

Incubator, technology, and innovation centers in Switzerland: features and policy implications¹

Alain THIERSTEIN,

Institute for Public Services and Tourism IDT-HSG
University of St. Gallen
Varnbuelstrasse 19
CH-9000 St.Gallen
Switzerland.
Phone: +41 71 224 23 42
Fax: +41 71 224 25 36
e-mail: Alain.Thierstein@unisg.ch

Beate WILHELM,

Institute for Public Services and Tourism IDT-HSG
University of St. Gallen
Varnbuelstrasse 19
CH-9000 St.Gallen
Switzerland.
Phone: +41 71 224 23 44
Fax: +41 71 224 25 36
e-mail: **Error! Bookmark not defined.**

Abstract

Only since the early 90s, when unemployment rates in Switzerland soared to unprecedented levels, federal technology and innovation policy has begun to design their activities also with regard to employment and the establishment of new firms. Now, all across the country, private as well as public incubator facilities, technology and innovation centers began to pop up like mushrooms in autumn. This papers starts with describing the theoretical and methodological background of that survey. In a first step, all cantonal offices for economic promotion are asked to report and to describe incubator facilities, technology and innovation centers within their realm. In a second step a selection of centers were analyzed in-depth. The results circle around the questions: who takes the initiative to establish a center? What are the motives for establishing such centers? What kind of services do centers offer? What branches are the start-up firms in and what level of technology do they utilize? How long are start-ups allowed to stay in the centers? How far away do these centers with their services attract start-ups? Together with selected foreign experiences, some recommendations for the operation of such centers are formulated. The paper closes with some conclusions for federal and regional innovation and employment policy.

Key words: incubator, technology and innovation center, federal and regional innovation and technology policy, structural change.

1 Background

Incubator facilities, technology or innovation centers are quite new business for Switzerland. Public awareness about their existence and their functions in general is very low. In the realm of public policy there are two strands of discussion which are shaping the Swiss reality. The German boom of technology, innovation and incubator centers that started in the 1980s and then spread to Austria (Sternberg et al. 1996; Galley 1997; Tödtling, Tödtling-Schönhofer 1990). On the other hand it is the glitter-like discourse about the hopes for copying the Silicon Valley Fever (Rogers, Larsen 1984) and the respective science parks boom in the U.S.A. and the UK alike (European Commission 1996; Westhead, Batstone 1999).

Incubator facilities, technology and innovation centers - ITI for short - carry much hope and are mostly put in place to follow a multitude of aims. In general management and sponsors of these centers claim to have at least one or more of the following objectives:

- To promote or increase regional development;
- To increase the rate of start-up companies with above average innovation potential;
- To help to contribute to structural change of local or regional economy;
- To contribute to general labor market goals by creating new jobs.

These major goals appear across most of the debate about ITI. Still, in Switzerland, there is very little awareness and very little knowledge on impacts of these centers, on their clientele and institutional aspects of successful management and the like. It is only since the early 1990s, that the unemployment rate in Switzerland soared to unprecedented levels. That fact in many regards began to change Swiss perception on economic development. Only then, federal technology and innovation policy has started to consider their activities also with regard to employment and the establishment of new firms.

Meanwhile, all across the country, private as well as public ITI began to develop and to offer advice and support for company start-ups. In spite of all these 'bottom-up' initiatives, Swiss federal policy up to now did not have a consistent and in-depth account on the various local and regional activities.

2 The design of the survey on incubator facilities in Switzerland

Since the creation of new firms is by nature a very disperse and local activity, information has to be gathered where it happens. In the Swiss case, that meant a two-step survey, thus trying to draw the full picture of incubator facilities in Switzerland by bringing together bits and pieces of scattered knowledge.

In the first round in early 1998, all of the 26 cantonal offices for economic promotion were asked by a postal survey to name and to describe incubator, technology or innovation centers which are located within their cantonal boundary. This approach produced a total of 40 facilities all across Switzerland, but with a tendency to agglomerate in the Swiss Plateau, that is the densely populated economic area stretching from east to west. One year later, a follow-up survey showed the high volatility of this ‘incubator business’, because we then counted already 61 centers. This indicates that already the 1998 survey did not fully cover all the then existing ITI: certain centers have not been included in the survey, others have already closed their doors in the meantime.

