

BUSINESS INCUBATION

International Case Studies



© OECD, 1999.

© Software: 1987-1996, Acrobat is a trademark of ADOBE.

All rights reserved. OECD grants you the right to use one copy of this Program for your personal use only. Unauthorised reproduction, lending, hiring, transmission or distribution of any data or software is prohibited. You must treat the Program and associated materials and any elements thereof like any other copyrighted material.

All requests should be made to:

Head of Publications Service,
OECD Publications Service,
2, rue André-Pascal, 75775 Paris
Cedex 16, France.

BUSINESS INCUBATION

International Case Studies

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Pursuant to Article 1 of the Convention signed in Paris on 14th December 1960, and which came into force on 30th September 1961, the Organisation for Economic Co-operation and Development (OECD) shall promote policies designed:

- to achieve the highest sustainable economic growth and employment and a rising standard of living in Member countries, while maintaining financial stability, and thus to contribute to the development of the world economy;
- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
- to contribute to the expansion of world trade on a multilateral, non-discriminatory basis in accordance with international obligations.

The original Member countries of the OECD are Austria, Belgium, Canada, Denmark, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The following countries became Members subsequently through accession at the dates indicated hereafter: Japan (28th April 1964), Finland (28th January 1969), Australia (7th June 1971), New Zealand (29th May 1973), Mexico (18th May 1994), the Czech Republic (21st December 1995), Hungary (7th May 1996), Poland (22nd November 1996) and Korea (12th December 1996). The Commission of the European Communities takes part in the work of the OECD (Article 13 of the OECD Convention).

Publié en français sous le titre :

LES PÉPINIÈRES D'ENTREPRISES A TRAVERS LE MONDE
Études de cas

© OECD 1999

Permission to reproduce a portion of this work for non-commercial purposes or classroom use should be obtained through the Centre français d'exploitation du droit de copie (CFC), 20, rue des Grands-Augustins, 75006 Paris, France, Tel. (33-1) 44 07 47 70, Fax (33-1) 46 34 67 19, for every country except the United States. In the United States permission should be obtained through the Copyright Clearance Center, Customer Service, (508)750-8400, 222 Rosewood Drive, Danvers, MA 01923 USA, or CCC Online: <http://www.copyright.com/>. All other applications for permission to reproduce or translate all or part of this book should be made to OECD Publications, 2, rue André-Pascal, 75775 Paris Cedex 16, France.

Foreword

This publication reviews current experience in business incubation in Australia, Germany, Italy, the United Kingdom, and the United States. With the exception of the Italian study, these papers were first presented at a Conference in Rome, in December 1997, entitled *Local Development and Business Incubators: Experiences of Enterprise and Job Creation*. The Conference was organised jointly by the OECD's Local Economic and Employment Development (LEED) Programme, along with Italy's Institute for Industrial Reconstruction (IRI) and the Agency for Entrepreneurship Promotion and Development (SPI).

In many countries of the OECD business incubators have become an increasingly widespread instrument for local economic and employment development. For example, there are now some 50 incubators in Australia, and around 200 incubator-type institutions in France. In Germany approximately 200 incubators offer premises for some 5 000 companies. Over 100 incubator schemes of different sorts operate throughout the United Kingdom, and there are estimated to be at least 550 incubators in the United States.

Business incubators aim to assist entrepreneurs with enterprise start-ups. This is typically done by providing workspace, often on preferential and flexible terms, while concentrating spatially the supply of utilities, services, facilities and equipment. Incubation schemes are also being used to pursue such objectives as the commercialisation of university research, supplying infrastructure, upgrading the technological capabilities of local firms, and in some cases affording a safe haven for legitimate entrepreneurship where crime is a constraint on business. As this publication makes clear, there is no unique business incubation model.

A diverse range of institutions have an interest in business incubation: local and regional governments, universities, chambers of commerce, science parks, private real-estate developers and non-profit organisations have all participated in establishing and running incubation programmes. However, this is still a young industry in many countries and evaluation material is scarce. Indeed, this volume is one of the first to treat the international experience of business incubation. As well as providing a detailed overview of the state of this industry in five countries, this publication examines the key operational issues of concern to the sponsors and

managers of business incubators. Consideration is likewise given to the economic rationale for public investment in incubation schemes, as well as problems faced in the evaluation of incubation programmes.

This project has been carried forward by Alistair Nolan with the assistance of the other members of the LEED Secretariat.

This book is published on the responsibility of the Secretary-General of the OECD.

Table of Contents

Chapter 1. An Overview of Business Incubators	7
Introduction	7
Linkages with the local economy	8
The impact of business incubators	9
Evaluating business incubators	11
Considering the economic rationale for public investment in incubators	12
Technology incubators	14
Key operational issues	16
Concluding remarks	19
Notes	20
Bibliography	21
Biographical Information on the Authors of the Country Papers	23
Australia.....	23
Germany	23
United Kingdom and Italy.....	23
United States	23
Chapter 2. Business Incubation in Australia	25
Introduction	25
What business incubation means in Australia.....	25
Small business in Australia.....	26
Government support and business incubators	26
Types of incubator in Australia.....	27
A national look at incubators.....	28
A guide to best practice	39
Policy plays.....	40
Bibliography	45
Other Information Sources.....	47
Chapter 3. Business Incubation in Germany	49
National overview	49
The organisation of incubators.....	52
Characteristics of the tenant companies.....	60
Assessment of impact.....	61
Conclusions and outlook.....	68
Bibliography	71
Chapter 4. Business Incubators in Italy	73
Summary, evaluation and conclusions.....	73

What is SPI?	82
SPI's BICs and CISIs	85
The development of BICs and CISIs in Italy.....	89
A national network.....	107
Constraints and problems	109
Chapter 5. Business Incubation in the United Kingdom	115
Introduction.....	115
Business incubation in the United Kingdom	117
How the United Kingdom's SME policies developed	121
The experience of British Steel (Industry) Ltd.	127
BICs, technology transfer and property development	137
Bibliography.....	147
Chapter 6. Business Incubation in the United States	149
Introduction.....	149
Overview of the industry	151
Impact assessment.....	158
Best practices.....	160
Mistakes made, lessons learned	163
Strategic issues for the industry	165
Conclusion.....	168
Notes.....	168
Annex 1. Business Incubation Profiles	169
Annex 2. Principles and Practices of Successful Business Incubation	173
Bibliography.....	175

List of Tables

1. Incubator set up.....	41
2. Incubator management.....	42
3. Incubator services.....	43
4. Incubator performance.....	43
1. A Breakdown of Investment in Incubators by Region.....	56
2. Major Consultation Services Offered by Incubators in Germany.....	58

List of Figures

1. Opening dates of existing incubators	29
2. Regional location of incubators	30
3. Size breakdown of incubators (in terms of lettable space)	31
4. Incubator region and size relationship	32
5. Managers' time spent on incubator activities in different incubator types.....	34
1. The geographic distribution of incubators in Germany 1996/97.....	53
2. Holders of Equity in German Incubators (percentage of cases)	54
3. Facilities and Technical Services Provided by Incubators	57
4. Usage of Consulting Services Offered by Incubators vs. Services Supplied by External Providers.....	59
5. Size of German Incubators (in square metres)	59
6. R&D Spending in Incubator Resident Firms (% of revenue)	64

Chapter 1

An Overview of Business Incubators

Introduction

This publication reviews current experience in business incubation in Australia, Germany, Italy, the United Kingdom, and the United States. With the exception of the Italian study (abridged here and published originally as OECD 1997a) these papers were first presented at a Conference in Rome, in December 1997, entitled Local Development and Business Incubators: Experiences of Enterprise and Job Creation. The Conference was organised jointly by the OECD's Local Economic and Employment Development (LEED) Programme, along with Italy's Institute for Industrial Reconstruction (IRI) and the Agency for Entrepreneurship Promotion and Development (SPI). This volume is one of the first to treat the international experience of business incubation.

In many countries of the OECD business incubators have become an increasingly popular policy instrument for economic and employment development. There are now around 50 incubators in Australia, and some 200 incubator-type institutions in France. In Germany approximately 200 incubators offer premises for some 5 000 companies and 200 research institutions. Over 100 incubator schemes of different sorts operate throughout the United Kingdom, and there are estimated to be at least 550 incubators in the United States. The *European Business Innovation Network* has created a network of some 120 Business Innovation Centres (BICs) throughout the European Union, the majority of which also perform a business incubation function. However, this is still a young industry in many countries: in Australia 40 per cent of incubators are less than 3 years old, and the bulk of incubator programmes in the United States have been set up only since the mid-1980s.

Business incubators aim to assist entrepreneurs with enterprise start-ups and development. Incubators typically seek to provide workspace, often on preferential and flexible terms, for a specific industry or type of firm, while concentrating spatially the supply of utilities, services, facilities and equipment. In addition to workspace, the services provided by incubators can include various forms of business planning and managerial advice, office facilities, finance and accounting, access to business networks, and legal services. As the papers in this publication

make clear, there is no unique business incubator model. Rather, the variety of types of business incubator, their modes of operation and the objectives they pursue is considerable. For example, the public, private and non-profit sectors have all participated in establishing and running incubator schemes (although the involvement of the public and non-profit sectors predominates). Local and regional governments, universities, chambers of commerce, science parks and private real estate developers have all funded incubation programmes. Incubators may also differ as regards selection criteria for tenant firms, as well as the quality and type of accommodation, and the structure of management. Variation likewise exists in the range of services offered: some incubators buy-in critical services when required, so-called “virtual” incubators provide only non-property-based services, and technology incubators may offer R&D facilities as well as legal services for issues of intellectual property.

The underlying objectives of business incubation programmes are similarly diverse. These objectives have included: combating unemployment by means of enterprise creation and improved rates of enterprise survival; redressing local and regional economic decline; nurturing a climate conducive to entrepreneurship; expanding the supply of infrastructure; providing a nursery for the commercialisation of university research (especially through technology incubators); upgrading the technological capabilities of firms in a given location; fostering the development of specific industries and technologies; and even affording a safe haven for legitimate entrepreneurship in areas where crime is a constraint on business, such as in some parts of the Russian Federation. Business incubators in Germany have also been used to assist reunification, while some specialised incubators in the United States focus on businesses established by minority groups, youth and women. In large part, the objectives of an incubator are established by the particular sponsor(s) concerned (OECD, 1997).

Business incubators have often developed in response to industrial restructuring. In seeking to minimise the social and economic damage caused to local communities by plant closures or technological obsolescence, large companies have in some cases played a key role in the evolution of business incubation. For example, in the UK, British Steel (Industry) Ltd. [BS(I)] was established in 1975 as a subsidiary of British Steel, with the sole objective of helping to create jobs in steel areas. BS(I) is perhaps the first undertaking of its kind in Europe. Accordingly, the chapter on the United Kingdom describes the experience of BS(I) in detail.

Linkages with the local economy

Business incubators should seek to maximise synergies with the local business environment. In the US and elsewhere the operation of many incubators is overseen by an advisory board comprising representatives of the local business

community. Most incubators in the US also have an affiliation with the nearest Small Business Development Centre (established in every State by the federal government's Small Business Administration). Conversely, incubators sometimes introduce infrastructure previously lacking in a given community, and can improve operating revenues by extending services to nearby firms. In Australia, for instance, larger incubators frequently offer telephone answering services to local "home businesses". Incubators can also serve as a point of referral for local firms, signposting the range of business, training and financial support services often on offer for small firms and start-ups. Marketing and matchmaking services have likewise been offered by some incubators, as well as by tenant firms within incubators, so as to facilitate outsourcing and supplier linkages between tenant and non-tenant local enterprises.

The economic characteristics of the location in which an incubator is established will greatly affect its operation and usefulness. The areas chosen as incubator sites should ideally provide access to markets for goods and services (as small firms within an incubator stand to benefit from trade and networking with larger companies outside) as well as a degree of business expertise in the surrounding community, diverse financial resources (such as venture capital funds, business angels, banks, etc.), and local commitment to the incubator program. However, such ideal conditions will often be lacking, especially as incubators are often established in response to local economic distress. Consequently, prior to setting up a business incubator it may be necessary to improve the local climate for entrepreneurship so as to encourage demand for the services an incubator would provide.

In many countries local governments, industry representative bodies and local financial institutions play a role in the financing of business incubators, heightening the significance of the nexus with the local economy. Furthermore, a number of incubators in Italy have become focal points for alliances between leaders from politics, business and the trades unions. And in Australia incubators have developed through partnerships involving local, state and commonwealth governments.

The impact of business incubators

Systematic economic analysis of the impact of business incubators is scarce (one of the more extensive studies available is the 1997 *Impact of Incubator Investments* – commissioned by the US Department of Commerce Economic Development Administration (EDA) – which is cited from at length in the chapter on incubation in the United States).¹ Notwithstanding the paucity of rigorous impact assessment, a notable feature of the papers collected here is the apparent considerable variation in incubator performance from one country to another. For example, in the United States a majority of incubator tenants affirm that incubators have had a

significant positive impact on corporate performance, while the available assessments from Germany question the efficacy of incubator programmes there.

Evaluations of business and technology incubators have generally shown a positive impact in terms of improving firm survival. In Australia for example the failure rate within the first year is an estimated 8 per cent among incubator tenants, compared with a national average of around 32 per cent. Survival rates for incubated firms in the United States are around 80 per cent, considerably above the norm for new businesses (NBIA, 1995). In 1996, the government of the UK set up an Enterprise Panel to examine business incubation. The Panel concluded that business incubators do improve survival rates, as well as facilitating technology transfer and innovation and generating jobs and local economic development. Evidence from France likewise indicates significantly higher survival rates among incubator tenants.

As regards employment, evidence from the US shows significant employment growth in incubator-resident firms. The Impact of Business Incubators study referred to above found that between 1990 and 1996 the average number of employees in the firms considered rose from 4.5 to 13. At the same time, employment data of this sort raise important issues of scale owing to the fact that the number of firms incubated may sometimes be too small to make significant inroads into the problems stemming from major plant closures. SPI – Italy's premier agency promoting business incubation – hopes to create around 2 500 new jobs a year nationally with a network of 30 incubators. And in Australia the estimated total number of people working in firms in incubators is around 1 700. These numbers are small when taken nationally. To be significant from a local perspective such employment growth needs to be well targeted. In this context it is relevant to note that firms graduating from incubators frequently locate in the vicinity of the incubator. For example, as noted in the chapter on the United States, a 1995 study of incubators in Michigan showed that 80% of graduate firms located in the same community as the incubator facility (Molnar, L.A., Rocco, D. and Gillette, L., 1996). The same evaluation also found a significant impact on local economic development in terms of taxes paid and investments realised.

The available assessments indicate that the cost of public support per job created in an incubator can compare favourably with other public job creation programs. Data from the US show incubators to perform well by comparison with the best public works programs in terms of cost per job created. As an instrument of employment creation incubators may favour those in the workforce possessing higher levels of skill (depending in each case, of course, on the characteristics of the population of tenant firms). However, once established, new businesses can raise demand for services which are often provided by less-skilled workers (such as copying, packaging, freight services, printing, etc.). It should also be borne in mind that incubation is a medium- to long-term undertaking, unsuitable for responding to

short-term employment crises. For example, the Research Triangle Park, one of the largest science parks in the US, took more than a decade to become viable (while nomenclature differs across OECD countries, the term “science park” often refers to a high-technology-oriented variant of the incubator model, and is sometimes used synonymously with “technology incubator” (see below). In the UK a “science park” generally has fewer of the typical attributes of an incubator and basically provides workspace near to a university. Many UK science parks also incorporate incubator units).

Failure rates for science parks appear to be high in the US, with about half of all parks eventually closing. In addition, a number of science parks have been criticised because their growth has occurred largely through attracting firms from outside the region rather than through new-firm formation. Despite the investment of significant public funds, few science parks in Australia are credited with success, a problem attributed in part to the reluctance of universities to transfer intellectual property rights to their own staff. In sum, the evidence for the effectiveness of science parks appears mixed.

Finally, as regards the assessment of impact, it should be acknowledged that while many incubators are concerned with direct job creation, they can have long-run indirect effects which are difficult to measure. For example, incubators can encourage imitation. A few successful start-ups can help local communities recognise that entrepreneurship is within their compass. Similarly, entrepreneurs whose ventures fail may learn from the experience gained and establish successful businesses at a later date. Indeed, the chapter on the Italian experience considers that jobs created by business incubators are “adding value far beyond their actual worth in changing attitudes towards entrepreneurship, building alliances among local leaders to develop coherent policies for economic growth, fostering a better climate for small business...”. Technology incubators can also sensitise academics to the problems of industry and impart business skills to the educational community. And an additional spill-over from the presence of an incubator can be an increase in the value of local property.

Evaluating business incubators

A range of criteria have been employed in the evaluation of business incubators. These criteria include firm survival rates, the numbers of jobs/firms created, the public investment required for each job created, the profitability of the incubator, and the sales and profits performance of tenant firms. It is important to recognise some of the deficiencies in the evaluation data often advanced in support of business incubation. For example, it is difficult to gauge the significance of improved survival rates among incubator-resident firms if those firms enter the incubator after a process of selection. In other words, such firms may be unrepresentative: their

success may be attributable more to inherent characteristics than to the effect of the incubator. At the same time, making assessments using a control group of firms can be a complex (and costly) undertaking, as was found in the major US evaluation referred to above. For instance, methodologically, information on non-tenant firms is usually found in sources which exclude early enterprise failures, which complicates the identification of a truly comparable set of firms, while the dynamic effects of incubation on firms may be missed in short-run data sets. However, Sherman and Chappell (1998) note that incubator managers might collect data on control companies by gathering information on “near miss” firms, *i.e.* firms which for reasons other than eligibility did not enter the incubation programme. These firms might have failed to enter the incubator owing, for example, to inadequate space or a decision by the firm not to accept the offer of a place. As incubator managers take in a new firm they might also seek to identify and collect information on a comparable local company, using data from a chamber of commerce, economic development agency or other source.

Even if the aforementioned methodological problems are overcome, and it is certain that the incubated firms are in some way representative, an increased rate of survival – as well as improved sales and profitability – is to be expected for firms in receipt of assistance. This underlines the critical point for the evaluation of public policy: that it is the ratio of costs incurred through incubation to benefits generated which matters. Incubated firms may survive longer, but at what cost to the public purse?

Another frequently used measure of the performance of incubators is the public subsidy per job created. However, such estimates are of little use to policy-makers, and may even mislead, if the job would have been created anyway outside the incubator. There is a need, then, for studies of a micro sort which assess the degree of additionality involved in job creation, as well as the performance of firms within incubators against that of similar firms outside of incubators, and the costs of incubation as compared with other measures which might be employed to achieve similar outcomes. Unfortunately, the lack of systematic evaluation of business incubators is a problem shared all too often with small enterprise support programs generally. In this regard, a noteworthy and potentially fruitful initiative is the preparation of toolkits by the National Business Incubation Association of the US aimed at facilitating and standardising data collection by incubators so as to provide meaningful statistics for evaluation. Such a measure could be emulated by institutions in other countries representing and/or working closely with the incubation industry.

Considering the economic rationale for public investment in incubators

The economic rationale underlying incubation programmes often remains unarticulated. There are somewhat different views in the papers collected here as to the

fundamental role which incubators should perform. If the provision of business support services (including networks) is seen as the principal function of an incubator, then the basis for public investment should be an understanding that a competitive market will undersupply the needed services. Market failure in the provision of financial and technical services to new and small firms is a contested subject, but may be infrequent, depending on the type of service and the nature of the firms concerned. Even if the market for services to new and small firms is failing, public intervention in funding the direct supply of services need not be the best response. Suitable regulation to make the provision of services more profitable for potential private suppliers may be preferred. This would have the virtue of encouraging competition in the supply of services, as well as limiting the call on public funds.

Similarly, if incubators are seen as little more than real estate operations then it has to be asked whether there are market failures in this activity which merit public intervention (in practice, it is the combination of real estate supply with technical assistance which can make business incubation a cost-effective form of business support – by lowering the unit cost of providing technical assistance through supplying this to a collection of firms, while creating synergies among those receiving support. This observation, however, does not answer the questions raised here concerning the economic logic of public investment). Certainly, the provision of industrial real estate often holds little attraction for private investors acting without public support, especially in economically distressed areas. This can reflect difficulties in securing tenants – particularly if auxiliary infrastructure is poor –, long time periods required to recover investment outlays, and potential opportunities for higher returns in other forms of real estate. Problems associated with the supply of industrial real estate will vary in severity from one location to another and must be assessed on a case-by-case basis.

Infrastructure can have the character of a public good (that is, essentially, when nobody can be excluded from using the infrastructure). Where the establishment of an incubator is intended to augment the availability of infrastructure, an economically sound basis for public investment may be present. Furthermore, the unit costs of infrastructure provision via an incubator can be reduced on account of its being supplied to a geographically clustered group of users. However, not all infrastructure has the character of a public good (one can be excluded from the use of a toll road for instance if one is unwilling to pay the toll), while the private financing of infrastructure projects is increasingly sophisticated and widespread. A case-by-case approach must be taken then in advancing infrastructure provision as an argument for public expenditure on incubators.

The preceding observations indicate that the economic rationale for public investment in incubation needs careful consideration. A justification for public subsidy of private enterprise should refer to positive economic externalities not sought by private enterprise, such as social cohesion, poverty alleviation, local

development and the like. The valuation of such benefits is of course complex (in part because, being external to the market, they do not carry a price). Nevertheless, an explicit recognition amongst policymakers of exactly what it is that public funds are being employed for is essential. Such recognition can help to identify and choose between policy alternatives. For example, if the objective of a given incubator is to increase social cohesion, but the incubator is likely to create jobs mainly for those with skills, then alternatives – such as targeted training – might be given a higher priority. Making explicit the economic rationale of policy may also help avoid expenditures which only duplicate or even displace the activities of existing private suppliers. Similarly, a clear statement of objectives is important both for evaluation purposes and for providing guidance in areas of potential operational conflict, such as between the incubator's promotion of economic development and its achievement of financial autonomy.

Technology incubators

Technology incubators present a technology-oriented variant on the business incubator theme.² Technology incubators take a range of institutional forms, operating as integrated, or sometimes separate, organisations within science parks, universities, and innovation centres. In common with business incubators generally, the range of stakeholders and objectives associated with technology incubators is diverse. There is considerable similarity in the types of services offered by business and technology incubators: both typically afford workspace, management advice, training, office services, business planning and other forms of business assistance. However, technology incubators more frequently provide technology-related services and support on issues of intellectual property. Indeed, support from law schools and local legal firms can significantly assist technology incubators. There is variation in the types of firm catered to by technology incubators in different countries and regions, with some incubators having focussed on attracting branch plants, while others work almost exclusively with start-up firms and SMEs.

Around one third of the incubators affiliated with the US National Business Incubators Association are estimated to have a technology focus. In Europe the development of technology incubators has been closely associated with the proliferation of science parks. In the United States the growth of technology incubation has been stimulated by modifications to legislation on the protection of intellectual property such that universities can retain rights to innovations they realise. In some countries funding pressures on universities have given added incentives to capture commercial returns from university research. As with some business incubators, certain technology incubators are being designed without physical facilities, concentrating instead on the provision of services.

Box. Supporting business incubation in Russia

The United States Agency for International Development (USAID) has supported five business incubator programs in the Russian Federation since 1994. Such programs have served to provide a relatively stable business environment in the midst of what are often unpropitious surroundings, and as such are of relevance to the circumstances of business in many transition and developing economies. Three examples of USAID-supported incubators in Russia are given here:

Volkhov small business incubator

USAID has assisted the development of an incubator for small businesses in the city of Volkhov (population 50 000) in northwest Russia. The incubator offers business training and consulting services, a credit/leasing program for small businesses, and a business association for small enterprises in the Volkhov region. The incubator offers a full range of business services (security, phone line, computer center, Xerox, fax, etc) for ten businesses. The incubator has graduated three companies and created 224 jobs. To date, training and consulting services have been provided to over 3 023 entrepreneurs, of whom 1 627 are women. Five small-business-related associations have been established with the incubator's assistance. The incubator's management is now considering issues of financial self-sufficiency and, consequently, plans to expand its services, especially its leasing program. Total assistance from USAID has amounted to almost US\$2 million.

International Business and Technology Incubator (IBTI)

IBTI is a virtual incubator established in Moscow to provide technical support to innovative high-technology projects. By December 1996 over 400 proposals had been screened, 37 projects had received approval for financial support and 31 projects had actually received IBTI support (capped at \$25 000 per project). Russian sources provided matching and additional funds for several of the projects funded by the IBTI. Projects were also promoted to find joint venture partners in the United States. Seventeen small businesses have been formed through the IBTI program. A Master of Science in Technology Management has also been established in cooperation with the University of Texas and the Academy of National Economy. Support from USAID has amounted to US\$2 460 000.

Business incubators under the Morozov project

The Morozov Project was designed to implement large-scale training of Russians – to facilitate their participation in a market economy – and afford support to small businesses through a network of Business Training Centers (BTC) and Business Support Centers (BSC) across the Russian Federation. The programme was also intended to implement a mechanism for attracting investments to small and medium sized businesses. Nearly 200 000 entrepreneurs and managers have been trained by the BTCs and BSCs. The Morozov training and business support services have spurred the founding of 2 500 new enterprises and the creation of some

Box. Supporting business incubation in Russia (cont.)

10 000 new jobs. 12 business incubators have been created as one of the results of the Morozov Project after 15 specialists received training in Austin (Texas) in one of the leading business incubators in the USA. Most of these are general purpose/mixed use incubators specializing in training activities. Some are industry-specific incubators, such as that created for agrobusiness in Borovichi. The average number of tenant firms is 10, with the incubators creating more than 3 240 jobs per year.

The National Business Incubators Association (NBIA) (not to be confused with the NBIA of the United States) is a noncommercial partnership established in early 1997 by 22 organizations operating and/or promoting business incubators. The Association was not directly funded by USAID, but was created by the Morozov Project. All USAID-funded business incubators are members of NBIA, which by May 1998 had 32 member incubators (owing to the fact that some institutions describing themselves as incubators do not perform incubator functions, it is unclear exactly how many genuine incubators are in operation in Russia today, although this number certainly exceeds 32). The activities of the NBIA include: providing assistance in the training of business incubator staff, including managers, experts and technical personnel; maintaining information exchange between the members; assisting regional business incubators in problem solving; protecting members' rights and interests; and building awareness of incubators as a business development tool.

OECD 1997 (pages 26-27) cites evaluation literature pointing to significant growth of employment and sales in firms leaving university-based technology incubators, and high levels of corporate performance more generally in firms associated with universities. For example, a 1995 survey by Coopers and Lybrand is quoted which found that fast-growth firms using university resources had significantly higher levels of productivity, revenue and investment than comparable firms not affiliated with a university.

Key operational issues

The great variety of institutional arrangements possible amongst business incubators means that certain operational issues will be important in some contexts but not others. However, while the significance of some operational issues is context-specific, the papers collected here illustrate a number of recurring concerns. These are addressed in the following sections.

Incubator management

The expertise and commitment of incubator managers is critical to success. High-quality incubator managers are essential in selecting suitable tenant firms,

in providing business and managerial advice to these firms and in creating links to investors and the wider business community. Some incubators make a direct investment in their tenant firms, heightening the need for financially skilled managers. The effectiveness of management may be strengthened by promoting the national and/or international networking of industry practitioners. Indeed, business and technology incubator associations operate in all of the countries reviewed here. Such associations offer a forum for the dissemination of information on industry best-practices.

Progression of tenant firms

To allow a constant flow of newly-incubated businesses tenants should out-grow their accommodation and move to bigger premises within a few years. However, industries often remain on the incubator's premises, thereby excluding new entrants. Policy on the graduation of firms from an incubator can be problematic. In some cases strict graduation timetables have been enforced. In Australia, for instance, some two thirds of incubators have exit policies, often with a stipulated time limit. Rental fees which rise over time are also widely used to promote graduation. However, there may be no suitable alternative premises for a business which departs the incubator. This dilemma is articulated by Mr. Vernon Smith, chief executive of BS(I) since 1989:

“... after a few years it was clear the units were becoming permanent homes for most of the tenants. Our strategy had been to move everyone out after four years. The problem came when you asked them to move on. In so many cases there was nowhere suitable for them to go. It all sounds very well, having a steady flow of tenants, with new ones coming through all the time, but it just does not work that way.”

BS(I)'s policy response was to use rental income to build new incubators, considering that once an incubator was housing a stable tenant population the primary objective of job *creation* was no longer being fulfilled. Once mature, the running of an incubator had become an exercise in real estate management. BS(I) therefore held that the creation of new sources of employment would be best advanced by incubating another set of firms on a new site.

Rentals and other income sources

BS(I)'s response to the graduation issue raises another general operational concern: policy on the setting of rents. BS(I) initially considered that some tenant businesses might collapse if rents were set at commercial levels. However, the view emerged that a genuine business should be able to afford a commercial rent. Indeed, without public support an incubator's survival depends on sales of its services, including rental income. But earning sufficient rental income may be

problematic if tenants are predominantly start-ups or if, as may be the case in economically depressed areas, there are few incipient ventures. Faced with such problems incubators have often rented a part of the incubator space to established businesses. This may be an appropriate strategy in the early phases of an incubator's existence (one which also underlines the importance of efficient management of incubator costs). However, achieving required occupancy rates in this manner is unsatisfactory over the long-run if the incubator is intended to serve a broader economic development function. Another and in some ways preferable means of generating revenue may be to provide advisory services to the business community outside of the incubator. Indeed, so-called "virtual" incubators – which have emerged in countries such as Australia, Italy and the United States – may be a cost-effective means of providing (non-property-based) services in areas with small numbers of potential tenant firms (the establishment of a virtual incubator may also serve as an initial option, allowing the incubator sponsors time in which to construct appropriate facilities while still providing services). These issues point to a possible tension between the role of an incubator as a financially self-sustaining venture and its contribution to economic development.

Interactions with institutions of higher education

A further important issue in the functioning of business incubators is the nature of their interaction with institutions of higher education. Many institutional permutations are possible in this regard, some involving a greater degree of involvement of the academic community in business development than others.

Some universities have created their own venture capital operations to service an incubator. In such cases there can be trade-offs for staff and university authorities between the investment of resources in either academic activity or enterprise development. For example, such trade-offs may relate to resource allocation as between general research or applied work linked to possible commercial opportunities. A related tension stems from the fact that industry often operates with short-term time-horizons, while universities may pursue longer-term research objectives. Furthermore, where universities and the land they occupy are publicly owned, legal and administrative difficulties may arise from the establishment of rent-charging incubation schemes.

In the US the development of science parks was driven by universities. However, in the UK science and technology parks are generally part of the commercial property market. The most famous is the Cambridge Science Park, founded in 1970 by Trinity College. Nevertheless, many businesses in this science park have no connection with Cambridge University. Their success is attributed in large part to the park's association with a prestigious seat of learning. Indeed, it is sometimes observed that, more than access to research, proximity to universities is important in creating prestige, recruiting highly qualified graduates, and making

use of information resources. The presence of centres of technical learning can also mean that entrepreneurs engaging in high-tech ventures will feel less like outsiders and may more often encounter interlocutors (such as bank managers) familiar with the problems they face.

Choosing the support services

The range of possible business support services is broad. Different incubators provide assistance to tenants in such fields as generating business ideas, planning, corporate finance, marketing, management, etc.. Incubators may offer secretarial support, telephone answering services, cafeteria services, conference facilities, photocopiers, various forms of information technology and so on. In cases where a facility serves a particular industry, certain services are more common. For example, in the United States most technology incubators offer legal services to assist with matters of intellectual property.

There is a need for flexibility in the provision of services, with services tailored to the needs of clients. In part, the choice of services provided should depend on the availability of equivalent services elsewhere in the vicinity of the incubator. Indeed, in some cases business incubators have been established precisely to supply those services lacking in a given location. However, providing a full range of support services may add to overheads unnecessarily. Alternatively, specialised services might be contracted in when needed. In some communities there exist networks of local service providers prepared to offer business support on a reduced-fee basis. Uppermost is that tenant businesses have access to an integrated array of services, whether these originate within an incubator or are provided from outside. However, as noted above, in determining the services to be provided policymakers should ask whether market failure is a genuine problem. If there is no market failure in the provision of support services then the use of public resources should be questioned.

Standards of accommodation

Where possible, standards of accommodation should be high. On this point Mr. Vernon Smith, the Chief Executive of BS(I), comments:

“The more experience we gained, the more I became convinced that you do not want cheap and inferior premises for this sort of activity. Good conversions can work, but new buildings are better.”

Concluding remarks

Business incubation is still a relatively recent policy tool for local economic and employment development. As the papers in this volume make clear, the range of

different objectives pursued, possible institutional arrangements and operational choices is considerable. It is evident that firms benefiting from incubator services frequently have their chances of survival enhanced, and that incubators can be a cost-effective instrument for employment creation. However, as described above, additional research is needed to properly assess the economic benefits of incubation. Such research is complex and costly, but may yield valuable findings for decisionmakers at both central and local levels of government. Nevertheless, a number of policy recommendations can be derived from current and past experience. From the discussion above, and from the papers presented in this volume, it is clear that policymakers and sponsors promoting business incubation should seek to:

- Make explicit the goals of the incubation scheme, based on a thorough analysis of local economic circumstances and of the problems which the incubator is intended to address.
- Ensure the highest possible quality of incubator management.
- Establish and develop a range of linkages with the local business community, educational and training bodies, sources of finance and other relevant organisations.
- Select a mix of services appropriate to the profile of tenant firms, whether these originate within an incubator or are provided externally.
- Take advantage of evolving experience in the incubation industry by affiliating with relevant industry representative bodies.
- Ensure proper evaluation and monitoring of the incubation programme (if properly designed, evaluation and monitoring will also afford a valuable ongoing management tool).

With further work required in this field, the Local Economic and Employment Development Programme of the OECD will seek to advance and disseminate the emerging understanding of business incubation.

Notes

1. However, on methodological grounds, Bearse (1998) raises serious questions against some key findings of this study.
2. OECD (1997) provides a detailed treatment of technology incubators and is the principal source for this section.

Bibliography

- Amirahmadi, H. and Saff, G. (1993),
Science Parks: A Critical Assessment, Journal of Planning Literature, Vol. 8, No. 2, November.
- Bearse, P. (1998),
A Question of Evaluation: NBIA's Impact Assessment of Business Incubators, Economic Development Quarterly, Vol. 12, No. 4, November 1998.
- Molnar, L.A., DePietro, R., and Gillette, L. (1996),
Sustaining Economic Growth: The Positive Impact of the Michigan Incubator Industry, 1985-1995, NBIA, Athens, Ohio.
- National Business Incubation Association (1995),
10th Anniversary Survey of Business Incubators 1985-1995: A Decade of Success, NBIA, Athens, Ohio.
- OECD (1997),
Technology Incubators: Nurturing Small Firms, Committee for Scientific and Technological Policy, OECD/GD(97)202.
- OECD (1997a),
Italy's National Hatchery: The Experience of SPI, LEED Notebook 25, Paris.
- OECD and the Commission of the European Communities (1992),
Business Incubators and Job Creation, Innovation and Employment Newsletter, No. 9, April.
- Sherman, H. and Chappell, D.H. (1998),
Methodological Challenges in Evaluating Business Incubator Outcomes, Economic Development Quarterly, Vol. 12 No. 4, November 1998.

Biographical Information on the Authors of the Country Papers

Australia

Paul Dowling has a background in research and small business. For the past three years he has been closely involved in the development of the business incubator industry in Australia. He has written two reports on business incubators – "Business Incubation in Australia: Best Practice Standards and an Industry Profile" and "Establishing and Operating Incubators in Australia: A Guide". He is currently involved in conducting incubator feasibility studies and undertaking research on small business. He can be contacted at pdowl@pcug.org.au.

Germany

Dr. Jürgen Janovsky is Professor of Innovation Management and International Management at Pforzheim Business School (Germany). In his current position he is entrusted with the promotion, acquisition and supervision of link projects with private companies and international organizations. Before his assignment in Pforzheim, Professor Janovsky worked as a consultant for various international organisations, including the European Commission, the World Bank and UNIDO.

United Kingdom and Italy

Ian Hamilton Fazey is a British journalist who has written extensively about small and medium-sized enterprises and economic reconstruction in steel and coal closure areas. He has written for the Financial Times since 1980 and was the FT's north of England correspondent for 10 years to 1996. He is the author of *The Pathfinder: the origins of the enterprise agency in Britain* (Financial Training, London, 1987). He was made an Officer of the Order of the British Empire (OBE) for services to journalism in 1990.

United States

Helen Payne Watt is a Program Manager at the Corporation for Enterprise Development, a private, non-profit economic development organisation in

Washington DC. She works primarily with rural communities on planning and community based development. Her current activities include sustainable development in several rural communities, a study of the US revolving loan fund industry and an evaluation of a federally-supported program for local planning.

Chapter 2

Business Incubation in Australia

Introduction

This chapter is based on the 1996 report “Business Incubation in Australia: Best Practice Standards and an Industry Profile”. That report was prepared by the Australia and New Zealand Association of Business Incubators (ANZABI). The report includes: a 1996 profile of business incubators in Australia; a description of emerging trends in business incubation in Australia; a set of best practices for Australian business incubators; and a summary of implications for policy makers.

What business incubation means in Australia

ANZABI defines business incubation as follows:

“Business *incubation* involves a unique mix of *advice*, *services* and *support* to help small businesses develop and grow. It takes place in *incubators* which are infrastructural developments that help businesses to become established and profitable.”

Business advice may include: developing business ideas; business and strategic planning; financial and legal advice; marketing and sales and management assistance. **Business services** often include: secretarial services; reception and telephone answering; office and/or workshop accommodation; conference and meeting rooms; photocopier, fax and postage services; bookkeeping and word processing. **Business support** may include: mentoring; networking and synergies with other businesses and personal support, for instance in stress relief. For all incubators, the *process* of incubation involves *nurturing*, *developing* and ultimately *graduating* new businesses.

To present the similarities and differences present in Australian incubators in the most accessible manner the incubators have been divided into three “streams”. Before detailing the characteristics of each of these streams the wider economic context in which business incubation is taking place needs to be outlined.

Small business in Australia

The small business sector is increasingly being viewed as important to Australia's future economic prosperity. Of the 927 286 businesses operating in Australia in 1994/95 some 887 318 or 96 per cent are classified as small. This same sector employs nearly 40 per cent of Australia's total work force and in 1993/94 registered total sales of 232 807 million dollars. Over the eleven years 1983/84-1994/95 the small business sector has grown at a faster rate than other business sectors (Australian Bureau of Statistics, 1996).

Governments and local communities see small business as an important platform for local economic development and diversification, job creation, import replacement, fostering innovative ventures and adding value to local products. Consequently, they are seeking ways of developing and nurturing small businesses through and beyond the critical start-up phase. Business incubators – variously called enterprise centres, nursery estates, shared work-spaces, managed work-spaces and venture units – are recognised as an important vehicle for achieving this.

Government support and business incubators

The incubator industry has developed through a partnership between incubators and local, state and Commonwealth Governments. Historically, the Commonwealth Department of Education, Employment, Training and Youth Affairs (DEETYA) has provided the majority of Federal support. A 1994 Evaluation reported that DEETYA had invested over 3 million dollars from 1991 to 1994. Whilst exact figures on the dollar value of investment up to 1996 are unavailable, over the past two years DEETYA funded 13 new incubators, assisted 11 existing incubators and funded a further 40 feasibility studies.

There are four relevant elements to DEETYA's current funding of incubators. First, the funding is provided for "infrastructure" only and not for operational purposes. Second, funding is provided to incubator programmes which can demonstrate financial self sustainability. Third, the funding is distributed through DEETYA's regional offices, each of which makes the final decision on allocation of funds. Fourth, each incubator proposal is examined on its merits and must compete with other employment and training projects proposed for the region.

It is illustrative to view this funding as a one off "investment" which provides a return to the Government at several levels. Firstly, the investment generates jobs. Second, this increased employment reduces payments of income support and increases income tax. Third the investment immediately generates increased economic activity in the form of sales of goods and services. Fourth, **unlike** most other government programmes the return to the government on this funding **accumulates and grows year after year**. That is to

say one off funding to an incubator programme can continue to yield additional jobs and economic activity long after the initial investment.

Types of incubator in Australia

There are many possible ways of characterising business incubators in Australia. Each business incubator operating in Australia can in some respect claim to be unique. Yet at the same time each incubator has much in common with others in Australia. With respect to most of the core processes of incubation, analysis clearly reveals **similarity** rather than difference among incubators. Irrespective of the stream an incubator is from, where it operates or what size it is, incubator programmes do similar things. The best practice standards reported later in this chapter reflect this similarity and describe standards common to **all** incubators. However, for the purpose of this study incubators have been classified into three broad *overlapping* streams, a classification which emerged from an analysis of the survey data on which this work is based. The analysis was based largely on three factors: the circumstances in which the incubator was set up; the degree to which incubator services, support and advice are provided by the incubator itself; and the objectives of the incubator. The three streams are as follows:

Stream 1: Embedded incubators

Embedded incubators have been set up in many different circumstances but are most often found operating in regional areas with a surrounding population of less than 100 000. These incubators are generally part of a larger umbrella organisation. The incubator can be housed on the same premises as the larger enterprise or may network with another non-incubator organisation. The incubator may offer all the services listed above but relies **in part** on its umbrella organisation to provide the incubator space or support services to tenants. Some of these incubators generate sufficient income to cover their operational costs, but the majority of the business advisory services are provided through the umbrella organisation. Other incubators provide their own business services and advice but the incubator staff effectively work part time, spending the remainder of their time working for the umbrella organisation. In 1996 there were 28 embedded incubators in Australia with an average size of 689 square metres.

