genesis incubators in

Rio de Janeiro represent strong examples of this genre of incubator. Support for cultural incubators come from affiliated universities as well as the State and federal governments that have an interest in sponsoring local art and culture. A cultural incubator manager pointed out that the entrepreneur in this area has a unique profile and is in business for love rather than money, hence needs very specialized assistance (Rio de Janeiro Interview 2006).

- *Private Incubator:* Most private incubators concentrated in the area of Information Technology appeared in 1999. Funded primarily by venture capitalists and by information technology professionals, the hallmark of these private incubators was the investment of capital in their promising client firms along with business development services provided by the founding partners. Universities to which they were affiliated as well as the entrepreneurs own knowledge of the market were the prime sources of knowledge for these incubators (Almeida 2005).
- *Corporate Incubators:* This type of incubator is housed in the context of a large company that aims to foster new ventures selectively in order to reap the benefits of innovation. The Brazilian oil giant, Petrobras has a good example of this type of incubator with close ties to the Federal University of Rio de Janeiro. Company incubators have witnessed remarkable growth in the last few years (Kantis 2005). The biotech incubator, Biominas in Belo Horizonte works closely with Biobras, a large bio tech firm that produces recombinant insulin from bovine pancreas (Belo Horizonte Interview 2006).

## **Environment for Entrepreneurship:**

The institutional environment in a country shapes the environment for incubation, and this holds true for almost any country in the world. The key institutions could encompass formal institutions that support entrepreneurial enterprise development as well as public policies aimed at the various stages of new enterprise creation, such as inception, start-up and early years (Urbano, Vaillant, and Veciana 2002; Lundstrom and Stevenson 2001). At the macro-level, new business creation in a market environment is facilitated by a stable macro environment, relatively low inflation and rates of interest that do not serve to deter new business growth and investment. Since the 2003 recession, Brazil has achieved economic stability, tamed inflation and resumed growth and investment with vigorous privatization process underway with a view to integrating into the global economy.

In a more open, globally integrated economy, small and micro businesses face opportunities as well as threats. The GEM (Global Entrepreneurship Monitor) Report on Brazil indicates that the main obstacles to business are capital scarcity and high cost, bureaucratic interference in the form of heavy taxes and regulatory burden, lack of coordinated and easily accessible information on entrepreneurial support systems / programs, and an educational system that does not foster an entrepreneurial spirit. Moreover, Brazilian culture tends to be risk averse encouraging people to prefer the security of a formal job with a large company over an entrepreneurial career fraught with risk and uncertain outcomes (GEM 2003, Sao Paulo Interview). Interviewees identified bureaucratic / regulatory barriers as the major deterrent to business creation along with a risk- averse culture. As one incubator manager in Rio puts it:

“Brazil has the 3<sup>rd</sup> or 4<sup>th</sup> highest tax rates in the world both for individual and corporations lower only than the Nordic countries, but without their welfare system. If you want to open a company in New York, it would take 2 days, but in Brazil just to open a company will take 6 months. Registration is a long and nightmarish process, since you have to deal with the bureaucracy and learn how to navigate it.”(Rio de Janeiro Interview 2006).

Others indicated that heavy bureaucracy and red tape are key reasons why many Brazilian entrepreneurs opt to remain in the informal economy. Incorporating a start up requires 15 procedures, three times more than in the United States. New companies must register with the appropriate government agency, apply for licenses and permits from several state and federal departments, such as environment and labor, register for taxes at multiple levels of government and provide evidence of membership in relevant trade organizations, all of which can easily take more than 5 months (National Dialogue on Entrepreneurship 2005). In a similar vein, a recent survey of Brazil in *The Economist* points out that, the average firm in Brazil takes 2600 hours to process its taxes and opening a business requires 17 procedures and 152 days, putting Brazil in the 115<sup>th</sup> place in the ease of doing business in a league of 175 countries (“A Special Report on Brazil”, 2007).

Capital scarcity and lack of awareness of the incubator as a support mechanism were cited by others as hindering new business creation. Lack of private investment and high dependence on government for survival along with the lack of well developed venture capital market for risk capital in the later stages of a new firm’s growth were cited as major barriers to growth. The world of incubation is not well-known in Brazil even with nearly 400 incubators in existence and the venture capital market is still in its infancy (Sao Paulo Interview).

An Inter American Development Bank report identifies the need for creating a culture of entrepreneurship through entrepreneurship education, removal of bureaucratic and regulatory hurdles, adequate financing programs to meet a growing business' needs as key to fostering a robust environment for new business creation in Brazil (Kantis 2005). Academics suggested that some of the universities had entrepreneurial courses and were in the process of offering more of these courses due to increasing interest and demand (Interviews in Rio de Janeiro, Belo Horizonte).