The second round of the study chose nine ITI for an in-depth postal survey which was followed by a moderated workshop. This time it was the managers of the centers who themselves provided the answers to our questionnaire. These nine centers were selected with respect to their geographical location – German, French and Italian speaking part of Switzerland – and with respect to their focus on start-up activities and services.

It has to be mentioned at this time that there is no uniform definition of these notions. It almost seems that labels are used at random or to deliberately create an image of modernism or high-tech although quite many of these centers are not much more than common business parks.

The range of notions go from ‘science parks’, ‘research parks’, ‘technology centers’, ‘innovation centers’ and ‘incubator centers’ to ‘start-up initiatives’ or ‘business parks’ (Luger, Goldstein 1989; Sternberg 1988). A basic feature to distinguish these centers is to look for *infrastructure*. Incubator and technology centers usually offer office space and additional infrastructure geared to their specific clientele. The next chapter will focus on these questions and other features of ITI.

3 The results of the survey

3.1 Who takes the initiative?

In Switzerland, 43 percent of all ITI were established by a joint public-private effort. Table 1 shows, that ITI most commonly are a combination of public business promoters and private companies or other private institutions like foundations or business associations.

Table 1: Who takes the initiative to establish a ITI?

Initiators	Number
• Start-up companies themselves	4
• Economic promotion of cantons	4
• Other public institutions Including other departments of public administration in cantons, cities or other public agencies, public institutions of higher education and public testing labs	9
• Other private companies Including foundations or business associations	6
• Joint or cooperative partnership	17

n = 40

Source: Thierstein et al. 1999

3.2 What do ITI offer?

Table 2 shows that in Switzerland more than half of all ITI offer space to rent; 18 ITI provide rates below market level. In addition to subsidized rents, 21 ITI make available also joint amenities like meeting rooms, secretariat, fax machine, copier, etc. Centers with this kind of services typically are called *'incubator and technology centers'* (Sternberg 1988). In contrast, 43 percent of Swiss ITI do not make available any rental space nor technical infrastructure. They are labelled *'start-up support initiatives'*.

Table 2: Space and infrastructure of ITI

Space and infrastructure Mentions	Space available/not available	Rent below market level	With joint amenities	With training and education programmes	
					Only pass on information
ITI with rental space	23	18	21	5	5
<i>In percent</i>	<i>57,7</i>	<i>45,0</i>	<i>52,5</i>	<i>12,5</i>	<i>12,5</i>
ITI without rental space	17	-	-	5	1
<i>In percent</i>	<i>42,5</i>	-	-	<i>12,5</i>	<i>2,5</i>

n = 40 ; partially multiple answers

Source: Thierstein et al. 1999

Joint amenities are supplied in 21 cases, but training and educational programmes are mostly lacking. 60 percent of all ITI do not have own facilities and only pass on relevant information about out-house services to start-up firms.

Offering specific services to their target groups makes an ITI improve its market profile:

around 90 percent of all Swiss ITI offer consulting services or recommend consultants by third persons. 34 ITI support start-up firms in their early stage; 18 centers in addition make services available that go beyond the start-up phase (table 3).

Table 3: services for target groups of ITI

Services of ITI	In-house service		Refer to out-house services only	No service
	number	<i>in percent</i>		
Consulting:	34	85,0	2	4
- start-up consulting	22	55,0	2	
- business consulting	26	65,0	2	
- technology	22	55,0	2	
Support of start-up phase	34 ¹	85,0	-	6
Support beyond start-up phase	18	45,0	-	22
Rental space	23	57,5	-	17
- with rents below market level	18	45,0	-	-
Joint amenities	21	52,5	-	19
Training and education	10	25,0	6	24