Stream 2: Independent incubators

Independent incubators are more likely to be set up in capital cities, urban areas of capital cities and large regional cities where the surrounding population is near to or greater than 100 000. These incubators tend to offer their own *incubator space, business services and business advice* without depending on outside groups. Therefore, sufficient income needs to be generated from the incubator tenants to

pay for the costs incurred by the incubator. Income may be generated both through rents and through charges for incubator services. Economies of scale operate here. The Australian industry has previously determined that an incubator offering commercial office space usually needs at least 1 500 square metres in lettable floor space, with more if the tenant firms are from light industry. An incubator of this size is normally capable of generating sufficient income to employ a full time incubator manager and some support staff. In 1996 there were 12 independent incubators operating with an average size of 1 644 square metres.

Stream 3: Technology incubators

Stream three incubators are set up for a single purpose. Technology parks which include a business incubator facility fall within this stream. While these incubators could be categorised as both stream 1 and stream 2 they have five distinguishing characteristics. They:

- offer leasable space within a larger area of technology businesses;
- support the transfer of technology as well as the establishment and growth of new innovative companies;
- are closely linked with public research and education institutions;
- offer technology research, development and production facilities;
- are all sited in capital cities.

For the purposes of this summary the incubators in this stream are referred to as technology incubators. In 1996 there were five technology incubators operating with an average size of 1 310 square metres.

Incubators which focus on “arts and crafts” or horticulture could be regarded as falling into a single purpose industry. Unfortunately, only limited information was available on the four arts and crafts incubators in Australia. This chapter cannot therefore report separately on this type of incubator.

A national look at incubators

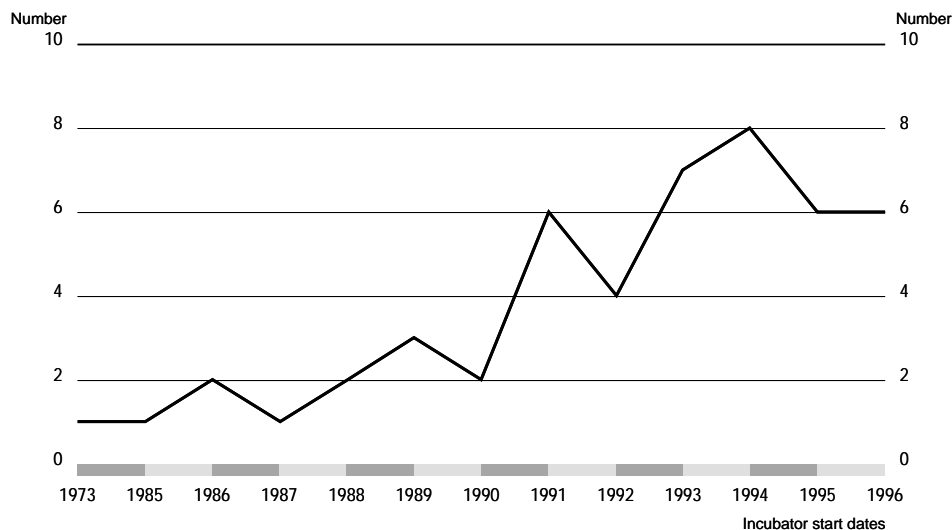
This section presents information on incubators from a national perspective. There are two subsections which cover basic characteristics of the incubation industry, and emerging trends in incubation in Australia.

Basic characteristics of the incubation industry

Number, age and location of incubators

During the 1980s in Australia, as overseas, business incubation techniques and incubators developed in response to growing economic problems such as the need to create employment and stimulate regional development, increase new business formation and cut the high failure rate of firms in their early years.

Figure 1. Opening dates of existing incubators



There is uncertainty regarding the exact numbers of business incubators operating at any one time over the past 10 years. In 1989 17 incubators were identified as already in existence or being planned (Small Business Council, 1988). In 1992, 40 operational incubators were identified (OLGDILGEA, 1992), and in 1994, 35 operational incubators were identified (Gardner and Associates, 1994).

In May 1996 there were at least 49 incubators operating in Australia, which represents a 40 per cent increase over the past two year period. ANZABI understands that as of September 1997 there were 52 incubators operating, with a further 27 funded but not yet operational and a further 46 planned but not yet funded. Figure 1 illustrates the growth in the number of incubators opening per annum.

The incubator industry is maturing, with an average incubator age of 4 years.* This compares to 1992 when only 30 per cent of incubators were more than 3 years old. Of the 49 incubators open in 1996, 36 were operating in 1994. ANZABI is aware of 10 incubators closing between 1994 and September 1997. Most of these were small embedded incubators.

* This is excluding the oldest incubator which opened in 1973 (the next oldest incubator opened in 1985). Removing the 1973 incubator better reflects the "average" age of the industry.

Figure 2. Regional location of incubators

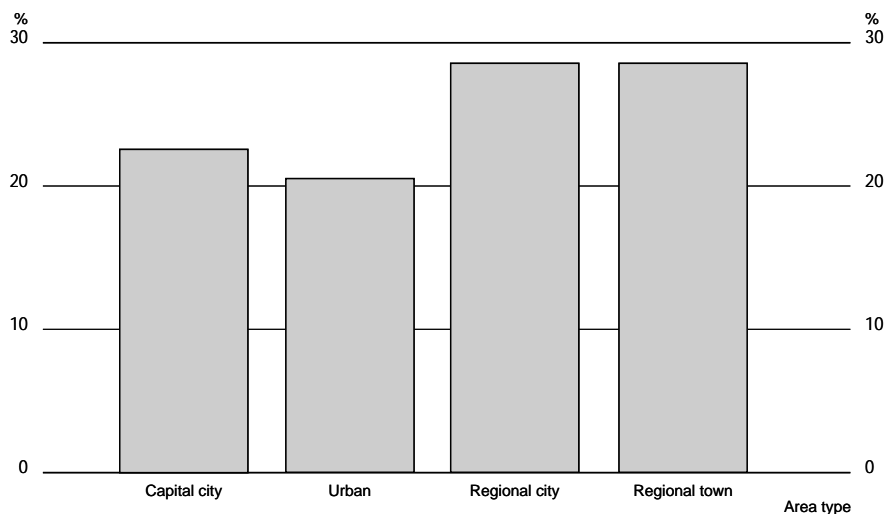


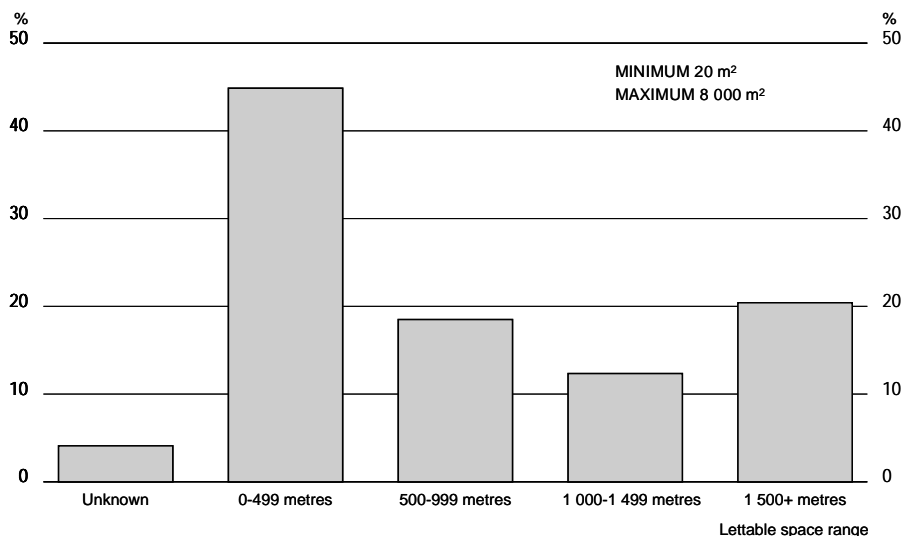
Figure 2 shows that almost 60 per cent of incubators are situated either in regional cities (with a population below 100 000) or towns (population less than 20 000). The remaining incubators are located in capital cities or their urban areas. From an industry perspective the number and location of incubators have several implications. First, 40 per cent of incubators are less than 3 years old, which means the industry is still fairly young and possibly in need of training assistance.

Second, incubators appear to be more difficult to operate in regional areas as shown by the small number of older incubators and the higher numbers of closures in these regions. Key factors here include: smaller populations which implies smaller numbers of new business startups and smaller markets; difficulty of access to larger markets; fewer community resources available for the incubator; and an increased disparity between rental income from tenant businesses and the operational costs of the incubator. However, it is important to note that there are some successful small regional incubators. Three key factors here include: the presence of a successful parent organisation; a supportive community and an extremely competent manager and staff.

Size of incubators

Incubators vary widely in size ranging from 20 to 8 000 square metres in lettable space. These two figures however are singular extremes. The remaining

Figure 3. Size breakdown of incubators (in terms of lettable space)



incubators range between 100 and 5 000 square metres, with nearly 70 per cent having less than 1 000m of lettable space. On average, embedded incubators are smaller than independent ones, at 689 square metres and 1 644 square metres respectively. Figure 3 illustrates the percentages of incubators of different sizes.

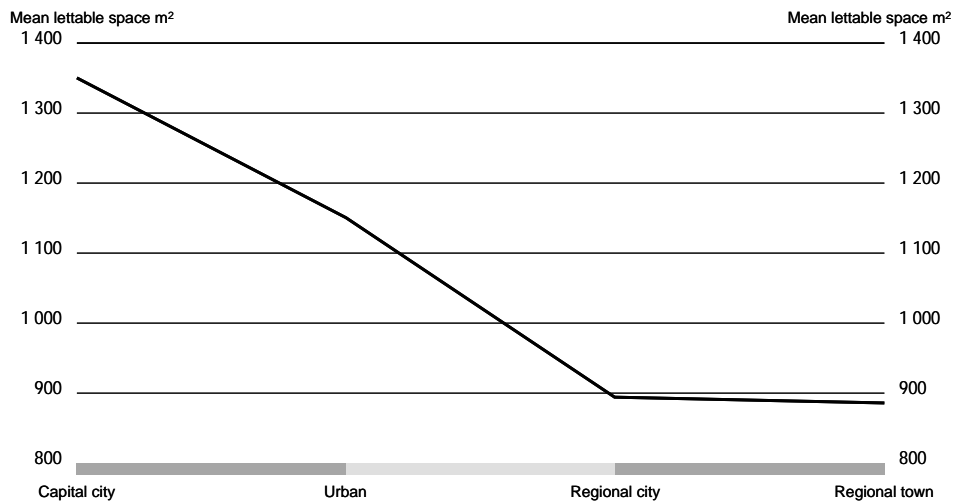
As one would expect, the size of incubators varies according to location. Broadly speaking, the larger the supporting population the larger the incubator. Figure 4 illustrates the relationship between lettable space and regional area.

Building characteristics

As the incubator industry matures two important building trends are emerging. First, over 66 per cent of incubators either own their own building or pay a peppercorn rent. This represents a substantial increase over the 1994 figure of 20 per cent.

Second, since 1994 there has been an increase from 25 to 33 per cent of incubators operating in purpose built buildings. The remaining two thirds of incubators operate from converted buildings. Over half the converted buildings were previously either office or factory buildings. This is similar to the 1994 data. 60 per cent of incubators are housed in a single building with a further 20 per cent housed in two buildings. The maximum number of buildings for one incubator is 14.

Figure 4. Incubator region and size relationship



These two trends are expected to continue as long as Government seed funding remains. Only 25 per cent of incubator managers rated their buildings as being flexible or very flexible in terms of meeting future tenant requirements.

Incubator ownership and governance

Although 42 per cent of incubators are incorporated as independent entities, most incubators operate under or with another organisation. This integration enhances the benefits flowing to the local community. Typically organisations are formed from existing community groups, local economic development groups, enterprise development groups and universities.

93 per cent of incubators are governed by a board or committee which is ultimately responsible for the financial and legal aspects of the incubator's operations. The majority of these boards are comprised of business, community and government representatives.

Incubator objectives

In terms of incubator objectives incubator managers now rate "business development" higher than "job creation" and "economic development". This reverses the position found in 1994. This is an important change as it is best practice for incubators to focus their energies on business development. This is not to

disregard job creation or economic development – they are vital objectives – but their objectives can best be achieved through good business outcomes. In descending order, the five highest rated statements of incubator managers as regards the objectives of incubators were:

1. to focus on nurturing, training and growing successful businesses;
2. to assist new enterprise development;
3. to reduce the failure rate of new enterprises;
4. to increase the growth rate of new enterprises;
5. to support job creation.

Incubator personnel

Precise information on incubator personnel is difficult to obtain due to the large number of incubators which are part of other organisations. Data are presented here not only on the numbers of staff but the percentage of time spent on *incubator* activities. However, some managers had difficulty separating the time they and their staff spent on incubator activities from extra-incubator activities.

• Managers

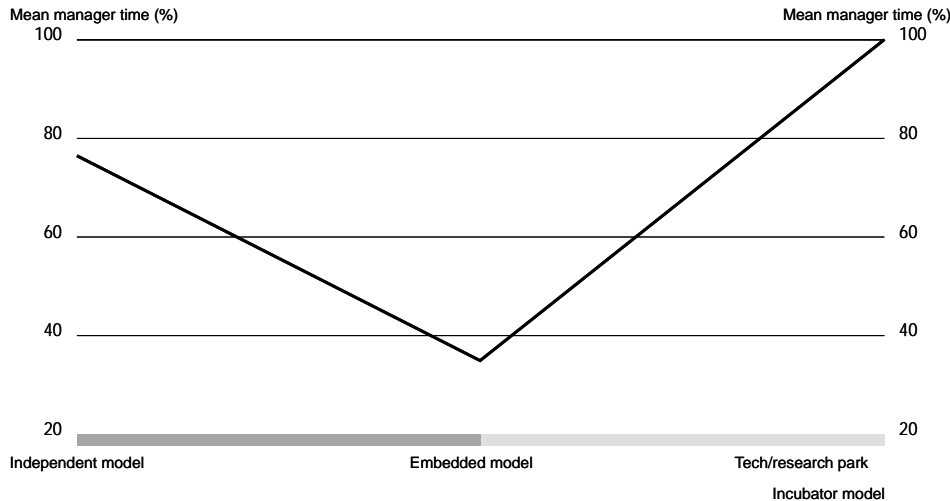
Adequate staffing of incubators is critical. Only 30 per cent of incubators have a full time manager and 70 per cent of managers spend less than 50 per cent of their time on incubator activities. This reflects the high numbers of embedded incubators and the dual roles that many of these managers have – working for the incubators and also the incubator's umbrella organisation, as depicted in Figure 5.

Managers reported having the following previous work experience:

Type of experience	Per cent
Business manager	70
Business owner	63
Sales marketing	55
Economic development	48
Business start up experience	44
Business counsellor	37
Property management	26
Financial services	22
Academia	14
Previous incubator manager	7

Due to the comparative youth of the incubator industry most managers are new to the role. Managers have been in their current position for an average of

Figure 5. **Managers’ time spent on incubator activities in different incubator types**



2.7 years, with a third of managers reporting a year or less. The longest serving manager has been employed for 7 years.

Managers rated the top 5 qualities they considered as essential in an incubator manager. These were, in descending order of importance:

- business management skills;
 - drive to succeed;
 - networking ability;
 - personal psychological skills such as empathy, patience and ability to handle stress;
 - entrepreneurial qualities.
- Other staff

Incubators employed an average of 2.3 employees per manager. Incubator staff spent an average of 30 per cent of their time on incubator activities. Additionally, incubators on average “employed” 1.6 volunteers.

Management practices

An incubator manager fills many roles. These include business counsellor; incubator landlord; networker with the business community; planner, manager and

marketer of the incubator. Best practice suggests that the time a manager spends working with tenants or developing business assistance networks or training programmes should be maximised. The current best practice for Australian incubators is 60 per cent of time spent. Embedded, independent and technology incubators averaged 39, 43 and 53 per cent respectively. How managers split their time amongst the different incubator activities does not vary significantly among the different types of incubators.

Planning is an important component of operating a successful incubator. 75 per cent of incubators were found to have a written business plan. This is a 5 per cent increase over the 1994 figure.

- Tenant policy

An important part of incubator programmes is the admission and graduation of tenant businesses. All three streams of incubators had similar tenant recruitment and entrance policies, with the three most favoured methods of recruiting tenants being, in descending order, through:

- informal external networks;
- brochures and pamphlets;
- tenant/graduate referral.

The five most important tenant entrance criteria in descending order were:

- projected viability of the business;
- ability to pay for rent and space;
- compatibility of business to incubator objectives;
- completion of the application package;
- projected growth potential of business.

Nearly two thirds of incubators have exit policies and 61 per cent of these incubators define their exit policy in terms of number of years of tenancy. Importantly, 46 per cent of incubators escalate rental fees to encourage graduation. Only 10 per cent of incubator managers categorise their tenants and use these categories as a guide to how much time they spend with tenants.

Incubator performance and business outcomes

The majority of incubator programmes aim to operate without subsidies. It is attempted to meet this objective through one or more of three ways:

- Increasing, as has happened, the proportion of incubators operating from their own building or paying a peppercorn rent. The dramatic increase in such arrangements has been in large part due to local, state or federal government support.

- Incubator programmes with less than 1 500 square metres in lettable space operate as part of a successful larger umbrella organisation which commands considerable community support.
- Providing business services to tenants.

Incubators can have an impact on their surrounding community in three important ways:

- Reduction in business failure

The reduction of the failure rate of new businesses within incubators can be assessed by noting the number of tenant businesses which fail as a proportion of the total number of incubator tenants. This figure can then be compared to the failure rate of businesses outside of incubators. The annual failure rate for businesses starting up in incubators operating for more than five years ranges from 6-9 per cent.

Reducing the failure rate of businesses means reducing a range of costs to the local economy. These include: immediate monetary costs (*e.g.* monies owed to creditors); some of the costs of unemployment; and social costs (*e.g.* mental health problems and family dislocation). Due to insufficient data no attempt was made to estimate cost savings from the reduction of business failure.

- Contribution to local economic development

Indications of the extent to which incubators increase local economic development can be gained by looking at four measures: the total number of tenant businesses within incubators; the total number of firms graduating from incubators; the number of tenant businesses graduating per year; and the annual dollar value of sales and services of the incubator, tenants and graduates. All of these magnitudes must of course be judged against the size of the local economy. There is presently a total of 637 businesses operating within 49 incubators. A further 706 businesses have graduated from 45 of these incubators. The estimated annual dollar value of sales and services of the incubator, tenants and graduates is approximately \$238 m. The average number of businesses graduating per incubator per year ranges from 1 to 4.43. On average 12 per cent of incubator businesses graduate each year. For 1995/96 this translates into 76 businesses graduating from incubators in Australia.

- Increase local employment

The estimated total number of people employed by incubators and their tenants and graduates is respectively 98, 1 696, and 1 765. This gives an estimated total of 3 559 people.

Emerging incubator trends

The quest for financial self sufficiency

Successful incubators in Australia are financially self sufficient. Self sufficiency provides the incubator with stability, which can translate into quality business support for tenants. Conversely, when there is a need for operational subsidy, management and staff often spend a large part of their time chasing additional funding. Management then spends less time assisting tenant businesses. In Australia, financial self sufficiency is achieved largely in two ways, as follows:

- Minimising costs

Within the broad principles of business incubation, incubators in Australia can minimise costs in different ways:

- by an umbrella organisation cross subsidising the business and providing advisory services to incubator tenants;
- by obtaining seed “infrastructure” funding to purchase land and or a building;
- by obtaining a long term lease with a peppercorn rent;
- by building and maintaining strong community support. This means that tenants can receive business advice and support at a reduced rate but at no cost to the incubator;
- by using anchor tenants to provide business services and advice. This works in some situations where the incubator programme cannot afford a sufficient number of staff. Otherwise, “outsourcing” these functions reduces the income of the incubator and there is less control over the delivery of services and support.

- Maximising income

The other side of the quest for financial self sufficiency in incubators concerns maximising income, without sacrificing incubation principles. Strategies which incubators use to maximise income include:

- Charging incubator tenants market rates or higher for floor space.
- Charging incubator tenants for all business services (including the use of telephone and fax, typing, photocopying, book-keeping, secretarial work and conference rooms). One incubator charges different rates for secretarial work depending on the turn around time the tenant requires.
- Using anchor tenants, especially in the incubator’s early years to provide a guaranteed level of income. However, once the incubator reaches the target

occupancy level this situation is often reviewed. Those anchor tenants which are part of the incubator's core business support and advice, for example being part of a Business Enterprise Centre, normally remain.

- Charging incubator tenants for parking. This is only possible in areas where parking space is at a premium, *e.g.* Sydney.
- Providing business services and training to businesses outside of the incubator, for example home businesses. A growing trend here is for incubators to offer external businesses a telephone answering service. Similarly, the business training seminars which some incubators provide for their tenants are also offered, for a fee, to external businesses.
- Providing computer services to the external community. Some incubators offer their local community access to the Internet as well as training courses in the use of computers.
- Maintaining a high rate of collection of rent from tenants, something facilitated by working closely with tenant businesses.

Increasing local economic development outcomes

The growing level of sophistication and expertise among successful incubators is leading to more effective business and economic outcomes for their communities. Several trends are emerging as follows:

- Amalgamation

It is beneficial for both small and large incubators to amalgamate with other organisations involved in enterprise development or local economic development. From a financial perspective there are cost savings, particularly in small areas where community resources are limited. Most importantly, the development of a "one-stop shop" for small business support and training can be particularly beneficial.

- Diversification

Allied to the amalgamation trend, incubators are beginning to cater for the external small business market. They generate additional income by offering business support and services to the wider community. For example, incubators drawing from larger catchment populations offer "home businesses" some of the services offered to incubator tenants. Increasingly, larger incubators offer a telephone answering service to local "home businesses". This generates income for the incubator at very little cost. Another good example of an incubator meeting local community needs and generating alternative income streams is the co-location of an incubator with an arts centre and a child care centre.

- Networking

In a few areas in Australia incubators are forming networks with other incubators and community organisations. This trend differs from amalgamation in that the organisations are managed and owned independently of one another and most often the organisations are geographically distinct. The main advantage in forming the networks is the sharing of expertise and the co-ordination of regional activities.

- Investing in tenant businesses

A few successful, larger incubators have self financed improvements to and growth of the incubators. In addition to providing their tenants with quality services they are beginning to venture into investment in these businesses. This is being done in two ways: first, by moving into partnership with promising tenants, which may involve a financial as well as directorial role in the business: second, establishing a pool of seed funds which is used to finance promising tenant businesses.

- Growth in expertise and knowledge

There is a growing level of knowledge and expertise on business incubation in Australia both at national and individual levels. In response to the information and training needs of a young industry ANZABI, in conjunction with the Federal Government, has developed and delivered a series of training modules focussing on incubator management and best practices. In addition, member incubators and consultants are refining and developing the concept of incubation to meet the particular requirements of both regional communities and industry sectors.

A guide to best practice

For the purposes of this report “best practice” refers to a set of business incubator activities and outcomes which are commonly regarded as the “best” in the industry. The final set of best practices was endorsed at the 1996 National Incubator Conference. Identifying best practice standards for the incubator industry in Australia presented several challenges:

- a diversity of business incubation reflecting differing circumstances and needs;
- limited knowledge among business incubator operators of this diversity;
- limited precedence for standard setting within the industry;
- limited consensus on what constitutes successful incubation and thus best practice.

For the purposes of this project business incubation was divided into four areas. These four divisions were made with two purposes: to select from among

the hundreds of activities involved in setting up and running an incubator the *key* sets of activities; second, to group these activities in a way which incubator practitioners would easily recognise and be able to use. The four areas and associated best practices are:

1. Incubator set up:
 - focus the incubator on nurturing and growing businesses;
 - ensure the needs of the incubator programme dictate building requirements;
 - structure the incubator programme to become financially self sustaining.
2. Incubator management:
 - use a planned and structured approach to develop the incubator;
 - recruit staff who fit the incubator programme and are able to help tenant businesses grow;
 - understand the needs of the tenant businesses;
 - incubator managers should focus on adding value to tenant businesses.
3. Incubator services:
 - focus the incubator's space, business services and advice on the needs of the tenant businesses;
 - support the incubator with a wide network of business support services.
4. Incubator performance:
 - regularly evaluate and improve the incubator programme's performance.

Three points need to be made. First, the identified practices are not just theoretical ideals but have been set and met by Australian incubators. Second, no incubator has achieved all the best practices: they are an amalgam selected from different incubators in Australia operating under different circumstances. Finally, it is recognised that many incubator managers wish to improve their incubator but are subject to influences beyond their control. The following tables offer a pointer to the direction successful incubators are taking when the opportunity arises. Each table contains an abridged version of the relevant best practices.

Policy plays

This section attempts to answer two key questions: “To what extent are incubators justified?” and “If they are justified what lessons can be learned from the Australian experience?”.

The Australian experience demonstrates that private sector involvement in business incubators most often takes the form of provision of business services to the incubator programme and its tenants. It appears that private investment in incubators has not arisen because it is insufficiently profitable. Whilst private sector “serviced offices” are present in Australia, they do not provide their tenants with

Table 1. **Incubator set up**

Best Practice	Focus the incubator programme on nurturing and growing businesses.	
Definitions <i>Defines the component parts of the best practice standard.</i>	"Focuses" means:	<ul style="list-style-type: none"> – the central objective of the incubator programme is to grow small businesses; – the incubator programme provides services and advice which tenant businesses need; – the incubator manager spends 60% of their time in direct contact with tenants or maintaining external business support networks or establishing training programmes.
Best Practice	Ensure the needs of the incubator programme dictate building requirements.	
Definitions <i>Defines the component parts of the best practice standard.</i>	Means:	<ul style="list-style-type: none"> – building size reflects the level of community demand for the incubator; – building space is flexible; – common area is centrally located and promoted as a place for informal interaction; – office services are centrally located; – low maintenance costs.
Best Practice	Structure the incubator programme to become financially self sustainable.	
Definitions <i>Defines the component parts of the best practice standard.</i>	"Incubator programme" means: "Self sustainable" means:	<ul style="list-style-type: none"> – all the incubator's space, services and business advice; – sources of income cover costs.

business training and advisory support. One must then ask "to what extent is public investment in incubator proposals warranted based on their worth as economic or employment development tools?". The answer to this question is uncertain.

Broadly speaking, successful incubator programmes can increase the number and survival rate of small businesses, create jobs, assist local economic development and help commercialise research and technology. However, a more precise analysis of each of these outcomes is difficult due to a lack of research, empirical data and common analytical framework. For example, the most common justification for incubators is that they reduce the failure rate of new businesses. Typically, in Australia 6-9 per cent of new businesses entering established incubators "fail", which compares well with reported first year failure rates for small businesses of up to 33 per cent (Watson, J. and Everett, J.E., 1996). However, the latter failure rate is being called into question (Kirchoff, B.A., 1993). As Watson and Everett (*op. cit.*) themselves note:

"Reliable statistics on small business failure are scarce and are often produced or inferred from databases designed for other purposes. ... Further,

Table 2. **Incubator management**

Best Practice	Use a planned and structured approach to develop the incubator programme.	
Definitions <i>Defines the component parts of the best practice standard.</i>	“Incubator programme” covers: “Structured” means: “Management plans” cover:	– incubator set up: building, finances, incubator management and incubator services; – plans are linked to one another; – strategic, business and marketing plans and annual budgets.
Best Practice	Recruit staff who fit the incubator programme and are able to help businesses grow.	
Definitions <i>Defines the component parts of the best practice standard.</i>	“Are able” refers to:	– small business experience in finance, marketing, bookkeeping and planning; high level of interpersonal skills and an ability to network in a range of settings; an ability to counsel businesses and provide access to external business advisers.
Best Practice	Understand the needs of the tenant businesses.	
Definitions <i>Defines the component parts of the best practice standard.</i>	“Understand” means:	– sufficient knowledge about the business to be able to anticipate problems and take advantage of opportunities e.g. when networking. This means knowledge is gained through formal monthly meetings and informal means.
Best Practice	Incubator managers should focus on adding value to tenant businesses, for example through training programmes.	

the available information is confusing because of the variety of definitions (or proxies) used. As a result, and in the absence of any contrary evidence, dubious statistics suggesting very high failure rates for small enterprises are frequently quoted and have been allowed to form part of the folklore on this subject.”

How do incubators rate as a tool for economic development when compared to other initiatives? A lack of empirical data also makes it difficult to answer this question. In employment terms, ANZABI’s 1994 report estimated that the cost to government per job created through incubators was \$4 000. This cost reduces with time as the tenant businesses graduate. This figure compared well with other labour market programmes in operation at the time.

Despite growth in the numbers of tertiary institutions designing modules and packages for small business training, anecdotal evidence gathered during feasibility studies throughout Australia points to a need for more basic small business training among new and established businesses. The sort of on-the-job training

Table 3. **Incubator services**

Best Practice	Focus the incubator's space, business services and advice on the needs of the tenant businesses.	
Definitions <i>Defines the component parts of the best practice standard.</i>	"Space" covers:	– monthly lease/licence terms; workspace size appropriate to tenants needs;
	"Business services" covers:	– nearby access to a fax, photocopier, computers, bookkeeping service and a conference room;
	"Business advice" covers:	– sales/marketing, financial management advice, help obtaining finance, business planning and counselling.
Best Practice	Support the incubator with a wide network of business support services.	
Definitions <i>Defines the component parts of the best practice standard.</i>	"Business support services" covers:	– business planning and management; marketing and sales; bookkeeping and taxation; financing and legal matters and mentoring.

Table 4. **Incubator performance**

Best Practice	Regularly evaluate and improve the incubator programme's performance.	
Definitions <i>Defines the component parts of the best practice standard.</i>	"Programme performance" covers:	– financial performance including budget variance; amount of sponsor support; non-financial including tenant satisfaction with and use of incubator services, annual graduate and failure numbers and occupancy level;
	"Regularly" means:	– financial data and tenant satisfaction monthly and use of services and incubator graduates yearly.

provided by creating and operating a business in a business incubator fits well with Australia's current emphasis on vocational and competency based training initiatives (Kemp, D., 1996).

However, more detailed economic analysis is required. Such analysis should take into account the full extent of government and community investment, the cost of "failed" incubators and the cost of any subsidies for support strategies (e.g. grants to a national industry association). On the benefits side such factors should be considered as the immediate monetary costs foregone (e.g. monies not lost by creditors), the avoidance of unemployment of business principals and staff, and diminished social costs (e.g. mental health problems, family dislocation, and so on).

If it is accepted that incubator programmes are economically justified then what lessons can be learned from the Australian experience? This can be answered from both a national and a local perspective. From a national perspective it is important that funds are available for the *establishment* of incubator programmes which are: based on a thorough feasibility study; are modelled on the industry best practices; and can demonstrate long term viability without recourse to ongoing operational subsidies.

To maximise the outcomes for the industry it is also important to have a co-ordinated national strategy which will facilitate training, information delivery, and networking to incubator boards and operators. This is especially important in regions where the incubator concept is in its infancy.

At a local or regional level it is important that certain ingredients be present in the area considered for an incubator programme. Access to markets for products and services, sufficient numbers of people with ideas and initiative, sufficient expertise in the community to provide business training and support, sufficient financial resources, and a certain community cohesiveness and commitment. A thorough feasibility study conducted by a suitably qualified person *in conjunction* with the incubator board or steering committee should cover such issues.

The type and size of the incubator must also reflect local conditions. For example, most regional cities and towns cannot support large “independent” incubators. In these areas successful incubators are part of larger parent organisations which serve a similar business development purpose in the community. The trend of amalgamation of incubators with other business development organisations strengthens the ability of a community to help stimulate the growth and development of new businesses.

The key to achieving successful employment outcomes is to focus the incubator programme on developing businesses. The degree to which “incubation” is the tool of choice to achieve business development and employment outcomes depends in turn on other factors. These factors include the extent of successful business advisory and training services in the local community and the skills and knowledge base of the workforce.

A planned incubator programme should be organised to operate on a financially self sufficient basis. It appears that most incubators which received operational funding have not survived the removal of that funding. Finally, one of the most critical factors in the success of an incubator programme is the expertise and commitment of the incubator manager. This issue requires further research.

Bibliography

- Australia and New Zealand Association of Business Incubators (1995),
Business Incubators: Fourth Australian and New Zealand Conference Proceedings, Canberra, ANZABI.
- Australian Bureau of Statistics (1996),
1995 Small Business in Australia (Catalogue No. 1321.0), Canberra, Australian Government Publishing Service.
- Australian Quality Council (1995),
Australian Quality Awards Assessment Criteria.
- Bearse, P. (1994),
The Evaluation of Business Incubation Projects: A Comprehensive Manual, Athens, Ohio, National Business Incubation Association.
- Department of Industry Science and Technology (1995),
Regional Enterprise Centre Networks: A Report on the Application of Networked Business Incubators in the Regional Development Context.
- Dowling, P. (1997),
Business Incubation in Australia: Best Practice Strategies that Incubators Use, Canberra, Australia and New Zealand Association of Business Incubators.
- Dowling, P. (1996),
Business Incubation in Australia: Best Practice Standards and an Industry Profile, Canberra, Australia and New Zealand Association of Business Incubators.
- Duff, A. (1994),
Best Practice in Business Incubator Management, Office of Regional Development, Department of Housing and Regional Development, Western Australia.
- Kenyon, A., Gardner and Associates (1994),
Business Incubators in Australia: An Evaluation, Canberra, ACT, Australia and New Zealand Association of Business Incubators.
- Office of Local Government, Department of Immigration, Local Government and Ethnic Affairs (1992),
Local and Regional Business Incubators: A Review (No. 27 in the Australian Regional Development Series), Canberra, Australian Government Publishing Service.
- Rice, M.P. and Matthews J.B. (1995),
Growing New Ventures Creating New Jobs: Principles and Practices of Successful Business Incubation, Westport, CT, Greenwood Publishing Group, Inc.
- Small Business Council (1988),
Business Incubators, Canberra, Australian Government Publishing Service.

Williams, A.J. (1987),

The Characteristics and Performance of Small Business in Australia (1983 to 1985): A Study of the Characteristics of Small Australian Business Ventures and their Owner/Managers, and a Longitudinal Investigation of the Economic performance, Monograph, University of Newcastle.

Other Information Sources

The raw data on which much of this summary is based was drawn from a national survey sent to all known incubators in 1996. The survey's response rate was as follows:

Full response	29	60%
Part response	4	8%
Non-response	16	32%

Additional information was obtained from ANZABI's database as well as from site visits to 20 incubators. An analysis using variables such as incubator size, age, model and location indicates that on these parameters the non-respondents do not differ significantly from respondents. As such the sample used can be taken with considerable confidence as representative of the incubator population in Australia.

Chapter 3

Business Incubation in Germany

National overview

The relevance of incubators in regional policy

Germany began setting-up incubators noticeably later than the other G7 nations. This was because regional development was first organised on a truly regional basis in Germany in the 1980s. Until then such policies were generally made on federal and state levels. Local authorities had only very limited influence. This policy change came at the end of the 1970s and the beginning of the 1980s. In the last 15 years the establishment of incubator centres has become the most important instrument in regional, as well as urban, development in Germany. In the meantime there are now over 200 such establishments in Germany, offering work premises for some 5 000 companies and 200 research institutions. Until now the centres have, in total, been directly responsible for the creation of around 60 000 jobs (ADT 1997, page 1).

The process began in Berlin in 1983. The incubator in Berlin (Berliner Innovation – und Gründerzentrum-BIG) was set up as an initiative from the parties responsible for technology transfer at the Technical University in Berlin together with support from the Berlin Parliament. In the first phase an area of circa 2 500 square metres was made available for the BIG. The fact that the demand for space far exceeded that offered meant that the centre was full within six months.

The promoters of this Berlin model led a very effective press campaign and thereby created a high level of attention for the project nation-wide. The project's innovator, Elmar Pieroth, at that time economy senator in Berlin, wanted to make his city into a centre of ideas for the future ("Handelsblatt", 18.01.1984) via the incubator. Soon other towns and cities began to establish incubators, including Karlsruhe, Aachen Schwerte, Dortmund, Osnabrück, Syne, Heidelberg, Bonn, Stuttgart, and Hannover.

These initiatives came in the main from city councils. In addition, a role was also played by the trade and industry chambers (above all in Karlsruhe, Aachen

and Dortmund), property developers (Schwerte, Bonn) and banks and building societies (Bonn and Stuttgart).

Between 1984 and 1986 the number of German incubators doubled each year. The next push came after German unification in 1990, when numerous areas in East Germany sought to achieve economic restructuring by setting-up technology centres. The first projects (above all in Berlin, Leipzig, Frankfurt/Oder, Dresden) were started in the months before unification. The German Government put forward a special programme for the setting-up of incubators in East Germany. The federation of West German incubators (Arbeitsgemeinschaft Deutscher Technologiezentren ADT) played an important role in the implementation of this project. It was decided that each East German project should have a West German incubator partner. Pioneers in this were the incubators in Dortmund, Hannover and Schwerte.

The ADT represents the interests of German incubators. By contrast with the *Promozione e Sviluppo Imprenditoriale* (SPI) in Italy, it is not involved in the setting-up and management of incubators. The ADT regularly produces detailed reports on individual incubators, but is reliant on the provision of data by its members for this task. The ADT receives its budget almost totally through membership subscriptions from the incubators, as well as the sale of publications and the organisation of events. The ADT is perhaps the main source of know-how concerning the setting-up of incubators in Germany. As a result it is often consulted on the preparation of incubators in Central and Eastern Europe.

Recent trends

Around 70 per cent of floor space offered by the incubators is a result of projects set up after 1990. Since 1992, on average, 18 new incubators have been opened each year in Germany. A large proportion of these new establishments are situated in the former East Germany. Every second centre is at present planning an expansion, and in many cases technology parks are being considered. The rate of occupation within the centres currently stands at 89 per cent which rises to 92 per cent when one discounts those centres only opened since 1996.

Whether the development of centres will continue in this vein is at present hard to predict. German incubators have been heavily criticised by the press and other publications. Critical findings from various analyses are often exploited by the press as evidence of the failure of this development instrument. Journalists have referred to the incubators as infertile "breeding grounds". The most recent analysis as to the effectiveness of incubators was summed up in the press in these words "The result – a total flop" (Markt und Mittelstand 1/97, page 30). Already by the mid-80s there were numerous critical reports which questioned the effectiveness of incubators (*e.g.* Eisbach 1985, Staudt 1985, Welsch 1985). These however did not prevent local authorities from investing heavily in the creation of new establishments.

In comparing incubators in Western and Eastern Germany the ADT makes the following observations:

“Differences between incubators in West and East Germany are decreasing, this is true for the size of the number of firms housed within and the people they employ as well as the variety and quality of services offered to companies. The difference between incubator numbers per million inhabitants is however clear to see between the two areas. Whilst in the West the figure lies at two incubators per one million people, in the East it is four per one million. Despite this, the number of incubators in both areas is increasing at equal rates” (ADT 1996, page 21).

Changes in the population of firms within incubators are also evident. Since 1989, the proportion of technology-orientated firms has fallen from 92 per cent to 72 per cent (TZNRW 1996, page 20). Incubator representatives explain this development by the fact that, in recent times, incubators are playing a far larger and more varied role in regional development (*ibid.*). Incubator critics cite the trend as an indicator that incubators are finding it increasingly hard to find “residents” from a technology-based background. They refer to the fact that in some incubators doctors and lawyers, as well as subsidiaries of larger firms, have set-up business, as in the case of the steel group Krupp-Hoesch (Markt und Mittelstand 1997). Unarguable is the fact that ever more German incubators are becoming like many of their British counterparts, gradually moving away from their role as promoters of innovation-based companies and becoming mere suppliers of office space.

Classification of existing incubators

The Fraunhofer Institut für Systemtechnik und Innovation outlined in one of its publications on German incubators (1985, page 2) the following classification scheme, a classification which is still valid today:

- **handicraft-orientated incubators** without co-operation establishments or services;
- **industrial parks with limited company founding and technological orientation** and limited provision for co-operation and services;
- **technology-based incubators** with extensive co-operation possibilities and services;
- **incubators** that as well as offering services **offer space to research departments**, institutions and divisions of established firms;
- **research park-like locations** for new and established firms, without provision of services and co-operation possibilities.

The second and third variants are those most evident among German incubators, though in many cases expansions to form research parks are the goal, whilst

maintaining the offer of services. Sternberg *et al.* (1996, page 70) came to the conclusion that 29 locations in West Germany and 16 in the East combine an incubator with a technology park. As a typical characteristic of German incubators Sternberg notes that (page 23):

“The more limited the period of residence in those incubators conceived as radiators, the stronger the concentration on technology-based firms set-up as a main goal. The lesser the involvement of polytechnics, or the reverse, the greater the relevance of local authorities as leading lights.”