**Sources of Incubator Support / Financing:**

Incubators in Brazil are generally funded by a coalition of partners from the public and private sectors. A representative example is the CIETEC incubator created in 1998 and housed in the University of Sao Paulo, Sao Paulo. CIETEC, a technology based incubator center was created as a partnership between the MCT (Ministry of Science and Technology), SCTDE (Science, Technology and Economic Development Secretary of the State of Sao Paulo), USP (University of Sao Paulo), IPEN( Nuclear and Energy Research Institute), IPT (Institute of Technological Research) and SEBRAE (Brazilian Support Service for Micro and Small Business) along with support from CNPq (National Council for Scientific and Technological Development), FAPESP (Research Support Foundation of the State of Sao Paulo) and FINEP (Financing Agency for Projects and Studies) (Interview and archival data, August 2006).

FINEP (Federal Agency for Research and Projects), a division of the Ministry of Science and Technology has a program, the PNI to support Brazilian national incubation. It is linked to the Ministry of Science and Technology and is instrumental in

formulating policy for business incubators (ANPROTEC Interview, Brasilia, 2006). FINEP recently issued a call for proposals from larger “anchor” incubators to help smaller incubators. The proposal from the anchor incubator would have to include a plan for helping at least three smaller incubators (Interviews in Sao Paulo, Rio de Janeiro 2006). These calls are instrumental in selecting strong incubators with innovative ideas to work in partnership with smaller resource constrained incubators in the region while providing learning, networking and knowledge transfer opportunities

SEBRAE (Brazilian Support for Micro and Small Businesses) is a non-profit public-private entity that supports incubator and small business development by a utilizing a mix of funds from government payroll taxes and private sources. With 27 branches in Brazil, SEBRAE invested around \$50 million to stimulate creation, development and consolidation of incubators. SEBRAE provided infrastructure funding for many incubators in the first round and is now focused more on providing start up funding and training to new ventures (SEBRAE Interview, Brasilia 2006). The dynamic and context sensitive nature of SEBRAE funding is evident from the fact that this organization is constantly reinventing its funding focus as appropriate to the evolving nature of incubation. One incubator manager pointed out that at present SEBRAE’s focus is on the development of productive industry clusters. Incubators receive funds on a competitive basis for cluster development and are able to indirectly support new businesses in the cluster with these funds (Belo Horizonte, 2006). A university based, high-technology incubator manager in Belo Horizonte reported that SEBRAE provided the first round of funding in 1988, the university contributed basic infrastructure and FAPEMIG, a Minas Gerais State Agency for Research provided a

scholarship or grant to the incubator manager along with internship assistance which helped the incubator get started. A Rio de Janeiro incubator manager described the SEBRAE Challenge, an innovative competition designed to identify entrepreneurial talent among college students in several Latin American countries (Rio de Janeiro Interview 2006). The “challenge” is a business game simulation based competition that is popular and useful in stimulating interest in entrepreneurial education.

### **Services / Financial Services to Client Firms:**

The Brazilian incubator movement is defined by its provision of unique and specialized services to support new businesses by providing an innovative environment for their growth through guidance, consulting, in addition to physical space and operational infrastructure (CIETEC Report 2003/2004). Particular services provided include traditional services, i.e. physical services, access to university labs and infrastructure, and training courses sponsored by SEBRAE. Higher value services include technology breakfast networking focused on different areas, i.e. biotech focus. The breakfast meetings would include several actors involved in the biotech arena. Informal cluster networking amongst client firms is also a part of incubator’s services. CIETEC has access to media where the incubator manager talks about CIETEC projects on a radio program. (CIETEC, Sao Paulo Interview 2006).

Availability of capital, as well as the structure of financial markets is a key determinant of growth of fledgling ventures (Bhide, 2000). Lack of financing for new ventures will thwart the creation of dynamic local economies built around a robust SME sector. Access to financing is crucial factor for innovation to occur (Mytelka and Farinelli 2003) Gaps in financing, particularly for early stage ventures can be a major

deterrent to new business creation, often leading to a fledgling venture's early demise. However, the government does not invest money directly into small businesses in Brazil. (ANPROTEC Interview). The federal agency, FINEP does provide money for projects done in conjunction with a university or research institute. Because Brazilian law does not allow direct flow of government funds to a company, the money goes to the university to finance a project within the company (Belo Horizonte Interview).