n = 40; multiple answers

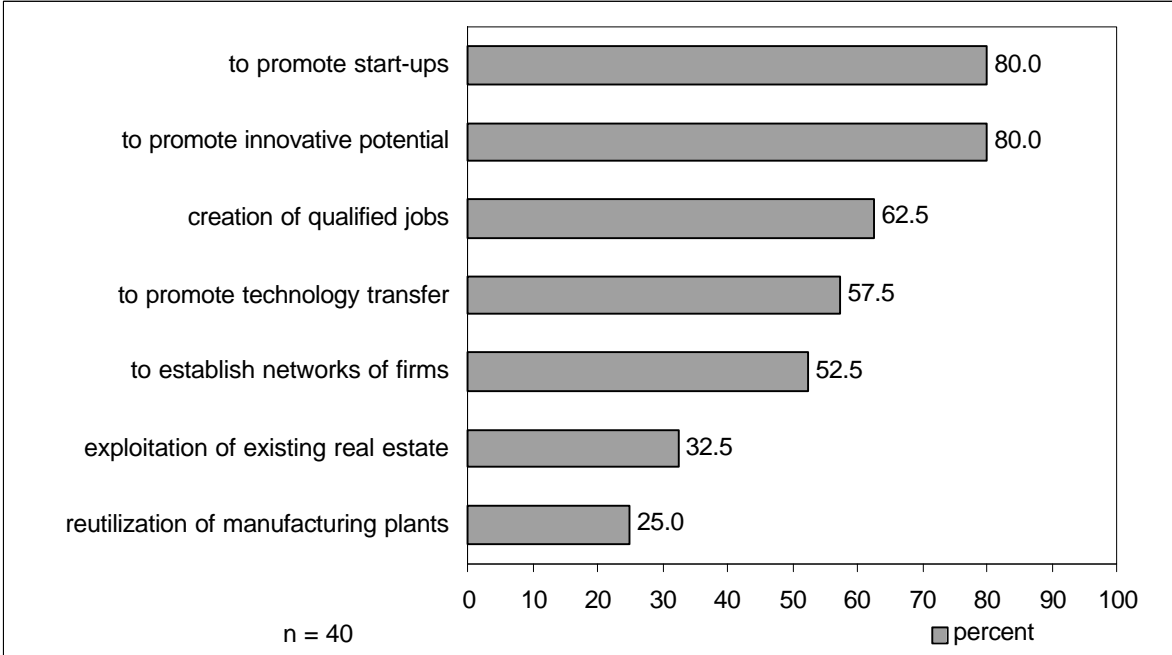
1 = three ITI included which only offer 'support beyond start-up phase'

Source: Thierstein et al. 1999

3.3 Motives for establishing ITI

The main motive for the creation of ITI is to promote start-ups and the innovative potential (80 percent; chart 1); the latter motive almost always means strengthening the regional innovative potential. In most cases, the local environment seems to have too little innovative potential for a ITI to concentrate on. More than 60 percent of the ITI focus on the labor market argument, that is to create new and qualified jobs. Exploitation of real estate and the reutilization of manufacturing plants obviously play a minor role.

Chart 1: Motives for establishing ITI

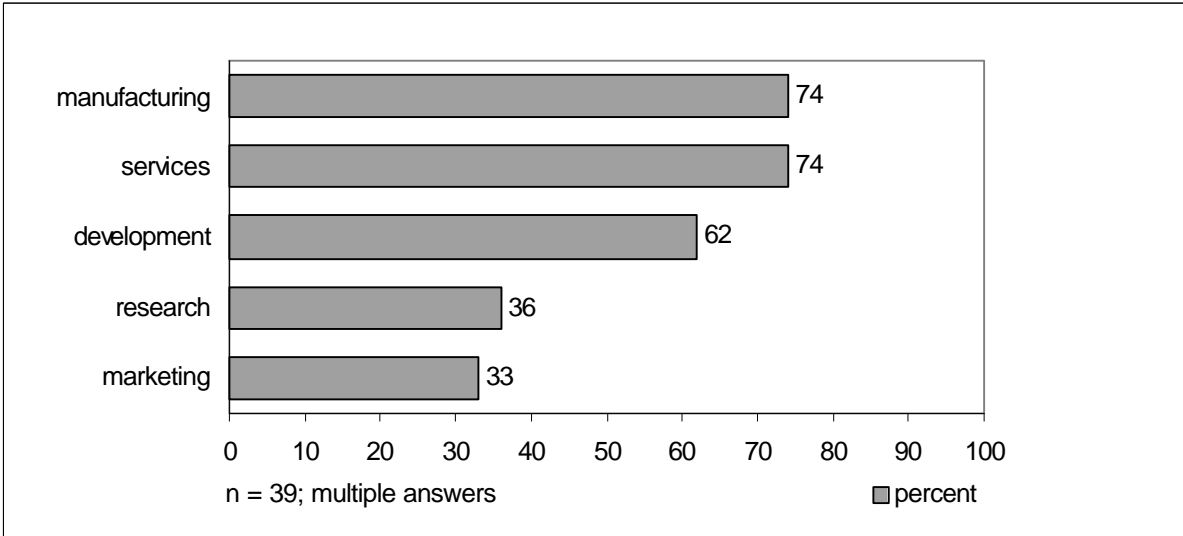


Source: Thierstein et al. 1999

3.4 Branch and technological orientation of ITI

Our survey shows that the target branches of Swiss ITI are predominantly manufacturing, services, and development activities (chart 2). Research and marketing activities are of much lower importance. The start-up companies in the ITI therefore concentrate on more applied and service oriented activities.