Universities and industrial areas are the most important location types for incubators in Germany. Rural regions and urban centers are among the least frequent incubator locations.

Geographic distribution

Almost one third of all business incubators are situated in North Rhine Westphalia. The Berlin and Saxony “Bundesländer” show themselves to be fully engaged with the concept. Bundesländer in the south of Germany appear more reluctant to set-up centres (when viewed in terms of employment statistics). Business incubators thus seem to be set-up in areas where serious structural problems need to be addressed.

For the coming years however a major shift is expected. The state parliament of Bavaria has approved an ambitious incubator creation programme, with the structurally disadvantaged areas to receive most attention. The situation is similar in Hessen, after the state government there rejected incubators for more than 10 years. Figure 1 illustrates the geographic distribution of incubators in Germany.

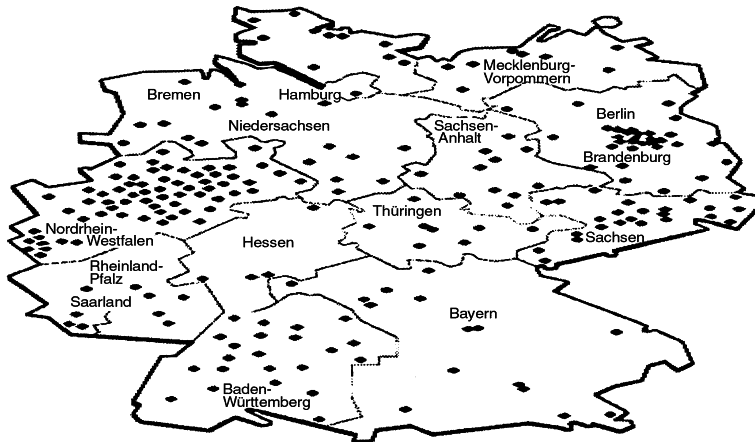
The organisation of incubators

Main objectives

The organising federation of business incubators in North Rhine Westphalia has described the aims of business incubators with the following statements:

1. To promote the setting-up of those firms which are active in the “areas of the future” (hi-tech and modern services).
2. To promote so-called “spin-offs”, namely the conversion of scientific results and findings into marketable innovations, through the setting-up of research-based companies.
3. To promote technology transfer projects.
4. Co-operation within the framework of regional and city development (TZNRW 1996, page 6).

Figure 1. The geographic distribution of incubators in Germany 1996/97



Source: ADT e.V. 1997 p. 1.

Earlier incubators were often expected to provide a positive image for the corporations involved. In the meantime, the achievement of this goal has become somewhat uncertain. Part of the reason for this is the heavy criticism German incubators have faced in the press. There are even cases where firms have tried to hide their involvement with incubators, fearing that the firm's reputation was at risk of being damaged. In the 1980s a case was reported in the press whereby a company based in Karlsruhe was refused credit by its bank due to its affiliation to an incubator.

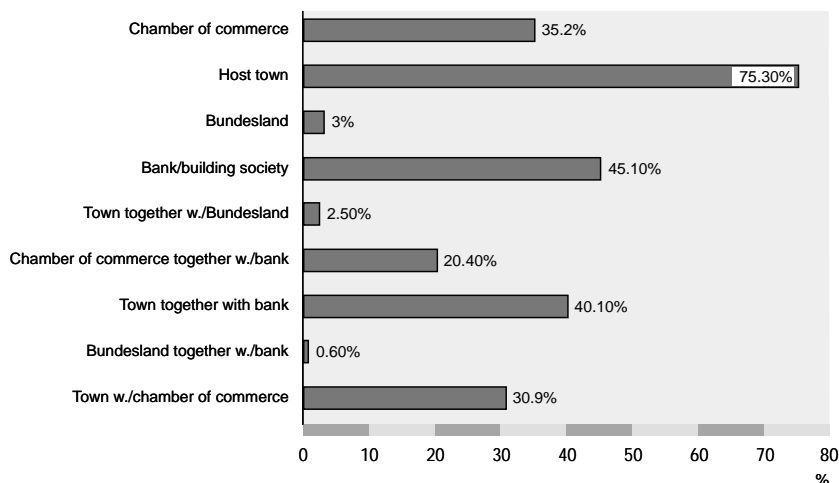
Legal status and main stake holders

A 1990 study by KMPG showed the majority of business incubators to be GmbH's (the German equivalent of limited companies). According to the more recent study by ADT, 53.1 per cent of all business incubators have this legal form. Figure 2.

In connection with the participation of different stakeholders, the following points are particularly noteworthy:

- Practically all players in regional economic development are involved, whereas the involvement of the federal-state institutions is limited to a few exceptional cases.

Figure 2. **Holders of equity in German incubators**
(percentage of cases)



Source: Own calculation based on ADR 1996.

- In the case of financial institutions, “Sparkassen” (savings banks belonging to the municipalities) are most widely represented. Their involvement arose, in many cases, as a result of pressure from regional corporations. The involvement of private banks is, until now, very rare. The repeated accusation that private banks are not sufficiently involved in regional development cannot be rejected, at least from the figures above.
- In every third case the incubator is a result of close co-operation between the regional development policies of local authorities and the relevant local chamber of commerce.
- Sternberg *et al.* make it clear (1996, page 172) that there are distinct differences between East and West Germany in terms of the role played by polytechnics and universities: “whilst in West Germany, universities are formal partners in only 3 incubators (5 per cent) in East Germany there are 8 cases of involvement (25 per cent).” The differences can be explained by the unusual situation in East German universities after unification (the dismissal of large numbers of scientists, the extensive availability of redundant property, specific state measures to ease the social impact of the restructuring process).

Financial set-up

In the majority of cases the financing of centres occurs through subsidies given by the centre's host town and/or the relevant "Bundesland". However, there are no reliable figures as to the amounts provided. Sternberg *et al.* further explain that two thirds of the money invested in West German incubators comes from the budget of local authorities and state governments. The federal government intervenes practically only in East Germany where, through ministerial funds, it provides over half of all construction costs. The involvement of private bodies and banks is limited almost exclusively to incubators in western Germany.

Sternberg *et al.* (1996, page 53) calculated that from their sample of 103 incubators the average investment stands at 13.6 million DM in western Germany and 4.3 million DM in the east of the country. In other words, in the west of the country 3 054 DM are invested per square metre for existing buildings and 4 245 DM per square metre in new constructions. The equivalent figures for eastern Germany are 1 253 DM and 2 463 DM, respectively. The authors state that "a positive correlation exists between investments for construction and rebuilding per square metre of rentable space and the federal states promotion quota". In other words: the more the federal state provides as subsidies, the higher the costs. The causality relationship that exists here can only be speculated upon. In North Rhine Westphalia, where the Federal Government was particularly active in the promotion of incubators, the investment per incubator was 16.2 million DM on average (based on a survey of 15 incubators) (Habersam *et al.*, 1994, page 137). This figure is far higher than the national average.

Table 1 gives information on the level of funding provided by the German Federal State Government to promote incubators. The figures allow for a comparison between eastern and western Germany and the various "Bundesländer".

The figures in Table 1 indicate that the contribution of the German Government is mainly centred on the new Bundesländer (East Germany) and North Rhine Westphalia, an area currently undergoing tremendous problems of structural adjustment.

The operating costs of incubators in eastern Germany are on average around twice those in the west of the country (Sternberg *et al.*, 1996, page 54). This difference, as well as the high deviations in different areas from average running costs, can be explained by the fact that German incubators present very different models in terms of management systems and equipment.

In a study by TZNRW (1996, page 24) the following points were made:

- 38 per cent of incubators cover their own costs (through rental income or project proceeds as well as income for services offered).
- 40 per cent are currently subsidised.
- 23 per cent receive structural subsidies.

Table 1. A Breakdown of Investment in Incubators by Region

Bundesland	Number of incubators	Level of total investment in incubators (million DM)	Level of state subsidy (million DM)
East Germany			
Berlin (East)	9	512	460
Brandenburg	12	257	222
Mecklenburg-Vorpommern	20	175	149
Saxony-Anhalt	12	247	170
Saxony	39	400	271
Thüringen	11	128	87
Total	103	1 719	1 359
West Germany			
Lower-Saxony	1	2	1
North Rhine Westphalia	19	416	302
Saarland	1	7	5
Schleswig Holstein	6	64	53
Total	27	489	361

When one considers that many incubators are moving away from their original structural development tasks and increasingly becoming real estate operations, and that in addition some incubators are given preferential treatment when it comes to winning public service contracts, then from these statistics the conclusion can be drawn that those incubators in Germany with a certain type of mandate for promoting regional development might not be able to survive without state aid. In most federal states the states themselves took over half the debts incurred by incubators in their early stages. The states of eastern Germany follow the West German example, as in North Rhine Westphalia and Lower Saxony, and often absorb more than half of all incubator losses. According to Sternberg *et al.* (page 55) there are only 4 eastern incubators whose income covers their costs. On average the incubators cover slightly more than 50 per cent of their costs.

The support given by local authorities often takes distinct forms which are not always purely financial. Other subsidies include the provision of cheap land and buildings as well as the indirect subsidising of personnel costs, making it hard to place a firm figure on the total value of public support given.

There are several pointers to the fact that authorities working above the regional level are also pulling out of incubators. This is above all true for the Federal Government in eastern Germany. At the moment it is impossible to judge how incubators will fare under these new conditions.

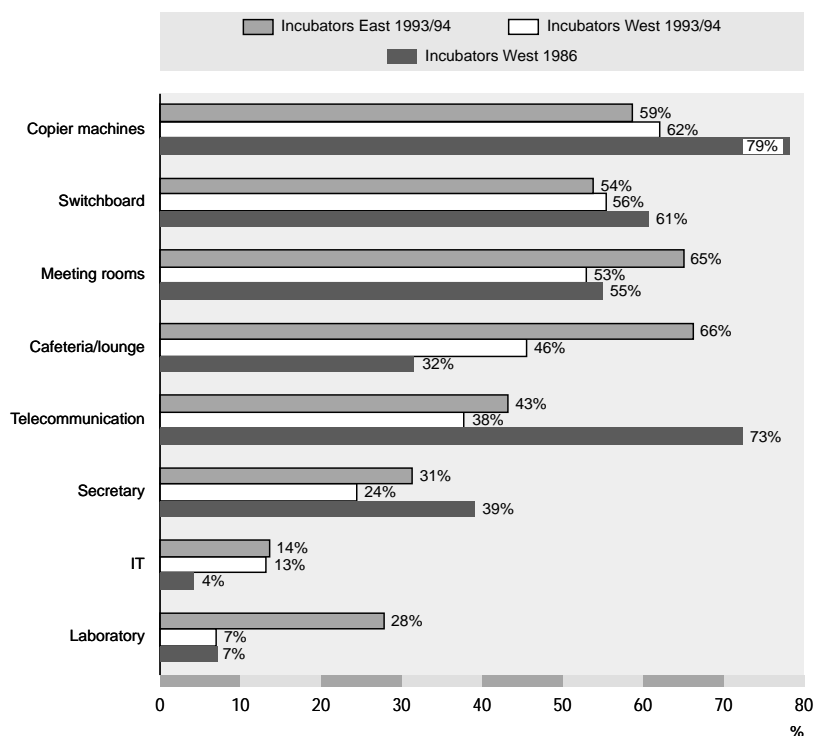
There is confusion when one asks the question whether rent payable in the incubators reflects the market rent for that area. Incubator managers often react

sensitively when asked this question. Questionnaires have shown rents to be within or above the market level (KPMG 1990, page 24). However, comparison of rents listed in the ADT brochure (Baranowski/Gross 1996, page 39ff) with average rents for the relevant areas often lead to the conclusion that this is not the case. Instead, the impression is that rents in the incubators are indirectly subsidised by the local authorities. Evidence for this can also be found in the studies of Habersam *et al.* (1994, page 140) and Sternberg *et al.* (1996, page 45).

Types of services and facilities offered to tenants

Figure 3 and Table 2 together provide an overview of the services and facilities offered by business incubators in Germany.

Figure 3. Facilities and technical services provided by incubators



Source: Sternberg *et al.* 1996 p. 80 3.6.

Table 2. **Major Consultation Services Offered by Incubators in Germany**

Type of consultation	Percentage of business incubators offering the consulting service directly	Percentage of business incubators offering the consulting service indirectly
Acquisition consulting	85.2	38.9
Business planing	47.5	44.4
Technological consulting	59.3	56.2
Patent consulting	11.1	68.5
Financial consulting	55.6	58.6
Promotion programme consulting	72.8	43.2
Legal consulting	8	71.6
Marketing consulting	37	67.3
Insurance consulting	8.6	66.7
Further education consulting	35.2	66.7

Source: Sternberg *et al.*, 1996.

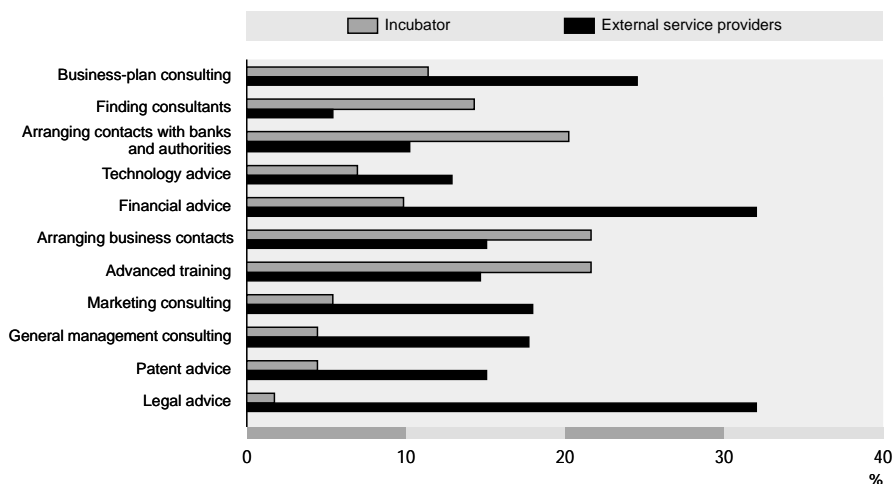
The consulting function is concentrated on advisory services for business creation. The fact that, apart from this, no specific area of consultation is offered by more than 60 per cent of incubators, makes it clear that in Germany, the French concept of “centre de ressources” has, up until now, not been introduced. A further conclusion to be drawn is in the area of co-operation and shared facilities. In German incubators far more emphasis is put on physical infrastructure and office services than on actual consultation. This again raises the question as to whether many German incubators operate as simple office facilities.

Sternberg’s study (1996, page 80) states that the usage of shared facilities is clearly in decline, whilst usage in eastern Germany remains at a level higher than in western Germany. Figure 4 illustrates the share of incubator residents using different classes of service, both those provided by the incubator itself and those supplied from outside sources.

When comparing the performance of consultation services in eastern and western Germany there appears to be little difference. In both regions these services are evaluated as “less important” or “unimportant” by the majority of companies. Similarly small is the proportion of firms who use these services. In the study of Steinkühler (1994, page 270) a large number of firms saw the quality of consultation services in incubators negatively. Very few incubators offer in-house financial facilities. Managers often point out that they could facilitate access to such services. An integration of consultation and financial services in an overall service palette is rare in German incubators.

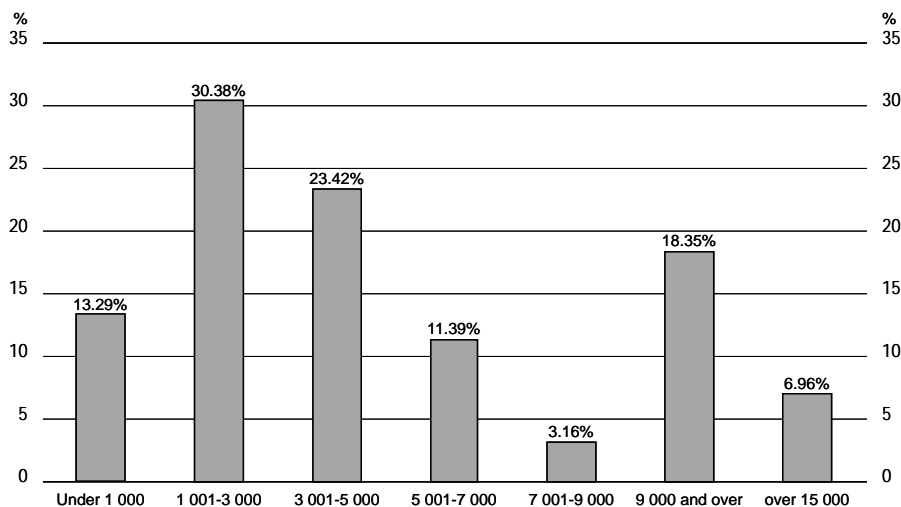
Sternberg (1996, page 84) cites data from 1993/94 which show that in western Germany over 88 per cent of firms in incubators consider the rented space offered by the incubator to be either “very important” or “important” for the development of the company. A similar result holds for eastern Germany. However, in western

Figure 4. **Usage of consulting services offered by incubators vs services supplied by external providers**



Source: Sternberg *et al.*, 1996, p. 84 pic. 3.9.

Figure 5. **Size of German incubators (in square metres)**



Source: Own calculation based on ADT.

Germany only around 27 per cent of firms consider the technical services offered by incubators to be “very important” or “important”. A much higher proportion of firms in eastern Germany (over 59 per cent) consider technical services either “very important” or “important” for the development of the company. Similarly, in both western and eastern Germany only a relatively low share of incubator-resident firms (24.6 per cent and 19.5 per cent respectively) consider the advisory services given by incubators to be “very important” or “important”.

On average an incubator offers 6 551.8 square metres of rentable floor space. Figure 5 illustrates the share of incubators in various size categories.

In both western and eastern Germany, the rentable space made available by incubators has been seen to exceed that demanded (Sternberg 1996, page 78). This seems to throw doubt on the chances of success of the numerous incubator expansions. There have been indications of over capacity for some time (Impulse 6/92, page 196, and Habersam *et al.*, 1994, page 147).

Characteristics of the tenant companies

Main types

As mentioned above, business incubators in Germany house some 5 000 firms and 200 research institutions. The ADT has the following observation as to the structure of these firms, in terms of employee numbers (1996, page 20):

“The average number of workers in these firms is between 8 and 9 per firm. These are normally highly qualified positions. This is however very variable, there are examples of firms with only 1 or 2 workers and others with 40-50, it depends on the stage of development the firm finds itself in.”

Origin of the companies

Seventy-one per cent of firms within the business incubators are founder companies (ADT 1996, page 22). Almost every second firm is a spin-off from the scientific sector (ADT 1996, page 22). Indirect spin-offs are responsible for around 20 per cent of all companies.

Fields of operation

The following figures outline the technological areas in which firms operate:

Information and communication technologies	75%
Software development	67%
Environment technologies	67%
Innovative services	63%
Production technologies	50%
Measuring and testing technologies	49%
Electrical engineering and energy	42%
Medical technology	34%
Microelectronics	30%

In some business incubators there is a distinct tendency towards sectoral clustering. In eastern Germany the most important areas of activity for firms in incubators are research and development (32 per cent of all firms), followed by technical services (19 per cent) and production/distribution (17 per cent). In western Germany the most important activities are research and development (19 per cent), production/distribution (19 per cent) and technical services (15 per cent). The high proportion of eastern German firms which are involved in research can be explained as a result of business incubators in eastern Germany having absorbed many of the scientific establishments that existed in the former GDR.

Assessment of impact

Numerous publications in Germany have examined the impact of incubators. However, these describe only some of the effects the centres have. The literature available is dominated by publications from organisations representing the centres, together with press articles which heavily criticise the usefulness of incubators. There are also a series of independent scientific studies. After analysing the available material, Sternberg *et al.* came to the conclusion (1996, page 14) that “until now, there is no empirical evidence for Germany that adequately analyses the effectiveness of incubators and thereby fulfils the following requirements:

- An intertemporal comparison as to effects of incubators, at least in West Germany.
- A study of East German incubators and the companies there, using an adapted questionnaire for a West German study.
- An analysis based on a sample sufficiently large to allow a representative overview of German incubators as well as their resident firms and make truly representative statements on regional and sectoral effects.
- A review enabling the identification and assessment of incubator effects on those firms that have already successfully left the incubators and provide a sufficiently large and representative pool of data for incubators in as many areas as possible”.

Sternberg *et al.* have produced the most comprehensive analysis of incubator effectiveness carried out in German-speaking areas. This analysis has fundamentally questioned the success of incubators. As mentioned above, these findings have been greatly exaggerated in the press. Due to the substantial subsidies they receive, business incubators in Germany are open to public criticism. Unfortunately, some centres actively try to hide the true value of the financial contributions they receive. This causes understandable, if excessive, speculation in the press. The most important evaluation findings of the existing literature will be summarised in the following areas: setting up of new companies; structural adjustment; job creation; technology transfer; creation of regional networks; regional image; and cost effectiveness.

Setting up of new companies

Around 90 per cent of German incubators regard innovation-based firms as their most important target group (TZNRW 1996, page 12*f*). The ADT often points out in its promotional material that, in the main, the firms housed in incubators do actually come from this group. The number of new firms created in incubators most likely runs into four figures. The question is, of course, how far was the establishment of an incubator the cause for the setting-up of these firms. Whilst Pett (1994, page 195) states that 20 per cent of firms asked said they would not have existed had it not been for an incubator, Sternberg *et al.* (1996, page 65) put this figure at only 3 per cent.

It is also important to examine the contribution of incubators to a company's ability to survive. The ADT states that the rate of bankruptcies within incubators stands at around 5 per cent (1996, page 21). This figure is clearly lower than the rate outside the incubators, where every third firm ceases trading within three years of being set-up. Sternberg *et al.* (1996, page 89) come to a far higher figure for within-incubator bankruptcies in their analysis, namely of 24 per cent. This figure is far lower than the rate for American incubators (Tichy 1990, page 269) but only slightly lower than that for technology-orientated firms in Germany (*cf.* Kulicke 1987, page 66*ff*). Sternberg's study therefore questions the effectiveness of incubators in helping resident firms survive. It should also be observed that the performance of firms in German incubators prior to their admission was above average, with many firms having undergone a selection test.

Also open is the question "how does involvement with an incubator affect a firm's rate of growth?". Steinkühler (1994, page 19) looked at this question by completing a comparative analysis (comparison with firms outside the incubator) and came to the conclusion that firms within incubators do in fact grow more quickly. However, the studies of Pett (1994) and Sternberg *et al.* could not confirm these findings. These latter studies are based on national comparisons which, unlike Steinkühler's study, make sectoral differentiation impossible. The relatively small empirical basis of Steinkühler's study is also problematic.

In conclusion, the material available on incubator effectiveness does not allow us to conclude that German incubators make a major contribution to firm creation.

Contribution to structural adjustment

The (potential) contribution of incubators to structural adjustment can be seen from the profile of firms renting incubator space as well as the effects that the incubators have on their surrounding economic area. A profile of renting firms goes in the main on the proportion of firms involved in technology-related activities. The available documentation shows significant differences in this regard. Incubator

representatives state that the proportion of technology-orientated firms stands at over 70 per cent (ADT 1996, page 22, TZNRW 1996, page 20). These figures are often provided by incubator managers. However, Sternberg *et al.* (page 155) were very critical of these manager-supplied results and came to the conclusion that this figure is not higher than 50 per cent (for West Germany at least). The manager of the incubator in Saarbrücken stated that, at most, only 25 per cent of German incubators exhibit a high level of innovation (“Wirtschaftswoche” 2nd February 1995, page 114). However, Steinkühler (1994, page 171f) came to the conclusion that in the incubators he assessed many firms were innovating. How can these differences be explained?

The first point concerns terminology. The term “technology-orientated” was not defined in the representative bodies’ publications. It could be suggested that this term, in the interests of the establishment’s image, is understood differently in the works of Sternberg *et al.* and Steinkühler. The differences of opinion between Sternberg *et al.* and Steinkühler could, on the other hand, lie in the collection of data and its analysis. Sternberg *et al.* analysed 100 incubators, whereas Steinkühler’s work was based on only 19 incubators. From the outset, Steinkühler’s aim was to analyse the potential for innovation in German incubators, and it might be the case that only incubators feeling themselves to be strong in this area participated.

Figure 6 illustrates spending on R&D among incubator resident firms. Other indicators also allow conclusions to be made as to the technology orientation of incubators:

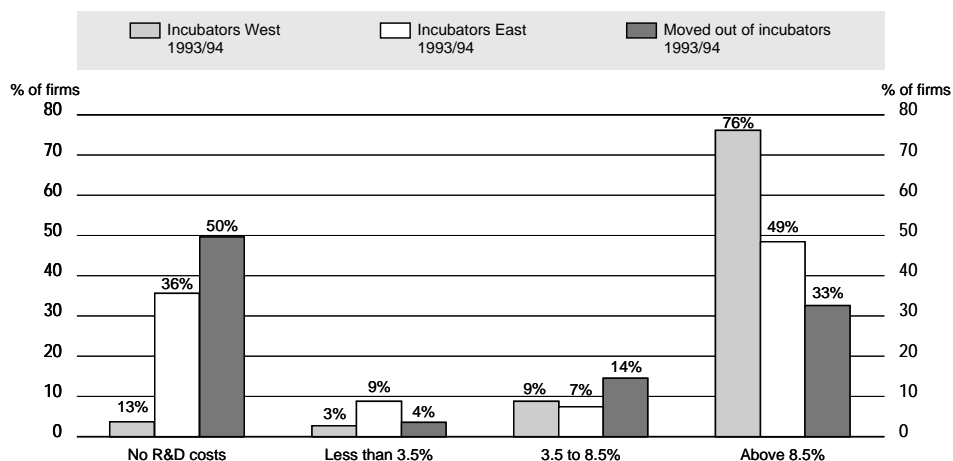
- Three out of four firms have registered no patents (Sternberg *et al.*, page 160f).
- In 1993/94, 38 per cent of all firms renting West German incubator space saw their main areas of activity as outside of research and development. However, in 1986 this figure was only 21 per cent.

The technology orientation of firms within German incubators is receding. This is confirmed by incubator representatives (TZNRW, 1996, page 20).

The impact of incubators on local economies has been seen critically since the setting-up of the first incubators. “Exceptional cases do not bring about structural change” was the title of innovation researcher Erich Staudt’s 1985 study of incubators. In his work he speaks of the “lemming effect” of German local authorities in the setting-up of incubators. Similarly, the analysis of Sternberg *et al.* comes to a negative conclusion:

“The contribution of incubators in raising regional innovation potential is minimal (page 191)... the creation of new firms, through the positive image of those firms successful in incubators is, until now, positively nowhere to be seen” (pages 191/2).

Figure 6. R&D spending in resident firms (% of revenue)



Source: Sternberg *et al.*, 1996 p. 100.

Sternberg *et al.* also underlined the fact that firms within incubators tend to look for co-operation partners outside of their region.

The ADT has tried to analyse the economic effect of incubators by looking at the number of firms that have left to set-up operations in the surrounding areas. The organisation also notes the fact that in many important incubators the number of firms leaving is substantially smaller than the number of firms which simultaneously move in (Baranowski/Gross 1996, page 29).

A cursory comparison of the geographical dispersion of technology-orientated start-ups in West Germany with the dispersion of incubators shows that areas, such as the federal state of Hessen, where there are a high number of technology-orientated start-ups are not necessarily well endowed with incubators. Conversely, in the south of Lower Saxony and the west of Schleswig-Holstein, only relative few new firms are seen despite the presence of many incubators. While such observations have limited methodological credentials. However, despite this, the influence of incubators upon regional economies lies, in some areas of Germany, far below the expectations of the 1980s.

Job creation

The creation of high-quality jobs was the main goal of incubators in the past. In this connection, the ADT states in its brochures that incubators have created

more than 60 000 jobs (ADT, 1997, page 1). The figure of 100 000 is sometimes given (ADT, 1996, page 29), in which case the employees of research facilities in surrounding areas are also included.

That many firms resident in incubators would have been created without them was the main point of the criticism of incubators in the Sternberg study. In the magazine "Markt und Mittelstand" (1/97) journalists stated that, until now, only 20 000 jobs had been created in incubators. The statements by Sternberg *et al.* are far more differentiated and can be used to indicate positive job creation effects. The authors write how, when compared to firms outside the incubators, the number of employees of incubator residents has shown more rapid growth (page 124ff). The other studies came to similar conclusions (Pett 1994, page 235; Steinkühler 1994, page 167ff). Sternberg *et al.* see the significant presence of academics working in incubators as a particularly positive feature. But it should also be recalled that many firms in incubators have to go through a screening process aimed at selecting those most likely to do well. Their performance may thus exceed that of the "average" firm for reasons not directly linked to the incubator.

A noticeable improvement in local job markets as a result of incubators has, however, not occurred (Sternberg, page 192).

Technology transfer

Technology transfer from the institutions of science to firms normally occurs through personal contacts between representatives of both areas. Scientific spin-offs play an important role. Incubator representatives regularly state in their publications that almost half of all firms within incubators are so-called spin-offs (e.g. ADT, 1996, page 22, TZNRW 1996, page 23). Sternberg *et al.* put this figure at 30 per cent.

The Forschungsagentur in Berlin (1996, page 6) recently came to the conclusion that spin-off potential in scientific facilities is larger than previously thought. At least 30 per cent of researchers asked considered setting up a firm. The early development of the incubator in Berlin made clear that such incubators provide the possibility to activate this potential. However, Chapter 4.1 comes to the conclusion that German incubators are not a deciding factor here.

Contacts between scientific facilities and incubators were analysed by Sternberg *et al.* as well as by Steinkühler. Both came to pessimistic conclusions regarding the potential for technology transfer occurring in a local context. Sternberg *et al.* saw the transfer effect as being insignificant (page 187) whilst Steinkühler, in the conclusion to his analysis of incubators in relation to technology transfer, states that there are "only very limited possibilities for support..." (page 270). The extent of co-operation and the resulting synergy effects have declined sharply since 1986 (Sternberg *et al.*, page 188) resulting in a reduction in technology orientation.

Regional network structures

The contribution of incubators to “regional networking” should be analysed in the following 4 areas: *i)* networking of organisations involved in economic development; *ii)* the contribution of incubator management to “regional networking”; *iii)* networking of incubator residents in the local area; and *iv)* networking between firms resident in the same incubator.

Networking of organisations involved in economic development

This is the most positive evident effect of German incubators. The majority of projects were implemented as initiatives from regional economic development offices together with chambers of commerce. The relationships between these two bodies were not always without disagreement and attempts to co-operate often remained as intentions only. The creation of incubators gave a concrete basis for this co-operation. In more than 30 per cent of German incubators the two bodies are both partners. In addition, there are numerous cases where the town has part shares in an incubator and the chamber of commerce is active in management. Many incubators have also managed to get the financial sector involved in project development. In 45 per cent of incubators financial institutions are listed among the partners. Even when these are mainly public savings banks, and fewer private banks are involved, the development is positive. Banks in Germany are often accused of disregarding new innovation-orientated firms. Also positive are the recent developments in eastern Germany, where various universities and private companies (mainly the so-called research and development Gmbhs – or limited companies – previously belonging to the R&D departments of large industrial firms) have become actively involved in the creation of incubators.

The contribution of incubator management to regional networking

Twenty-five innovation consultants at selected Chambers of Trade and Industry were asked to give their opinions on the incubators in their areas, the effects they have on the regional economic landscape, and various other related questions (*e.g.* the level to which company networks have been set-up, how and in which sectors as well as the role of Chambers of Commerce in the whole process). The questionnaire was carried out via the telephone, the aim being to obtain primary data concerning German incubators, most importantly from a neutral source. The findings showed very distinct regional differences, as well as very different attitudes to incubators. It was seen that in the vast majority of areas company networks already existed. The sectors in which they were evident proved to be varied. The impetus for collaboration between firms tended to come from the chambers themselves. Several had databanks available to firms searching for partners. The majority of collaborations involve smaller firms, owing to the fact that

they do not have the same resources or experience for the development of products as larger firms. The simple exchange of experience and know-how was also seen to be important.

The involvement of incubators in these collaborations was seen to be considerable, the answers given to the role of the incubators in the local economy as a whole were somewhat more varied and critical. Whilst several respondents saw their role as being very important, others claimed that they could be improved, citing the very different needs of the companies they serve as being a problem, as well as the failure of firms to accept assistance.

It must also be mentioned that those innovation consultants whose catchment area contained numerous incubators often found it difficult to give one overall response as to the effectiveness of the incubators in stimulating the local economy. It was noted for example that some incubators had a positive influence on firms outside the establishments, whereas others only acted in the interests of the firms housed within them, meaning that their effectiveness in the locality was greatly reduced.

Respondents were then asked to evaluate the role of the incubators in various regional economic policies. The incubators were seen most positively in the creation of a good regional image and the collaboration between companies and establishments promoting economic development. Less positive was their role in the economic restructuring of their areas, as well as the attracting of investors. This is perhaps a result of the limited space the incubators provide, the problem of firm "turn-over" (that firms take too long to move out and provide new space for others) and above all the problem that the firms that benefit are often very small, with a correspondingly small effect on job creation.

When asked to cite areas of special importance, several consultants cited the role of incubators in the communication of information, together with the aid they can give to very specialised industrial sectors. The candidates were asked to evaluate how often the centres in their areas offered the following services: further education; regional workshops; information events; the creation of regional co-operation networks; market studies; communication of contacts with research establishments; and technology studies.

The areas in which the centres were seen to work most regularly were in the organisation of information events, together with further education and the improvement of contacts with research establishments. Their involvement in technology and, particularly, market studies was seen to be far more limited. When asked to give their opinion on the successes and failures of incubators in their areas very varied responses were received. This clearly underlines that each region has its own particular economic problems and that from region to region the centres differ greatly in the success they have.

Networking of incubator residents in the local area

Sternberg *et al.* come to the clear conclusion that networking between incubator resident firms and those outside is no higher than is the norm in Germany (page 177). Habersam *et al.*'s study (1994, page 151) shows that possibilities for co-operation are not exploited. However, Sternberg *et al.* have stated (page 169) that a positive trend exists here. The inclination of incubator residents to involvement in local co-operation networks appears to be far greater today than several years ago. However, Steinkühler (page 269) states that incubator managers can offer only limited support to residents searching for clients. This is confirmed by Sternberg *et al.* (page 80ff).

Networking between firms resident in the same incubator

The contact intensity between incubator residents is, according to Sternberg *et al.* (page 180) declining. Only around half the residents have contact with other firms in the incubator:

“The synergy effects desired by many incubators, which should ideally bring more firms under one roof, are not directly measurable. The interest in firm co-operation is relatively high, in the majority of cases unsatisfied and compared to 1986, in decline” (Sternberg *et al.*, page 192).

The decline in contact frequency could be a result of the far wider spectrum of activities taken up by incubators in the past few years. The restriction of residents to technology-orientated firms is increasingly ignored, which may lead to less co-operation between firms.

Effects on regional identity

Our questionnaire showed that representatives of chambers of commerce held the effect of their incubator(s) on the region, on the whole, to be positive. This could be due to the considerable involvement of chambers of commerce in the setting-up of incubators. Sternberg's study shows that the creation of firms in incubators would often have occurred without them and that the incubators made no measurable impact on regional innovation (page 65ff). Until now, no evidence exists in Germany to show that incubators have helped in this area, though expansions to form technoparks have been successful. However, many incubators are in very attractive locations, so when more space is made available and eventually sold the movement of investors to this location need not be directly linked to the existence of the incubator itself.

Conclusions and outlook

The most comprehensive analysis of the successes of German incubators carried out until the present day (Sternberg *et al.* 1996) does not come to the most encourag-

ing of conclusions. The study shows that the contribution of German incubators to the setting-up of new firms, structural adjustment, creation of new jobs, stimulation of technology transfer, the creation of local network structures and the improvement of the regional identity of the relevant areas, is far weaker than initially intended. Firms within German incubators do develop more quickly than those outside the establishments. However, this difference is, on the one hand, very small and on the other, the role of the incubator in this process is hard to define. One possible explanation for this could be that firms in incubators were in any case more likely to prosper than the average firm, otherwise they would not have passed the strict selection stage. One positive achievement of incubator projects is an improved quality of co-operation between institutions involved in economic development, although universities are seen to only play a small role in this process.

Certainly, from such studies the relevant regional corporations can draw starting points for improved interaction with incubators. The results of these studies also lead to the following recommendations for the implementation/development of future incubator projects:

- The incubation industry should not be encumbered with unrealistic expectations.
- The level of funding is not necessarily of greatest importance in an incubator's success. The positive correlation between subsidies and project costs identified by Sternberg's study should make those responsible, especially on a federal state level, consider subsidies carefully. Bavaria and Hessen, states which are only now launching incubator projects, should seriously consider the fact that incubators in eastern Germany receive, on average, two thirds of the funding of their western German counterparts, while a noticeable difference between the two areas in the realisation of goals does not exist.
- The continued subsidisation of rents in incubators should also be seriously reconsidered. Investment in incubator-resident firms may be more appropriate than providing subsidies. This may have the following advantages:
 - The managing company can better adapt its services to the firms receiving them. They are no longer obliged (as is the case when rents are subsidised) to provide the same support to all resident companies, regardless of whether these are new firms or subsidiaries of multinationals.
 - In later stages, services can be financed from dividends and the sale of shares. In this way a type of "revolving fund" can be implemented, allowing future financing to be independent of the state budget.
 - The managing company will be more motivated to adapt its consultation services to the actual needs of the firms. There are improvements to be made in this area at the present time (*cf. Sternberg et al. page 85*).

- The integration of consulting and financing will occur, something long demanded but rarely evident in German incubators. The relevant local authorities may also be more likely to involve local financial institutions in questions of risk management.
- The incubator would generally become more attractive and would therefore have the possibility, through the selection of its residents, to better consider the technology-orientation of potential resident firms.
- Options must be found to better incorporate German universities in incubator projects. The study by the Forschungsagentur Berlin has shown that there is a far greater interest in setting-up firms among scientists than was previously thought. The fact that successes in Berlin, Aachen and Dortmund (the best performing German incubators) have been achieved through co-operation with universities proves that incubators can perform an important bridging function. It is not however enough to build an incubator in the proximity of a university and hope that technology transfer will occur automatically. Researchers will only become incubator residents when they are guaranteed an exit clause. Conversely, the extension of certain academic contracts might be made conditional on the rendering of services to the incubator.
- German incubators have, so far, been totally uninvolved in the acquisition of public contracts as an instrument for their promotion. Without the mandates of NASA and the US Defense Ministry Silicon Valley would probably have remained an insignificant location on the Californian coast. The attempts by German local authorities to build “small Silicon Valleys” would be greatly facilitated by the provision of sizeable public contracts.

There are, therefore, various possibilities for improving the likelihood of success in German incubators. Not all of these involve public financing. It was often the case that a local authority made a sum available for its incubator and waited to see what happened. Experience has shown that the authorities' work only really begins once the incubator is opened. Here, a critical question is how incubators can be incorporated, to a greater extent, in regional economic development. There is a need to create long-lasting networking structures within the regional economy. This will provide German incubators with their greatest challenge in the coming years.

Bibliography

- Arbeitsgemeinschaft Deutscher Technologiezentren (ADT) (1996),
Arbeitsbericht zum Projekt Athene, Berlin (internal document).
- ADT (30.1.97),
Technologie- und Gründerzentren leisten einen bedeutsamen Beitrag zur regionalen
Wirtschafts- und Strukturförderung, Pressemitteilung.
- Baranowski, G. and Groß, B. ed. (1996),
Innovationszentren in Deutschland 1996/97, Berlin.
- Commission of the European Communities (1990),
Evaluation of Employment Enterprise Zones, Brussels/Luxembourg.
- Eisbach, J. (1985),
Gründer – und Technologiezentren – Sackgassen kommunaler Wirtschaftsförderung,
Wirtschaftsdienst, pp. 88-91.
- Forschungsagentur Berlin GmbH (1996),
Technologieorientierte Unternehmensgründungen aus dem Wissenschaftsbereich,
Berlin (internal document).
- Fraunhofer-Institut für Systemtechnik und Innovation (1985),
Sieben Fragen zum Thema Gründer- und Innovationszentren, Karlsruhe.
- Gunther, W.D. and Leathers, Ch.G. (1987),
British Enterprise Zones, *The Review of Regional Studies*, 1/87.
- Habersam, M. *et al.* (1994),
Technologiezentren im Wandel, Berlin.
- Handelsblatt (18.01.84),
Peieroth möchte Berlin zum Zentrum der Zukunftsideen machen.
- Janovsky, J. (1986),
Les parcs technologiques en France, au Royaume-Uni, et en RFA, Paris.
- Impulse (6/1992),
Für jeden High-Tech-Bereich eine eigene Ideenschmiede.
- KPMG Deutsche Treuhand Gruppe (1990),
Innovation und Wirtschaftsentwicklung durch Technologiezentren in der Bundesrepublik
Deutschland, Frankfurt am Main.
- Kulicke, M. (1987),
Technologieorientierte Unternehmensgründungen in der Bundesrepublik Deutschland,
Frankfurt am Main.