A new venture's capital needs vary over its life cycle from inception through its growth stages. Most countries have gaps in the capital market for early stage funding when firms have little or no track record and / or collateral to seek funding from banks. FINEP addressed the need for financing at various stages of firm growth from inception with a 0% interest program to stimulate firm growth in early stages. It has a venture capital program called INOVAR, as well as a seed capital program that provides funding for early stage growth. BNDES (Bank for Social Development) which used to support only big companies now has a support program for micro-enterprises. Bank loans are not a feasible alternative for small companies in Brazil, since interest rates are very high and it is difficult for micro-enterprises to borrow money without collateral (ANPROTEC Interview, Brasilia 2006).

It is relatively rare for an incubator to invest its own money in one of its client firms, though some incubators are experimenting with this approach. However, one incubator manager discussed their intent of moving from a service model where the incubator offered services, infrastructure and management services in return for rental fee to a partnership model where the incubator takes a financial stake in the firm in lieu of rent and the payoff for the incubator comes in the form of profit sharing (Belo

Horizonte Interview) Another incubator manager in Rio de Janeiro pointed out that they currently do not invest in their incubatees, but are discussing the possibility of being a member of a seed money fund that would be funded by a coalition of public and private partners (Rio de Janeiro Interview 2006). Currently, most Brazilian incubators follow a more conservative model of linking client firms to potential investors.

A biotech focused incubator in Belo Horizonte has started an innovative program with the Inter American Bank (IAB) to finance new companies in Brazil. IAB gives the incubator grant money of \$200,000 - \$1 million to invest in promising new firms. The recipient has to match the money dollar for dollar. The program allows the incubator to invest money in the company and the return on investment is then reinvested in other companies. This particular incubator had financed 12 companies through the IAB Program. This incubator has also started a seed capital program in partnership with FINEP and FAPEMIG (State Agency for Science and Technology) of \$10 million reais to invest as seed capital in early stage biotech ventures, with the incubator taking a 25-30% stake in the venture in return for its investment (Belo Horizonte Interview 2006).

The INOVAR Project led by FINEP is a consortium of local and foreign VC firms for establishing an institutional structure for promoting the capacity and culture of venture capital. The goal is to set up a \$200 million fund for tech based ventures, a web site for information and virtual matchmaking, a Venture Forum and network to support high potential entrepreneurs (Lalkaka 2003). Several interviewees mentioned the INOVAR Project as a pilot for the creation of a venture capital market in Brazil. One manager noted that VCs had very high expectations of return given the high rates

of interest from banks and the uncertainty of success (Rio de Janeiro Interview 2006). In general, interviewees pointed out that there was a mix of state, federal, some private funds / venture capital and some seed money, but there clearly are gaps in the financing chain that need to be addressed.

### **Role of Government / University / Industry**

The two major objectives of the government are technology development and social development (ANROTEC Interview 2006). Universities in Brazil have a strong interest in providing benefits to society and industry has a vested interest in home grown technologies that would benefit them. All three stakeholders view incubators as a tool that has the potential to advance their objectives. This synchrony of objectives along with strong incubator associations has resulted in several innovative and timely initiatives from different levels of government to facilitate new business creation.

The Brazilian legislature has passed laws such as the FACIL (The Easy One), which simplifies laws to open and register a business and SIMPLES(The Simple One) a single tax rate for small business to reduce the tax burden on small businesses under the Statute of Micro and Small Enterprises (SEBRAE web site July 2007). Several interviewees mentioned the new Innovation Law passed in 2005, which legalizes the act of a researcher at a federal university setting up a company in his/her name. The Law clarifies the work relationship between the researcher and the federal government by allowing a researcher to leave the university for a period of time to work for a private company and then return to the university, if she/he desires. The most innovative element of the law is the possibility of using money from the government to support companies. Under the law FINEP would be authorized to provide federal grants

to companies for specific research. These research grants aimed at fostering innovation is probably the most innovative aspect of the law (Rio de Janeiro, Belo Horizonte, ANPROTEC, Sao Paulo Interviews).

The interaction between the incubators and elements of the triple helix, such as industry could be responsible for some of the innovative approaches developed by some incubators to incubating new firms. A technology incubator in Belo Horizonte described their approach as demand-oriented incubation, which is aimed at creating companies based on cluster needs. Qualified professionals with industry experience are used to conduct a market analysis along with expert panels that identify products based on the market analysis of industry need. As an example, the incubator conducted a study for RFID (Radio Frequency Identification) software. The same incubator is also working with the idea of accelerated incubation, where they showcase their best companies to venture capital groups to get funding for the more promising businesses thereby accelerating their path to market (Belo Horizonte Interview 2006).

Brazilian incubators receive support from a broad spectrum of federal agencies, such as FINEP, public-private entities like SEBRAE, strong national incubator associations, such as ANPROTEC as well as local, state and city governments. Corporations, such as Petrobras and Biobras support focused incubators related to their technology cluster. The interaction between government, universities and industry appears to be synergistic and relatively well-coordinated with incubator industry associations playing a boundary spanning role.