Chart 2: Dominant activity of firms in ITI



Source: Thierstein et al. 1999

What level of technological competence do start-up firms display? The basic assumption behind this question goes as follows: regional economic development is mainly spurred by new technology based firms (NTBF) in the manufacturing sector (Malecki 1983; Autio, Yli-Renko 1998). In addition to NTBF it is also innovation based firms as well as production and business service based firms, that today complement regional development dynamics (Illeris, Philippe 1993).

In the Swiss case, more than half of all ITI (25 cases) concede that their firms’ activities have a considerable or very considerable input of technology. This fact means in terms of profile for ITI, that these centers which want to cater for (high) technology start-ups have to locate themselves in or close to agglomerations. Else, the ‘market’ for their preferred target group might be too narrow and operating of an ITI may not be profitable. This very fact has led some ITI to letting in start-up firms which do not fit the ITI’s original profile or target group.

3.5 Are start-ups limited in their stay in ITI?

To limit the time span that start-ups are allowed to stay within a center and to use their facilities can be seen as an indication that the ITI follows at least partially regional development objectives. Setting a time limit usually makes firms fluctuate more frequently and that in turn gives more entrepreneurs the opportunity to make use of these ITI.

Table 4: length of stay in ITI

Length of time to stay in center	Numbers of ITI	Stay is limited:		
		One year	3 to 4 years	5 to 6 years
Limited <i>In percent</i>	9 ¹ 29,0	3	2	3
Partially limited <i>In percent</i>	6 19,4	0	3	3
Unlimited <i>In percent</i>	19 61,3	-	-	-

n = 31 ; three cases with multiple answers
 1: One answer without clear declaration on time limits; in certain cases an average time span is used
 Source: Thierstein et al. 1999

Table 4 shows that more than half of all ITI do not limit the length of stay for their ‘customers’². Three centers in addition keep the option to nevertheless limit the stay of firms. Thus it can be concluded that these centers are not primarily aiming at promoting the most possible numbers of start-ups; they instead focus on employing their facilities to capacity.

Beside the large number of ITI without time limits it is this very time limit itself that is interesting: three centers only give a very temporary support (one year) while the other eleven ITI orient themselves more along the 'natural' life cycle of start-ups. These centers either limit the length of stay to a more 'incentive like' basis of three to four years, while others give a more generous margin of five to six years.

Over all, the survey gives the impression that the ITI are not very much preoccupied considering the time span start-ups are invited to stay within a center. One indication is the rather large number of missings to that very aspect in the questionnaire (nine centers). Beside problems of comprehension, one reason for the ITI might be their own young age as an institution and therefore their not running at full capacity; hence they do not care much about such aspects yet.

3.6 How far is the spatial orientation of ITI's activities?

The centers were asked how far in geographical or spatial terms do their activities reach or what the spatial realm of their 'customers' is, i.e. where do start-ups come from to establish themselves in the center. Four options were given in the questionnaire: 'local', 'regional', 'interregional/national' or 'international'.

Most of the start-ups in ITI originate within the region of that specific center (chart 3). Nevertheless around 40 percent of all start-ups come quite a long way, that is national or international or have their business relations on these levels. The local level obviously is of very minor importance. As already mentioned it seems that for almost all ITI the local context has a too narrow potential for technology based new firms to successfully run a ITI in the Swiss situation.