- Kupsch, G. (1984),
Planung und technische Realisierung des BIG, published in TU Berlin (ed.), Berliner
Innovations- und Gründerzentrum, Berlin, pp. 36-42
- Markt und Mittelstand (1/1997),
Brutstätten ohne Eier.
- Pett, A. (1994),
Technologie- und Gründerzentren, Frankfurt am Main.
- Staudt, E. (31.05.85),
Ausnahmen bewirken noch keinen Strukturwandel, Wirtschaftswoche.
- Steinkühler, R.H. (1994),
Technologiezentren und Erfolg von Unternehmensgründungen, Wiesbaden.
- Sternberg, R. *et al.* (1996),
Bilanz eines Booms, Dortmund.
- TechnologieZentren im Land Nordrhein-Westfalen E.V. (TZNRW),
Technologie- und Gründerzentren in Deutschland und Nordrhein-Westfalen
- Tichy, G. (2/1990),
Gründerzentren und Regionalpolitik, in Wirtschaft und Gesellschaft, S. 265-280.
- Welsch, J. (1985),
Durch "Technologieparks" zu mehr Arbeitsplätzen?, WSI-Mitteilungen, pp. 6-17.
- Wirtschaftswoche (2.2.95),
Nicht alles Gold.

Chapter 4

Business Incubators in Italy

Summary, evaluation and conclusions

A national network

Small and medium-sized enterprises in Italy have only recently become the subject of deliberate policymaking by government. One of the principal agencies responsible for direct intervention is SPI – *Promozione e Sviluppo Imprenditoriale* S.p.A. – which is dedicated to entrepreneurship promotion and development. SPI is wholly owned by COFIRI, a finance subsidiary of the Institute for Industrial Reconstruction, better known as IRI, the Italian state holding company.

SPI's work has initially been concentrated in steel closure areas and the southern regions of Italy which lag behind the more prosperous north. SPI has concentrated on using business innovation centres (BICs) to nurture new businesses, particularly in the high technology and manufacturing sectors. Under some EU funding regimes certain BICs are known as *Centri Integrati per lo Sviluppo dell'Imprenditorialità* (Integrated Centres for Entrepreneurial Development), or CISIs, but whether BICs or CISIs, the centres do the same job: they offer managed workspace within their walls to companies, as well as outreach services to those outside.

After successfully developing centres in Trieste (1989) and Genoa (1990) using converted buildings, SPI established a purpose-built centre at Taranto in Puglia (1992), followed by others in Pozzuoli (Naples) and Marcianise (Caserta). A second generation of almost exclusively purpose-built centres opened during 1995 and 1996 at Massa in Toscana, Teramo in Abruzzo, Gorizia in Friuli Venezia Giulia, Campobasso in Molise, Catania in Sicily, and Casarano in Puglia's southern province of Lecce. A new centre was completed early in 1997 at Terni, the steel closure area 80 km north of Rome. Two others are under construction in Calabria, deep in the south, and Taranto's centre is being extended to almost double its size. Plans are in hand for eight other new centres in Savona, La Spezia (Liguria), Lovere (Brescia), Piombino, Foligno, Salerno (Campania), Sassari and Nuoro.

SPI also has, or is planning, a few centres without managed workspace or incubators, but which offer supporting services alone. Examples include BIC Veneto,

established in the early 1990s, where building an incubator at some later stage has not been ruled out and SVI Lombardia (which should eventually have an incubator at Lovere). No incubator is planned for SVI Lazio, however, and a few regions will have no centre at all. These latter regions are small, excepting Emilia Romagna, where the local economy is sufficiently able to help itself for such intervention to be unnecessary.

With another nine centres at the planning application stage (as of end 1996), however, SPI is well on the way to establishing a national network of BICs and CISIs by the early years of the 21st century. By then there should be at least 30 centres spread around Italy. SPI forecasts that at any one time a network of this size would contain more than 1 000 SMEs and provide work directly for about 10 000 people.

Turnover of tenants, cost per job and effectiveness in job creation

Companies spend three or four years in an incubator, although this may be increased in special circumstances, such as where high technology is involved and the company concerned needs a sheltered environment until its product is at a stage where it can be sustainably marketed. If this turnover of companies can be achieved, it should ensure that each BIC and CISI incubator unit can be “recycled” to house a new company every three or four years. In effect, each incubator unit is supposed to function as a capital asset. If they can all do so, BICs and CISIs ought to provide a cost-effective way of creating a reasonable number of new jobs – 2 500 a year when the network is about 30 centres strong, assuming companies stay an average of four years before moving on.

Costs per job

SPI says that on the evidence so far, this should put the net marginal cost of creating a job in a BIC or CISI at about Lit. 60 m, although SPI does not include the cost of building the incubators in its calculations. The contrast is with government help given to transplant jobs into an economically needy region via direct investment: such money is, in effect, an unrecyclable grant. Past projects have enabled the monies involved to be calculated at up to Lit. 200 m for a job in a medium-sized company and up to Lit. 350 m for one in a large enterprise – between three and six times the projected cost of a job in a BIC or CISI.

This makes the BICs and CISIs look like very good value for money, but the figures must be treated with some caution. It will be interesting long-term, for example, to compare the eventual comparative costs of job creation in Taranto, where a large, subsidised steel industry was built up in the 1960s and 1970s at the equivalent of Lit. 350 m a job today, only for some 22 000 jobs to be lost when most of the steelworks closed down.

By contrast, the CISI Puglia centre at Taranto cost only Lit. 8 bn to build and is being extended at an additional cost of Lit. 7 bn. However, even if it were eventually to house 40 companies at any one time at an average size of 10 employees each, this would work out at only 400 jobs, or 100 new jobs a year if SPI's four-year tenancy turnover target is achieved. On this basis, it would take 220 years to replace the lost steel industry jobs!

However, this "drop in the ocean" judgement is not entirely fair. Whilst BICs and CISIs are concerned with creating jobs directly, they are also in the *indirect* job-creation business in the long run. By encouraging entrepreneurship, they aim to foster corporate infants that will do most of their growing under their own steam after leaving the BIC or CISI where their early development was nurtured. The BICs and CISIs are hatcheries and nurseries, with the hope that an improved climate for entrepreneurship will also have a knock-on and ripple effect in areas around them through such mechanisms as local inter-trading between companies and the emergence and the build-up of regional supply networks. One piece of economic activity potentiates another.

Job creation

Therefore, counting new jobs created by SPI's BICs and CISIs strategy is not straightforward because of further job creation by successful companies which leave, or because of parallel or associated development triggered by the BICs and CISIs – the multiplier effect. However, some of the benefits so far can be measured. There are at least 493 direct jobs in the centre at Genoa and 262 jobs in the Pozzuoli centre, with another 157 created by 12 successful companies before they moved out of Pozzuoli to find room to expand. At Marcianise, the enterprises in the centre at the time of writing have so far created 223 jobs. SPI's aim is an average size of 10 employees per BIC or CISI tenant. Genoa's centre is running at more than eight at present, Pozzuoli's at nearly nine, and Marcianise's at nearly 7.5, so the SPI's target figure is not unrealistic, although it is still some way off being achieved in a nationally consistent sense. When there are 30 BICs and CISIs, the hope is that they will house about 1 000 companies employing 10 000 people. If the length of the average stay eventually works out at four years, this implies an annual job creation rate of 2 500 a year. Is this achievable?

Problems in achieving tenant turnover

The BICs' and CISIs' long-term effectiveness will depend on keeping the centres full whilst turning over space efficiently to achieve a steady throughput of new businesses. However, achieving a four-year turnover target will be easier said than done if the evidence of the UK's most experienced operator of managed work-space is taken into account. British Steel set up a subsidiary in 1975 called British

Steel (Industry) to create jobs and promote entrepreneurship in steel closure areas. This experiment was a European pace-setter and many of BS(I)'s resulting initiatives have been widely copied in other countries. One of the main initiatives has involved building and operating managed workspace, or incubators, with centralised services for tenants, the forerunners of Italy's BICs and CISIs, as well as many others.

More than 21 years of experience have led BS(I) to the conclusion that it is optimistic to expect to be able to recycle most of this space. In practice, only about 25 per cent of tenants move on at all, let alone at the end of four years. Three-quarters become permanent residents. BS(I) has become reluctant to try to evict them, for where else would many of them go? If evicted, some, perhaps many, would then fail because they would not be able to afford the services to which they had become accustomed. BS(I)'s policy now is to sell managed workspace to property companies once the centre concerned becomes "mature" with three-quarters of the space occupied by long-term residents. It sees itself not as a landlord, but a job-creator, and is beginning to develop a policy of starting a new cycle with a new centre to try and continually re-establish and maintain momentum.

The turnover record of SPI's BICs and CISIs is impossible to evaluate because too few centres have been operating long enough to provide statistically meaningful figures. Moreover, each is different from the others. So far, the oldest centre, in Trieste, has housed 39 companies since it opened in 1990. There are 20 companies there at present, re-using space previously occupied by others, so that 19 have moved on. This suggests a 95 per cent turnover in six years, or about 16 per cent a year. By contrast, Genoa's centre has taken in 76 new companies over a similar period. Of these, 13 have left and five have failed, one of which was rescued. This suggests a turnover rate, so far, of only about 5 per cent a year. However, the centre has been growing continuously, so that many companies have not yet had time to establish themselves strongly enough to leave. Until a steadier state of "ins" and "outs" is established, turnover performance cannot be assessed fairly. A similar situation applies in the centre at Taranto, which is currently full, but with only 17 tenants. Although it opened in 1992, it took two years to attract tenants in numbers (as was also the case in Genoa, incidentally) so the idea of the Taranto centre's achieving any significant turnover at all during this period is academic. Only now is there a real demand for places that is being met by extending the centre to double its size. Until the centre at Taranto has been operating stably in its larger format, evaluating its turnover performance will be meaningless. CISI Campania, however, appears to be doing better: the centre at Pozzuoli, has admitted 41 companies in a little over two years and 12 have left – a yearly turnover rate of about 20 per cent for 30 incubator units; the Marcianise centre has admitted 36, of which six have moved on in little over a year, again suggesting an annual rate of 20 per cent. The keys here, however, are local demand and culture: the greater

Naples area is the largest and most densely populated area served by a BIC or CISI; moreover, there is a bigger base of people to draw from, as well as an opportunistic culture, which the Pozzuoli centre in particular has been able to tap. Both the Pozzuoli and Marcianise centres also appear to have benefited from pent-up demand for secure, sheltered premises in areas where organised crime is endemic. This latter point may slow down initially promising turnover rates, as some companies are reluctant to move to less secure premises.

A “half-way-house” system, involving secure industrial estates for larger tenants would have a role to play here. Indeed, SPI would find it easier to encourage businesses to leave BICs and CISIs earlier in all parts of the country if there such comparatively sheltered industrial estates for maturing companies were available. Among other things, they would also enable networking to be kept up between BIC and CISI tenants – another important contributor to the economic multiplier effect of the programme. SPI is addressing this issue of special industrial estates.

Other means of evaluating performance

So do the BICs and CISIs really work? Some economists and commentators argue that intervention in market mechanisms is anathema in any form.

However, in the areas of poor, dependent or anti-entrepreneurial culture BICs and CISIs are especially important – and not so much for their direct or even indirect economic impact, but for their importance in social policy and development generally. Non-intervention leads to emigration of able people and further relative decline. Intervention needs to signpost the pathways people can take to help themselves, as well as promoting a more stable, widely-based economy. Entrepreneurship skills can be taught. BICs and CISIs are instruments to help create the conditions in which entrepreneurship can at least start to succeed, even if takes years to flourish.

In addition to their role in creating jobs, therefore, BICs and CISIs must also be measured against what other value they add in the areas where they operate. Many of these benefits cannot be quantified. They will probably prove assessable only in retrospect, and perhaps not for many years, when change has become obvious.

Adding value

BICs and CISIs are not just concerned with real estate. In all cases, they add value by doing something over and above providing accommodation for SMEs. Two types of added value are involved:

- a) For the SMEs themselves, through advisory and business services and the creation of a supportive community. This is elaborated further below.

- b) For the community around them, by contributing something that would otherwise not have been there. For example, in Genoa, siting the BIC in a derelict steelworks prevented the total abandonment of a substantial industrial zone near the middle of the city which had become disparagingly known as “the Genova Bronx”. The BIC provided a focus and kept the area alive. This in turn has encouraged recent vigorous development of new industrial real estate on the whole site, including some accommodation for successful companies leaving the BIC. In Sicily and Campania, the BIC and CISI are providing a safe environment for SMEs to start up unmolested by organised crime. In Puglia, the two centres are helping to create new industry in regions from which entrepreneurs, such as those who have started up these businesses, have traditionally migrated. They are also helping to change social attitudes based on economic dependency. The CISI centre at Casarano, south of Lecce, has helped demolish a major barrier to the entry of new small firms into the local market: there is no easily available supply of utilities such as power, water and sewerage and, until now, only the biggest companies have been able to afford to install them. The new centre comes with power points, running water and flushing toilets, thus removing a crippling local obstacle to small business start-up.

Local alliances: the role of leadership

BICs and CISIs are also proving important in forging local alliances between political, commercial and trades union leaders. This is proving especially important in helping the integration of national and regional policies. The Calabria regional government has recognised this by becoming a shareholder in the new BICs under construction there, an important breakthrough for SPI in the Mezzogiorno in securing more than oral commitment from local authorities. The building of local partnerships, even if they are informal, however, helps to put increasingly more responsibility for achieving economic improvement into the hands of the people who will benefit from it. This in turn strengthens and reinforces commitment to the goals involved.

A key factor in building such alliances is that SPI's BICs and CISIs are neutral, which provides common ground where differences can be put aside in favour of what all agree upon. The lessons of what has made for successful local economic development and regeneration in North America and the United Kingdom, in particular, are threefold: firstly, there have to be leaders; secondly, they have to submerge their differences and commit themselves to work together to achieve common goals; and, third, each leader has to have a broader vision of and for their community than their own role in it. BIC and CISI managers are playing important roles in consensus building and in helping leaders to emerge, as well as contributing to the broader vision needed for sustainable economic development and – particularly in the south of Italy – a change in attitudes towards entrepreneurship.

Mentoring

BICs and CISIs require strong and imaginative leadership and management. This in itself adds value through the mentoring process managers can undertake. BIC and CISI tenants have a day-to-day, continuous opportunity to learn from each centre's managers and consultants, all of them highly experienced managers in their own right. One feature of the high quality of management involved is the close rapport developed between managers of BICs and CISIs and their tenant companies. There is regular dialogue – usually on the spot in the incubator unit – and a monitoring of financial progress, where needed, to nip problems in the bud.

There is an area of potential weakness here, however. Maintaining the present high quality of management is likely to become increasingly difficult as numbers of centres expand. SPI is attempting to head off potential management supply problems by regionalising its BIC and CISI operations so that the most experienced managers will each have overall charge of several BICs or CISIs. This will have to be balanced against the need for managers to have close hands-on control of local operations and maintain rapport with tenants. These have been crucial factors in the low failure rates achieved by BICs and CISIs so far.

The BIC and CISI as a social community

Tenants also benefit from the fact that the BICs and CISIs are social communities in their own right. This goes a long way to reducing the problems of isolation that characterise small businesses everywhere. Indeed, it can be argued that in those parts of Italy where the small business sector is particularly strong, one reason for this is the strength of networking that is encouraged by proximity, camaraderie and a general sense that what is “good for business” is good for everyone. In BICs and CISIs, the cafeteria has usually proved as important as a centre's communal presentational facilities in bringing people together. Such informal social contact has proved important in creating a mutually supportive environment and a “club” atmosphere among companies and employees based in the BICs and CISIs. Without BICs and CISIs, individual small businesses would find life much more difficult because of isolation, especially in areas with a poor entrepreneurial culture.

SME finance

Finance for SMEs is a particular problem in Italy because of traditional, conservative attitudes towards risk and lending among its fragmented and tightly constrained banking sector. There is little merchant banking. With the banks inexperienced in these markets and lacking the knowledge to take risks reasonably safely, nearly all entrepreneurs interviewed started their businesses from their own resources, usually savings or money from their relatives and friends. BICs and CISIs

are developing a new role to assist expansion of their tenant companies by operating loan guarantee schemes, where bank or other debts are underwritten by the BICs and CISIs, and through equity lending, where the BIC or CISI acts as a venture capitalist. One new company in one of the newer CISIs has been able to start up because of the loan guarantee scheme. It would have taken two years for it to do so from the three partners' own resources, and it might not have started up at all.

"Exit routes" are crucial to venture capital markets, however, so that investors can realise their profits. In the Anglo-Saxon/US model, this is through flotation on a stock exchange or a trade sale of the business. The exit route for the BIC or CISI is usually a contract under which the investee will buy back its shares within a period of about five years, although the trade sale option also exists. Venture capital investment of this kind is in its early stages in Italy and will have to be judged on its record in some years' time.

Whether the loan guarantee and venture capital funds are sufficient is open to question. There is a belief among SPI's senior management that if Italian banks do not respond adequately to the needs of SMEs and develop a more vigorous capital market to meet them, they will deservedly suffer from foreign competition. Already, new (for Italy) forms of raising working capital are emerging for SMEs, such as factoring, invoice discounting and leasing.

Relationships have still to be finalised where regional funds, owned by regional authorities, are concerned, although SPI has good relations with them all. These funds could play a crucial role in providing equity finance and development capital if they were to co-ordinate their activities closely with the BICs and CISIs. The need is for them to act like merchant or investment banks, rather than depositories with substantial funds uninvested, as is the case with Friulia, Italy's biggest, which has 40 per cent of its Lit. 500 bn fund in the bank.

High technology and manufacturing

In the high technology and manufacturing sectors, BICs and CISIs are providing Italy with an alternative dynamic to the US/Anglo-Saxon "sink or swim" approach for developing high technology companies. Such companies everywhere have problems with under-capitalisation, poor cash flow and shortage of working capital during the early stages of life. It remains to be seen which system ultimately produces the strongest companies in the long term. However, survival rates certainly seem to be good in sheltered environments.

The importance of clusters and networks

BICs and CISIs are proving particularly important for clustering similar or associated SMEs and helping them operate in a network across the incubator system nationally and internationally. Services which few, if any, of the companies could easily afford on their own – such as international marketing – can be provided more

efficiently for clusters of companies, as well as individual ones. Agroindustries, food processing, food technology and information technology are examples of sectors where BICs and CISIs can play a potentially decisive role through clustering, networking and collective marketing at the national or international level. All developed countries have strategies for improving their industries' competitiveness, rates of innovation, quality standards and international marketing capabilities. The BICs and CISIs can be seen as part of Italy's strategy in some of these areas.

Failure rates

Failure rates in BICs and CISIs – for all types of company, whether high tech, low tech or no tech – are very low at between 5 per cent and 9 per cent, depending on the centre. In part, this is because of tight selection. In CISI Campania at Pozzuoli, for example, only 10 per cent of applicants get in. Half fall out during an initial screening process, another quarter then fall out during pre-feasibility studies, while of the quarter who actually then work up a business plan, only two in five prove to have something sufficiently viable to be given a place in the CISI. Failure rates can best be judged by the record of the more established BICs: for example, BIC Liguria in Genoa has admitted 76 companies since 1990, of which 13 have left. Only five have failed: one because the partners fell out, another because half its turnover was owed by a large company which went bust, one because it tried to cut corners by buying a cheap batch of raw material which compromised product quality, and one because its principal customer was in a part of the defence industry which disappeared with the end of the Cold War; the fifth was rescued after the BIC management intervened and found new backers. These businesses would probably have failed anywhere.

Summary of conclusions

BICs and CISIs are a form of intervention in local markets which have so far made relatively little impact in terms of jobs created. They are, however, adding value far beyond their actual worth in changing attitudes towards entrepreneurship, building alliances among local leaders to develop coherent policies for economic growth, fostering a better climate for small businesses, and reducing failure rates among them.

In this wider context, SPI's network of BICs and CISIs has made a promising start, with notable success in Trieste, Genoa, Taranto, Naples and Marcianise, although companies are not growing quickly enough to the average size upon which SPI has based its forecasts of future performance, or moving out of the BICs and CISIs soon enough to work the assets as intensively as SPI would wish. Centres in the next generation of BICs and CISIs – Massa, Casarano, Catania, Teramo, Gorizia and Campobasso – cannot be fairly evaluated yet because they are too new, but they are basing their approach on proven formulae.

Overall, SPI will have to work hard at achieving satisfactory levels of throughput of new companies to keep re-using space in its business incubators if it is to reach acceptable levels of productivity and cost per job created. The hope is for about 2 500 new jobs a year nationally, with 10 000 employed by 1 000 companies in 30 BICs or CISIs by the end of the century. Based on longer British experience in this area, there must be doubt as to whether these goals can be achieved, although one way of achieving faster turnover of space would be to develop industrial estates for mature businesses to which BIC and CISI tenants could graduate.

SPI will also have to work at keeping up and developing its standards of management as its network of BICs and CISIs expands. Present standards are high because only the best of a good pool of managers were needed to run BICs and CISIs while the network was small. The network has more than doubled in size in the last two years and numbers look likely to increase threefold on the present level during the next three years. This will require careful management at the top to balance the need for more formalised systems of reporting and control with the experienced, hands-on involvement required on the ground from people with the right to use their own initiative.

There is also an urgent need to develop new ways of financing small businesses in Italy, as well as enhancing old ones in order to overcome the problems caused by a fragmented and risk-averse banking system. SPI's loan guarantee scheme and venture capital fund hold great promise, but there are undoubtedly considerable opportunities for foreign investment in this field, particularly from countries where financial institutions have a better understanding of managing risk and of merchant and investment banking.

What is SPI?

Before and after Law 181/89

As its name suggests, SPI is dedicated to entrepreneurial promotion and development. It is indirectly owned by the Institute for Industrial Reconstruction, better known as IRI, the Italian state holding company. SPI's mission is the development of small and medium-sized enterprises (SMEs). SPI does, however, have priority action areas. Within the broad definition of its mission, SPI focuses on SMEs with innovative processes and products, job-creation in the steel closure areas and the Mezzogiorno, and the establishment of business promotion centres. SPI receives substantial public funds from the Italian government, the EU and local authorities for this task, mandated under various laws and policies drawn up to counter the effects of plant closures, such as in the steel industry, or to help economically lagging regions of Italy catch up with the more prosperous parts of the country.

Law 181/89 and the supplementary Law 513/93 are principal instruments for using public funds to finance reindustrialisation. They specifically give SPI power to promote, assess and bring to fruition projects in steel industry closure areas, in collaboration with the private sector, with authority to invest venture capital in any suitably qualified enterprises concerned with the process. SPI was initially given funds worth Lit. 200 bn after Law 181/89 was passed but this was increased to Lit. 800 bn, with a job creation target of about 7 300, after Law 513/93 was approved by parliament.

SPI's business promotion centres have two names, generally – though not universally – according to whether they are in the North or South of Italy and part of the EU's structural programmes. In the former case they are mostly known as Business Innovation Centres, or BICs; in the latter case as *Centri Integrati per lo Sviluppo dell'Imprenditorialità* (Integrated Centres for Entrepreneurial Development), or CISIs. In order to develop the BICs and CISIs, SPI has resources of about Lit. 230 bn from the Italian government, the EU, and Italy's regional authorities.

At the level of the individual one-person business, cooperative or larger (but still small or medium-sized) company, SPI is also able to function as a provider of risk capital, thus helping to fulfill Italy's endemic lack of institutionalised, private sector venture capital of the sort familiar in the United States and United Kingdom. Its venture capital revolving fund is worth Lit. 20 bn. Here, SPI's financial support is given in exchange for a minority shareholding of up to 30 per cent of a company's equity. The other business owner(s) undertake(s) to redeem SPI's shareholding at the end of a specific period. Various forms of loan finance are also available from SPI, as well as appropriate grants and subsidies. In addition, SPI operates loan guarantee schemes to help release more money for small businesses from Italy's traditionally conservative banking system.

SPI has a staff of about 70 in its Rome head office, but it also has a network of able managers running its BICs and CISIs, each of which usually has a staff of up to nine people who enjoy considerable autonomy from headquarters in Rome. Most of SPI's staff – whether in Rome or the field – are specialists, with expertise in fields such as business promotion, feasibility studies, market research, financial analysis, economic evaluation, administration, and management.

SPI in the Italian context

Italy's regional development policy was in the past based on large scale investment in heavy industries such as steel and chemicals. The restructuring of the Italian economy in recent years precipitated a crisis in heavy-industry areas, such as Genoa, Terni and Taranto, as large plants were closed or downsized. At the same time, what development policy there was in the Mezzogiorno was generally incompatible with EU rules because of the subsidies involved to heavy industry. The

Italian government was obliged to find new ways of promoting economic development in disadvantaged regions and shift away from large-scale investment in state-owned businesses and infrastructure. This involved transferring resources to help fund a system of local development that would encourage more competition. The result has been a series of enterprise and job creation initiatives, of which SPI's work is part. These enterprise creation policies have been emerging since the mid-to late-1980s at both national and regional level, with regional authorities playing a more active role than previously through developing their own approaches. The tendency to regionalism has been reinforced by EU regional policies and the funding associated with them.

The risk in the mid- to late-1990s is that there is now such a variety of policies and tools that duplication and contradiction may arise. National and regional policies may overlap. There may also be too many instruments. The issue is the subject of debate in Italy, with acceptance that there may have to be some rationalisation. Several bodies, companies and institutions are involved, including SPI, the *Società per l'Imprenditorialità Giovanile*, ENISUD, GEPI, INSAR, CFI and SOFICOOP.

With the projected privatisation of its owner IRI, **SPI** is understandably keen to prove the efficacy of its own policies, of which BICs and CISIs are now the major component. SPI's role is growing as IRI's is reducing, reflecting the switch from national subsidy of large, state-owned companies to a local approach of assisting small firms to start-up and grow. SPI's advantage is that it already has a presence in the heavy industrial areas and throughout the Mezzogiorno because of its own and IRI's previous involvement. It is reinforcing its presence through various initiatives and strong networks, using BICs and CISIs as representative offices.

The ***Società per l'Imprenditorialità Giovanile*** – IG Spa, or Youth Entrepreneurship Agency – was set up in 1986 under Law 44 to help young entrepreneurs from the south of Italy to set up their own businesses. The scheme is highly selective, with 1 056 projects approved out of 4 603 applications in the first 10 years. Successful applicants are tutored and supported by IG Spa and the current survival rate is 82 per cent, with 20 662 jobs created for an investment of Lit. 3.08 bn, or Lit. 149 000 per job. The scheme has recently been extended to all of Italy and its role expanded. IG Spa is now allowed to take stakes in new companies and an unsecured “loan of honour” has been introduced which provides Lit. 60 m for self-employment projects in southern Italy.

ENI, the national oil company and industrial conglomerate, which was partially privatised in 1995, has taken two initiatives. **Agenni** was established in 1984 to manage the outplacement of former ENI employees, mainly from ENI-owned textile companies closed down as non-core activities. An attempt to develop an enterprise creation agency started by ENI in the early 1990s appears to have failed. However, ENI re-thought its strategy in 1992 by transforming Ageni into a new agency called

Enisud to promote and manage local development in areas where ENI plants or interests have been closed or downsized, notably at Sulcis in Sardinia, a former mining area, and Crotone in Calabria. It works as a local development bank and started with funds of Lit. 100 bn.

GEPI was set up in 1971 by Italy's principal state-owned industries and has undergone several transformations. It has served as a development agency and merchant bank for the Mezzogiorno. It has also been given the task of intervening directly to help industrial companies in trouble and to help the long term unemployed. Its latest role has been to sell all direct investments – about 80 in 1994; provide venture capital for enterprises in the Mezzogiorno and economic crisis areas; and to promote so-called socially useful jobs.

INSAR – *Iniziativa Sardegna* – is a regional development agency for Sardinia controlled by ENI and GEPI. It has been active since 1981 and claims to help create up to 300 jobs a year. Its annual budget is about Lit. 30 bn.

CFI and **SOFICOOP** were created by the Marcora Law 49 of 1985 to help the unemployed set up cooperatives. The two agencies are controlled by Italy's large cooperative organisations. In the first seven years CFI financed 136 new cooperatives, mostly in northern Italy, with an average cost per job of about Lit. 25 m. SOFICOOP, working in the south, has helped only 30 cooperatives to form, spending Lit. 25 bn on about 600 jobs at a cost of nearly Lit. 42 m each. Both agencies changed their role after 1993 following financial difficulties. They now work mainly as agents and enablers through their relations with other public bodies at national and regional levels.

SPI's BICs and CISIs

The principal characteristic of nearly all of SPI's BICs and CISIs in Italy is that each is a centre for entrepreneurship with accommodation from which small businesses can operate. Because this accommodation is designed to provide a sheltered environment in which small businesses can develop, the industrial units and offices comprising it are referred to universally as incubators and sometimes as laboratories. Whatever the terminology, this is serviced workspace with easy-in, easy-out rental agreements for businesses which must, however, pass stiff selection tests to get in. Three of the BICs and CISIs are in converted buildings that were once factories and offices; one is partly accommodated in a former office block; the rest are purpose-built to a common pattern, with rows of incubator units arranged around quadrangles of attractive open space linking to a block for administration, communal facilities and high technology laboratories.

There is one BIC run by SPI which does not have incubators. It is in Veneto. The BIC now offers services and support to SMEs in its region and works as an enabling agency in fields such as finance, the brokering of partnerships, training, management consultancy, international marketing and networking.

Similar outreach services are on offer at all BICs and CISIs, but those with incubators offer very much more. Part of their core function is the communal supply of the services any business needs for day-to-day operation. Incubator clients therefore have ready access to centralised administrative, secretarial, and clerical services, and facilities which include a mailroom, photocopying, telephone switchboard and answering facilities, visitor reception, heat, light and power, data connectivity and other telematic services, terminals, printers, building maintenance, car parking, and – especially important in some of the more sparsely populated and arid areas of southern Italy – reliable water supplies and sewerage.

Nearly all the BICs and CISIs also provide a restaurant of good cafeteria standard and most operate a bar for socialising and networking among and between client companies in the incubators and their visiting customers and contacts. All BICs and CISIs with incubators also provide a well-equipped auditorium for presentations – sometimes with a full range of multimedia and telematic facilities for large-scale videoconferencing – and reception and interview rooms of various sizes for client company usage. Incubator rentals usually include free use of auditoria and reception rooms on a set number of occasions each year. Training rooms are also available, if they are not already in use by BIC or CISI staff or consultants for courses.

The other critical feature BICs and CISIs offer their incubator clients is security. Most have secure perimeter fences, and the purpose-built ones, for example, have a tidy, well-maintained garden environment surrounding the buildings putting space between them and the world outside. Such security is important everywhere in terms of protection from “ordinary” criminal activity, such as break-ins and burglary, and from the risks of fire or other emergencies, but it has a special significance in Sicily and Campania where the Mafia and the Camorra operate widespread protection rackets to extort money from business in general.

The basic provision of all these common services comes within the rental price paid by small businesses in the incubators, although they have to pay for their own consumables, of course. Unit rentals in the incubators generally appear to be up to 50 per cent more than might be the price of accommodation outside, but the general consensus is that a small company would pay as much again for a lesser standard of essential services and still have fewer services on tap in total. In effect, a place in a BIC or CISI comes with many overheads accounted for, so that the tenant can concentrate on developing his or her business.

Support for incubator clients from BIC and CISI staff – and, indeed, from fellow businesses which are also tenants – covers a wide range of management consultancy services, including financial planning, international marketing assistance, and general advice. Companies have been and continue to be helped with evaluating ideas, analysing projects, preparing business plans, market research, finding business partners, planning and executing their export strategies, managing

contracts, training their personnel, raising loans and finding premises for production. BIC and CISI staff have given support in budgeting, preparing accounts and tax returns, obtaining tax relief, getting specialised legal and corporate advice and finding consultants for marketing, insurance and patents. Specialised advisory services include technological brokerage, bespoke financial instruments, and the use of international contacts.

Other incubator tenants are often on hand with immediately available services. In some cases, one of the incubator tenants will be an Internet service provider selling to other BIC or CISI tenants as well as outside. The restaurant will usually be franchised to an incubating small business based in the BIC or CISI, which can then provide catering for other clients' receptions or presentations. An architectural tenant may help others with their office design and ergonomics. Marketing services is another area where one incubator client will often sell to many of the others. Such services may range from graphic design to preparing home pages for the Internet, but the foreign language demands of international marketing probably provide the widest opportunity for business-to-business intra-incubator services. Linguistic skills, particularly writing skills for brochures, sales material and business letters, are at a premium everywhere in the global marketplace.

BIC and CISI staff also provide an invaluable link with financial institutions, particularly the banks, which in Italy are fragmented and particularly risk-averse as far as small businesses are concerned. Being in a BIC or CISI is in itself an indicator of superior creditworthiness, giving incubator clients a considerable advantage in local capital markets.

Each BIC and CISI also has an outreach role, offering its business services and expertise to companies in the region around it. Its facilities, particularly the training rooms, play an important part in fostering entrepreneurship and information technology skills among the general population, as well as helping to prepare young graduates for the world of work after university. Some training is carried out by incubator clients, particularly in information technology.

All BICs and CISIs also increasingly play an important role in regional economic development through contacts and contracts with provincial governments, as well as trade and industrial associations. They are active participants in the OECD's LEED programme (Local Employment and Economic Development).

Selection of incubator clients is rigorous. SPI selectors – the BIC and CISI staff – look for companies with growth potential, preferably involved in innovation, new or high technology and/or manufacturing, and capable, if possible, of serious exporting. This also enables BICs and CISIs to counter criticism that they themselves distort the market by offering a form of subsidy to companies that might not otherwise succeed.

In new high technology and manufacturing projects it may take years before markets can be established firmly enough for cash flow to give sufficient returns to justify the original investment. Small businesses everywhere are characterised by their undercapitalisation because of difficulties in obtaining sufficient backing for something new and small. It is always harder for manufacturers, who must tie up capital in machinery, plant, equipment, raw materials and work-in-progress long before they can earn any money.

Against this background, BICs and CISIs offer a better chance of survival to incubator clients by nurturing them through the early stages of negative cash flow and advancing or guaranteeing the capital they need. Knowing that borrowers are in a protected environment with access to all the managerial, financial, technical and marketing advice they might need is at least a comfort to lenders in that risks are clearly reduced.

Many companies in the BICs and CISIs are involved in continuously evolving knowledge-based fields. One or two may one day become giants in their own right, but most will probably become sophisticated components of an increasingly advanced industrial economy, perhaps growing to medium size, though not necessarily so. Italy's BICs and CISIs already contain an illustrative clue as to how this new competitive dynamic will work. Several of them house small but highly advanced engineering design companies working for Fincantieri, the Trieste-based ship-builder which is a world leader in the global cruise liner market. In the past, large companies might well have done such work in-house. Now, much of it is outsourced to dedicated small businesses in BICs and CISIs. They are independent of each other, but have the opportunity to network at both formal and informal levels, and to pursue similar work in other markets or sectors should opportunities arise. A similar interdependent dynamic may also be beginning to emerge among several BIC and CISI tenants involved in more general computer-aided design and manufacture.

BICs and CISIs are, by definition, nurseries. They create conditions conducive to growth, but the companies within them must move on once they can stand on their own feet. In most cases, tenancies are limited to three or five years, although this may be extended in special circumstances, such as if the company's international markets for particularly innovative products need more time to develop. SPI plans to ensure networking continues after companies have left.

BICs and CISIs are also involved in international networking in their own right as members of the European association of BICs. Commercial interchange is promoted through the European Group of Economic Interest (the GEIE), which was established by SPI with 35 publicly-funded regional financial companies. This helps promote exchange and business between companies in BICs and CISIs and their counterparts in other European countries.

This, then, is what the BICs and CISIs are and do. Most of them, however, are still relatively new and, it could be argued, still have to prove themselves. However, their role has emerged and been defined as a result of solid records of achievement in those which were established first, as will now be seen.

The development of BICs and CISIs in Italy

Italy had no specific government policy for promoting small and medium-sized enterprises before the mid- to late-1980s. SPI financed investment in economically weak areas but policymakers were more concerned with big business and big companies that provided large numbers of jobs at once, rather than the slow accretion of new jobs that accompanies successful small business start-ups. However, the job-creation initiatives of British Steel (Industry) Ltd. and British Coal Enterprise were looked at closely by the Italian authorities during the latter half of the 1980s, when steel industry closures loomed in Italy and technological redundancies threatened jobs in other traditional industries, such as quarrying marble in the Massa-Carrara area.

BIC Friuli Venezia Giulia

BIC Friuli Venezia Giulia: Trieste (1989)

It was against this background that Italy's first BIC came into being in Trieste in 1989, a factory conversion with up to 40 incubator units, depending on the way the 4 500 square metres (sq. m) of total space is configured. Trieste was then a very different place from now. The Berlin Wall came down at the end of 1989, but the BIC was planned in an era when Trieste was at the edge of Western Europe, only five kilometres from the border with what was then Yugoslavia. Because of this, Trieste was a maritime city with at least half of its natural hinterland missing. It suffered higher unemployment rates than elsewhere in northern Italy – typically more than 10 per cent against only 3 or 4 per cent only a few tens of kilometres away. It was also in a steel closure area and its shipyards were facing strong competitive pressures in a global marketplace. A startling measure of the local economy's changing structure is that manufacturing accounted for 45 per cent of jobs in 1946, with this share dwindling to only 16 per cent by 1996.

BIC Trieste is full most of the time these days. Eleven companies moved in during 1989 and another seven by the end of the following year, when two of the original 11 had already departed. So far 39 companies have set up there, of which 19 have moved out to expand. There are usually between 15 and 20 companies in the BIC, each paying Lit. 110 000 per sq. m per year. The sectors of operation have included biotechnology, electronics, pharmaceuticals, optical systems, colorimetry, graphics, software, informational technology, communications, health services, new

materials, aeronautics and consultancy. The normal rental agreement is between three and five years, with many of the companies successful enough to leave after a much shorter period. There are three- month reviews of any extensions. Most of the companies have been start-ups and 80 per cent have been spin-offs from larger operations or research activities.

There are nine BIC staff, led by Paolo Fratini, the BIC president, who is also head of project management and control for SPI nationally. Antonio Sfiligoj, the general manager, sums up the BIC and CISI philosophy in one succinct sentence: "You are never alone in a BIC". It is a philosophy which has led to the very survival of some of BIC Trieste's tenants. One – a pharmaceuticals manufacturer which has developed an energy-conserving and materials-saving means of making drugs would have been a major loss to the industry in general had the BIC not been in a position to carry out some financial engineering to prevent its failure. Relations with banks and Friulia, the largest regional public finance operation in Italy, which is based in the region, are particularly important.

Roberto Bernardis, a member of the Trieste staff, says: "A BIC is particularly useful in areas which are weak from an infrastructural point of view. Small businesses need infrastructural support in order to grow. There are no spontaneous clusters here. You make it easier for them to form. A BIC was the right choice for this area. The BIC also offers easier access to Friulia, other funds and venture capital." Entrepreneurs in the BIC are also in no doubt as to its value. As one put it: "We have better relations with the financial institutions, particularly the banks, than we could hope for outside. They offer special conditions to BIC companies. It is still difficult to get money out of them, but it's a help. The BIC has also simplified discussion with Friulia." In another case: "We have been able to benefit from specific help on projects. The other important point was that we had a building ready from day one when we set up. We also enjoy good relations with other BIC companies. We are like a big family living in one big house. We share problem solving between similar businesses and are always learning from each other."

Just as the entrepreneurs within the BIC formed their own networks, so did the BICs supporters. One of the early lessons of the Trieste experiment was that all sections of the community needed to be involved if a BIC is to work properly. The BIC's shareholders therefore cover all influential groups and authorities. Although SPI is the majority shareholder, other shareholders include the regional and local authorities and various groups representing industry and commerce, as well as relevant financial institutions.

The crucial change for Trieste since 1989, however, has been the opening up of the central and eastern European markets following the fall of the Berlin wall and the dismantling of the Iron Curtain. This has almost given a proper hinterland back to Trieste, though not yet completely while border controls still exist with Croatia

and Slovenia. The opportunities arising will certainly be grasped, however, not least because of new political leadership following the election of Riccardo Illy as Mayor of Trieste. Mr. Illy's vision is of Trieste in a wider context than that in which it has been able to operate since the end of the Second World War. He is already reaching out to build new alliances with neighbours and renew old ones. He is also a firm supporter of the BIC.

If Mr. Illy is critical of the BIC at all, it concerns its local relations outside its walls. The BIC is active in training but, Mr. Illy says: "It needs deeper and continuous relationships with all other relevant entities. There is a big difference for companies when they leave the BIC. There is a comparative lack of support outside. There is no general local commitment to help and relations are not good enough with local scientific institutions and the science park, although dialogue has started and coordination is beginning to improve. We have all the elements to succeed but they are not tied together properly. To bring them together is the challenge."

Meeting the challenge, however, may be more of a role for politicians than for staff at BIC level. One of the key things they stress is their own – and the BIC's – neutrality. This neutral stance has been important in building up a broad network of support from both sides of industry and across political ideologies.

BIC Trieste has also taken outreach work and consultancy outside very seriously, with BIC staff acting as lead consultants on entrepreneurship, innovation, technology transfer and SME policy and implementation in Slovenia and Croatia. Work is financed and supported via the EU Phare programme and the OECD's LEED programme and operated through a company headed by Mr. Sfiligoj called SEED, which stands for Service for Eastern Economic Development.