## **Incubators and Networking**

Brazil has a network of business incubators with incubator networks serving multiple roles at different levels. Founded in 1987 ANPROTEC's (Brazilian Association of Science Parks and Business Incubators), members include incubators from all categories, traditional, technology, social and private. ANPROTEC offers training courses, organizes meetings that facilitate knowledge exchange and lobbies for public support (Hoeser 2003). It encouraged incubators in each State to create regional networks, gained university support and participation for incubators and helped voice incubator concerns to policy makers at the national level ANPROTEC 2004). In addition, there are 17 regional incubator networks in Brazil. For instance, RMI (Rede Mineira de Incubadoras) or the Minas Gerais Incubator Network is the regional network for the State of Minas Gerais in Brazil. The RMI Incubators Network Information and Communication Technology Program is a not-for-profit organization created in 1998 in the state of Minas Gerais. Its mission is to contribute to regional and national economic and social development by supporting organizations that promote technology-based companies in the state such as incubators and technology parks. RMI comprises 15 technology incubators in Minas Gerais, all not-for-profit organizations connected to public or private institutions including universities. (InfoDev Report and RMI Interview 2006). The networks help incubators exchange experiences, share resources and speak with a unified voice to policy makers (ANPROTEC Interview 2006). Through a grant to RMI, *infoDev*, an initiative of the World Bank is supporting three incubator operations in Brazil: one in Belo Horizonte in Minas Gerais and two in Rio de Janeiro.

Venture capital and angel networks appear to be in their nascent stages in Brazil, again with strong initiatives from multiple actors to promote the concept in Brazil. Universities in Rio de Janeiro and Sao Paulo are active in promoting connections between promising ventures and angel groups. A case in point is the Gavea Angel Network in Rio de Janeiro, named after a wealthy neighborhood in Rio which adjoins a favela or slum. Gavea Angels are able to identify promising micro businesses from the social incubator to invest their time, resources and expertise (Rio de Janeiro interview 2006).

Incubators facilitate networking among their clients as well as clients of other incubators through formal as well as informal networks that allow for resource and knowledge transfers. One example is the technology breakfast meeting organized by one incubator on a periodic basis to facilitate interaction with other firms in a certain cluster (Sao Paulo Interview 2006). Many Brazilian incubators appear to be moving toward the new model of incubation (Grandi and Grimaldi 2004) that focuses on higher, value adding services (O'Neal 2005) as compared to the old "landlord" model of incubator as a provider of physical space and services.

## **Conclusions**

Brazilian incubation is very much a bottom up process with the university acting as a key catalyst and facilitator. Even though incubation as a business creation tool has not gained widespread currency, multiple levels of government and a rainbow coalition of partners from various spheres appear to be involved in supporting incubators. The government has clearly made incubators a policy priority as witnessed by the various initiatives to support incubators and incubatees alike. Different lines of

funding from government sources to meet new venture needs at various stages in its life cycle are an attempt to address some of the gaps in the financing chain faced by micro and small businesses in most countries (Mytelka and Farinelli 2003). The government-initiated INOVAR Program is an attempt to ignite the growth of the venture capital market in Brazil, which is growing, albeit slowly.

Incubator associations such as ANPROTEC are active and engaged with policy makers in eliciting support for incubators in general. Quasi public-private entities, such as SEBRAE play a role in funding incubators and micro-businesses. Monies from these organizations, for the most part are given to incubators through competitive grants and this helps select the best incubators with innovative ideas for subsequent funding thereby propagating the survival of the fittest. The call for competitive grants encourage innovative proposals as well as active networking with smaller incubators thereby incentivizing knowledge transfer, resource sharing and best practice transfer.

Brazilian incubators are smaller in size with an average client base of 10-15 incubatees compared to China's giant incubators that house a much larger number of incubatees on average. The emphasis in Brazil appears to be more on the "softer" services such as networking relative to the provision of physical space and hard infrastructure. In this sense, incubators in Brazil are indeed transitioning to the newer approaches to incubation that relies less on the hardware of incubation and more on the software of value adding services (Lalkaka, 2003, O'Neal 2005). Brazilian culture tends to be risk averse placing a premium on jobs with large well-established firms over starting an entrepreneurial venture. This may be changing slowly as universities

institute entrepreneurship education and the media propagates stories of successful high-profile entrepreneurs.

Innovative models, such as the cooperative or social model of incubation were born in Brazil in response to poverty alleviation and job creation in economically depressed areas. This model has vast potential applicability to other developing countries across the world. A closer study of this model, its specialized services, with particular emphasis on financial services for clients, its sources of sponsorship and funding would be of interest and value due to its transfer potential to other countries.

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