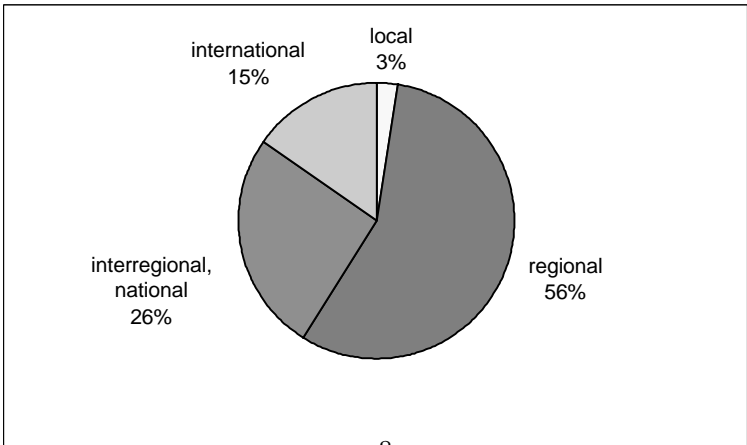


Chart 3 : Spatial orientation of ITI

Source: Thierstein et al. 1999

4 Conclusions and recommendations for the design of ITI

4.1 General remarks

The following chapter concentrates on general recommendations for designing successful operating incubator centers in Switzerland. The first boom phase of incubator and technology centers in Germany and Austria did not affect Switzerland much. This is not only due to the then very low unemployment rate in this country but even more to the almost complete absence of an explicit technology and innovation policy in Switzerland. The necessary political awareness for deploying such a new-style instrument to promote economic development in the large sense was missing.

Today it seems that foreign experiences help a great deal to avoid wrong ways and dead end streets. In this regard slow adaptation of 'hip' international concepts seem to be more of an advantage than stubborn reticence to modernism. It gives time to carefully evaluate and then draw productive conclusions. Especially the German experience shows that the initial euphoria and expectations that were attached to that instrument did not materialize. Scaling down of expectations brought a shift in focus from the original supply-side approach to a demand-side approach of ITI. The factual demand within a region sets the capacity and determines the services of ITI. This approach prevents from high-flying 'across-the-board' services being supplied in the centers.

One very important fact for Switzerland is the comparatively high percentage of private owners or initiators of ITI which want to be profitable on a full cost basis. As reverse side of that coin these dynamic private initiatives led to a certain lack of transparency about these ITI. In general there is little consolidated knowledge about strategies, services and such³.

Considering the comparatively large share of private centers, the instrument of ITI has not been utilized much for purposes of regional economic development.

The main reasons for a certain intransparency with respect to ITI are as follows. First there is no vertical coordination between the three levels of political organisation in Switzerland, that is the federal, the cantonal and the municipal level. Second there also is very little horizontal coordination between the ITI themselves. Certainly, there is a so called 'Club of technology

centers' in Switzerland which exchanges experiences on a regular basis. But a lot of ITI with lower technology orientation give themselves a very ambitious mission statement that prevents sometimes from cooperating more closely. On the other side it is often public bodies which operate with exaggerated expectations towards the delivering capacity of such ITI.

To sum up, ITI find themselves confronted with a threefold field of tension:

- to fulfill certain public tasks or needs;
- to follow their own objectives, mostly on a market cost basis and
- to live up to their quite often over ambitious self-image and overestimated performance.

4.2 Incubator centers follow a multitude of objectives

Looking at foreign experiences one detects two distinct general patterns or models for incubator, technology and innovation centers:

- the '*continental European model*' is predominantly publicly funded and focusses on public policy objectives like improving regional economic development and fostering innovative networks.
- The '*anglo-saxon model*' is geared more towards the creation of new technology and science based firms which in turn necessitates close cooperation with and proximity to universities and higher educational and research institutions.

Within that typology, Switzerland has a special position. Although there are much more ITI along the continental European model, private initiators are much more frequent than public funding. Swiss ITI therefore are more geared toward profitability. Thus Swiss ITI are quite distinct from 'first generation centers' in Germany or Austria.

The ITI centers in Switzerland usually follow a *multitude of objectives*, quite often focussed on goals of regional development in a large sense. One main reason is the predominant share of privately operated ITI which have a quite different economic logic than public funded institutions. They are interested in employing the center at full capacity and are therefore focussed on profitability. By doing so, they are not so much interested in a constant flow of incoming and outgoing firms in such a way that the benefits of ITI go to the largest clientele possible. Looking at ITI from a regional development angle, these centers are torn between being profitable and running at full capacity on the one hand or serving as many start-ups as possible in the other.