Mr. Sfiligoj and his colleagues are also setting the pace for the latest stage of BIC and CISI development in Italy, which involves regionalising their operations and opening other BICs or CISIs under the wings of those already established. It is with the BIC at Trieste, with a new BIC operating at Gorizia, 40 km to the north. The arrangement offers economies of scale at the general management level, with rapid injection of the experience of time-served BIC managers into a new area, with all the implications of this for speedier effectiveness.

BIC Friuli Venezia Giulia: Gorizia (1995)

Gorizia's importance is its location on the Italian-Slovenian border on southern Europe's main east-west road and rail links between Barcelona and Moscow. Gorizia is a classical junction town, with a large truck depot and extensive transit facilities for goods, automobiles, commodities and livestock.

Gorizia is still split by the Italian-Slovenian border – there are 40 000 people on the Italian side and 20 000 on the Slovenian side – so that its economy has long been based upon exploiting the differences between Italy and Slovenia. Even with

border controls much easier in the wake of the ending of the Cold War, differences are still marked. Italy is in the EU and Slovenia not, but a case has been made by both mayors for the EU to make all of Gorizia a special zone for EU assistance in economic development. Part of their case is based on heading off potential ethnic and cultural problems arising from economic disparity. Slovenian per capita GDP, for example, is about \$9 000 a year, which is around two-thirds of Italian levels. There is general consensus that Gorizia's economy must in future base itself on similarities and community of interest, with the town's role as a potentially major transport, staging and trading hub being paramount. A promising new joint project at the planning stage also involves tourism.

Part of the overall economic development strategy is to try and foster a more supportive environment for SMEs. Gorizia's new BIC is a significant element in this. It opened in 1995 and is housed in one of a terrace of large warehouse units in the Gorizia truck terminal, which is itself already the base for 74 transport-related companies. The cost of ECU 1 m compares with ECU 2.5 m for the BIC in Trieste in 1988, and EU finance has come via Programme Perifra, which was originally set up to help East Germany catch up with the West. The Gorizia community's contribution to the BIC has been to give the premises rent-free for 10 years.

The BIC is still filling up and it is too early to judge how effective it has been in terms of survival rates among its tenants, but those interviewed indicated they might have struggled to find and afford suitable premises in the area had the BIC not been available. Rents are Lit. 1 m a month per laboratory. The new companies include a biosensor manufacturer, an on-line medical screening and testing quality control specialist and a developer of advanced telemetering and control services for public transport networks. All of these companies already have markets well beyond Gorizia. All also have global sales potential if the companies can grow and obtain the requisite capital and advice. It is, of course, part of any BIC's job to assist such processes, so the companies must have a better chance within the BIC than they would have had otherwise.

However, it is not too early to say that the strategy of piggy-backing the development of the BIC at Gorizia on the success of the BIC at Trieste has been obviously cost-effective and efficient. No one has tried to reinvent the wheel, or tried to outdo the senior institution, or launch into risky, unknown territory in order to be different. Instead, a well-tried formulaic approach has been transferred by an experienced general management to an environment that ought to be conducive to the growth of new businesses.

BIC Liguria: Genoa (1990)

While the BIC at Trieste was the first of its kind in Italy, the BIC at Genoa, which opened a few months later, vies with it for the title of SPI's flagship project. The BIC

at Genoa has so far built a most impressive record for the numbers of companies it has nurtured, and has achieved a telling success rate among them. The BIC is not only in a steel closure area, but actually located in one of the defunct steel plants.

The BIC was legally founded in 1987, but it took three years to get the first stage of the conversion of the mill ready for occupation. A consensus of support had to be built among all sections of the community, while the necessary law needed for state finance did not come into force until 1989. The first new building was erected in 1995. Total investment so far has amounted to Lit. 14 bn, with most coming from SPI and the EU. However, the fact of having 27 shareholders demonstrates the degree of consensus and support that has been achieved. SPI is the dominant shareholder, with 65 per cent of the Lit. 8 bn of equity. The rest is split between a wide range of organisations, bodies and institutions, including the regional public finance company, the Genoa Chamber of Commerce, the Commune di Genova, regional associations of entrepreneurs and industrialists, banks, other local authorities and trade associations.

There can be no doubt that the BIC has been crucial to saving the whole site. It has enabled a conversion of the mill ready for occupation. A consensus of support had to be built among all sections of the community, while the necessary law needed for state finance did not come into force until 1989. The first new building was erected in 1995. Total investment so far has amounted to Lit. 14 bn, with most coming from SPI and the EU. However, the fact of having 27 shareholders demonstrates the degree of consensus and support that has been achieved. SPI is the dominant shareholder, with 65 per cent of the Lit. 8 bn of equity. The rest is split between a wide range of organisations, bodies and institutions, including the regional public finance company, the Genoa Chamber of Commerce, the Commune di Genova, regional associations of entrepreneurs and industrialists, banks, other local authorities and trade associations.

Irrespective of its present apparent success, however, it looked for some time as though the BIC might not work. As Filippo Gabbani, the BIC's director and general manager, puts it: "We had initial problems attracting entrepreneurs. The first 25 were the hardest. This was the Genova Bronx and many people would not even consider it. It took more than two years to get the first 25 companies in, but then things started accelerating. The next 25 took 18 months. Now we have no vacancies."

The BIC can house about 50 companies at a time, depending on how its incubator units are configured or divided up. So far, the BIC at Genoa has housed 76 companies, of which 13 have left and only five have failed. About 500 new jobs have been created among them. All the leavers did so after two or three years, perfectly fitting the ideal BIC scenario. One yet to leave will move into purpose-built premises in the adjoining Campi di Genova. Selection is tough and by business

plan. "We do not ask for a lot of pages, but we do want a demonstration of their thinking and strategy and we want to be sure they have the money to do it", Mr. Gabbani says.

One striking thing about the BIC at Genoa is an almost tangible sense of community within it. This is a village of small and medium-sized business activity. The first companies to move in may have felt like pioneers at a frontier, and certainly they moved into what was then a wasteland. The BIC's spirit of community is greatly helped by two important communal facilities – the cafeteria/restaurant and the bar. As at Trieste, these are crucial to communal and social relations among the hundreds of people working in or visiting the BIC each day. The catering facilities are run by one of the BIC tenants. A complete meal in the cafeteria costs only Lit. 12 000 and the standard is good enough for most purposes. A few minutes for a drink or a coffee in the bar soon reveals its role as a place of business, rather than leisure. BIC tenants network there among themselves and visitors. The building itself is another pleasant architectural conversion.

If there is an extra-curricular social role, it is in the BIC's squash club, built as part of the understanding with the Genoa local authorities for general community use in lieu of local taxes.

The more important social and economic role of the BIC is, however, summed up by Guido Molinari, general secretary of the Chamber of Commerce, which represents 80 000 businesses in the area, half of them manufacturers. "The local economy is undergoing continuous change," he says. "Heavy engineering is in decline. Port-related activity is 50 per cent of the local economy. The base may be there, but we have a very difficult structural problem. There are big gaps between very big companies and very small ones. We have an almost total lack of medium-sized companies in the 200-300 employee range. We have only between 10 and 20 companies of this size, but a multitude of companies employing fewer than 50". There is an evident need to facilitate the emergence of a new generation of entrepreneurs.

Mr. Molinari sees the BIC's protective role as particularly useful because, he says, the general Italian small business failure rate is about 50 per cent. He thinks BICs can cut this to as low as 5 per cent. "We believe the BIC is one of the most important instruments in our region to promote industrial development", Mr. Molinari adds. "Because of this, you cannot judge the BIC in terms of cost per job. It must be seen in terms of its additional role in creating a wider impact. It has a multiplier effect throughout the local economy. The BIC is also tangible. You can see it and talk to the people doing business there. Visibility promotes entrepreneurship."

The BIC at Genoa also has an outreach role, so that it has helped many more companies than those within the BIC itself. The wider effect of this is indicated by a presentation by BIC staff to the European Parliament in September 1995, when

they claimed at that stage to have assisted the creation of 87 new enterprises and 1 524 new jobs.

Mr. Gabbani says: "The BIC has a growing role as an investor in the Liguria region. The BIC promotes SMEs but is also an agency. An incubator is only an instrument. Incubators are not the activity of the BIC. Training, marketing, organisational consultancy, trading, contacts with other SMEs around Europe, networking – these are what BICs do. We have 300 companies in the network of BIC Liguria. There are 1.6m people in Liguria, spread through four provinces. Genoa has 560 000 people on its own. Our main activities are around ports of Genova and La Spezia but we have outreach services to Savona, Imperia, Nice, in France, and we are also active in Piemonte. We are building an incubator in La Spezia and have another planned for Savona."

These services will be enhanced by newly authorised financial instruments, which will enable the BIC to act as a venture capitalist and loan guarantor. There is also an EU seed capital fund and the BIC has close links at board level with Ligur Capital, the regional fund.

On top of all this, BIC Liguria is also profitable in its own right and tries to function as a business with its staff of 12. Annual turnover is running at about Lit. 2.5 bn, with Lit. 5 m surplus expected for 1996. Mr. Gabbani says: "In any BIC you expect to lose money for the first three years, but we have not lost any money in the first five years. We are one of only 20 out of 120 BICs in Europe that is not a loss-maker."

While successful tenants testify to the fact that the BIC at Genoa is working effectively, the whole venture testifies to much more than that. Paolo Corradi, the BIC's managing director and a leading figure in several other parts of the network trying to regenerate the region says it is the first example in Italy of a complete reindustrialisation. The BIC is one of the largest in Europe and could be expected to make a commensurate impact, but with the Campi di Genova springing back to life next door to it it may well achieve more than anyone could have reasonably expected when it was first planned 10 years ago. The BIC has kept an important industrial area alive and is enabling its resurgence. If the Campi di Genova can be fully resurrected as a thriving industrial zone, the results will rank the BIC as one of the most significant examples of this type of initiative attempted in Europe and beyond.

CISI Puglia

CISI Puglia: Taranto (1992)

The significance of the centre at Taranto in the development of BICs and CISIs in Italy is that it was the first to be purpose-built. Managing director Francesco

Ruggieri explains: "Unlike the situation in Trieste and Genoa, there were no buildings in Taranto suitable for conversion, so we built in Taranto's new industrial zone to provide the zone's service centre and help step up the industrial development programme." Partners included FinPuglia, two banks, and the association of entrepreneurs, with the full support of provincial authorities and of local trades union leaders. Taranto is also a steel closure area.

Puglia had little industry to speak of 100 years ago, whereas Trieste and Genoa had a broad range of industries to rely upon, as well as an urban and urbane industrial culture to balance some of the losses and provide a base on which to rebuild. Taranto's traditional economy was based on agriculture and fishing. Even today there are 17 000 agricultural businesses in the province. There is also port-related and shipyard work, although Fincantieri has shed more than 1 000 jobs locally in recent years. However, there remains a naval base and some shipyard work because of Taranto's natural harbour, the Mare Piccolo, a site of considerable historical interest recognised as such by the EU for special funding purposes.

Taranto, less than half-way up Puglia and tucked into the inside corner of the heel of Italy, is at the southern end of Italy's autostrada to Bologna and Milan via the east coast and Rimini. Geographic isolation and a narrowly structured local economy with relatively low added value have always been Puglia's problems. To counter this, the Italian government decided to import a substantial portion of the country's steelmaking capacity into Taranto during the post-war decades, with a large expansion in the 1970s. The Ilva steelworks made strip and tubes and had an annual capacity of more than 1 100 tonnes. The strategy was highly successful and Taranto doubled in size. According to one trades union leader: "At the end of the 1970s, Taranto was fourth in Italy in terms of income per head. The town had grown by 12 000 people because of the influx of the steel industry."

Success was not sustainable in the long-term, however, because it relied on a subsidised steel industry. Global competitive pressures and EU policy doomed over-capacity throughout Europe. What happened next at Taranto was cataclysmic in economic and social terms. Ilva's output was cut, and now stands at a mere 8 m tonnes a year. Ilva employed 30 000 people at peak, but this figure crashed to 8 000 in 15 years. There were widespread redundancies among the over-50s, creating serious social problems, but the longer term problem is worse for the under-30s and will remain so if jobs cannot be created faster than the growth of the labour supply.

The credit for inventing the centre at Taranto almost certainly goes to Francesco Ruggieri, managing director of CISI Puglia. He was director of external relations and industrial development at the Ilva steelworks and in 1986 concluded that a BIC had to be an essential ingredient of the area's EU-backed development programme. He did not know of SPI at that stage, but SPI had become involved by the time planning got under way in 1988. Mr. Ruggieri became managing director a year later and the centre eventually opened in 1992.

The decision to build from new created a dilemma: the building had to be practical and symbolise the future without costing too much, but without looking cheap. It succeeded triumphantly by combining good design with low cost materials, such as rough-cast, bare concrete. The centre cost Lit. 8 bn to build. It has 6 000 sq. m of space, of which 2 500 sq. m is for offices, services and laboratories and the rest for incubators. Rents are Lit. 10 000 per sq. m per month.

As in Genoa, not everything went smoothly when the centre opened. "At first there was no success", Mr. Ruggieri recalls. "It was a matter of seeing is believing to demonstrate what we were trying to do. Things started to pick up in the second year and we are now full with 17 enterprises. There is good demand for places in the new incubators as soon as they are ready. What is now clear is that this centre as originally planned was too small to be productive. It was the first experiment and we have learned from it." The extension of the centre will create an economy of scale and this is being further enhanced by the creation of CISI Puglia by merger with Lecce's new centre at Casarano, which opened in December 1996.

Mr. Ruggieri established some important operational principles early on. "The CISI is not only an instrument to create jobs. It enables and ensures cultural change. It is a technical instrument, not a political instrument and it deliberately adopts a politically neutral stance. Our mission is to help the transition from the protected market of a subsidised steel industry to a free market of diverse industries."

Raffaele Bagnardi, the director responsible for training, says, "We have to promote this market idea from school onwards and work with the trade unions and the entrepreneurs' association to change attitudes. We offer training; 300 young people have gone through programmes to equip them with knowledge, competence, ability, flexibility and a positive attitude. The centre also helps firms in the area select young recruits. Solving problems is the great skill for running your own business. Entrepreneurs need to know how to make a business plan. Interestingly, although humanities students have much more trouble than those with technical training, the humanities people are more flexible in the long run. We are already seeing a new generation which thinks in a different way from the old one. 'Seeing is believing' has been very important. The centre is a visible example of change at work. Success breeds success."

Not everyone is so optimistic. Some in the chamber of commerce believe that despite making some progress, the Taranto centre is nevertheless held back by an endemic culture of dependency and anti-entrepreneurial attitudes. Building "a nice office and a small incubator" is not enough, says one business leader, who thought more needed to be done on infrastructure, with the CISI playing a bigger role as an arm of central government, with power to direct strategy and manage investment of public funds on a grander scale. SPI's answer is that it has a clear mandate to support a national network of BICs and CISIs and find a balance in

funding and supporting them all fairly. Their role is fundamentally local. Each has to manage itself according to local conditions.

The entrepreneurs within the Taranto centre are in no doubt as to its benefits. Several say they would have migrated north had the facility not existed. One, a fire extinguisher supplier which also trains companies in fire precautions, has created 22 jobs. Another makes ducting from steel coil and sheet and has overflowed from one incubator unit into another to meet demand. Another of the centre's tenants has developed impressive computer aided programmes for manufacturing complicated shapes; national sales have helped create 13 jobs. The newest tenant is a welding school; another is involved with control systems for automation and is turning over Lit. 1bn a year.

CISI Puglia: Casarano (1996)

The province of Lecce is like many in Italy in that it is made up of a large number of municipalities. Lecce, more than 10km inland from the Adriatic about halfway down the sparsely populated Peninsula Salentina, Italy's "heel", outdoes most places, however: there are 98. Add to this an inherent conflict between the political left and right and between workers and employers and there is a recipe for frustrated inaction. "Our problem", says one local political leader, "is how to achieve collaboration. There is too much individual effort."

CISI Puglia's new centre at Casarano, however, about 40 kilometres to the south of the city of Lecce, seems to be providing a common cause which everyone can adopt. There is supportive agreement between local authorities, political parties, trades unions, the university, the chamber of commerce and Confindustria, the industrialists' and employers' association. Not all growth is going to be home-grown, however: Lecce has formed a strategic relationship with Emilia Romagna, the rich northern Italian region, to promote direct investment in exchange for improved northern access to the southern Mediterranean basin and its markets.

Casarano is in the middle of Puglia's largest single indigenous natural economic resource – its extensive forest of olive trees, the oil from which is widely acknowledged as among the world's best. The centre is on a small, still developing industrial estate in the countryside near where southern Puglia's main north-south and east-west roads intersect. The estate already houses several sizeable premises, including a large Filanto shoe factory employing 3 000.

In addition, the nature of the terrain and local conditions are justification enough on their own for a centre. Water, for example, is a major problem in many parts of southern Italy. Utilities cannot be taken for granted: there are problems of water supply, waste disposal, sewerage and power which, for CISI Puglia tenants at Casarano, come all-inclusive in the rent. Urbano Infante, the centre's director, says: "This area cannot offer much to help a new small business start up. Without the

centre, these companies would not exist. Only a big company could afford to set up here. Big companies bring jobs, but they do not always stay and they do not necessarily help the development of entrepreneurship." As with all the BICs and CISIs, training will be an important activity so as to encourage more people to take the entrepreneurial plunge.

The centre has 22 industrial units and 12 high technology laboratories housed in another well-designed, purpose-built structure. SPI owns the land and services it, so there are reliable supplies of power and water for almost any conceivable high technology purpose. A dedicated ISDN link is planned with the CISI Puglia centre in Taranto.

Demand is exemplified by nine companies moving in as soon as units became available, months before the opening in December 1996. They had created 110 jobs between them before the end of October 1996. Two of the first tenants were footwear manufacturers; another prints labels. One of the most interesting tenants, however, is a small pasta factory set up by a husband and wife team but in which each employee – all of them women – has been given a stake. Overall, it is too early to judge the CISI's effectiveness, but it has started well.

CISI Campania: Pozzuoli (1994) and Marcianise (1995)

CISI Campania is in two centres, at Pozzuoli near the northern shore of the Bay of Naples and at Marcianise, inland to the east of Naples. There are plans to add a third centre, south of Vesuvius at Salerno. The arrangement seems the most advanced and effective example of SPI's regional policy for BICs and CISIs. There is common management and direction and a clearly integrated strategy to concentrate particular types of enterprise into one centre or the other. It is therefore more appropriate to evaluate the Pozzuoli and Marcianise centres together. In the chronology of Italian BICs and CISIs they were the fourth and fifth to open after Trieste, Genoa, and Taranto. The director of all CISI Campania operations is Eduardo Vestiti, a managerial heavyweight who was formerly chief of engineering with Remington Rand and is also a former technical director of Indesit.

The CISI at Pozzuoli is in a disused part of an Olivetti factory near the Tangenziale, the autostrada ringing northern Naples that is a vital piece of local transportation infrastructure. An adjoining office block has been converted to house the CISI's management and administration, as well as common facilities and half a dozen laboratories for high technology start-ups or their early-stage growth. The factory, which is in effect a large open shed, has been partitioned to create 23 incubator units. Total space amounts to 7 560 sq. m.

There is a strong contrast with the CISI at Marcianise, however, which is strategically located 20 km north of Naples on the A1 to Rome, and at or near the A1's junctions with the A30 to Salerno and the A16 to Bari, respectively. This

facility is purpose-built along similar architectural lines and to the same standards as the CISI at Taranto and those other purpose-built BICs and CISIs which have followed elsewhere. It has 32 units, 8 000 sq. m of space and similar communal facilities to BICs and CISIs elsewhere. Set-up costs reflect the two styles. It cost Lit. 7bn to convert the Pozzuoli building and Lit. 9bn to build Marcianise. The two centres are also clearly demarcated in terms of tenants. "We have no manufacturing at Pozzuoli for ecological reasons, only services", Mr. Vestiti says. "Marcianise was created specifically for manufacturing". However, he warns, "I hate comparisons because everything varies with local conditions. The basic principle of BICs and CISIs is to reduce the risk of failure. Only 5 per cent of tenants have failed. The concept works, whatever the age of the buildings".

Success has been almost instantaneous. Where the BICs at Trieste, Genoa and Taranto filled up slowly over the first two years, entrepreneurs in Campania showed little hesitation. "In the first two years we have attracted 41 enterprises into Pozzuoli and are full", Mr. Vestiti says: "A dozen have expanded and left. At the end of October 1996 we had 277 new jobs in the centre, while 123 have been created among the firms which have left, so 400 jobs have been created altogether. Marcianise opened in April 1995 for a wide range of manufacturers. There are 36 new companies there, and six have left because they needed more space to grow. There are 223 jobs among the 30 enterprises in the centre, and 288 among the leavers."

Mr. Vestiti believes that the size of the local community has had an important influence on these figures because more people mean more entrepreneurs, especially when the population is tightly concentrated and the prevailing culture is of assertive self-sufficiency, rather than dependency upon others to provide work.

The original plan was to help existing small businesses with their main problem of international marketing. Whilst this policy has been followed with many tenants CISI Campania also houses a host of start-ups. Picking potential winners is always a headache in such circumstances and Mr. Vestiti has reduced the risk of giving space to no-hopers by operating a tight selection policy. "Only 10 per cent of applicants get in", he says: "About half fail at the initial screening interview. Then, only half of the survivors prepare business plans. Three out of every five who do so then drop out at or after that stage. This helps to explain the low failure rate. Selection is in fact part of the education process. The business plan becomes a guide for running the business and we can tell from it whether there is real promise or not."

The rent in the centres is Lit. 14 000 per sq. m per month. Units range in size from 25 sq. m to 250 sq. m at Pozzuoli and from 100 sq. m to 500 sq. m at Marcianise. The comparative rate outside is Lit. 10 000 per sq. m for the space alone, but Mr. Vestiti says it would be Lit. 20 000 if entrepreneurs had to buy-in the services

they get in the CISI as part of the price. These cover the normal facilities needed to operate day to day, such as office and clerical support, photocopying, telephone, reception, use of communal facilities, parking and security.

Other services are optional and chargeable, such as advice on finance, technical organisation, marketing services, management services, or specialised consultancy on issues such as quality assurance, total quality management and reliability. Finance and marketing services are the areas where most advice is sought. These services are also available on an outreach basis and about 100 companies have asked for this sort of help during CISI Campania's first two years. The CISI also tries to promote synergistic contacts between entrepreneurs in BICs and CISIs elsewhere in Italy and, indeed, in the rest of Europe. It also encourages collaboration with local authorities and science parks and actively promotes Technapoli, an organisation concerned with technology transfer, particularly to new SMEs, which has a base in the CISI at Pozzuoli.

For Riccardo Van Den Hende, president of the association of small entrepreneurs, the new centre in Marcianise is essential for many reasons. "The CISI is very important for enterprise to take root in the area. Location is critical. There is poor availability of space outside the CISI and it is very difficult to find safe premises in which to start up and develop. The CISI is now part of the infrastructure. Many foreign companies invested here directly in the 1960s. Their companies were successful and many SMEs were created to service the big companies, but were dependent on them. We now have to create SMEs which can exist on their own. The CISI is vital to this, as well as in helping companies obtain finance. Banks are a problem here. They are risk averse as far as business is concerned. Banks in the south must become more unified and behave more as they do in northern Italy by working together to share risks and help business."

Crime is also a big worry in an area where organised gangs traditionally "tax" businesses to pay for "protection". The CISI in Campania are well protected with secure fences, alarms and TV surveillance. It is difficult for criminals to approach managers and threaten them.

Mr. Vestiti says that "SPI's next idea is to create industrial estates where companies in BICs and CISIs can go when they have to leave. But we also think they will help foster and keep up contacts between entrepreneurs. Synergy does occur and we want to continue to encourage it." In Genoa, of course, the idea is already becoming reality in the Campi di Genova, adjacent to the BIC, where one of the BIC's most successful tenants is relocating.

Mr. Van Den Hende also sees BICs and CISIs playing a wider role by demonstrating that entrepreneurship pays. Many able young Italians leave the south each year to set up businesses in northern Italy and elsewhere in Europe because they see the local culture, of which crime is only a part, as anti-entrepreneurial.

Mr. Van Den Hende says: "We have 65 per cent youth unemployment and the black economy is very large – about 50 per cent the GDP in the area. We need examples of successful small businesses to show people their value. If you teach in the schools and the factories that jobs create wealth and that this is better than crime, we might have a chance of changing things."

BIC Toscana: Massa (1995)

BIC Toscana opened in Massa late in 1995 to address large numbers of job losses in various sectors, such as agroindustries and food processing. In addition, there have been technological redundancies over many years in Massa-Carrara's primary industry of quarrying marble, where two men with modern equipment can do work that used to employ up to 8 or 10 times as many.

BIC Toscana is a conversion, though only in part because its 14 incubator units, each of which is 200 sq. m in size, are new and built in pleasantly landscaped grounds along with a cluster of training and assembly rooms. The whole development is on a site of largely disused factories that once employed 8 000 people between them. The BIC now contains 19 companies employing 61 people. This may seem a drop in the ocean compared with what has been lost, but BIC Toscana has developed its philosophy in a way it hopes will generate a considerable multiplier effect throughout the local economy.

The approach is summed up by Geris Musetti, the managing director: "We are filling up the BIC with service companies first, not manufacturing. We are concentrating on high technology and high technology services. Our philosophy is that the system is the incubator, not the BIC. The regional government sees the BIC as a local economic development agency and has invested Lit. 1 bn in it... We shall be building in Livorno in middle of 1997 next year." Livorno, about 55 km to the south of Massa, is about half-way to Piombino, where there have been large steel industry closures.

Modern telecommunications is at the heart of the BIC Toscana's operations. The complex is wired in the most advanced way possible and great emphasis is being laid on telematic services for SMEs. Mr. Musetti rates this as very important for providing services and developing new ones, with active, real-time links to networks of companies elsewhere and telematic outworking commonplace. Multi-media video conferencing is available.

The BIC has an agreement with Telecom Italia to develop the systems. Once established, they are likely to follow quickly in all other BICs and CISIs, following an accord late in 1996 between SPI and Telecom Italia to similarly wire the whole network of BICs and CISIs. At Massa, the BIC has triggered and driven rapid implementation of the new technology to use the Internet for marketing and this has become a central feature of BIC Toscana's operations. There is an Internet service provider

in the BIC – as is the case with most BICs and CISIs – and what works best is being evaluated and catalogued. As might be expected, one of the major efforts, run by one of the companies in the BIC, is dedicated to marble and marketing it internationally. Most of the marble companies in the area are involved. The operation is, in effect, an electronic classified advertising and information system. All Tuscan marble companies are listed electronically, but can pay to have a dedicated entry with appropriate promotional content and sales information. It means that architects and specifiers anywhere in the world with access to the Internet can do their window-shopping in Massa via their personal computers and place electronic orders. The BIC is developing a similar electronic technology-based approach for agro-industries and food processing.

Mr. Musetti says the BIC has six main tasks. These start with exports and international marketing and also include financial consultancy, services and support for SMEs; economic development for local authorities; support for innovation and quality management programmes; the administration of EU programmes; and playing the leading role in the information and education fields.

CISI Abruzzo: Teramo (June 1996)

Abruzzo is very keen on BICs and CISIs. Despite the fact that it only opened its first centre at Teramo in June 1996, it is planning three others as a central part of its regional economic strategy. Abruzzo, on the Adriatic coast and the eastern neighbour of the capital region of Lazio, has long been the most northerly of the regions comprising the “south” of Italy, even though Teramo, where CISI Abruzzo’s first centre has been located, is actually north-west of Rome.

Abruzzo’s approach to regeneration has been successful enough to bring its per capita GDP up to 89 per cent of the EU average. Abruzzo has long had advantages over other, more lagging Italian regions: Teramo is only about 130 km from Rome. There is a law-abiding culture, so the towns are apparently free of organised crime. Communities look cared-for by the citizenry. There seems plenty of “can-do” entrepreneurial spirit. As Mr. Ferdinando Marsilii, director of CISI Abruzzo puts it: “We have no cultural problem here. There is a good commercial mentality and no shortage of entrepreneurs.”

The problem is not to change the culture or to create a climate for entrepreneurship from scratch, but to provide physical assets, help with finance, advice, counselling and consultancy – to make conditions more conducive for small, new ventures to take root and grow, for many more jobs are needed. Even though there is plenty of work in tourism and there are 40 000 businesses in the region, unemployment is 11.5 per cent and persistent. Youth unemployment is being tackled vigorously and is not as bad as elsewhere, but the big problem is with middle-aged men.

"We have made much progress, but our industry is not yet self-sustaining. We need to consolidate development", says one political leader. "Twenty years ago the main economic structure was based on clothing, textiles and leisure. There was little locally-owned capital, but lots of work. The CISI has two roles: first, to help existing businesses survive; second, to create new work in new sectors, particularly high technology." What Abruzzo needs is higher value added from its efforts. By centring its regional policies for small business on a network of CISIs it hopes to provide a physical infrastructure that will incubate at least 150 businesses every three to five years with substantial prospects for growth, as well as ensuring there is a centre within easy reach of any other business that could benefit from advice, consultancy, access to financial help and any other outreach services that might be needed.

Typically for Italy, Teramo province is made up of 47 communities, so one of the great advantages seen for the CISI is its *tutto pronto* status as far as businesses are concerned and a consequent ability to cut through red tape and time-consuming bureaucracy. The area has a EuroBic business innovation centre to help small business, but the consensus among political, industrial and entrepreneurial association leaders is that this has not been effective, whereas they say the first CISI has made an instantaneous impact. Construction finished in April 1996 at a cost of Lit. 8 bn and the first companies moved in during the following June. Political and business leaders are projecting that many of the gaps in the economic structure will be filled by small businesses generated from a return to handicraft and artisanship.

BIC Sicilia: Catania (July 1996)

The Catania centre of BIC Sicilia opened in the summer of 1996 (a centre with incubators at Palermo is at the planning application stage) after three years of planning and building and is assured of three years' funding by the EU. There are 30 units covering 7 500 sq. m and the building is another well-designed formulaic piece of architecture conducive to small business needs.

Sicily has well-documented problems caused by a lagging economy, a unique culture and organised crime, all of which the BIC is trying to address. However, there was no initial rush for places in the incubator units. Only three companies moved in during the first four months and developing a "seeing is believing" strategy to demonstrate the centre's value looks like involving a somewhat different approach from that followed elsewhere. Some tenants are not going to be "brand new", but subsidiaries of existing companies, some of them well-established. Whether they need to be "incubated" in the purest sense of the word is questionable because these will not be corporate orphans with nowhere else to turn. But they will demonstrate how the centre can operate and the services it can offer. Mr. Giorgio Chimenti, BIC Sicilia's managing director, says: "Local conditions determine the strategy for any

BIC. We are promoting our Catania centre not only as an incubator, but also as a centre of excellence and a service provider for solving logistical problems for any companies that might need them. We hope some existing companies will use it to set up high technology manufacturing subsidiaries. It takes ages for them to get planning permission and approval from the authorities to build anything of their own and we can certainly offer them a solution in this respect."

One entrepreneur who is looking at the centre for this very reason echoes this. "Regional bureaucracy is a bigger problem than crime", he says: "The value of the BIC is that it is *tutto pronto* for immediate start-up. You avoid the time and bureaucratic problems that hold you up outside. It is also very important that it is a neutral organisation."

The Catania centre is also tackling local anti-entrepreneurial culture – which has traditionally driven many young Sicilians away from the island – using counselling, advice and entrepreneurship awareness courses. "We spend a lot of time talking to young people with good ideas", Mr. Chimenti says. "We have to do a lot of work to convince many of them that an idea is only any good if it is marketable. There seems to be about a 10 per cent conversion rate to investment and only three out of 10 will become entrepreneurs." The entrepreneurship awareness courses last six months and are run in the afternoons. This timing allows people to work in the mornings and encourages women to take the courses so as to try and counter the cultural pressures of a traditionally male-oriented society that sees the place of women as in the home.

The BIC is adopting a variety of tactics to prove its value to the business community. "We are trying to set up industrial and craft associations", Mr. Chimenti explains, "anything that will enable us to lead by example. We need to show the value of our services. International marketing skills are needed across a wide range of industries and this is an area where we can certainly help." The BIC has a range of consultants on its books for such outreach work. They bring a wider perspective into business owners' lives. "Quality is very serious problem", Mr. Chimenti says. "Many entrepreneurs in Sicily have not yet realised that quality has to be a free decision, not an imposition. It is a decision forced only by the customer. Local companies find it difficult to invest money in quality. They are much more concerned with day-to-day management. It is very difficult to persuade people to invest for tomorrow. We are trying to convince entrepreneurs that in the long run it will cost them much more not to move to a quality system."

Finance is a particularly difficult local problem. To try and address this, the BIC has been able to start up with a loan guarantee scheme in place, although only one bank, the Monte dei Paschi di Siena, is participating so far. BIC Sicilia also has funds for direct investment.

Crime is a problem, but the BIC is addressing this through tight vetting of applicants for places, rigorous perimeter security, TV surveillance and alarms. One company suspected of having links with the Mafia and which tried to get into the Sicilian fortress was not allowed a tenancy after its business plans revealed it would have to rely on sources of funds it refused to disclose. However, Mr. Chimenti also urges that people keep a sense of proportion. "The Mafia is one of the reasons people left to start businesses in the north of Italy or in other countries, but not the only reason. Just as important are political inefficiency and bureaucracy. In the past, it took even longer than it does now to get anything done. We are trying to help with both these problems."

It is too early to evaluate BIC Sicilia yet. What can be said is that the principal building blocks – including the BIC itself at Catania – are in place. There is a confident and strong management team with a clear vision, support from Catania's political leadership, and sensible policies have been developed to improve the local entrepreneurial culture and establish the BIC's role as a centre of excellence providing much-needed consultancy services for all-comers. Sicily has not got the concentration of people and density of entrepreneurs possessed by Campania – and its culture is not as conducive to spontaneous economic development as that in other areas, so it is unrealistic to expect too much too soon. Moreover, the experience of other BICs and CISIs – notably at Taranto, where the culture is a dependent one – is that it may take up to two years to attract significant numbers of new companies, but when they do start coming forward in numbers, BIC Sicilia has already made sure they will not be short of anything they need.

CISI Molise: Campobasso (September 1996)

CISI Molise opened at Campobasso in September 1996 and has yet to prove itself, but the location has been chosen carefully to ensure that in addition to nurturing new enterprises and creating jobs the CISI adds other value to the Molise region. The area had an important boost in the 1980s after the discovery of Europe's oldest palaeolithic remains in Isernia – an event which put the town on the front page of *Nature*, perhaps the world's foremost scientific journal – and there has been a steady stream of knowledgeable visitors since. Other visitors come for skiing in winter, to visit a nearby national park and hike in the hills and mountains. Encouraging more short-stay, special-interest tourism is a principal element in the local economic development strategy promulgated by Domenico Pellegrino, president of Isernia province and a strong supporter of the CISI.

Transport routes are limited and communities are small and scattered. There are 130 communities and only 300 000 people in the region. "It is politically difficult to regenerate because everything is so small", admits Agostino Angelaccio, president of the chamber of commerce. However, the fact that he is also president

of the CISI and works closely with Dr. Pellegrino suggests that an overall strategic vision is developing for the area.

Past attempts at large-scale economic development have seen Fiat locate a factory in one industrial zone – which also spurred the building of an *autostrada* to improve access – and a second zone developed for textiles and other large-scale manufacturing. “But job creation without enterprise creation is not good enough for the long term”, says Giovanni di Gregorio, the CISI’s director. “The area is short of large numbers of small companies. We have deliberately located the CISI in the province’s third industrial area, which is less developed than the other two, despite the presence of Procter & Gamble. But Campobasso has a population of 50 000, so there is a reasonable concentration of people to draw new businesses from.” Things are moving quickly because there is undoubtedly some pent-up demand among local existing and would-be entrepreneurs.

The incubators range in size from 200 sq. m to 400 sq. m, while there are 17 units in the high technology section of the CISI. Standards of architecture and design match the standards set by other new BICs and CISIs.

One of the first tenants into the high technology units was a local commercial analytical chemist looking for somewhere to expand an existing laboratory he owns in Campobasso. His purpose is to chase a growing market being generated by increasing numbers of environmentally friendly projects and regulations. He is a “natural” entrepreneur in his 30s who started his business at the age of 22. The CISI made it possible to take only the 100 sq. m needed. Without the CISI he would have struggled to find suitable property and might have had to restart his whole business in bigger premises at a cost that would have forced him to move more slowly, if he had done so at all. Through the CISI, he has been able to act quickly and employ two more scientists, an important contribution to keeping skilled labour in the area.

Importantly, the CISI has started with consensus about its role across the whole community, including regional and local governments, the chamber of commerce, the association of entrepreneurs and trades union leaders. All have signed an accord pledging support and the CISI has been contracted to lead a substantial portion of local employment and economic development. Its first entrepreneurs are certainly good role models to prove its case.

A national network

This, then, is where Italy has got so far (as of end 1996) with its BICs and CISIs programme, as far as operational centres are concerned. Others are in the final stages of completion and due to open during 1997 at Terni, a steel closure area in the mountains about 80km north of Rome, and Calabria, the Italian mainland’s most southerly region. An important feature of BIC Calabria is that the Calabrian regional government has become a shareholder. Only in Toscana has the regional government participated

in a BIC or CISI in this way. The tangible nature of the commitment in Calabria is seen by SPI as a landmark in partnership-building and in the close ties, if not integration, of BIC and CISI policy into the wider context of regional development.

Romualdo Volpi, SPI's managing director explains: "Our programme is no longer in the testing phase but in start-up from both the qualitative and quantitative points of view. The general framework now exists. We have an organised presence in 12 areas. We have defined programmes with the government and other relevant authorities in Sardinia, Piemonte and Lazio and have advanced contacts in Emilia-Romagna, Marche, and Basilicate. We now have a very strong territorial presence and we aim to be active in most of Italy's 20 regions in the next three years. Some regions in the north do not need the same sort of support from us as we provide in other areas because they already have well-balanced economies and strong small business sectors. They have good, proactive finance companies and we shall continue to work closely with them, as we do now. Overall, in the next three years or so we should have around 30 incubators, which means 1 000 SMEs giving work to 10 000 people."

In prosperous areas, SPI's approach will be to offer support, know-how, and financial collaboration where appropriate. It has already proved with BIC Veneto – a BIC without-incubator, or incubator-without-walls – that in such prosperous areas consultancy and training, mainly to improve competitiveness, may be all that is needed where an entrepreneurial culture is a fact of life and the local economy has a stable mixture of large, medium-sized and small businesses.

All this is indicative of a deliberate well-planned strategy. That this is deeply understood throughout SPI's staff is indicated by the words of Roberto Bernardis of BIC Friuli Venezia Giulia in Trieste: "It is the wrong approach just to push BICs for everywhere", he says. "You have to study a territory and then identify the support mechanisms which will do the best job. There is a tendency among local authorities to automatically ask for a BIC or a science park or both. But they are very expensive and not always the most appropriate mechanism with which to start. A BIC is particularly useful in areas which are weak from an infrastructural point of view."

Mr. Volpi has a wider vision for the Italian network as a whole. "We aim to bring together finance companies in international fields", he says, "to assist companies to position themselves in international markets. The food sector is a prime target because there is a common interest throughout Europe. We are also aiming to cluster or network companies with common policies or related markets."

He also sees BICs and CISIs not as a starting point, but a stepping stone in a national policy to encourage innovation. "Our network is based on the incubators", Mr. Volpi says, "but we now have to worry about pre-incubation. We have submitted to the Italian government, together with the ten big universities, a scheme to manage companies within universities. We are looking for spin-outs. People would use

existing equipment in the universities to develop their ideas. We would use the universities for feasibility studies and then move any companies that emerged into the incubators.” He proposes the scheme be paid for from public funds.

This is probably as near to a “picking winners” policy as anyone can get. It is a selection policy and interventionist. The idea is clearly to adopt an approach to the pre-incubation stage such that ideas can emerge relatively cheaply and be turned into businesses. The metamorphosis would be completed in BICs and CISIs where companies could grow without high overheads and bearing only variable costs. Mr. Volpi believes the process could be managed with a corporate death rate of less than 10 per cent.

Constraints and problems

Making these policies work is going to depend on several crucial factors, in particular, turning over incubator space productively, managing the programme on the ground and financing the Italian small business sector much better than it is financed at present. Let us consider these points in turn, but first let us also examine one stand-alone problem that needs to be addressed – the thorny subject of intellectual property rights, upon which SPI has yet to formulate a policy.

Intellectual property is a vital topic in innovation, particularly with the globalisation of high technology niche markets. Several companies in the BICs and CISIs already have patents on their products, processes or ideas, but have taken matters no further as far as legal protection is concerned at the international level. This can be very costly and far beyond what most small companies can afford. Moreover, specialised legal advice is needed, of the sort available only in large financial and professional service centres such as Rome, Milan and Turin.

Turning over space more productively

One of SPI’s principal aims is to use the BICs and CISIs for continuous job creation. The contrast is with costs of Lit. 300 m to Lit. 350 m to create a job in a normal industrial sector through direct investment, such as greenfield building or relocation. In the incubators, SPI reckons the cost is Lit. 60 m – but excluding the cost of building the incubators – and that this will fall over the years through recycling incubator space. “We would expect to get 4 000 jobs through our incubators every 10 years”, Mr. Volpi says. “Every lira of public money would then support many more jobs than would be the case using other means.”

However, such high productivity will depend on a satisfactory level of recycling. The BICs and CISIs will be expected to achieve an average four-year tenancy turnover rate to recycle their space so as to accommodate a constant stream of newcomers. Mr. Volpi concedes that exceptions would have to be made for high technology companies requiring longer to establish themselves in new markets.

Experience so far suggests that although there is a steady turnover of tenants within two to five years, a substantial bulk want to stay their term and some would like to stay longer.

Moreover, there is a problem in Sicily and Campania concerning organised crime. It is one thing to incubate small businesses in the protected environment of a BIC or a CISI, but as Riccardo Van Den Hende, president of the association of small entrepreneurs in Marcianise, says, similar protection is needed by mature businesses. One way of improving turnover of tenants generally would be to develop industrial estates – and secure ones where there is a need – where BIC and CISI tenants can move when they are capable of standing successfully on their own feet. A start has been made, though probably not intentionally, in Genoa, where BIC tenants can graduate to the adjoining Campi di Genova. Mr. Vestiti in Campania says SPI has such estates in mind anyway – and would use them to positive advantage for clustering related types of businesses and networking with similar industrial estates, as well as with BICs and CISIs.

Who should be responsible for such developments, however, must be open to question. Is it the government's job through SPI, or should the private sector contribute through joint ventures – or do the job on its own? At any rate there seem two opportunities here – one for private sector property developers and their financial backers to invest, and one for SPI to provide a means of speeding up BIC and CISI throughput. It is the businesses in the BICs and CISIs which are themselves the raw material in this process. SPI will need to find systematic and sensible ways of moving them on efficiently if it is to achieve high levels of productivity in its BICs and CISIs, especially when there is a national network of about 30 of them, or more.

Management

The planned and potential size of the network of BICs and CISIs also presents managerial problems. As Mr. Volpi admits: “They are not just a form of local development. Incubators require active, high quality management, the cost of which is spread across the companies in the BIC or CISI. The quality of BIC management is critical. They have to have technical skill and they must be enthusiastic and have a passion for the work.”

SPI has been able to tap the resources of IRI and its network of contacts for some managers. The steel industry itself has proved another source of well-qualified people. They have included experienced managers approaching retirement, as well as other senior managers, some of whom have worked at board level, still with many years to contribute. Others have made career moves from good jobs in other industries or organisations, some of them abroad. All BIC and CISI senior managers encountered during this evaluation had a strong entrepreneurial outlook themselves. High quality experience was apparent in all cases, as was an intimate knowledge of all

tenant companies in their BIC or CISI. This is a vital contributor to low failure rates – between 5 per cent and 9 per cent, so far – among BIC and CISI tenants.

Good managers also possess good social skills, which are much needed for building good relationships and consensus with the community around them, particularly with local political, industrial, commercial and trades union leaders. This latter work is also crucial to the success of the whole BIC and CISI programme.

Keeping up the quality as the network expands will itself require astute management by SPI. To some extent, the problem is already being addressed by regionalising BIC and CISI development, so that the best managers have responsibility for all the BICs or CISIs in their region and delegate day-to-day supervision in each one to good deputies or assistants on the ground. The thing to watch here will be the maintenance of intimate contacts with tenant companies and the avoidance of organisational politics, which are bound to develop as organisations progress beyond the simple one-manager, one-BIC approach of the early stages. As the national and regional BIC and CISI structure becomes more complicated, so will the management structure. BIC and CISI management will become a career in its own right. It may be that more formalised structures will become inevitable as the network expands into a production line along which ideas are turned in businesses, the businesses are then incubated and the maturing, young but growing companies are then pushed out of the nest. Support by experienced managers will nevertheless remain essential, not least as the BICs and CISIs develop their new role as venture capital providers. Good investment decisions in venture capitalism are not only about the cold analysis of markets, risk and return, but also concern local knowledge and making sound judgements of people applying for funds. SPI is aware of the problems likely to arise from changing the nature of the growing network's management structure, but a careful watch will have to kept on developments.

Financial consequences

Although it must be said that entrepreneurs all over the world complain that their banks never do enough for them, the Italian banking system has a particularly poor reputation among entrepreneurs. Nearly every BIC or CISI tenant interviewed for this report had started their business from their own resources, usually personal or family savings. Few had any good to say about Italian banks, which are seen as possessing little understanding of entrepreneurship or risk management.

As one senior SPI official puts it: "There are no real business banks in Italy and the role of existing banks is constrained by law because of past banking failures. Our banks don't know how to do it." The result is that while most banks have a function in supplying specie for day-to-day use, processing transactions and accepting deposits and savings, they are not aggressive seekers of business from small enterprises.

“Our banks also have poor reputation for helping businesses when they get into trouble”, Mr. Volpi says. “Stock Exchange rules are being changed to assist fund-raising, but the banks have no intention of changing their attitudes because that would incur increased risks. Meanwhile, there is less family involvement and more professionalism in SMEs. New tools such as factoring and leasing are proving attractive, but the need for equity funding and risk capital is growing.”

An interesting view comes from Avv. Matelda Grassi, an SPI consultant who is a former vice-minister of labour in one of Italy's recent caretaker governments. “Yes, our banks are conservative”, Mrs. Grassi says. “They have had a protected market in the past. Intervention was managed and little risk was taken. The new liberalism is changing this everywhere and in other countries too. Despite these changes, however, the output of industry is still the same, but the effort must be made to change further because we cannot take it for granted we have reached optimum output. We have to finance new ways and new industries. There is a shift from manufacturing to services. How can we intervene? I think that obtaining venture capital has to be seen from a different perspective. In an open market situation, Italian banks will either have to adapt themselves or be replaced by foreign competitors.”

SPI is already helping to transform relations between small businesses and some of the banks. As the network of BICs and CISIs becomes stronger, so will SPI's influence as an expert on SME finances and as an intermediary with the banks. Mr. Volpi points out this could be crucial concerning EU support for SME development, especially in fields such as innovation, training and enhancing competitiveness, all primary roles of BICs and CISIs. “You have to put in national resources to get EU resources”, he says. “Italian banks have the resources.”

SPI was equipped by law in 1995 to get directly into the funding market itself. It has two instruments – a venture capital fund and a loan guarantee scheme. BIC and CISI managers have yet to make equity investments, but most are already evaluating proposals, though as with venture capitalists everywhere there are already grumbles about quality and potential deal flow. They are optimistic but – as in the sophisticated venture capital markets of the United States and United Kingdom – may have yet to discover the market's golden rules: there are never enough good investments and the lemons always ripen before the plums.

The loan guarantee scheme has proved quicker to implement, but the conservatism of Italian banks is again apparent. There is widespread concern that not enough banks are taking part in the scheme and that banks in the south are less warm towards it than those in the north. Indeed, only one bank, the Monte dei Paschi di Siena, has so far joined up. This failure by the banking sector as a whole to participate in the scheme means that risks cannot be spread as they can in, say, the United Kingdom, where all the main clearing banks take part in a national loan guarantee scheme aimed at small companies with much riskier prospects than would be the case in Italy.

The Italian scheme as it now stands means that as far as new enterprises are concerned, the one participating bank is at present willing to lend only four times the value of funds a BIC or CISI has available for underwriting the risk. Even with new enterprises, this ratio may be conservative. It assumes a 25 per cent failure rate, which is pessimistic in a BIC and CISI system where failure rates are already under 10 per cent. With rigorous, duly diligent evaluation of enterprise applications, higher risks could be taken, even with new enterprises. In fairness, BIC and CISI success rates are recognised with loans under the scheme to existing businesses, where 20 times the value of underwritings may be advanced, implying an expected maximum failure rate of 5 per cent. However, failure rates so far inside BICs and CISIs suggest that total sums available for lending to new tenants might well be safely set at 10 times SPI's guarantee fund. Even seven times – an implied failure rate of 14 per cent or so – would make much more money available while still maintaining a conservative stance.

The key here is to get more banks to take part in the scheme so that risks will be better spread among them and managers made more comfortable with them. However, if Italian banks remain unsupportive SPI might do well to follow Mrs. Grassi's implied advice and actively try to open this lending market to foreign competition. Italy's seriously under-served market in small business loans must rank as a major opportunity to banks elsewhere in Europe or the United States with successful experience of such risk management.

There are also lessons to be learned from the working of loan guarantee schemes in other countries. According to Professor David Storey of Warwick University's centre for SME research, the United Kingdom's government-backed loan guarantee scheme has actually turned out to be an effective means of training bank managers to be better judges of risk. Italian banks might find it profitable to look more closely at this.

Chapter 5

Business Incubation in the United Kingdom

Introduction

Business Innovation Centres, or BICs, are a form of managed workspace, a concept developed, if not invented, in the United Kingdom from the mid-1970s. In spite of this, BICs have not in themselves played a decisive role in the development of entrepreneurship in the United Kingdom. Rather, BICs have been one part of a holistic approach towards business formation and growth which – along with lower marginal tax rates and the liberalisation and deregulation of labour and capital markets – has transformed the United Kingdom's culture of entrepreneurship over a period of about 20 years.

It would, therefore, be misleading to try and evaluate the role of United Kingdom BICs and managed workspace in isolation. What the United Kingdom possesses is a system of business incubation, rather than a collection of incubators. This system has evolved through a mixture of policy, private sector leadership, public sector consolidation, pragmatism and accident. The system recognises the value of entrepreneurship and attempts to smooth the process of starting a business. Registration processes are minimal compared with most other countries. Awareness of entrepreneurship is encouraged in schools, where, since 1981 in some areas, successive cohorts of teenagers have been learning the rudiments of business formation and operation. In effect, the United Kingdom has eased the starting of a small business and has ensured that those businesses capable of growth have access to the tools needed to achieve it.

In general, the broad system of business support has three principal components: advice; finance; and premises. The ways in which all three components work and interact are exemplified by the experience of British Steel (Industry) Ltd., an archetypal job creation company set up in 1975 to ease local economic problems impending from the modernisation and, eventually, privatisation of the United Kingdom steel industry. This experience is considered in detail in this chapter, along with the lessons and implications for public policy.

As far as general advice is concerned, the United Kingdom developed a comprehensive network of about 300 enterprise agencies between 1978 and 1986. In recent years most of these have been superseded by or subsumed into a new

network of about 80 training and enterprise councils, which were established from 1989 onwards. Another type of network has been added in stages from 1993 in the form of business links, which function as one-stop shops offering advice to businesses. Some of these have since been incorporated into training and enterprise councils and there is some confusion over roles. However, the United Kingdom is expected to rationalise advisory services soon through new regional development agencies, which will have an umbrella or supervisory function.

As far as finance is concerned, businesses in general have access to a wide range of capital markets. Financial provision is generally adequate and risk management effective among capital providers. While financial provision is in the main driven by market forces, the government provides relatively small grants to encourage innovation, exports and competitiveness. There are also special funds, usually provided by charitable trusts, to help business start-up among groups of people with little security to offer, such as members of ethnic minorities and young people.

The provision of premises is fundamentally driven by property markets. However, United Kingdom experience suggests that survival rates are improved by sheltering small businesses in managed workspace and ensuring they have access to advice and finance, so it is generally in the interests of landlords to provide the necessary supporting services. The United Kingdom now has an abundance of more than 100 substantial centres of managed workspace. The original concept of most such premises – as with all BICs – envisaged 100 per cent turnover of tenants every four years so that space could be recycled. Experience suggests, however, that about three-quarters of tenants do not grow sufficiently to move, so a new dynamic towards premises is being pioneered by British Steel (Industry) which developed the concept of managed workspace in the 1970s. It is selling its mature centres to property companies so they can be run by professional landlords, and using the proceeds to build new centres of managed workspace so the cycle can start again.

Experience also suggests that what tenant turnover can be achieved is helped by the existence of intermediate-sized progression units to which growing businesses can graduate. British Steel (Industry) has built some, but they are generally an increasingly common feature in science and technology parks, as various high quality industrial estates style themselves. Many of the parks have or plan innovation centres which the parks' developers and landlords hope will spawn their future tenants. This has already proved the case in some science parks which started in the early 1980s.

The United Kingdom is also setting up various experimental innovation centres, particularly in biotechnology, to try and improve technology transfer from the "blue sky" environment of academia to the commercial world. Other new approaches to business incubation and assisted expansion are also under way and are considered in the final section of this report. It is at present too soon to evaluate their effectiveness.

What can be concluded, however, is that the United Kingdom has over the past 20 years developed a holistic approach to business incubation based on universal access to advice, finance and premises. A wide variety of instruments are associated with the incubation process. A lack of prescriptive or formulaic attitudes has enabled these various instruments to be used flexibly, according to the circumstances, the nature of the businesses involved and the resources of the entrepreneurs. Business incubation itself has behaved like a business, with all the disciplines of the marketplace.

Business incubation in the United Kingdom

Ironically, for a country which has been more effective than most in Europe in encouraging the growth and professionalisation of the small business sector during the last 25 years, business innovation centres – BICs – do not in themselves exert a decisive influence. Even if the broadest definition is used to define what is or is not a BIC, their impact upon the United Kingdom's small business sector, or upon local employment and economic development issues, is marginal.

Definition is not simple. In general, these institutions provide sheltered accommodation for small businesses, with flexible leasing or rental arrangements for floorspace and centralised office and supporting services, the cost of which may be included in rentals, or which can be hired as and when required to save tenants incurring unnecessary overheads. However, this definition covers a wide range of accommodation, from very basic managed workspace to high-specification buildings. Another definition of a BIC is by type of tenant and holds that only companies capable of rapid growth should be allowed to rent space. In theory, all tenants should then quickly outgrow their accommodation and move on to bigger premises within three or four years. Another definition is by management structure: to be called a BIC and qualify for EU funding the centre must have a formal managerial hierarchy of its own, including general, financial and marketing management functions. Under such a definition, the United Kingdom has only about a dozen BICs, none of which have been notably successful and some of which have suffered problems as their initial tranches of EU funding have run out.

The United Kingdom, however, has been in the managed workspace business longer and in greater volume than any other European country. The very concept was developed 20 years ago by British Steel (Industry) Ltd., a subsidiary of British Steel formed in 1975 to create work in steel closure areas, where the pressures of modernisation and privatisation were to cause the loss of about 180 000 jobs. The experience of British Steel (Industry) – or BS(I) for short – suggests that important lessons will be missed if BICs are not defined in the broadest possible way. In general, as research has found, only about one in six of all small businesses are capable of growing to substantial size. Some research has suggested that half of all jobs

eventually generated by start-up companies stem from the growth of just 4 per cent of them. BS(I)'s experience is that it is impossible to "pick winners" with sufficient accuracy to ensure they are all clustered in a particular BIC. Three-quarters of small businesses reach an optimum size for the aspirations of their owners after a few years, and their owners then opt to stay put where they started. With a shortage of suitable premises to which to move, BS(I) has opted to build new centres, using rentals from existing centres to do so, or even by selling mature centres to property companies. BS(I) has also withdrawn from full membership of the European Business Network (EBN), which represents BICs as defined under EU rules, on the grounds that the EU definition and requirements concerning management structure are over-prescriptive, adding unnecessarily to BIC overheads.

BS(I) maintains associate membership of EBN, arguing for simple local management of its managed workspace to minimise overheads, while insisting that any specialised advice its tenants might need can be provided centrally or brought in or bought in locally. Yet BS(I) has proved a remarkably successful job creator with about 60 000 new jobs created directly and at least as many again created indirectly in its first 21 years. Its experience suggests that BICs or managed workspace centres should best be part of an overall strategy. In BS(I)'s case this strategy has three prongs: advice, finance and premises. It is through financial instruments involving both equity and loan finance that most impact is made among companies most likely to grow. They do not have to be housed in a BIC or managed workspace centre, although some have been. Because of its success, BS(I)'s experience must be taken more seriously than arguments about what is or is not a BIC. BS(I) has results to justify not only its current policies, but why it changed them, for in its early days it too assumed that the forerunner of the BIC it invented would nurture large numbers of rapidly expanding companies which would grow quickly to move out within four years, enabling the workspace to be recycled.

BICs have a direct part to play in job creation; diversification and strengthening of a local economic base; business growth; and technology transfer. When premises and accommodation are considered, BICs also have an impact on property development. BICs offer a key benefit: all the evidence is that they improve the survival rate of small businesses which become tenants. This applies whatever definition of a BIC is adopted. The dangers of a narrow definition – where only companies promising rapid growth are allowed in as tenants – are that there may well not be enough of these to fill the space, and there is a disturbing possibility of policy-makers and administrators creating two classes of SME.

In the view of some, first-class SMEs are seen as those which will grow into substantially-sized enterprises eventually employing hundreds of people. Second-class SMEs stay small and merely provide their owner-managers with a comfortable living. This definition of class is never stated, but the attitudes of policy-makers, advisers, academics and administrators who, in effect, endorse the idea, are

betrayed by the implied disparagement of referring to SMEs which stay small as “lifestyle” businesses. Lifestyle businesses are, of course, administratively inconvenient. They offer few economies of scale to, say, venture capital providers, or government ministers wanting to create large numbers of jobs quickly. They are disliked by some trades unions because they are difficult and time-consuming to organise, and their owner-managers may be hostile to trades unions anyway. Nevertheless, they create jobs and wealth, contribute to economic output, diversify the economic base, increase the size of the private sector, often enable significant transfer of technology, and contribute to the income stream of landlords and property developers. Moreover, they trade with each other and with larger companies and form part of the general supply chain, even if they supply only services and have little tangible stock of finished goods. Their owners often sell their businesses to “first-class” SMEs, either to start new ones or to retire. The survival of these “second-class” SMEs is therefore extremely important, especially in a United Kingdom economy where half of all private sector jobs are now in companies employing fewer than 50 people. In other words, their aggregate presence is important.

In addition to this, successful economies – whether at national, regional or local level – are often characterised by a private sector comprising a balanced mixture of large, medium-sized and small companies. An analogy is with “good” concrete, which, before the cement is poured, must have large stones to provide basic structure, medium-sized ones to occupy the larger holes between them, and small stones, even gravel, to fill in the remaining interstitial spaces. “Bad” concrete usually has too many interstitial spaces left unfilled and eventually crumbles under pressure. Similarly, regional economies that lack such a mixture of large, medium-sized and small companies are usually unsuccessful in the long-term long term as their large industries suffer from the pressures of economic cycles, political change, technological obsolescence, and competition. Merseyside, where the Port of Liverpool suffered from all four of these factors over a period 70 years, is the United Kingdom’s worst such case of structural economic dysfunction. The ship-building, coal and steel production regions of Northern England, South Wales and the West of Scotland have been similarly afflicted. SME policy, therefore, must cover all types of SMEs, whether potential large employers or lifestyle businesses.

What are defined as BICs in the narrowest senses can be regarded merely as a superior form of managed workspace, though they are not always so. Accommodation is usually of a high standard, but it does not have to be. Equally, not all BIC tenants, in the United Kingdom and elsewhere, are involved in high technology or have much potential to grow, however careful the process under which they were selected as tenants. Unlet space is nearly always financially dangerous for landlords and property developers: entry criteria are usually eased to fill space, rather than let it lie empty.

Practicability is another consideration: the United Kingdom has only a handful of BICs as defined in the narrowest sense. Their impact on the emergence of the United Kingdom's SME sector in the last 20 years has been insignificant. By contrast, the United Kingdom has a much larger amount of managed workspace than BICs, with more than 100 centres, some of which are comparable to BICs anywhere. Many are called "business centres" and tenants are often high tech. Indeed, the centres as a whole cater for a wide range of "high tech" and "low tech" tenants.

Moreover, BICs in the United Kingdom are but one means of business support in a very large national array of services. In this BS(I) is a microcosm of the national strategy. High technology businesses do not necessarily need a BIC to nurse them through infancy, given the range of other types of support that is available. Trying to draw general lessons for SME policy from studying United Kingdom BICs is, therefore, less rewarding than studying the environment and climate in which they operate.

What the United Kingdom has to offer other countries is the example of a continuously evolving, flexible, but seemingly integrated and effective system for encouraging the process of business incubation. "System" may be too generous a word, for much policy appears to have emerged unsystematically and even by accident since the mid-1970s. However, pragmatism has prevailed. Policies have been developed on the basis of what works and what might make things work better. A system of sorts is in place and there is a generally supportive environment for SMEs. Evolution is still taking place, particularly in the fields of advisory services, training and fiscal measures to encourage investment. But what United Kingdom SMEs have in abundance is access to affordable advice, capital markets and property. They also operate under a favourable fiscal régime, where corporate and personal tax rates are relatively low (for Europe); where grant aid is available in some economically stressed areas, as well as for technological development or export market research; where investment in SMEs by individuals or venture capital trusts is encouraged through tax allowances; where large companies can write off support for the development of enterprise, whether in cash or kind, against corporate taxation; where capital allowances against tax promote investment by SME owners; and where equity finance is readily available for sound projects. As far as the last of these is concerned, the United Kingdom has developed the world's most successful venture capital market after the United States.

Territorial policies saw government-backed urban development corporations reclaim derelict hectares of disused docklands and inner cities; the corporations assembled and prepared land for development, thus reducing or eliminating downside risks that would have otherwise made development unprofitable. A parallel territorial development led to some areas being designated as enterprise zones, where, for a period of 10 years, all investment could be written off against tax. Companies locating in the zones were exempt from local taxes, and there was a

relaxed planning regime to speed up development. Such concessions did not always lead to much lower costs for business: in some cases, property developers were motivated to build better buildings for which they could charge premium rates, but still offer savings in overhead to tenants because no local business taxes were payable. Rentals in the zones then distorted local property markets, although a substantial overhang of slow-to-move property resulted during the United Kingdom recession of the early 1990s. However, the long term result is that some of the zones spearheaded substantial local urban regeneration, the most remarkable being Salford Quays, the largely disused inner city docklands at the end of the Manchester Ship Canal. In two other cases, London Docklands and Trafford Park (the latter on the opposite bank of the Manchester Ship Canal docklands to Salford Quays), an enterprise zone was combined with an urban development corporation, leading to a surge in property development which ensured there was no shortage of accommodation for businesses of all sizes well into the mid-1990s. The economic cycle, which brought recession in the early 1990s, damaged some property companies and individual developers, but the infrastructure was at least completed for long term economic development.

United Kingdom policies towards business incubation must be considered in the light of these broader developments. Sheltered conditions were provided for small businesses via a national network of advisory centres, easy-let accommodation and managed workspace. Previously, many landlords wanted companies to commit to 25-year leases before they would let premises, even though the bulk of small enterprises rarely take more than a year's view, if that, of the future of their business. Some of the worst culprits among such landlords were local councils.

To evaluate the United Kingdom's process of business incubation and the role of BICs and managed workspace within it, it is useful to look at how the system developed and the various types of complementary measures and instruments that now exist.

How the United Kingdom's SME policies developed

The United Kingdom had no formal policy towards small and medium-sized enterprises before the election of the Thatcher government in 1979. Policy derived from a dialogue between giants and institutions: big firms or representative bodies, such as the Confederation of British Industry, industry associations and chambers of commerce, talked to national government or local authorities, who also talked to trades unions, who in turn also talked to big firms and bodies representing employers. Small businesses were not well represented, even by local chambers of commerce, which tended to be dominated by large firms in any particular area. One reason was that small businesses were often seen as inconvenient to deal with.

By the mid-1980s, it had never been easier to start a small business and there was a wide national spread of advisory services, finance and, increasingly, dedicated premises available for SMEs generally. Various developments which would have a profound effect on the SME sector were already emerging, however, before 1979. These were largely driven by the pressures of impending technological redundancy in key industries, notably steel and glass. These led to the establishment of British Steel (Industry) and the beginnings of the enterprise agency movement. Both have proved seminal in the development of SME policy in the United Kingdom. Instruments such as managed workspace and BICs must be seen in the general context of United Kingdom policy on SME development and more general economic regeneration. The main events, instruments and trends have been as follows.

British Steel (Industry) Ltd. BS(I) was first in the field, having been established in 1975, and claims to have invented the concept of managed workspace, the forerunner of today's BICs. Its programmes for SMEs have three strands: advice, finance and premises. The latter comprise managed workspace along BIC lines and progression units to which expanding tenants can move. BS(I) has been highly successful, with lessons for policymakers everywhere.

Enterprise Agencies began to emerge around 1977-78, with the Community of St. Helens Trust claiming to be the first. The trust was developed by a former executive with Pilkington, to whom the glassmaking company gave free rein to find a means of encouraging the development of more small businesses in St. Helens, a Merseyside borough where Pilkington had its headquarters. Pilkington had developed a revolutionary "float" process in which optically clear glass for everyday use in buildings and the automotive sector could be made continuously, rather than in batches. The process greatly improved Pilkington's competitive advantage, but it was capital intensive and was eventually to destroy tens of thousands of jobs in the glassmaking industry throughout the world. Helping small businesses form and grow was seen as a means of countering job losses. The enterprise agency's main role was advisory. It also acted as an intermediary with providers of finance and premises.

The concept remained experimental until its national potential was recognised by Mr. Michael Heseltine, a senior member of the first Thatcher cabinet, on a visit to the St. Helens agency in 1980. At the same time, large companies in the private sector were being urged to follow the example of Pilkington and a few others in supporting measures to help SMEs, an idea many still considered alien. However, in the wake of inner city riots in Toxteth in Liverpool and Brixton in London, Mr. Heseltine and others argued successfully that assisting economic reconstruction and helping the development of a stronger SME sector was in the self-interest of the private sector, because it would strengthen the trading environment and improve confidence, especially in areas with high rates of factory closure. One

result was the formation of Business in the Community, a national charity, to co-ordinate efforts in this and related fields. Another was that the United Kingdom government altered its tax regime to make it easier for business to help.

An argument against helping had always been that this was charity; and companies were worried about possible shareholder reaction. Mr. Heseltine persuaded Sir Geoffrey Howe, then the United Kingdom's chancellor of the exchequer, to make an important concession in the Finance Act of 1982. Section 48 of the Act enabled companies to claim 100 per cent tax relief on contributions in cash or kind to enterprise agencies. The "in kind" provision was crucial: in addition to companies being able to give equipment, services and even premises to enterprise agencies, they were also able to lend them personnel and set their salaries against taxation. In some cases, secondment was of senior managers who were winding down to retirement, but other secondees included many younger managers, accountants and bankers whose postings, which usually lasted up to two years, were made part of their career development.

The final step in the development of the United Kingdom enterprise agency network came with the appointment of Mr. Trippier as minister for small firms. He set a target of 300 agencies by 1986, achieving this number with some months to spare. Not all were agencies on the St. Helens model. Some were local venture capital funds, others were concerned with training, others were managed workspace centres; but all were given enterprise agency status for taxation purposes, which helped them obtain sponsorship and support in cash or kind. Not all the agencies were effective. Much depended on the quality of each agency's management, the level and quality of local support from both private and public sectors, and the way each promoted itself. It is estimated that about 80 of the enterprise agencies were thoroughly effective, a factor reflected in the numbers which survived later events.

Parallel to the development of enterprise agencies, the United Kingdom government also introduced a variety of territorially based measures. These were not designed specifically to help SMEs, but they did so indirectly, particularly through improving the supply of better and more plentiful premises, an easier regulatory framework in some areas and fiscal advantages associated with one of the measures.

In 1981, Mr. Heseltine introduced Urban Development Corporations to regenerate the docklands of London and Liverpool. Mr. Nicholas Ridley, a successor in office, extended the concept in 1986-87, by designating another eight corporations. One purpose was to regenerate key city centre sites; another was to tackle the substantial dereliction caused by factory closures in the so-called Black Country of the West Midlands; another addressed dereliction caused by the demise of shipbuilding in North East England; and yet another aimed to stop the run-down of Trafford Park, a 2 000-acre zone at the head of the Manchester Ship Canal that was Europe's first industrial estate when it was developed nearly 100 years ago.

The job of all the corporations was to assemble land from fragmented ownership, clear it, service it and bring it up to a standard that would attract private sector developers. SMEs benefitted greatly from this as modern premises became available. One of the first developments in Liverpool's reclaimed docklands involved enterprise workshops – managed workspace very close in spirit to what would now be called a BIC – in refurbished transit sheds. The developer was BAT Industries, which had precipitated hundreds of job losses by closure of local tobacco processing operations.

One of the great strengths of the urban development corporations was that they were by law independent of local councils (although council leaders sat on their boards) and were their own planning authorities. This enabled them to cut through red tape and shorten the time needed by developers to obtain consent for their projects. Another parallel instrument also shortened development cycles. This was the Enterprise Zone introduced in the early 1980s. The measure designated areas of land as enterprise zones within which developers and companies would pay no local taxes and would benefit from accelerated planning processes for a period of ten years from each zone's vesting date. Some, such as in London Docklands and Trafford Park, were within the boundaries of urban development corporations, further increasing incentives to private sector developers.

There are several ways of assessing the success of such measures, one of which is the ratio of private sector funds to public monies expended in getting sites ready to attract the private sector. This ratio has varied between two-to-one and seven-to-one, with four-to-one typical. The achievements of the urban development corporations are probably best typified by what happened at Trafford Park in its first eight years. By 1995 there were 35 916 jobs in Trafford Park, compared with 24 950 when the corporation was set up, an increase of 10 966. The ups and downs of industrial regeneration, however, were illustrated by the gross figures for new jobs – 15 888 between 1987 and 1995. This meant 4 922 were lost from Trafford Park during the same period for the net gain of 10 966 noted earlier – roughly three steps forward for one back in terms of job creation. Total government investment in the first eight years was £190 million. The money went into land assembly, reclamation of 337 acres, 242 environmental schemes and 15 miles of new or upgraded roads. A new bridge was also built over the Manchester Ship Canal to improve access to the United Kingdom national motorway network. All this improvement of the working environment encouraged spending of £787 million by the private sector, more than four times the public sector investment.

Like the enterprise zones, the urban development corporations have nearly all now been wound up either with their job done, or with an unstoppable regenerative momentum to ensure the private sector finishes the job.

Meanwhile, the United Kingdom government had decided at the end of the 1980s to break up its nationally based training agency and delegate the job to

people with more detailed knowledge of local labour markets. It set up about 80 Training and Enterprise Councils for the purpose, each chaired by a local business leader and with substantial private sector representation on the board. This was a “top-down” initiative circumscribed by bureaucratic controls and basically in charge of disbursing public funds for retraining the unemployed. But the “enterprise” part of the council’s name was supposed to be aimed at helping SMEs through advice and training support. This inevitably clashed with the role of enterprise agencies, the poorer ones of which withered.

The agencies’ chances of survival were then worsened by the introduction of Business Links from 1993 onwards. These were another top-down initiative aimed at establishing one-stop shops where businesses could get all the advice they might need. About 200 were planned, of which 80 were to be core centres servicing the remainder on a hub-and-spoke basis. The original idea was to fund them for three years so they could build up a clientele of SMEs, the owners of which would then have to pay for any further services rendered. Business Links were, however, set up with high overheads, partly to link the core offices with the peripheral ones. They had ISDN landlines for communications and video-conferencing, for example, and, usually, were housed in superior accommodation. Some, as in the case of training and enterprise councils, had large staffs. It was a far cry from the more rough-and-ready enterprise agencies of the early 1980s, with their second-hand or borrowed furniture, cast-off computers and seconded staff. Few people object to the principle behind business links, but there were worries from the outset about their costs and continued funding. Several ran into trouble early on, as did some training and enterprise councils. Some training and enterprise councils absorbed their local business link to avert the latter’s financial insolvency. Some chambers of commerce merged with their local training and enterprise council and the local business link followed them. Others advocated co-location of all three bodies, so that businesses would have only one place to go to for advice, training, export documentation, representation and anything else they might need, even if different services were provided by different bodies. Meanwhile, surveys showed that most businesses did not know where their local business link was and that even more had never used it. Against this background, however, there was little room left for independently sponsored enterprise agencies, though some very good ones still survive. Many were subsumed by training and enterprise councils.

By the time of the 1997 United Kingdom general election, the outgoing Conservative government had shifted its position on business links becoming self-funding, but proposed they should compete for funding with each other, the winners being those which had developed partnerships with their local private sector. Where they stood after Labour’s election victory was unclear nearly six months later. There can be little doubt, however, that the overall picture on SME support became and remains confused and confusing, with a lack of national

consistency and a proliferation of different local arrangements. The recent discovery of possible fraud in at least one training and enterprise council has since done little to improve business confidence in the national advisory, training and SME support system, if “system” is not too generous a word for what now exists.

That said, there is also evidence of support for both business links and training and enterprise councils. The United Kingdom’s Investors in People programme, which the training and enterprise councils administer and which is concerned with improving the management of human resources throughout British commerce and industry, is gaining increasing support and appears to be proving effective. However, it is very difficult to get government grants without subscribing to Investors in People, so there is a powerful incentive towards compliance, even among some of the smallest SMEs. Business links also have their supporters among users: they can provide subsidised expert consultancy for SMEs and are particularly strong in export development counselling. The problems of national inconsistency, poor promotion to potential users and low visibility, however, remain. Moreover, they are not much interested in very small businesses with fewer than 10 employees, so this very large group of SMEs has not been helped by change. That the bulk of the SME sector has been able to ignore the haphazard development of business links and training and enterprise councils is almost certainly because most SMEs have either not needed them or have been able to manage without them anyway.

Much now depends on the new government’s intentions, particularly towards the Regional Development Agencies. These will be business-led, with the private sector having a boardroom majority over the public sector representatives. They will derive their powers and their funds from central government. Their role and modus operandi have yet to be defined, however, as has their relationship with the training and enterprise councils, business links, chambers of commerce and any other bodies associated with the SME sector.

When coal closures accelerated in the 1980s, British Coal Enterprise modelled itself on its steel industry predecessor [British Steel (Industry)] and successfully followed its winning formula of providing sound advice, easy finance and secure, well-appointed premises. Meanwhile, private sector developers established their own managed workspaces, some in partnership with development corporations, local authorities or large local employers. Generally, the United Kingdom climate for business in general and SMEs in particular has improved continuously over the best part of two decades. Things have only gone awry when the government has tried to impose over-prescriptive, bureaucracy-inducing, “top-down” policies on training and advice that went beyond the broad fiscal incentives to the private sector offered in the early 1980s. This, then, is the context in which United Kingdom managed workspace, BICs and other types of property development for the SME sector should be assessed.

The experience of British Steel (Industry) Ltd.

British Steel (Industry) Ltd., or BS(I) for short, has played a crucial role in finding ways of developing and supporting SMEs. Its work has had an impact not only in the United Kingdom, but also in Europe and beyond. If BS(I) is not the archetypal example of how best to do this work, its role has at least been seminal. BS(I) has developed and used a range of measures that appear to provide optimal value for money, investment and time expended. Almost certainly, no other body or organisation anywhere now has so much experience or can show that it has achieved so much. BS(I) began its activities in 1975, two or three years ahead of other job creation organisations in the United Kingdom and more than decade ahead of some other EU countries. One result has been that its methods have been widely studied and copied in the United Kingdom and in other countries.

BS(I) rightly claims to have pioneered the forerunners of what are now called Business Innovation Centres. It did so in the 1970s, responding to the difficulties of small businesses in finding suitable premises on realistic terms. The concept was of managed workspace, let on short-term leases or by tenancy-at-will, or licence. Each cluster of managed workspace offers centralised services and facilities so that tenants can minimise their overheads during the early stages of development and concentrate time and resources on running their businesses. BS(I) did more than most to develop the concept and make BICs and centrally serviced managed workspace almost standard instruments. They have proved effective in helping small clusters of viable SMEs emerge and compete during periods of rapid, locally cataclysmic economic change and industrial reconstruction. BS(I) also claims that when it was founded in 1975 by the British Steel Corporation – then a gigantic, state-owned enterprise employing about 225 000 people – it was the first job creation company set up by a commercial organisation in the United Kingdom and probably in Europe.

The bulk of the 225 000 jobs at the British Steel Corporation were to be lost over the next 15 years as the industry sought to stay competitive. BS(I) was set up as a wholly owned subsidiary with a single remit: “To help create jobs in steel areas”. In fact, the “steel areas” were all to become “steel closure areas” as rationalisation of United Kingdom overcapacity proceeded under competitive pressure and the eventual privatisation of the industry. There are 20 such areas around the United Kingdom, including the sites of some notorious wholesale plant closures such as Consett in County Durham, in the north of England, and Ravenscraig in Lanarkshire, a county south-east of Glasgow in Scotland.

By 1996, the number of employees in the now-privatised British Steel had fallen to about 44 300. BS(I) is reluctant to compare numbers of jobs lost in the industry with new jobs that it knows it has helped create in the steel closure areas, but the figures are there to be interpreted. BS(I) can claim that 58 000 new jobs have

resulted directly from the help it has given more than 3 500 businesses. Moreover, at least 50 000 more jobs are known to have been created as the result of work by other organisations – mainly enterprise agencies – which BS(I) has funded and supported. When comparing these figures for jobs lost and jobs gained it is also important to bear in mind that many of the initial job losses were early retirements among an ageing workforce. No one was seeking to replace these jobs anyway. BS(I) also stopped counting jobs created indirectly several years ago when the figure reached 50 000.

There are undoubtedly many more new indirect jobs now, not least because BS(I) has always concentrated its efforts on helping manufacturers with products or markets offering the prospect of at least 10 years of life. Such businesses usually then last even longer as owner-managers become more experienced and develop their products, or add new ones, to adapt to changing market conditions. As their businesses have grown, so have those of other locally based enterprises which service them. It is probable, therefore, that gains and losses are nearer to balancing each other than at first sight.

One thing that BS(I)'s experience proves is that fostering small business development is a long-term undertaking. Many jobs go immediately when a steel works closes or when a coal mine or shipyard stops production; replacing them may take the best part of a generation, as well as sustained determination. As BS(I) found, it first had to fight pessimism that its efforts would make any impact at all – and then had to keep struggling on in the early days when progress was painfully slow. In BS(I)'s case, self-belief and leadership by senior management was critical to the success of what in the 1970s and early 1980s were experiments. The need for such leadership and determination is one of the lessons BS(I) provides. It ran job-creation as a business and, as has been amply proved throughout the private sector everywhere, businesses only succeed if management sets objectives, knows where it is going, and makes things happen.

British Steel estimates the cost of all this activity at £60 million in the first 21 years of BS(I)'s life. The bulk of this was provided before 1984, although £10 million of it was a special supplementary sum to help BS(I) step up its work in Lanarkshire when Ravenscraig, which had been expected to survive after shedding staff and modernising, was forced to close down totally as recession bit in 1991.

BS(I) has three main programmes: advice, finance and premises. Advisory services have involved supporting enterprise agencies, as well as BS(I) managers providing advice directly. Financial schemes have so far provided about £42 million to more than 2 250 businesses, of which £31million was loan or share capital for about 1 600 companies. The rest went on a now-discontinued leasing scheme. In the 1990s annual spending has settled down to a steady £2 million invested in up to 60 businesses a year. Of these, about one in five fail, although many companies

are subsequently rescued by different owners. Finance is available to *any* company within a steel closure area. It may come in the form of loans, share capital or packages of both. Sometimes, where large investments are involved, BS(I) will join other capital providers in a syndicate. One of BS(I)'s proudest claims, however, is that it was the first body in the United Kingdom to provide share and loan packages in amounts as low as £25 000. Most capital providers are unwilling to consider such small sums because their transaction costs are only a little lower than for very large sums, so advancing or investing such small sums is inefficient. BS(I) has overcome the problems partly by minimising such costs through in-house capability, experience and doing enough such deals to exploit an economy of scale.

Three principles have guided BS(I)'s financial policies. Firstly, it refuses to duplicate resources which are readily available elsewhere; this means it is not in competition with traditional providers, but provides complementary or "gap" finance. The second principle is that any funding should improve a company's financial base by strengthening its balance sheet, rather than its revenue account. SMEs that fail usually do so because of under-capitalisation (having limited bank deposits and few long-term loans). The third principle is to encourage involvement by other funders, even if this arises only as a result of strengthening a company's balance sheet and thus improving the confidence a lender might have about providing more working capital through an overdraft facility.

Businesses helped have typically had an annual turnover of between £500 000 and £5 million, or have been capable of reaching this range within two or three years. They have usually been seeking total funding of between £100 000 and £1 million. So far, start-ups have taken 27 per cent of all funds, expansions 63 per cent, with management buyouts and buy-ins accounting for the majority of the remainder. The largest proportion of businesses – 59 per cent – employed fewer than 20 people when first assisted, while 38 per cent employed between 20 and 100.

The premises programme has centred on managed workspace, with £12 million spent on 500 units in eight centres around the United Kingdom. The centres are not generally housed on the sites of redundant steelworks, or necessarily very near them, but they are in the travel-to-work hinterland of each steel plant. This has enabled them to be sited optimally, sometimes within larger industrial estates or business parks, sometimes on particularly suitable plots of land, sometimes in areas where access to markets, suppliers and labour is particularly favourable. Managers at centres are trained to give advice, or direct tenants to where they can get it. They can also refer tenants to the appropriate BS(I) source of financial advice.