Nevertheless privately run ITI with no limited time to stay also have positive effects on regional development. They offer very specific quality services which in turn adds up to a favorable climate for start-ups in general and may thus foster a regional 'start-up culture'.

4.3 Incubator centers: the labor market argument

Evidence shows that ITI in general do not have a significant impact on reducing unemployment on the macro economic level. Foreign evaluations point to the fact that qualitative effects outrun quantitative effects by large (Behrendt 1996; Sternberg 1995). There are accounts on how many jobs have been created by ITI centers. Usually these numbers include jobs that would have been created anyway or outside the centers (crowding-out effect) by start-up companies. In the best case, ITI improve the local economic structure and local image.

The more ITI are focussed on technology and research activities the more these centers are located in larger cities, urban agglomerations and are drawing in turn from know-how from universities and higher technical institutions. Therefore, 'high-tech ITI' will not contribute to the improvement of peripheral or economically depressed regions with unfavorable employment structures. Instrumentalization of ITI for regional development in unfavorable economic environments only will make sense when the centers target their activity towards non-high-tech and 'everyday economic activities' start-ups which have to be integrated in a well functioning regional network.

4.4 Incubator centers: their role for structural change

ITI centers are able to contribute to the regional restructuring of economic activities. They may play on the one hand a significant role in establishing innovation networks between existing firms and innovation and technology based start-up companies. On the other hand they are important intermediary actors with regional universities and higher educational and research institutions. It is assumed that such a regional network integration succeeds the more the ITI centers are able to base their activities on the already existing economic potential of that very region. Therefore it is crucial, that ITI can draw financially and institutionally on a multitude of regional actors.

Public support, as one important conclusion, should nevertheless concentrate on initiating and moderating the process for the establishment of ITI centers. Most of the times, public

authorities are not able to pick successfully future economic activities or technologies. But what seems important is to try to diffuse the benefits of ITI on to a broad network of actors and to involve them in these networks.

4.5 Concluding remarks

All participants in the present study apprehended with enormous surprise the extent of ITI already in place and operating in Switzerland. First the survey only wanted to focus on incubator centers which support solely start-up companies. In the early stage of this research it became very clear, that there is no clear-cut distinction between incubators, technology, and innovation centers, and related private and public initiatives to foster and support the creation of new firms in this country.

Almost unnoticed by the broader public and by politics, Switzerland developed a growing number of ITI centers within the last five to six years. It is up to now a more or less bottom-up, self-organizing process, fuelled by private initiative and some proactive public authorities, that leads to the above described multitude of centers and initiatives in Switzerland. By doing so, the ITI centers establish, as a by-product, a new instrument for regional economic development, noteworthy without deliberate public intention.

Our evaluation showed a couple of *positive impacts of ITI centers*. Nevertheless, it has to be added, that this dynamic development is not without *problems*. Lack of horizontal coordination between the various ITI centers and the still very underdeveloped public discourse might lead to a picture of ITI that varies very much in terms of quality and reliability. Flaws in operating concepts and a small scale spatial competition between single communities may lead to a misallocation of resources. On top there is still another aspect: even when ITI operate on a strictly private finance basis – and therefore any risk of failure is covered by private capital – there is a need for a minimum of coordination with regional or local public bodies. In the Swiss context it is a sure fact, that proactive cooperation between various ITI and public institutions increases the positive impacts of these centers on their economic and social environment.

In order to operate ITI centers more effectively we present the following *recommendations* which address at the same time public bodies as well as private initiators:

- *Public authorities* should consider to mandate ITI with certain tasks and delivering services in the context of promotion of start-up firms and regional development. The contracting out of public tasks or duties is well in line with new public management activities which now go about in many countries and many public administrations all around the globe.
- *Incubator, technology and innovation centers* not only get the opportunity to take on some public functions but also some formerly private activities. For example regional or local chambers of commerce more and more are challenged by their member firms to deliver effective and up-to-date services. It is this dynamics that qualify ITI to take on start-up related tasks from private business associations or vocational institutions.

In Switzerland the new federal law on higher educational institutions (HEI; Fachhochschulen) necessitates these HEI to develop their own research and development activities and to enter the 'business' of diffusion and dissemination of such results. In order to fulfill this task it might be helpful to team up with a ITI and to develop a regional or even interregional network or center of competence. This may help to contribute to the improvement of regional innovative capabilities which are more connected to certain features of innovative milieus and complementary networks than to a strict geographical boundary of a region (Koschatzky 1998).