Some centres were converted from redundant factories, some were purpose-built. Each has most of the hallmarks of what are called BICs elsewhere, though for reasons that will be explained, none are called that now. Basically, they consist of small industrial units and well-appointed offices for high technology businesses,

clustered around a central administration facility, the latter housing the centre's management and communal advisory and other services, such as secretarial support and photocopying. About 1 350 businesses passed through these centres in the first 17 years after the first premises opened in Glasgow in 1979, so it is obvious that turnover of tenants is slow. The initial letting policy was that all tenants should move out as they outgrew their premises, aided by easy-in, easy-out rental agreements. The reality has been very different, with large numbers of tenants unwilling to move and with nowhere to go without moving far afield or facing severe, possibly risky disruption of their businesses. Although BS(I) has developed or encouraged some industrial property of intermediate size – called progression units – the tendency of most tenants to stay put has forced BS(I) to radically reappraise its policy, with lessons for those managing BICs and similar forms of managed workspace everywhere.

According to Stuart Morrison, who runs BS(I)'s centres in Glasgow: "People will only move when they are fit to leave. They know themselves when it is time to move on. Those that can, do. They will have grown too big for their premises. Growth and expansion will have provided the financial base for them to be able to do so."

Trying to force less expansionist tenants to make way for others did not commend itself to a BS(I) management worried about possible job losses that might result. Vernon Smith, BS(I)'s chief executive since 1989, says:

"Having incubators – with a constant flow of newly-hatched businesses – was the original plan, but after a few years it was clear the units were becoming permanent homes for most of the tenants. Our strategy had been to move everyone out after four years. The problem came when you asked them to move on. In so many cases there was nowhere suitable for them to go. It all sounds very well, having a steady flow of tenants, with new ones coming through all the time, but it just doesn't work that way."

The problem posed by this, however, was that once the centres were full, there was insufficient turnover to cater for new demand. Pragmatism prevailed and BS(I) gradually modified its policy. Mr. Smith again:

"We adapted our strategy so as to use moneys from rental income to keep expanding by building new centres."

There was concern that some tenants might go under if rents were set at commercial, though competitive levels, but Mr. Smith and his colleagues decided to tackle the problem head-on, affirming that:

"If our tenants were running successful, genuine businesses, we reasoned they should be able to afford to pay a commercial rent. We have a problem with non-commercial rents. They amount to subsidies. If a business cannot afford to pay a fair commercial rent, you have to question whether it is a genuine business."

So although BS(I) has rejected an eviction policy for small, non-expanding businesses, it has not allowed its centres to develop as sanctuaries for lame ducks. A tenant business is allowed to remain small and remain in the centre, but it must be a sustainable business, capable of paying its way and contributing to the centre's profitability as a piece of industrial real estate. This in turn allows BS(I) to build more centres, including "progression units" – clusters of larger industrial units to which expanding tenants can graduate, but which also accept "outsiders" as new tenants. Another type of "progression" has also been allowed to develop: some tenants who wanted to expand but were reluctant to move have been allowed to take over adjacent units to their own as they became vacant.

BS(I) is now carrying the policy one stage further. Once a centre has thoroughly matured and has a largely stable tenant population, BS(I) is only marginally fulfilling its primary role of helping to create jobs in the steel areas. Mr. Smith says:

"Our main job is not to act as a landlord. There are other people who specialise in this and our doing so consumes managerial resource that can be applied more effectively in the areas where we function best."

Policy now, therefore, is to sell mature centres to property companies and put the proceeds towards building yet more centres or upgrading old ones.

Clyde Workshops, BS(I)'s first centre, which opened in 1979 at Cambuslang in south-east Glasgow, is no longer in BS(I)'s hands. It was developed from existing buildings and the site once housed a factory that made cannonballs for the Napoleonic wars. At the time it opened, it overcame a serious problem that was greatly hindering the development of SMEs throughout the United Kingdom, namely that landlords required leases of 15 or more years. Clyde Workshops provided short-notice letting agreements.

BS(I)'s current policy is now best illustrated by the two successive generations of centres that have followed in Scotland not far from the Clyde Workshops site. Coatbank Business Units, purpose-built in 1987 at Coatbridge in Lanarkshire, just over the Glasgow border, is a collection of 21 industrial units ranging in size from 350 sq. ft to 1 500 sq. ft, and eight offices/laboratories of around 200 sq. ft each. The centre as a whole has been 90 per cent full throughout its life.

Considerable thought went into what to call the development, based on what BS(I) had learned in operating Clyde Workshops and Hartlepool Workshops, the latter a centre opened on Teesside in North East England shortly afterwards and comprising 38 units and five "studios". In connection with the choice of terminology for describing business incubation units Mr. Smith says:

"Don't use the term incubator or workshop if you are trying to encourage high tech businesses. They don't want to operate from something called an incubator or a workshop. They certainly do not want such terms on their letterheads or in their business addresses because it creates a poor impression and implies they are beginners in terms of quality and production, rather than merely in terms of the age of the business."

By the same token, the same argument may even apply to “business innovation centre”, as this too may imply that the business is immature, inexperienced, lacking roots and is less creditworthy than it deserves to be.

So, the new centre was called Coatbank Business Units. Its tenants comprise a similar mixture to those found in many managed workspace centres and business innovation centres – high tech and low tech. A typical example is a ceramics company which makes dental crowns and bridges from advanced materials. It has grown from three to 13 employees in three years after starting with a £5 000 loan from the Prince’s Trust, a charity founded by the Prince of Wales to provide pump-priming funds to young or inner city people with little collateral and an insufficient record of creditworthiness to obtain start-up funding. The loan encouraged the company’s banker to allow an overdraft facility of up to £5 000. The founders added £7 000 of their own. The company runs an apprenticeship scheme to solve local labour supply difficulties and overcome skills shortages. It now turns over some £330 000 a year. Coatbank Business Units’ management – BS(I) employees – have helped the company’s principals find suitable financial planning courses to enable them to improve their control of the business. The company is also registered with the United Kingdom government’s Investors in People programme, which helps it achieve and guarantee suitable training for employees and general human resources development. It uses the local enterprise trust – an advisory agency – for guidance on purchasing items such as computers and other office equipment. It has also benefited from BS(I)’s attitude towards progression by taking over an adjacent unit.

What the firm has achieved, and the services it has drawn upon, illustrate the value of projects such as Coatbank Business Units, whether they are called workshops or business innovation centres. The interesting question, however, is whether the company would have qualified for entry into some BICs which seek only to take on high tech, high flyers with a potential for more rapid growth. According to the criteria expounded by some BIC enthusiasts it would not, yet growing from three to 13 employees in three years is good going by SME standards anywhere. Moreover, this company will almost certainly not be ready to move out of its sheltered, supportive environment next year, as it would have had to were a four-year eviction cycle in force.

In this case, however, Coatbank tenants do – or did – have somewhere to move when ready. Brown Street Units, another centre, is half-a-mile away. These comprise eight progression units of 2 500 sq. ft each on a two-acre site and have been developed specifically to provide an intermediate stage for people who want to graduate from Coatbank. As such they represent another generation of BS(I) centres. They were built as part of an inner city project operated by Henry Boot, a Sheffield-based, but nationally operating publicly-quoted construction company. Henry Boot used the Brown Street scheme to train young people for work in the construction

industry, using former skilled workers from the shut-down Ravenscraig steelworks to run it. By 1996, however, the space was 37 per cent let to three companies employing 16 people between them. The idea was abandoned of their being used only as progression units to which growing BS(I) tenants could graduate; the accommodation was offered on the general market to any interested SMEs and all units are now full.

Part of their appeal is that they are well-designed and look good. Mr. Smith comments in this regard:

“The more experience we gained, the more I became convinced that you do not want cheap and inferior premises for this sort of activity. Good conversions can work, but new buildings are better. You want nice property on a nice site. That is what potential tenants want and are willing to pay sensible commercial rents to get. It cost £1 million to buy the Brown Street site and put in the utility services. We also did the project with the Motherwell Partnership, which is made up of the local authorities, enterprise agencies, universities, charities, BS(I), and so on. It is essential to have commitment from all parts of the community, another important element in this sort of work.”

A good example of this philosophy on standards of accommodation can be found in the 300-acre Strathclyde Business Park, where BS(I) has developed its Grovewood Business Centre, built in 1993 and the first in its latest generation of managed workspace. This has 39 industrial units ranging in size from 550 sq. ft to 2 700 sq. ft. A two-storey building houses 15 offices/laboratories of up to 1 400 sq. ft each, as well as offices for the centre's management and communal facilities such as meeting and presentation rooms. The industrial accommodation comprises progression units for growing businesses which started elsewhere. The centre is the nearest thing in terms of design to the newest BICs being developed by SPI in Italy – right down to the type and mixture of tenants. A typical high tech tenant is developing interactive multi-media information packages for museums, art galleries and visitor centres. It has grown from a one-man business founded by a freelance graphic designer to 10 personnel in less than three years. This is good growth for an SME, but is not of the scale some BIC proponents would wish for. However, something like a BIC is needed to help such a business get going: modern communications technology may mean that such work can be done anywhere, but without the sort of suitable accommodation offered by BS(I) it would probably not have been possible to do it in the Glasgow area and the creative talent behind it might have drifted south to London. The virtue of being able to develop in Scotland is that the company offers job opportunities in highly skilled software and information technology development, improving the quality and diversity of the local labour force and the economic base. Also, it is often businesses like this one that spawn others in the same sector as the more adventurous employees branch out on their own to try their entrepreneurial luck.

Grovewood Business Centre can therefore be regarded as a BIC in the latest sense in which the word is used – except in terms of its management structure, which is simple and as spare as possible. BS(I) deliberately avoids creating a top-heavy structure of managers on site in any of its centres. A manager, plus a secretary/general services person has proved sufficient for on-the-spot support in most cases, although there is also a small regional and national infrastructure of a few senior managers to call on and to keep overall strategy on course. This question of management structure is the principal reason why BS(I) is no longer a full member of the European Business Network (EBN), the EU-sponsored association of BICs, as well another reason why BS(I) shies away from calling any of its centres BICs. It remains an associate member of EBN, but to qualify for full membership under EU rules each BIC has to have a full complement of senior managers – chairman and directors – to cover general management, marketing, finance and so on. The idea of this is to have specialised help available on the spot to nurture tenants and assist their growth.

Mr. Smith is critical. He believes such a structure adds unnecessarily to administrative overheads without adding value for the BIC's owner or operator. EU grants subsidise this overhead during a BIC's early years, but most United Kingdom BICs founded on the EBN model have experienced problems as initial EU funding has run out. "In our experience you only need a manager and secretary to run these centres, you do not need a management team," he says. The United Kingdom has plenty of sources of specialised advice available for SMEs. These are now housed in, or at least channelled through the Business Link network, or through enterprise agencies and Training and Enterprise Councils. Many of these three types of body are now part of the same organisation or at least co-located, sometimes with the local chamber of commerce. Nor is there the same difficulty in the United Kingdom over finance for SMEs, in the way there is, say, in Italy. The United Kingdom has a mature venture capital sector and a proliferation of local start-up funds offering equity finance and grants, while United Kingdom banks have developed sophisticated lending instruments and loan schemes for medium and long term borrowing.

BS(I)'s attitude to lean management in its equivalent of BICs is, therefore, both justified and understandable. It also conveys a clear message about nurturing SMEs: they do not have to be over-supervised. Entrepreneurs who need more than a small amount of hand holding may well not be true entrepreneurs and may fail anyway. A particular benefit from centres such as BS(I)'s – and any BIC – is that they allow SMEs to cluster together. Some trade with each other, many share similar business experience and can offer corporate companionship, short cuts to solving problems, and a sense of community that can overcome the loneliness experienced by many SME owner-managers.

The lessons of Grovewood will next be applied by BS(I) in Cardiff, where it has another large but old centre it is going to replace with new buildings. The fourth generation of development, however, will be in Sheffield, near BS(I)'s headquarters. The

Regent Street Innovation Centre will cost £3.5 million to build and its 42 000 sq. ft of space will be available for letting in April 1998. In this case, the centre is being called an innovation centre because this nomenclature will fit its marketing image. Located in the centre of the city between two university campuses, it will be involved with technology transfer as much as SME development. It is the one BS(I) centre where sectoral clustering is being considered. BS(I) has previously not followed such a policy. Mr. Smith says:

“We have never specifically tried to cluster by sector, but have instead only backed companies in manufacturing or which provide a direct service to manufacturers. There needs to be strong, localised demand or an obvious opportunity if sectoral clustering is to be effective. We did not look for service companies to back. Our view is that if you get some manufacturing industry going, then services will follow of their own accord as demand rises. There is no point in encouraging services in a vacuum. They have to have a market. Manufacturers provide it.”

This general policy will continue in the Sheffield centre but Mr. Smith is not rejecting the idea of encouraging something more specific, such as medical engineering, where Sheffield's academic institutions are particularly strong. However, this will not be done at the expense of leaving other demand for space unsatisfied if a medical engineering cluster is slow to develop.

What BS(I) has also proved is the value of being flexible and pragmatic, which it could not have been had it stayed in what it saw as an over-prescriptive EBN regime. The prime example of flexibility is its decision not to force a higher turnover rate and, instead, to switch policy to using revenues from rentals and sales to develop new and better appointed centres. But flexibility is ingrained in the organisational culture, affecting many areas of policy. “There are different solutions for different problems; we adopt a varied approach, according to local demand and conditions”, Mr. Smith insists. If there are few SMEs in an area because of a long tradition of dependency on large companies providing jobs, then it may well be better to channel support into developing an SME sector through education, training and promotion, before making detailed and specific provision by way of facilities. In other words, there needs to be a certain level of effective demand. As Mr. Smith says:

“Managed workshops need a market of SMEs or slightly larger companies with which to trade. They cannot provide the answer by themselves just by being there. Start-up businesses are OK, but they are not the answer either. You need a mixture of differently sized businesses in an area for long term stability. And if you can find 100 SMEs capable of taking on 20 people each, then that's 2 000 jobs.”

He cautions against going into any area with preconceived ideas or formulae. The traditional first stage of providing help may appear to be managed workshops, but it may be more important to first ensure the survival of the local enterprise agency so it can fulfil its role of giving advice to SMEs and raising awareness of the values and virtues of entrepreneurship – and even deterring those whose business plans suggest they are more likely to fail than succeed. Nor may it be sensible to be over-proprietary. BS(I) had workshops at Consett, County Durham, for example, a one-industry town with little SME tradition, which was devastated by the overnight closure of its ironworks in the mid-1980s. “We gave them to the enterprise agency so the agency would have an income stream to continue to do its work”, Mr. Smith says.

The nature of centralised services in the centres has also changed. The first managed workshops included telephone answering services and faxing facilities. Modern technology now means that most small businesses install a phone and fax for themselves as soon as they start operating. Copying facilities, which remain individually expensive, are one of the few things small businesses still need as a common day-to-day service, with access to facilities such as meeting rooms also remaining important.

Selecting good staff to manage the centres also matters. The managers have to understand SME needs and forge good relations with all tenants so that timely advice is always available when required. BS(I) had many good former British Steel executives to choose from, but quickly found there was value in a wider perspective. Mr. Smith says:

“We advertise internally and externally for every appointment so as to introduce new and different blood. We therefore have people from a whole range of different industries and disciplines. This has improved the quality of what we can offer and our understanding of a much broader spectrum of manufacturing industry.”

The lessons provided by British Steel (Industry) Ltd. are clear, and in most cases universal. They can be summed up as follows:

- a) Be flexible and avoid being over-prescriptive. At a detailed level, it has proved impossible for BS(I) to have a national policy for the United Kingdom that can be applied consistently. Policy must change according to experience or local conditions.
- b) Do not expect quick results. It may take years for the impact to become apparent. Determination at the top of the body sponsoring a BIC or similar centre is essential to keep progress on track.
- c) Adopt an integrated strategy that can provide advice and finance, as well as premises. The advisory services and financial instruments must not be confined to centre tenants, but be aimed at assisting business development in a wider area.

- d) Do not try to develop a BIC or similar centre in a vacuum. SMEs need other SMEs and larger companies with which to trade and form networks. It may be necessary first to encourage more general support for entrepreneurship so as to improve the local climate for SMEs and foster demand for the facilities a centre might provide.
- e) It is not necessary to incur high overheads in managing a centre. BS(I) has found over many years of experience that a manager and secretary are sufficient. Specialised services offering, say, marketing or financial advice can be brought in as needed by tenants.
- f) Tenants should be expected to pay realistic, commercial rents for space. If a business cannot afford a commercial rent, it is questionable whether or not it is a viable enterprise.
- g) Accept that about three-quarters of tenants may never move and that trying to force them to do so may prove counter-productive. If tenant turnover does not reach acceptable levels, do not try to become a landlord. Instead, sell the centre concerned to a professional landlord, or use revenues from rentals to finance the building of new centres so that the whole process can start again.
- h) Develop progression units so that BIC or centre tenants who do want to graduate to bigger premises have somewhere to go. Let them expand “sideways” into adjacent or nearby units in the BIC or centre if these become available.
- i) Words such as “incubators” and “workshops” and even “innovation” can imply that tenants are inexperienced, thus conveying the wrong image of a tenant company’s competence, capability and prospects. “Business Centre” or “Business Units” are more positive and invite no assumptions when a tenant company uses such words on its letterheads.
- j) BIC and similar centres should be designed and built to the highest possible standards. Conversion of old buildings should not be attempted if such conversion cannot be accomplished at least as well as building from scratch.
- k) Recruit BIC or centre staff from a wide range of backgrounds to broaden the benefits of experience on offer to tenants.
- l) Develop plans and policies in partnership with local authorities, business organisations, educational institutions and other interested parties in order to secure their involvement and commitment.

BICs, technology transfer and property development

As has already been seen, there are problems in defining BICs in the United Kingdom. This report has assumed that the United Kingdom’s contribution in this field can only be fairly judged by treating much of its large quantity of

managed workspace centres as BICs. In the United Kingdom, the same problem of definition also applies to science and technology parks, where some BICs are housed. BICs cannot be considered in isolation from science parks, partly because the two are related and are often part of the same continuum in business incubation. Reduced to their essentials, these so-called “parks” are no more than pleasantly designed industrial estates. Calling them “parks” is better for marketing the property built upon them. One result is that almost every pocket of industrial development outside a United Kingdom town centre – but sometimes even in inner cities – is now called a “park” of some sort or another, whether prefixed by “science”, “technology” or “business”. Indeed, since about 1987, at least 200 million square feet (that is about 20 million square metres) of space for offices and light industry have been marketed in these “parks”. This is more than the total office space available in central London. Tenancy is often not dependent on a company being involved in high technology or in playing some pioneering role in technology transfer, and a considerable share of “park” space is often occupied by accountants, insurance companies and providers of financial services.

These observations are important in reminding us that the terms “business innovation centres” and “science parks” are euphemisms for managed workspace and industrial estates. BICs and science parks are niches in the property market and what makes them work – if they work at all – is commerce, profit and occasionally enlightened self-interest.

Other institutions, government agencies, local authorities and private companies followed BSI's example of creating managed workspace. The result is that there are now more than 100 managed workspace schemes dotted around Britain. This is now a mature market – a property market – with largely stable tenancies in much of the space, and with property and insurance companies as likely to be landlords as anyone else.

The same commercial realities have driven the development of science and technology parks in the United Kingdom. In the US, where there are more than 200 of them, science parks were driven by universities, usually to exploit ideas within those universities. There has been some of this in the United Kingdom, but science and technology parks are, in the main, part of the commercial property market. The most famous is the Cambridge Science Park, which was founded in 1970 on 120 acres of farmland – about 48 hectares – owned by Trinity College. It is an outstanding success, as is the St. John Innovation Centre at Cambridge, funded by St. John's College, but not so much because academics have spun out of Cambridge colleges to translate ideas into commercial reality, but because it is associated with one of the world's greatest seats of learning and this has encouraged people to start up high technology businesses there or relocate to the science park from outside. Many businesses have no connection with the university at all, although they will build connections if this is useful. One of the latest newcomers is going to be Microsoft.

Another highly successful industrial estate of this kind is the Birchwood Technology Park in Warrington, half-way between Manchester and Liverpool. It was built in the late 1970s and early 1980s by Warrington New Town Development Corporation – which was a government agency – and the NCR Pension Fund. There is no university at Warrington, but the park contains the headquarters of British Nuclear Fuels and is adjacent to what used to be called the United Kingdom Atomic Energy Authority. This proximity encouraged scores of small, high technology companies and consultancies to set up in the technology park during the 1980s, creating more than 3 000 jobs. Other, blue-chip high technology companies have also set up in the park, not least because it is at the cross roads of the United Kingdom motorway system with more than 90 per cent of Britain's population within a half-day's driving time. It is also only 20 minutes from Manchester Airport, now the ninth largest in Europe, with scheduled daily connections to most of the world's important destinations, particularly in the United States. When Warrington New Town Development Corporation was wound up in the mid-1980s, private sector property companies moved in and invested.

There are more than 40 science or technology parks in the United Kingdom now. Many are attached to universities and there are notably successful ones at Warwick, Aston, Coventry, Cranfield and Manchester. Oxford's is at the nearby Abingdon Business Park. It is owned by Standard Life, an insurance company. The Surrey University Science Park at Guildford also houses a good-quality, four-star hotel as part of its infrastructure. Indeed, it is infrastructure like this, together with good restaurants and proximity to an international airport, that many science park developers say is more important than proximity to a university. Where there is a link to research and development, it is to industrial R&D, not blue sky work in academia. The opportunity for cross-fertilisation of ideas with universities can prove very effective.

For example, medical scientists at Manchester University wanted to develop a biosensor that could be used for instantaneous blood analysis by paramedics dealing with unconscious patients. This would save lives because some treatments could be started immediately, rather than having to wait until the patient arrived in hospital and the laboratory had done the necessary analysis. Accurate analysis is very difficult in the field because of contaminants. The secret is to use membrane technology to filter out these contaminants. ICI Diagnostics funded the basic work in the university for four years to 1988, when ICI restructured to concentrate on its core businesses. Since then, about £300 000 of funds have come from government funds for developing high technology products, with another £200 000 contributed from Manchester University's own reserves. The work produced more than 20 patents. The question was how to exploit them. It proved impossible to develop a suitable product because the time taken to get approvals in the health sector would have meant too long a period with no income stream. The university,

however, turned the problem over to MBA students at Manchester Business School. They found that the principles that would make the blood-testing device work could also be used for measuring the ratio of sugar to alcohol in fermenting grapes or beer, or for testing the ripeness of fruit before it is picked so it can have maximum shelf-life in supermarkets. The device is being developed now for these markets. They will provide the income stream needed by venture capitalist backers while it is developed further for the medical market for which it was first envisaged. The small team developing the product is housed in what is in effect an *ad hoc* BIC on Manchester University's science park, itself a pleasantly designed industrial estate forming a buffer between the university campus and one of Manchester's poorer inner city districts. The team did not need much workspace, however; once a market had been identified, it was a matter of moving straight out to a factory to start production. The key to it all was flexibility and seizing the opportunity for cross-fertilisation of ideas, rather than having physical premises in which to work.

In 1996, the United Kingdom government set up an Enterprise Panel, sponsored by the Midland Bank, to look at business incubation. Its members included academics, civil servants, bankers and the managers of an enterprise agency, a science park and two commercially-based but academically connected innovation centres. It preferred the term "business incubator" to BIC and distinguished incubators from managed workspace by selection criteria for tenancy and whether tenants were encouraged to grow bigger and leave. The panel concluded:

- Business incubators help start-ups and businesses with high growth potential to succeed. They improve survival rates, aid technology transfer and innovation and generate local jobs and economic development.
- There is no one way to develop a business incubator. Each is unique, reflecting local conditions and its own objectives. There are few business incubators in the United Kingdom.
- Research needs to be done to identify what makes a successful incubator, with the knowledge gained updated regularly and transferred to existing and new developments.

The report assumes that the "right" sort of tenants can be found, that they will all grow; and that they will all leave for bigger premises once established. This is a bold assumption in the light of two decades of United Kingdom experience and may well be wrong, although there are clear pointers to the panel members' belief that client turnover can be achieved. The United States evidence the panel cited was that the prime purpose of 81 per cent of United States incubators was to create jobs. Most tenants were in high technology or light manufacturing and were selected by quality of business plan, fast growth potential and new start-up status. However, 80 per cent of tenants had fewer than 10 employees after two years. Turnover of occupancy was achieved by tightly enforced tenancy agreements, whereupon 80 per cent relocated within the same city, suggesting there was suitable accommodation available.

The comparison with BS(I)'s experience is remarkable. Its purpose is also to create jobs, its tenancies are biased towards manufacturing – though not necessarily high technology – and few tenants grow beyond 10 employees in the first two years. It does not try to move tenants on, however, if there is nowhere suitable for them to go, although it is trying progression units to help those who grow big enough to move. Its new dynamic, after 20 years of experience, is to use rental income streams, or sell its property to professional landlords and use the proceeds to build anew.

Much depends on how incubators are financed. In the United States case, they are property developments or venture capital projects in their own right. Investors expect to see them break even after four years, by which time tenancies should have been turned over at least once. One aim may be to create jobs, but the primary objective of such a process is a short- or medium-term return on investment. In the BS(I) example, short-term return is clearly not sought at the expense of job creation, with extreme caution about forcing tenants out, if this increases the prospect of their failing. However, tenants pay commercial rents which will yield an income stream to BS(I) or improve the sales worthiness of one of its centres. BS(I)'s view is that if tenants cannot afford commercial rents, they should not be in business anyway.

The Enterprise Panel sensibly urges action to identify what makes a successful incubator, to increase awareness of them and the benefits they might bring, to improve networking so as to identify best practice, and to improve funding – the promotion of corporate venturing is one idea – so more incubators can be financed for the few crucial years before they break even. It recommends setting up a national business incubator centre to promote the concept and act as an enabler. It noted that about 30 incubators were planned or had been set up already, often associated with successful science parks, and it came out heavily against a subsidised system by expressing reservations about the 12 EU-model BICs set up in the United Kingdom because they lost impetus and effectiveness after the initial EU funding finished.

The dangers of subsidies in this field are illustrated by the experience of an organisation called Nimtech, the name of which is derived from “New and Improved Technology” and which appears to offer another model worth considering for incubating business growth and technology transfer. Nimtech was set up in 1986 in North West England by Unilever, ICI, and Pilkington, with government assistance. Its role was to act as a broker and clearing house for ideas and projects between nine universities and industry in a region of more than seven million people. The idea was to improve technology transfer. Five years later it was about to go bankrupt and a business consultant was brought in to try and save it. Nimtech stopped trying to obtain more subsidy. Instead, it targeted small and medium-sized businesses which needed to grow but lacked specialised resources to find new technologies

and potential markets. Nimtech enrolled more than 100 of them in a network with the universities, charging them all yearly subscriptions. It seems to work. It has now formed a worldwide marketing subsidiary to look for new export markets and venturing opportunities.

Because survival relies on Nimtech making a commercial success of technology transfer and brokering partnerships and joint ventures between its subscribing customers, it is not only surviving, but flourishing as a business in its own right as a result of the entrepreneurial disciplines it has imposed on itself. Drive and commitment from the top is also evident. Nimtech's role is increasingly that of a sort of "incubator without walls" and the model it presents should not be overlooked.

There is also a profound change under way in the United Kingdom universities. With problems in obtaining sufficient government subsidies, commercial disciplines have been imposed on them such as they have never experienced before. Many lament the fact that the state can no longer fund universities in the way it used to, but one result is that universities are almost certainly going to have to develop their science parks much more along United States lines. The signs are already there. Most have set up technology transfer companies, for example.

Several experimental incubators are also being tried, particularly bio-incubators. The United Kingdom government is giving £1 million of pump-priming money to no less than eight of them. Last January, Cambridge's Bioscience Innovation Centre announced that it intends to raise up to £6 million from a private share placing, accompanied by flotation in the London Stock Exchange's Alternative Investment Market. Here, the market dictates development, for there are ample other opportunities for investors and venture capital funds, so the would-be fund-raisers have to compete for attention and commitment.

Perhaps the most ambitious project so far is the Manchester Biosciences Incubator, which is to have its own £12 million building attached to Manchester University's School of Biological Sciences, as well as an exploitation fund expected to total £30 million. The incubator is a concerted attempt by Manchester, backed by a £6 million grant from the European Union, to secure a big share of the fast-growing biotech sector. In the United Kingdom, this has so far been concentrated in what is known as the bio-triangle of Oxford-Cambridge-London in South East England. It is hoped the northern project will create more than 900 local jobs over five years as companies expand out on to Manchester Science Park and elsewhere. Manchester University is investing nearly £4 million, as well as its portfolio of bioscience patents, but most of the funding will come from the private sector. Merlin Ventures, a specialised venture capital company, is to make a substantial investment, and other potential investors are negotiating with the university.

The incubator will be integrated with the academic activities of what is the largest biological sciences department in a European university, and will have a seed corn fund to support business ideas. The university hopes its own academics

will provide most of the ventures for the incubator, although it will also welcome small bioventures from elsewhere, including spin-offs from the drugs industry. The idea is to bridge what the university calls the discovery gap, so that academics can test the commercial viability of a piece of excellent science – and go back to the lab without losing face if it does not work. If it goes well, there would be further development within the incubator, followed by spin-out to a science park or somewhere else. The new building, which will be able to house 250 scientists, will be ready in 1999. In the meantime, the university will provide laboratory space to run a smaller “virtual incubator”.

Coincidentally, Manchester University is also being helped by the European Union to try and develop another type of incubator. A disused electrical engineering building has been converted to support young scientists with ideas and nurture them through the pre-business stage of development until they can form viable companies. In a normal BIC they would be expected to start with a business plan, which Professor David Auckland, the man behind the experiment, believes is likely to thwart promise by forcing a company into inflexible objectives too soon. There will be no such early pressure in the Manchester experiment. Instead, it will provide a half-way house for people who as yet have something between an idea and a business but need to carry out a type of technological due diligence before final commitment. It is being run by a new company owned by the university called Campus Ventures. The “units” on offer range from single desks to 1 000 square foot partitioned workshops. Those who occupy them will need no capital, but will be given a “graduate account” by the centre against which their costs will be debited. In the pre-business period there will be no risk attached to the tenants at all, but debits in the graduate account will build up. A compulsory stage in the process is to form a company to take responsibility eventually for the graduate account, but support is good for six to 12 months.

In the second year the university expects some repayment, with final clearance of the graduate account over the next 18 months to two years. The tenants would then be expected to leave for normal commercial premises and operate independently within three years. The capacity of the building will be 30 to 40 budding entrepreneurs at any one time. The only other compulsory element will be for each new company to give Campus Ventures a 5 per cent non-dilutable stake on formation of their companies, so that there will be an eventual return if a business succeeds, either through dividends if it stays in its original ownership or through a realisation if it floats or is sold. The key will be whether eviction can or will be enforced, particularly if the flow of new tenants slows. This will be crucial in this case, as the subsidies will eventually run out.

In addition to EU backing, however, the project is being sponsored by Manchester Airport Commercial Ventures, British Nuclear Fuels, The Co-operative Bank, ICL, Manweb, the regional electricity supply company that is part of United

Utilities, and Manchester Training and Enterprise Council. Support in kind is coming from the university itself, which is providing the premises rent-free, and Addleshaw Booth, one of the largest commercial law firms outside London, which is headquartered in Manchester and has a substantial office in Leeds. It is giving free legal services. Local industry and commerce is therefore heavily committed to making the incubator succeed. This is not altruism, but enlightened self-interest: it makes long term commercial sense to support initiatives that encourage a more diversified, high tech local economy.

The Manchester experiment is a start, but it is an experiment. Much will depend on the ratio of successes to failures and the cost of the latter. Moreover, in the stage between entry into the centre and the tenant establishing a company, what is the legal status of the enterprise involved? Who is legally responsible for its debts? The graduate account the centre operates for the tenant – in which the centre, in effect, becomes a lender – must make the centre legally liable for the commercial risk taken by the tenant. The pre-feasibility stage of projects looks enormously risky for both parties. A big gamble is involved here, but the risk is being taken to try and solve a fundamental problem in technology transfer and business incubation everywhere. The experiment is certainly one to watch – and to copy if it succeeds.

The Enterprise Panel report also points to another type of incubator in the United Kingdom that is worth looking at, known as a “building businesses incubator”. This is basically a training scheme aimed at improving the skills of managers and assembling teams of managers from various professional disciplines to run businesses. The team is helped to research markets, find products to sell to them, and raise finance to form a company to do the job. There are two examples of note – Univentures, in Wakefield, West Yorkshire, and Lanarkshire Development Agency in East Kilbride, Scotland. Univentures claims that 16 companies have been set up since 1994 which might otherwise not have been. In Lanarkshire, 13 companies were in this category, following seven entrepreneurship programmes which also assisted 37 other companies start up. Of the 37 which planned to start anyway, the entrepreneurship programmes improved their prospects through factors such as better timing or choosing the right scale of operation. Ultimately, of 50 businesses only two have failed. The 48 survivors were forecasting 1 600 jobs and aggregate sales worth £29 million in 1997.

It is clear, however, that commercial considerations are at the heart of incubator development in the United Kingdom. Subsidised BICs are in a tiny minority and are not taken very seriously by leading practitioners and thinkers in the incubation industry. The commercial approach, rather than heavy subsidy from public funds, gives the BIC involvement in its own success. If its job is to encourage entrepreneurship, it should be entrepreneurial itself in the first place. The Enterprise Panel's

proposal for a national business incubation centre is a call for better focus and co-ordination of many disparate efforts. This would help build on best practice and improve efficiency.

The Enterprise Panel also advanced the important view that any BIC must be part of a wider project, not something that exists in isolation. There are already some valuable pointers here. Milton Park, is a high technology business park in Didcot in Berkshire, near another centre of activity for the United Kingdom nuclear industry. It has an innovation centre on site with 6 000 square feet of space, from which tenants can graduate into a 42 000 square foot business development centre. Oxford Innovation provide management and advisory services. The venture is owned and run by MEPC, the property company which developed Milton Park on an old ordnance factory site. Although it gets rent from the centre's tenants, advisory and support services are provided at no extra charge by Oxford Innovation. MEPC covers its costs with the rents, but is looking for no additional return. But it does expect to recoup its outlay when companies grow large enough to move out into the technology park proper. In other words, it is using the BIC concept to provide part of its own long term customer base for the total development. Milton Park is already successful in that by 1996 it housed 130 companies employing 4 000 people. About 1 600 jobs have been added throughout the park since the development of incubator space in 1991, though it is difficult to say how many of these can be directly attributed to the incubator. What incubators can certainly claim is that they improve survival rates among tenant businesses, some of which eventually expand. The key factors seem to be that progression units are immediately available. In the Milton Park case, Didcot is also in the United Kingdom's thriving M4 corridor, with easy accessibility to London's Heathrow Airport, so local conditions offer much stronger opportunities for growth than, say, parts of northern England and Scotland.

St. Johns Innovation Centre in Cambridge, which provides incubator space and services, is another example of how a progression policy can work. It is situated in St. Johns Innovation Park. The centre is owned by St. Johns College and is run to provide a commercial return. The centre opened in 1987 and nearly eight years later the park was home to 67 companies, most under five years old and employing more than 1 000 people between them. Survival rates are put at nearly 90 per cent.

Progression units have also proved their worth in two of the United Kingdom's older and most successful science parks, at the University of Aston in Birmingham, which opened in 1983, and at Warwick University, near Coventry, which followed a year later. Each offers good quality accommodation and support services. The universities have worked closely with local authorities, which own the land involved, and have benefited from European Union finance, particularly from the European Regional Development Fund. Each has an incubator centre offering the usual array of flexible space on easy letting terms, but at commercial rates, as well

as advisory and supporting business services. Selection is by business plan but there is no formal graduation policy, although tenants are encouraged to move onto the science park and into more normal accommodation *when they are ready*.

Such experiences have encouraged others to try the principle of integrating BICs within science parks elsewhere. For example, Warwick Technology Park – a development planned by Warwickshire County Council and Warwick University – will house the Bermuda Business Innovation Centre, which the local district council is joining the two main developers in funding. Cranfield University Technology Park, where Nissan is investing in a £46 million building, is also planning a 24 000 square foot, £1.5 million innovation centre on a two-acre site aimed at local start-ups and financed by the local district council. Coventry University Technology Park also plans an incubator; in this case in an urban setting, as the “park” is on a redeveloped inner city site.

The fundamental principle is of encouraging progressive growth and making it as easy as possible. Stripped of the fancy nomenclature, the progressive principle works as follows:

- provide the facilities for an enterprise to start with a unit as small as a desk;
- provide or facilitate access to advice and finance;
- ensure there is managed workspace available nearby for immediate growth, with cheap accessible supporting and advisory services to ensure the new business incurs minimal indirect costs and overheads;
- develop the managed workspace on, near or as part of industrial estates where progressively larger accommodation – or land – is available for workspace tenants capable of growth.

BS(I)’s dynamic of not forcing workspace tenants to move, but building new workspace from the financial proceeds of old ones as they mature with tenants who will grow no further, is partly the result of the unavailability of suitable premises, although, as we saw earlier, it too now builds progression units (even if these end up filled by “outsiders”). It pioneered managed workspace, but frequently isolated managed workspace. What appears to be developing elsewhere in the United Kingdom is a more integrated type of property development. The basic BS(I) principles – to provide advice, finance and premises – are still intact in other developments, but progression is being built into the premises component as a matter of course. However, the fundamentals of the way whole populations of new businesses grow do not appear to have changed. Only about one in six new businesses grow sufficiently to progress through a series of bigger premises. Fewer than one in 20 will become large businesses. The new science parks and innovation centres may well hope to attract all of the high fliers, but this is unlikely, if not impossible. Many of the high fliers will succeed on their own anyway without using any of these facilities.

The great value of managed workspace and associated, well-planned industrial estates, however, is that they provide shelter and support for new and small businesses that improve survival rates. The emergent United Kingdom model, coupled with the BS(I) dynamic for mature workspace, may well be what will evolve. Incubators will use profits from small tenants which do not grow beyond a certain point to build more incubator space in the same science, technology and business parks. Incubator owners who do not want to see themselves as property developers or landlords may have to accept they are both, or follow the BS(I) lead of selling to property companies and using the resources generated to move on to new projects. Property developers and landlords, however, should see business incubation as a powerful long term revenue stream. Some clearly do already. They, more than anyone else, probably hold the key to future development, for business incubation is as much a business as any other business.

Bibliography

The Enterprise Panel,
“Growing Success: helping companies to generate wealth and create jobs through business incubation”, Midland Bank Plc.

Chapter 6

Business Incubation in the United States

Introduction

Business incubation programs in the United States are a practical, often local, response to a community's need for enterprise development. Business incubation programs "accelerate the successful development of entrepreneurial companies through an array of business support resources and services, developed or orchestrated by incubator management, and offered both in the incubator and through its network of contacts" (NBIA, 1996).

The first United States business incubators opened in the 1950s and 1960s, but it was not until the mid-1980s that incubator programs appeared in quantity and with any consistent pattern of performance. A recent study shows that almost half of all incubators in existence today were founded between 1985 and 1989 (Adkins, D., 1996). During that period, the National Business Incubation Association (NBIA) was created as a professional association to collect and disseminate information on business incubation program management, and to build a network of practitioners.

Business incubators are employed in the United States as a strategy for new business creation, and ultimately for job creation. Incubation programs are supported by a growing recognition that strengthening small businesses is an important component of economic development (Campbell, C., 1988). Successful incubation programs are also shown to catalyze local economic activity. Research shows that firms which graduate from incubators tend to locate in the community rather than move away. In a 1995 study of incubators in Michigan, 80 per cent of firms that graduated from an incubator were located in the same community as the incubator facility (Molnar, L.A., Rocco, D. and Gillette, L., 1996).

A report issued in 1992 by the accounting firm Coopers & Lybrand indicates that the industry faces increasing difficulty as many incubator managers focus on facility survival rather than business incubation (cited in Rice, M.P., and Mathews, J.B., 1995). The "state of the art" has shifted towards the importance of the process of business incubation, but program managers remain burdened with facility operations issues. Reports like this have prompted the industry to generate

more and better information on the actual process of business incubation so as to guide existing and new programs.

In addition to a greater emphasis on the development needs of the entrepreneur, the industry is beginning to recognize that incubation programs vary immensely. The incubator industry is now an amalgamation of very different types of facilities operating under very different circumstances. Both supporters and critics agree that analysis and evaluation of incubators must move past aggregate summary statistics into a more detailed analysis of successes and failures by incubator type.

Now that over half of the incubation programs in the United States are at least ten years old, books and papers elaborating these "best practices" have been published to guide the start-up of new programs and to offer advice to existing programs. In 1996 the NBIA adopted a definition and ten principles of business incubation to further focus the industry. In general, the incubator industry in the United States has recently produced excellent information on what we know about establishing and managing these programs.

However, questions about the need for business incubators and the conditions under which they are appropriate remain largely unanswered. Incubation programs combine business services with affordable space to encourage entrepreneurs. We know from current research that this approach to business creation works. But when should a state, a local government, or other stakeholder in economic development decide to establish an incubator program? A tool is needed to offer these stakeholders when they are faced with the question: **To incubate or not to incubate?**

In 1986 a consulting group reported for the Massachusetts Special Legislative Commission on Small Business Incubators that incubators should only be added to a "toolbox" of economic development strategies if studies show that the private market *is not* providing the space and services entrepreneurs need to start new businesses. This suggests that incubators are appropriate only where the private market fails to support business creation, and in places and among people where job growth might not otherwise occur (Mt.Auburn Associates, 1986). The report suggests that there are, in general, just three cases where incubators are appropriate: 1) in economically depressed areas; 2) when targeted to disadvantaged populations; and 3) industry-based incubators. Many United States programs fit into one of these three categories, but many also do not.

According to the NBIA there are currently about 550 incubator programs in the United States. They are an extremely diverse group, ranging from inner-city redevelopment initiatives to technology transfer centers. The incubator industry in the United States has made significant progress in recent years in identifying and disseminating principles for successful program operation. These principles are

useful not only to incubation programs, but to any program engaged in enterprise development.

The goal of this paper is to briefly describe the nature of the North American incubator industry, to highlight the main factors common to successful business incubation programs, and to raise important issues around the role of incubators in an economic development strategy.

Overview of the industry

Definition

The NBIA has published the following definition of a business incubator:

“Business incubators accelerate the successful development of entrepreneurial companies through an array of business support resources and services, developed or orchestrated by incubator management, and offered both in the incubator and through its network of contacts.

A business incubator’s main goal is to produce successful firms that will leave its program financially viable and freestanding. These incubator “graduates” create jobs, revitalize neighborhoods, commercialize critical new technologies and strengthen local and national economies.

Management guidance and consulting suitable for young growing companies is critical to the definition of an incubator. Incubators usually also provide clients access to appropriate rental space and flexible leases, shared basic business services and equipment, technology support services, and assistance in obtaining the financing necessary to company growth” (NBIA, 1996).

This definition represents recent consensus in the industry about what business incubation means. Real estate projects that provide only commercial space are not considered business incubators, and are not counted or surveyed as such by the NBIA. There is a development role for these facilities, but the new definition provided by NBIA clearly states that business assistance is a critical feature of a business incubator.

If sponsors adhere to this definition as they design and operate their business incubator the program is more likely to succeed. This definition is a tool for stakeholders as they consider business incubation, sponsors as they operate programs, and the industry as it matures into a sound strategy for economic development.

Classification of incubation program types

Business incubators in the United States are founded with varying objectives. Incubators may be set up to stimulate growth in a particular industry, or to diversify

an economy, such as an area that is heavily defense dependent. Business incubators are also frequently used to provide the intensive support needed to serve non-traditional entrepreneurs, such as youth, women, and people with low incomes. In some cases technology incubators are created in partnership with academic and research institutions to commercialize new technologies.

Traditionally, incubation programs have been classified in the following ways:

- mixed use (program serves a mixture of service, retail, technology, and/or light manufacturing firms);
- manufacturing focus;
- technology focus;
- service focus; or
- microenterprise/empowerment (program serves businesses started by non-traditional entrepreneurs, such as women, youth, and minorities).

A 1995 survey of the industry shows that the largest group of programs describe themselves as in the first category, “mixed use” (42 per cent). In addition, 30 per cent are technology programs, 13 per cent are in light manufacturing, 9 per cent are in services, and 7 per cent are microenterprise/empowerment. Interestingly, the most recent surge of activity has been among technology programs; half of all technology incubators included in the study opened after January 1, 1990.

Until recently, most research in the industry assumed that incubation programs were quite similar. Research compared incubation programs with each other, surveying such characteristics as the physical size of the program, number of tenant firms, average start-up costs, etc.. However, the 1995 survey of business incubation programs in North America concludes that “the industry needs detailed profiles of various incubator *types*, based on random samples, so that similar programs can compare themselves with greater assurance” (Adkins, D. 1996, page 3).

To test this recommendation, a major research project initiated in late 1996 includes a survey by program type (NBIA, 1997a). The project, implemented by several organizations including the NBIA and funded by the federal Economic Development Administration (EDA), researched the community impacts of incubation programs. For the purpose of their research project, programs were classified and studied as one of the following three types:

- General purpose/mixed-use (49.2 per cent).
- Technology (39.7 per cent).
- General purpose/mixed-use targeted to empowerment of a specific community or population (11.1 per cent).

The major findings of this study are:

- Business incubation programs help companies create many new jobs.

- Business incubation programs create new jobs for a low subsidy cost and a substantial return on investment. The estimated public subsidy cost per job created was \$1 109.
- Incubator companies experience very healthy growth. For example, the average annual growth in sales per firm was \$239 535.
- Business incubation programs produce graduate firms with high survival rates – a reported 87 per cent of all graduates are still in business.
- Most firms that graduate from business incubators remain in their local communities – an average of 84 per cent.
- Most incubator firms offer employee benefits.
- Incubator programs contribute to their client companies' success and expand community entrepreneurial resources.
- Business incubator programs improve community image.

Current profile of the industry

The National Business Incubation Association is a non-profit membership organization based in Athens, Ohio which provides research, networking, and leadership for incubation programs in North America. In 1995 the NBIA undertook a survey of its 500 members. Over 180 programs replied to the survey. Since there are an estimated 550 incubators in North America, the survey responses represent about one-third of all incubation programs in North America. The remainder of this section is based on findings from this survey.

The industry

The 1995 NBIA survey illustrates the diverse nature of business incubation programs. About one half of all programs are sponsored by government and/or non-profit organizations primarily for economic development purposes. The next largest group (18 per cent) are programs that are joint efforts by a variety of sponsors, the remaining categories include academic-related, private, and "other" sponsors.

Incubation programs are located throughout the country. The North Central region is home to 31 per cent of programs, the South 27 per cent, the West 23 per cent and the Northeast 18 per cent. Just 1 per cent of survey respondents were from Canada.

Of all incubator types, over half the respondents indicated an incubator *special focus*. A special focus reflects a particular mission or target population which a program is designed to serve. The largest target groups were minorities/women (33 per cent), software (11 per cent), medical/biotech (11 per cent), other (38 per cent, including environmental technology, information technologies, ceramics and glass).

There have been several key changes in the industry since the last survey in 1991. In general, incubators are more geographically dispersed than previously. For example, although urban facilities still make up 48 per cent of programs, incubators in rural areas are opening at the fastest rate. Currently, nearly 32 per cent of incubators are in rural areas. Incubator growth in the last decade has taken place mostly in the western and southern states.

The make-up of client firms also varies widely among business incubation programs. By far the largest group of client firms is service firms (40 per cent). The next two groups are light manufacturers (23 per cent) and technology firms (22 per cent). Firms that define their work as “other” and “research and development” make up the last category.

Services

All business incubators in North America provide rental space, and most make business assistance services available. Any survey participant that did not answer “yes” to at least one of the following business assistance services was dropped from the study.

The following list shows the most common types of services:

- 97 per cent provide general management advise on strategy and basic business development issues.
- 85 per cent provide business planning and implementation assistance.
- 85 per cent provide office services, such as clerical and reception services.
- 84 per cent provide assistance obtaining expansion financing from banks, public grant programs when appropriate, or finding private investors.
- 79 per cent provide marketing assistance, such as identifying a market niche, and pricing.
- 65 per cent provide financial and accounting services such as financial management, balance sheets, and aid with taxes.
- 49 per cent provide technology consulting.
- 43 per cent provide legal and intellectual property assistance.
- 19 per cent of programs provide services other than those listed above.

In cases where a facility served a particular industry, certain services were more common. For example, 72 per cent of technology incubators offered legal and intellectual property assistance.

Incubators are increasingly providing services to off-site businesses, called “affiliate firms,” for a fee. As programs search for opportunities to generate income, this is an increasingly popular activity. Terms like “virtual incubator” and “incubator without walls” refer to this trend towards technical assistance services to non-tenant firms. The survey determined that a relatively large percentage of the total

incubator client base is represented by off-site firms. While 59 per cent of the firms served by incubation programs are “regular clients” (start-up firms in the facility), 34 per cent are “affiliate firms” (firms that access services but are located off-site). Mature firms that are often self-sufficient and are either graduates or remain in the facility adding stability to the incubator are defined as “anchor firms” and make up 7 per cent of all clients.

Role of government

Business incubation programs in the United States mostly originate as local initiatives by economic development officials. Once a feasibility study has been undertaken and partnerships for implementing the program are in place, applications for major start-up grants or loans are made to federal agencies. The federal programs in the United States that have been involved with incubator development include:

- United States Department of Commerce, through the Economic Development Administration.
- Department of Housing and Urban Development, through Community Development Block Grant funds.
- Department of Health and Human Services through its discretionary funds.
- Department of Agriculture, through rural economic development grant and loan programs.
- The Tennessee Valley Authority, for programs in that region.
- The Appalachian Regional Commission, for programs in that region.

Federal funding however is usually limited to construction costs, and is temporary (Rice, M.P., and Mathews, J.B., 1995, page 3). Another important role for the federal government has been in funding industry research and analysis. The research project mentioned earlier in this article, “The Community Impact of Business Incubators” was funded by the EDA. The research partners in the project make 13 policy recommendations in the final report. These are aimed at the industry and its sponsors, including private and public funders, and are summarized below.

The study shows that programs that perform poorly are those which do not follow the best practices promoted by industry leaders and supported by years of industry experience and research. Sponsors should ensure that the business incubation programs they oversee adhere to the generally accepted definition and best practices of business incubation, as described by NBIA and reported in this article. Other recommendations suggest that sponsors and the industry should:

- support the creation of a national performance benchmarking program for business incubation based on uniform measures;

- establish a national database of demographics, statistics, and performance outcomes to quantify program performance;
- regularly seek objective evidence of program performance;
- take incubator missions into account in making policy, evaluation, and funding decisions.

The most important long term partners are local, state, and regional stakeholders. Many programs owe their success to city or state partners willing to give up short term political gains on the project for a long term return on their investment.

Massachusetts

Very little research is available on state incubator policy. Fortunately, the report commissioned for Massachusetts mentioned earlier provides excellent insights which, according to experts, are still applicable to the industry ten years later. One of the key lessons from the findings is that United States incubators with a public purpose (those developed by public or non-profit organizations) generally divide into three categories:

1. support for general small business and entrepreneurship development, usually in an economically depressed area;
2. targeted job creation and entrepreneurial development for disadvantaged populations; and
3. support for technology-based new enterprises, often in conjunction with a university.

States crafting policy to set up these types of incubators should follow five broad guidelines. First, the state's policy should define how incubators will meet a public purpose. In the report, the authors identify five possible public purposes for business incubators. These are:

- expanding entrepreneurial activity and improving the success rate for new businesses statewide;
- targeting support for small business and entrepreneurial activity to economically depressed areas;
- supporting business ownership efforts and opportunities for specific economically disadvantaged populations;
- accelerating the commercialization of new technologies to develop a competitive advantage; and
- improving the competitiveness of businesses with common needs or problems.

Second, the location of a business incubator with a public purpose is an important decision. States need to assess local market conditions, particularly the availability of affordable real estate for start-up firms, and locate the facility where there are small amounts of commercial or industrial space.

Third, policymakers should learn from the experiences and practices of other states and nations. Fourth, a state should define the boundaries of its effort to encourage incubators. Finally, the state must determine the resources needed, and identify or appropriate funds to meet those needs. For example, since incubators' missions are to serve risky clients with flexible lease terms, private financing of the facility will usually be difficult.

The report also made four specific recommendations for state policy in Massachusetts. These were:

- incubator projects need to be appropriately targeted to fit the state's "public purpose";
- an incubator program should be modest in its initial goals, supporting only a few facilities at first;
- incubators can be important resources for all small businesses, they need not be restricted to serving tenants alone; and
- state subsidies should be matched to the particular financing needs of small business incubators.

Michigan

A study in Michigan in 1995 concluded with a set of recommendations to enhance the effectiveness of business incubators as an economic development tool in that state. In 1984 the state passed the Michigan Business Incubation Act:

"An act to encourage and assist in the establishment and expansion of certain small businesses within this state through the creation of business incubation centers; to provide for community boards and to prescribe their powers and duties; to prescribe the duties of the department of commerce; to prescribe the duties of, and certain benefits provided to, lessees of business incubation centers; and to make an appropriation."

The recommendations from the Michigan report relate to the Act specifically, and to stakeholders statewide:

- Appropriate, consistent, and sufficient funding to assist state-wide incubators and tenants with capital and operating costs.
- Review the incubator graduation policy [in the Act] and extend from 18 to 36 months.
- Implement a reporting system to collect tenant data.
- Make sure revolving loan funds and other local business resources are available to tenant firms.
- Weigh the costs and benefits of business recruitment strategies and business incubation programs carefully.

- Consider business incubation an opportunity to reuse an abandoned or underutilized structure, or as an anchor for the revitalization of an economically depressed area.
- Consider business incubators as an opportunity to promote minority economic development at the local level.
- In tenant selection, operators should “give strict attention to factors of compatibility to insure maximum synergism among tenants”.
- Research industry-wide dynamics, impacts, and performance as a tool for economic development. (Molnar, L.A., DePietro, R. and Gillette, L., 1996, pages 17-20).

Although the Michigan recommendation preceded the soon-to-be-released EDA research by a few years, there are several similar themes. They provide additional detail helpful for state and local officials.

Another advantage of incubation programs over other forms of business assistance is their potential to generate income to cover operating expenses after an initial start-up period. As more programs achieve levels of self-sufficiency and can perform as models, the strategy will be more appealing to investors of public funds. In general, business incubation programs operate with multiple partners and a wide array of funding sources. Juggling the interests of all these stakeholders is a task often shared by the program manager and his or her board of directors.

Impact assessment

Until recently, impact measurements had been limited to basic industry-wide performance measures such as the number of firms graduated, jobs created, and square footage of facilities. Business incubation programs measure their own impact in different ways, but most collect data on current firms, graduates, jobs created, and revenues generated.

In the following paragraphs, note the wide variation between average and median figures on each indicator. One of the conclusions in the survey from which these numbers were taken (the NBIA's 1995 survey) is that “it is no longer satisfactory to report in terms of means and medians for the industry as a whole, given the widely varying missions and characteristics of the incubation programs” (Adkins, D., 1996, page 3).

- North American incubators served an average of 17 firms in-house (median 10), and many facilities provide business incubation services to firms outside the facility. On average, these incubators had 21 graduate firms each (median 8.5).
- Incubator facilities have supported the creation of 288 full-time equivalent jobs, on average, among current and graduate firms, and 41 jobs among affiliate firms. Median jobs created were 38 for in-house clients, 60 for graduates, and 10 for affiliates.

- Incubators reported average aggregate revenues in 1994 of \$4.3 million for tenant firms, \$2.8 million for affiliate companies, and \$24 million for graduate companies. Median revenues were \$1.5 million for tenants, \$500 000 for affiliates, and \$6.6 million for graduate firms. In 1994, on average, each incubator graduated 3.1 clients (median 2).

Just a few other projects have been undertaken to evaluate the potential of business incubation as a strategy for economic development. The Michigan Impact Study, completed in 1996, is a detailed analysis of the impact of business incubation programs on a statewide economy. The authors conclude that “incubators are a demonstrated reliable source and method for economic and business development for the state” (Molnar, L.A., DePietro, R. and Gillette, L., 1996, page 12).

Research for the 1985-1995 NBIA study (authored by Adkins) also evaluated performance measures used by the industry. The survey found that the following measures are considered by the programs themselves to be the most important in evaluating performance:

- Clients served.
- Women/minority owned firms served.
- Firms assisted with financing.
- Increased neighborhood property values.
- Jobs created.
- Increased incubator program revenues.
- Aggregate client/graduate revenues.
- New technologies brought to market.
- The number of graduate firms.
- State/local taxes paid by clients/graduates.

In addition, respondents offered other criteria they use to measure themselves, such as: total number of graduates that survived over a period of time, incubator progress toward self-sufficiency, the quality of the companies served, the number of university technologies commercialized, and the incubator rate of occupancy.

The 1997 Impact Study collected data on the following financial and job performance measures:

- Combined total annual revenues of tenants and affiliates.
- Number of firms participating in programs since inception.
- Number of firms still in business (excluding anchor tenants).
- Number of current tenants.
- Number of graduates from an incubation program.

- Number of graduate firms still in business.
- Number of graduate firms no longer in business.
- Number of non-tenant affiliates receiving incubator services for a fee.
- Number of people currently employed by tenants and affiliates (full-time and part-time).
- Total jobs created by graduate firms.

A collection of indicators, known as a benchmarking system, is also of interest to many analysts in the industry. In the closing chapters of *The Art and Craft of Technology Business Incubation* the authors recommend the introduction of benchmarking to the incubator industry (Tornatzky, L.G., Batts.Y., McCrea, N.E., Lewis, M.S, and Quittman, L.M., 1996). A long term effort to standardize and measure performance of incubation programs would provide the industry not only with well-chosen measures of impact, but also a tool for comparing “best practices”.

The findings of the EDA-funded project “Impact of Incubator Investments”, summarized earlier in this paper, detail industry performance using several measures. The report also recommends a national benchmarking system and the use of industry-wide performance measures.

Best practices

The Director of NBIA, Dinah Adkins, argues that “communities have to be creating new businesses to survive”.¹ Business incubation programs discover and carry out what it takes to create businesses in a community. After ten years, these programs together have achieved the critical mass and the maturity to begin to draw lessons from successes and failures. Based on these lessons, several practitioners and academics have created lists of best practices.

For example, Robert Meeder, President of the SPEDD Network in Pennsylvania, makes the following points to those considering the development of business incubation programs:

- Do not try and force an incubator on a community that doesn’t really want one.
- An incubator is not a real estate operation, it is a service center whose real estate just facilitates getting people together.
- An incubator must be sizable enough to have an impact.
- A good entrepreneur can attract other entrepreneurs and stimulate a cluster of economic activity.
- Expect a two year cycle for program development, with an eighteen-month period to lease space up to a point where bottom line costs are being met (Hayhow, S., 1996, pages 7-9).

A survey of Robert Meeder's and other's insights reveals three important practices critical to the success of a business incubation program:

1. Careful **planning and preparation** before facility start-up to determine that needs and a timeline are properly understood and adequate resources are in place.
2. Clear **consensus** among Board members and stakeholders on the mission of the facility, expectations, and an agreement that the facility be operated as a business and directed by an entrepreneur.
3. **Supportive, constant relationships** between the director and each tenant firm are the heart and soul of a business incubator.

Logically, the inverse of any of these "what works" arguments begins a discussion of "what doesn't work". That is the topic of pages 15-17 of this paper: "Mistakes made, lessons learned".

Planning and preparation

Robert Meeder, manager of the largest single network of business incubation programs in the country and author of *Forging the Incubator: How to Design and Implement a Feasibility Study For Business Incubation Programs*, writes that a feasibility study is as important to an incubator as a business plan is to a start-up company. Among other things, the process can be used to forge consensus, motivate participation, solicit funds, and avoid documented patterns of error. He remarks that a proper feasibility study can help a new incubator "avoid two classic errors: the temptation to accept the worst building in town, and the temptation to let your business assistance program take care of itself" (Meeder, R., 1993).

Thorough planning and preparation are necessary to launch a successful business incubation program. Susan Matlock, of the Birmingham Business Assistance Network referred to in Annex 1, discusses the need for those planning an incubator to act as entrepreneurs considering a new venture.

"In my view, it is critical that those responsible for developing a business incubation program realize that they are themselves acting as entrepreneurs. They are developing a new business that must meet all the market and financial tests that any emerging business must meet" (Rice, M.P., and Mathews, J.B., 1995, page 143).

The business plan for a new program must determine many things, including the menu of business services to provide to client firms. In *Incubating New Enterprises: A Guide to Successful Practice*, Gregg Lichtenstein and Thomas Lyons try to identify the growth an entrepreneur must experience to build a successful business. The authors develop a list of almost 100 business incubation practices and a diagnostic framework to help a program decide which practices meet an entrepreneur's needs. This methodology for selecting incubator practices based on resources, obstacles, and entrepreneurial need is one of the first of its kind.

At some point in planning and preparation the team studying the feasibility of an incubator program must decide if the program should go ahead. Answers to critical questions of finance, management, market, and the product or service should point to a conclusion. This is also the point at which stakeholders need a way to determine if indeed an incubation program is the most appropriate response to their circumstances.

Mission and management

As Rice and Mathews affirm, “Communities are rushing to create incubators without understanding that incubators are ‘start-up’ ventures whose purpose is the development of other start up companies. It is difficult to imagine a more unstable situation” (Rice, M.P. and Mathews, J.B., 1995). During this period of instability, the board of directors and stakeholders provide critical support to the facility. Political support and associated funding sources can waver with the political climate, community support may falter when progress is not immediate, but the board must be a source of continued commitment and guidance to an infant program.

First and foremost, the board must agree that its primary mission is business development, and that the incubator director's primary responsibility is to work with client companies. Targeting populations and geographic areas, and seeking facility self-sufficiency should be secondary concerns, at least at the outset.

Hiring a program manager is one of the most important decisions the board will make. The NBIA recommends that programs recruit and appropriately compensate management capable of achieving the mission of the incubator, and with the ability to help companies grow (NBIA, 1996). Ideally, this person is an entrepreneur who thrives on risk, has high levels of energy and creativity, and who is so committed to the process of enterprise development that any other tasks which intervene are regarded as intrusions.

In their interactions with the manager, the board must ensure that management time is used first and foremost to provide client assistance. Mark Rice and Jana Mathews discuss in detail how the board should also “manage external relations”, in particular to “buffer the president from multiple external distractions” (Rice, M.P. and Mathews, J.B., 1995, page 53).

Tenant-manager relationships

Once a good program director has been hired, and the board has agreed that he/she should give highest priority to client assistance, enterprise development becomes the guiding force of program operation. This emphasis on serving the client comes from recognition in the business incubation industry that support and assistance to entrepreneurs is central to the incubation process. As Rice and Mathews affirm:

“It's important to understand that the incubator building is a very minor part of the incubator's array of services – a necessary evil for being able to provide assistance with The Three Ms - marketing, management, and money – to client

entrepreneurs. For most of the people I talk with, this is truly a paradigm shift in thinking. They think the building is the incubator, but nothing could be farther from the truth" (page 145).

Rental space, services, and networking opportunities are all important, but the capacity of the manager to assist and nurture the entrepreneur on a regular basis may well be the most important factor in the success or failure of tenant firms.

Lichtenstein and Lyons note that:

"The critical challenge of the incubation process is how to support entrepreneurs in their own development and increase their ability to achieve their own goals, rather than do the work for them...the actual day-to-day relationship between an incubation program staff member and the entrepreneur is the heart of the business incubation process, and the key to its success" (pages 18-19).

Mistakes made, lessons learned

The North American incubator industry has a mixed track record. Although some incubators have been a major success, some have failed and many are just surviving. The failure of an incubation project, failure of tenant firms, or lengthy incubation periods can often be traced to one or more of the following problems:

1. Poor planning.
2. Poor understanding by stakeholders of the timing and financing needs of the program.
3. Poor management, usually because the manager is absorbed in facility operations rather than client firm development.

Practices that do not work are simply *inverses* of best practices described in the previous section. Any combination of these can be "a recipe for disaster."² Raymond Smilor, of the Center for Entrepreneurial Leadership, summarizes the most common reasons why incubators fail: they expect too much too quickly, select the wrong manager, overestimate the incubator's role, overspend, or they fail to leverage resources (Hayhow, S., 1996, page 10).

Rice and Mathews note that the experience amassed by the over 500 incubator programs in the United States provides lessons on "classic" errors made by incubators. These, in condensed format, are:

- Accepting the worst building in town.
- Underestimating the importance of recruiting a competent incubator president.
- Assuming an effective management assistance program requires little more than a few referrals.
- Failing to define a path to financial self-sustainability.
- Failing to manage the incubator like a business.

One issue emerges as the most important lesson – and chance for a misstep – at this stage in the development of the United States incubator industry. The time spent in direct client contact by the incubator manager is by far the most significant factor for success, both of that client and of the program in general. Reports and studies reveal that concerns which distract incubator directors from time spent with tenant firms – such as facility management, funding, and stakeholder issues – jeopardize the success of tenant firms.

In his doctoral work on business incubators in the early 1990s, Mark Rice concluded that “the biggest impact on the effectiveness of the incubator manager in his or her efforts to help clients was the time spent in client intervention” (Hayhow, S., 1996, page 98). Based on his survey and interview research, Rice estimated that incubator professionals spend about 20 per cent of their time in direct service, and the rest on strengthening political and financial support from sponsors and stakeholders. An NBIA survey done at about the same time came up with similar findings: among incubator managers, incubator financing (not client assistance) ranked as the top concern (NBIA, 1992). Rice’s advice is to decrease the distractions that take the manager away from his or her primary mission of enterprise development.

It is clear that direct client assistance is critical to the success or failure of client firms. Another aspect of client assistance is the quality and accessibility of business assistance services. In *Incubating New Enterprises*, Lichtenstein and Lyons recommend a thorough and careful assessment of needs and resources to determine the best mix of client services.

While this kind of meticulous evaluation is invaluable, there may be gaps in basic services needed by client firms. For example, in a study of Michigan-based incubators, there are discrepancies between services that tenants say are available and services managers say are available. The relevant findings are presented below for some of the most common services needed:

Managers and Current Tenant Firms Report on Services Available at Michigan-Based Incubators

%

Business Skills Training Services	Managers	Current Tenants
Individualized business advising	78.9	38.6
Business plan development	84.2	35.7
Financial management and accounting	63.2	32.9
Sales and marketing	57.9	20

Source: Molnar, L.A., DePietro, R., and Gillette, L. (1996), *Sustaining Economic Growth: The Positive Impact of the Michigan Incubator Industry, 1985-1995*, Athens, Ohio: NBIA.

There may be a variety of reasons why 79 per cent of managers report that “individualized business assistance” is available and only 39 per cent of tenant firms say it is actually available. Managers may have an inflated view of the assistance they are providing. But when services are informally delivered, clients may also not recognize them as assistance. Client firms may not recall informal discussions when they are surveyed on their experience of “individualized business assistance,” while at the same facility the program manager may spend several hours a day “checking in” with clients.

Robert Meeder notes that “entrepreneurs tend to seek management assistance when they are in major or minor crisis mode. The incubator president, on the other hand, must take a proactive approach and must continually offer services before an entrepreneur is even aware that he/she needs them” (Rice, M.P., and Mathews, J.B., 1995, page 143). Service delivery mechanisms and measurement is certainly an area that needs further analysis.

In 1996 the following principles and best practices were developed and adopted by the NBIA based on material in the aforementioned publication by Rice and Mathews *Growing New Ventures, Creating New Jobs: Principles and Practices of Successful Business Incubation*. The Best Practices can also be adopted as performance measures against which incubation programs can evaluate themselves.

Strategic issues for the industry

There is optimism for the future of the industry, much of it stemming from a new clarity about the best practices described above. There is also appreciation of the complex difficulties and demands facing incubator managers. This final section attempts to define what it is that we don’t know about business incubators, and encourages further research to determine when an incubator is an appropriate economic development tool.

To move forward, industry supporters and critics alike need to consider the following questions:

- What are the competitive advantages of a business incubator?
- Are business incubators cost-effective?
- Are business incubators a good idea? In which situations?

Competitive advantage of incubation programs

To stake a position in the marketplace of economic development tools, business incubation programs need to understand and strengthen their competitive advantages. The industry needs an answer to a question posed by Gregg Lichtenstein, “what does it mean to incubate firms?”.

One route is a fresh understanding of the role the building plays. Practitioners now agree that business incubation is more about the process than the place, but that without the place, the program is indeed like any other technical assistance initiative. A building creates the potential for service delivery that is cost-effective, for synergy among clients, for self-sufficiency of the program from rental income, and for a focal point – a hive – of entrepreneurial activity. NBIA Director Dinah Adkins suggests that these factors are the advantages of business incubation that make it different from any other form of business assistance or real estate development.

Mature, well-run incubation programs are themselves generally entrepreneurial and self-sustaining. Founded often with considerable public funds, incubation programs ideally evolve into technical assistance programs independent of substantial public funding. The NBIA highly recommends that programs be founded and managed as businesses. Other models of business assistance, such as the Small Business Development Centers supported by the Small Business Administration, remain largely dependent on public funds.

Financing incubation programs

We know that incubators require significant investment during start-up, but that they also have the capacity to meet their facility expenses after an initial start-up period. Sponsors of incubation programs recommend a 3-5 year “ramp-up” period before a program can be expected to reach self-sufficiency. Both before and during self-sufficiency, revenue sources and operation costs for most incubators in the United States can be summarized as follows (see Rice, M.P., and Mathews, J.B., 1995, page 23):

Sources of revenue

- Rental income from companies.
- Fees charged for business services.
- Fees (current in the form of cash, and deferred in the form of royalties and equities) from incubator companies for management assistance.
- Financial support or “investments” from one or more sponsors.

Costs of operation

- Real-estate related costs, which may take the form of rent paid to a landlord, or, if the facility is owned by the incubator or its sponsor, costs associated with amortization of debt for acquisition and renovation.
- Costs related to providing shared services.

- Staff salaries.
- Capital expenditures.
- General and administrative costs such as office supplies, marketing materials, and professional fees (*e.g.* for legal and accounting services).

The NBIA Impact Study (NBIA, 1997*a*) found that 57 per cent of revenues came from rent or client fees, 21 per cent from service contracts or grants, and 31 per cent from cash subsidies.

To pay for the delivery of business assistance services, incubator sponsors must often seek support from local, state, and federal stakeholders in the project. Sponsors generally willing to support incubator development include:

- state and local economic development agencies that typically have a mission to create jobs and work with distressed communities;
- local banks interested in new business clients which may graduate from the incubator;
- chambers of commerce, business associations in towns and cities nationwide, with an interest in increasing the number of businesses and the services available to businesses;
- public colleges, universities, and community colleges see an opportunity to link the community with their technical assistance, training, and technology capacity;
- churches may be interested in the job and business creation support an incubator provides for low income entrepreneurs;
- corporate and community foundations are sometimes interested in incubators for community and entrepreneur development projects; and
- federal programs interested in creating businesses and jobs which contribute to the health of the local economy and the reduction of unemployment and poverty.

The 1997 Impact study also found that just 13 per cent of respondents said they could maintain their operations without the subsidies. Fifty-two percent said they could maintain operations but at a reduced level, and a full 36 per cent indicated that they would be able to provide minimal or no service without subsidies. As to the financial viability of incubators, research is needed on a variety of financial issues, including costs per job created, the minimum size of incubator necessary to achieve a critical mass, conditions for a business incubation program to move from start-up to self-sufficiency, and different models (rent structures, service fees) for self-sufficiency.

Models for financing business incubators are now one of the most important concerns of the industry. Until these are available, program managers will continue to prioritize concerns over program operations, rather than client services.

To incubate or not to incubate?

Based on research and years of experience, best practices and industry standards are increasingly available to guide the design and operation of successful business incubators. But the largest question still remains unanswered... **in what situation is a business incubator the best solution?** When are incubators more cost effective and more appropriate than other strategies at tackling economic problems? What are the advantages and disadvantages of these various strategies? Answers to these questions will help identify the niche for business incubation programs and give policymakers guidance in the planning and funding of such programs.

Conclusion

The business incubation industry in the United States is diverse. Although few programs look alike, most operate on the principle that the synergy of providing business assistance and rental space to fledgling firms stimulates local enterprise development. Current best practices suggest that new programs must be carefully planned and widely supported, and that all programs be led by a distinctly entrepreneurial manager.

Key issues about the impact and cost of incubator programs as a strategy for economic development remain unclear. But while researchers try to answer these questions, the number of successful programs and graduate firms continues to rise. As long as there are visionary managers and boards in the industry, incubation programs will create enterprises and jobs, and will catalyze local economic activity.

Notes

1. Dinah Adkins interview, 2/25/97, Athens, OH.
2. Dinah Adkins, 2/26/97.

*Annex 1***Business Incubation Profiles*****Birmingham Business Assistance Network (BBAN)
Birmingham, Alabama, USA***

The *Birmingham Business Assistance Network (BBAN)* is an example of a mixed-use business incubation program. BBAN was founded in the mid-1980s by economic development officials and leaders from the business community who determined that the City of Birmingham needed a resource for new business formation. BBAN is a non-profit corporation and receives funding under contract from the City of Birmingham and investments from the private business community.

Located in Birmingham, Alabama, BBAN offers:

- **management assistance:** guidance in developing business plans, cash flow projections, and market research;
- **aid in identifying financing alternatives:** information on federal and local loan programs, as well as commercial bank options and private investors;
- **an incubation center:** 48 000 square foot facility designed to house qualified start-up service and light manufacturing firms.

BBAN tenants receive the following services:

- affordable space for lease;
- copy, fax, and postage machines;
- computer stations, conference rooms;
- receptionist, clerical, word processing, and janitorial services;
- seminars by volunteer professionals;
- security personnel and a building security system.

In 1996 BBAN received over 100 requests for business services, 60 per cent of those clients requested a space in the incubator facility. The facility houses 20 firms, including:

- a distributor of spring water;
- a biomedical services firm;
- a monthly parenting publication;
- an electronic data and Internet consultant;
- a computerized embroidery service;
- a supplier of safety equipment.

Eligible candidates for the program include:

- emerging service or light manufacturing businesses;
- firms with job creation potential;
- firms with the ability to export a product or service beyond the county;
- firms with potential to replace currently imported products to the local economy;
- firms financed or finance-able.

Ineligible candidates include:

- retail;
- construction contractors;
- businesses whose job creation is primarily commissioned sales, such as real estate and insurance;
- professional counselors such as accountants, attorneys. and financial planners.

BBAN is close to achieving some measure of self-sufficiency. Client and building expenses are covered by client and building income. Program elements, such as counseling and administering a loan fund, continue to be covered by a contract with the city.

Thoughts from the Director

Susan Matlock is the Executive Director of BBAN (she was until recently the Chair of the NBIA Board of Directors), and is nationally recognized for her experience and expertise in the field of business incubation. She notes:

“A business incubation program should not be launched without fully developing a business plan that includes not only an annual operating budget complete with sources and uses of funds, but also the same month-by-month cash flow projections for the first two years that would be expected of any other new business. It is extremely unwise to receive initial funding commitments and start spending money to develop a business incubation program without a long-term view of the program’s financial viability. As with a business, underplanning can lead to the failure of the business incubation program” (Rice, M.P., and Mathews, J.B., 1995, pages 142-143).

Birmingham Business Assistance Network
110 12th Street North, Birmingham AL 35203
Tel. (205)250-8000
<http://www.tech-com.com/bban>

Rensselaer Polytechnic Institute (RPI) Incubator Program
Troy, New York, USA

The Rensselaer Polytechnic Institute (RPI) Incubator Program is an example of an incubator program with a technology focus and a university affiliation. RPI's Incubator Program, founded in 1980, is one of the oldest United States incubators, and is possibly the first sponsored and operated by a university. The Program is not focused on a single technology or industry, rather the objective is to attract diverse ventures reflective of the technological strengths of the university.

The three goals of the program are:

1. ***Enrichment of Rensselaer's academic and research environment.*** Students augment classroom training with "hands-on" projects with incubator companies, such as the rewriting of a business plan or the implementation of a market research project. Companies benefit from student assistance, and many times create jobs, internships, education assignments, and research opportunities for students.
2. ***Technology transfer and commercialization.*** The Incubator Program at RPI was created to assist in the translation of inventions and expertise into marketable products and services.
3. ***Regional economic development.*** The Incubator Program is in the forefront of the university's commitment to the regional economy. The Program has created over 1 000 new jobs and reports \$100 million in aggregate annual revenues by past and present firms.

Criteria for entrance of new firms include:

- A business concept involving technology-based products or services.
- Potential synergies with RPI's academic and research programs.
- Demonstrated financial resources to sustain the business during the start-up phase.
- A capable and motivated entrepreneur or entrepreneurial team.
- An acceptable written business plan.

Key operating statistics since the Program's inception in 1980:

- Over 100 companies incubated, most which stay in the region upon "graduation".
- 80 per cent survival rate for companies.
- Occupancy typically exceeding 95 per cent.
- 2/3 of companies have evolved from research at Rensselaer or have been started by alumni.
- 75 per cent of companies either employ students or are participating in academic projects with students.
- The Program has been financially self-sustaining since inception.

The Program operates three separate buildings. The buildings were bought and renovated using state, foundation, and Economic Development Administration (EDA) funds.

Thoughts from the Director

Mark Rice, Executive Director of the RPI Incubator Program, chair of the Board of NBIA from 1990-1992 and co-author of *Growing New Ventures, Creating New Jobs*, remarks on incubator performance:

“I researched nine incubators, and found that, by and large, almost all the entrepreneurs had the capacity to respond to intervention and the managers had the capacity to assist clients...The intensity of the relationship between the manager and the client was the crucial factor. But I discovered a clash between the ideal of incubation – proactive intervention applied to new business creation and development – and the fight for the financial and political survival of the incubator. In brief, I found the larger the political content in the operation of the incubator, the smaller the entrepreneurial content” (Hayhow, S., 1996, page 172).

Rensselaer Incubator Center
1223 Peoples Ave. Troy NY 12180 USA
Tel. (518)276-6658
<http://www.rpi.edu/dept/incubator/homepage>

Annex 2

Principles and Practices of Successful Business Incubation

*From “Principles and Practices of Successful Business Incubation”,
National Business Incubation Association (NBIA), 1996*

Two principles characterise effective business incubation:

- The incubator aspires to have a positive impact on its community’s economic health by maximizing the success of emerging companies.
- The incubator is itself a dynamic model of a sustainable, efficient business operation.

A “Best Practices” incubation program:

- Is committed to the two core principles of business incubation (listed above).
- Has obtained consensus on a mission that defines its role in the community and has developed a strategic plan that contains quantifiable objectives to achieve the program mission.
- Is guided by a realistic business plan and has achieved or is clearly headed for financial sustainability.
- Has an effective board of directors committed to the incubator’s mission and to maximizing management’s role in developing successful companies.
- Has recruited and appropriately compensates management capable of achieving the mission of the incubator and having the ability to make companies grow.
- Has prioritized management time to place the greatest emphasis on client assistance.
- Has developed an incubator facility, resources, methods, and tools that contribute to the effective delivery of business assistance to client firms and that address the developmental needs of each company.
- Seeks to integrate the incubator program and activities into the fabric of the community and its broader economic development goals and strategies.
- Is supported by stakeholders, including a resource network, that helps the incubation program’s client companies and supports the incubator’s mission and operations.
- Maintains a management information system and collects statistics and other data necessary for on-going program evaluation, improving effectiveness, and evolving with the needs of the incubator and its clients.

**National Business Incubation Association
20 East Circle Drive, Suite 190
Athens, Ohio 45701 USA
Tel. (614)593-4331
<http://www.nbia.org>**

Bibliography

- Adkins, D. (1996),
A Decade of Success: 10th Anniversary Survey of Business Incubators, 1985-1995, Athens, OH, NBIA.
- Campbell, C. (1988),
Change Agents in the New Economy: Business Incubators and Economic Development, Minneapolis, MN, Humphrey Institute of Public Affairs, University of Minnesota.
- Hayhow, S., ed. (1996),
A Comprehensive Guide to Business Incubation, Athens, Ohio, NBIA.
- Lalkaka, R. and Bishop, J. (1996),
Business Incubators in Economic Development: An Initial Assessment in Industrializing Countries, New York, NY, UNDP.
- Lichtenstein, G.A. and Lyons, T.S. (1996),
Incubating New Enterprises: A Guide to Successful Practice, Washington, DC, The Aspen Institute Rural Economic Policy Program.
- Meeder, R. (1993),
Forging the Incubator: How to Design and Implement a Feasibility Study For Business Incubation Programs, Athens, Ohio, NBIA.
- Molnar, L.A., DePietro, R. and Gillette, L. (1996),
Sustaining Economic Growth: The Positive Impact of the Michigan Incubator Industry, 1985-1995, Athens, Ohio, NBIA.
- NBIA (1997a),
Impact of Incubator Investments, prepared for the US Department of Commerce Economic Development Administration.
- NBIA (1997),
Business Incubation: Building Companies, Jobs and Wealth, Athens, Ohio.
- NBIA (1996),
Definition and Best Practices.
- NBIA (1992a),
Bricks and Mortar: How To Find and Design the Best Business Incubator Facilities, Athens, Ohio.
- NBIA (1992b),
The State of the Business Incubation Industry, 1991, Athens, Ohio.
- Rice, M.P. and Mathews, J.B. (1995),
Growing New Ventures, Creating New Jobs: Principles and Practices of Successful Business Incubation, Westport, CT: Center for Entrepreneurial Leadership, Inc..

- Mt. Auburn Associates (1986, November),
The Entrepreneurial Economy, "Special Report: Designing A State Small Business
Incubator", Vol. 5, No. 1, Corporation for Enterprise Development, Washington, DC.
- Tomatzky, L.G., Batts, Y., McCrea, N.E., Lewis, M.S. and Quittman, L.M. (1996),
The Art and Craft of Technology Business Incubation, Research Triangle Park, NC,
Southern Technology Council and the National Business Incubation Association.

OECD PUBLICATIONS, 2, rue André-Pascal, 75775 PARIS CEDEX 16
PRINTED IN FRANCE
(04 1999 03 1 P) ISBN 92-64-17051-0 – No. 50691 1999