Our survey on features and various activities of ITI finally showed one thing very clearly: start-ups of new firms are not restricted to high-technology activities only. On the contrary, it is the diversity of new firms with economic activities along the whole chain of value-added that finally contributes to the restructuring of a regional or local economic tissue. Therefore it becomes quite obvious that public support has its legitimation where private capital does not dare to invest. Obviously *seed money* is one of these fields of market failure, because private venture capital all too often concentrates only on glamorous high-tech start-ups with expectations for rapid firm growth and consequently high return on investment. The Swiss experience demonstrates that there are ITI which can be run effectively and still follow public interest, that is balanced regional development and a minimum of diversity in economic activities. Thus, ITI can be a meaningful economic instrument, but still underrated in Switzerland.

Bibliography

- Autio, Erkki & Yli-Renko, Helena (1998): New, technology-based firms as agents of technological rejuvenation. *Entrepreneurship & Regional Development*, 1998, Nr. 10, 9. 71-92.
- Behrendt, H. (1996): Wirkungsanalyse von Technologie- und Gründerzentren in Westdeutschland. *Wirtschaftswiss. Beiträge Nr. 123*. Heidelberg: Physica. Zugl. Diss. Univ. Hannover 1995
- European Commission (1996): Comparative study of science parks in Europe: Keys to a community innovation policy. Brüssel, Arbeitsbericht European Commission, 1996 (EIMS publication No 29).
- Galley, H. (1997): Regionalwirtschaftliche Impulse durch Technologie-, Innovations- und Gründerzentren. *Wirtschaftspolitische Blätter*, 1997, Nr. 5, S. 445-454.
- Illeris, Sven & Philippe, Jean (1993): Introduction: The Role of Services in Regional Economic Growth. *The Service Industries Journal*, 1993, Vol. 13, No. 2, April, S. 3-10.
- Koschatzky, K. (1998): Firm Innovation and Region: The Role of Space in Innovation Processes. *International Journal of Innovation Management*, Dec. 1998, Vol. 2, No. 4, S. 383-408.
- Luger, Michael I. & Goldstein, Harvey A. (1989): Research (Science) Parks as Public Investment. A critical assessment. Wien, Arbeitsbericht IIR, 1989 (Interdisziplinäres Institut für Raumordnung; DP 41)
- Malecki, E.J. (1983): Technology and regional development: A survey. *International regional science review*, 1983, Vol.8, S. 89-125.
- Rogers, Everett M. & Larsen, Judith K. (1984): Silicon valley fever. Growth of high-tech culture. 1, New York: Basic Books.
- Sternberg, Rolf, et al. (1996): Bilanz eines Booms. Dortmund: Dortmunder Vertrieb für Bau- und Planungsliteratur.
- Sternberg, R. (1988): Technologie- und Gründerzentren als Instrument kommunaler Wirtschaftsförderung. Dortmund: Dortmunder Vertrieb für Bau- und Planungsliteratur.
- Thierstein, Alain; Wolter, Stefan C.; Wilhelm, Beate; Birchmeier, Urs (1999): Der stille Boom. Gründerinitiativen im Aufwind. Bern, Stuttgart, Wien: Paul Haupt.
- Tödting, F.; Tödting-Schönhofer, H. (1990): Innovations- und Technologietransferzentren als Instrumente einer regionalen Industriepolitik in Österreich. *Schriftenreihe der ÖROK Nr. 81*. Wien
- Westhead, P. & Batstone, S. (1999): Perceived benefits of a managed science park location. *Entrepreneurship & Regional Development*, April-June 1999, N. 2 / Vol. 11, S. 129-154.

¹ This paper draws mainly from the recently published book: Thierstein, Alain; Wolter, Stefan C.; Wilhelm, Beate; Birchmeier, Urs (1999): *Der stille Boom. Gründerinitiativen im Aufwind*. Bern, Stuttgart, Wien: Paul Haupt. The study was jointly executed by the Swiss Federal Office for Economic Development and Labor and the Institute for Public Services and Tourism at the University of St. Gallen, Switzerland. Funding was provided by the Swiss Federal Office for Economic Development and Labor.

² It has to be remembered that the managers of the centers themselves produced these answers and not the firms in the centers.

³ That exactly was the reason to publish the book already mentioned in note 1.