

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

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Only since the early 1990s, when unemployment rates in Switzerland soared to unprecedented levels, has federal technology and innovation policy begun to design their activities 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 centres have begun to spring up. This paper starts by describing the theoretical and methodological background of a survey of incubator, technology and innovation (ITI) centres. In a first step, all cantonal offices for economic promotion were asked to report and to describe incubator facilities, technology and innovation centres within their realm. In a second step a selection of centres were analysed in depth. The key findings are that: (1) ITI centres are most commonly established by a combination of public and private initiatives; (2) the main motive for the creation of ITI centres is to promote start-ups and the innovative potential; (3) most ITI centres offer space to rent and make available joint amenities; (4) ITI centres are predominantly in manufacturing, services, and development activities; their level of technology input is high or very high; and (5) the spatial reach of most of the ITI centre is on the region. Together with selected foreign experiences, some conclusions and recommendations for the operation of such centres are formulated.

Keywords: incubator; technology and innovation centre; federal and regional innovation and technology policy; structural change.

1. Introduction

Incubator facilities, technology or innovation (ITI) centres are quite a new business in Switzerland. Public and political awareness about their existence and their functions in general is very low. In the realm of public policy there are two strands of discussions that are shaping the Swiss reality: the German boom of technology and incubator centres that started in the 1980s and then spread to Austria (Tödtling and Tödtling-Schönhofer 1990, Sternberg *et al.* 1996, Galley 1997). Second, there is the glitter-like discourse about the hopes for copying Silicon Valley and the respective science park boom in the USA (Luger and Goldstein 1991) and the UK (Westhead and Storey 1994, European Commission 1996, Westhead and Batstone 1999).

In Germany, technology and incubator centres serve to define technology policy and the responsibility for it at the regional level. This is one of the most important reasons for the boom of technology and incubator centres in Germany. A second one is

the financial support most of the technology, innovation and incubator centres had received from the German states. Furthermore, they serve as a hope for regional development. The example of Silicon Valley has been a widespread means to underline the hopes and to set technology and incubator centres on the political agenda (Sternberg *et al.* 1996). In the 1990s, these centres were increasingly seen as developers of regional innovative networks or at least important players in such networks. The concepts of innovative networks and milieux were much appreciated by politicians and quickly added to the range of aims of technology and incubator centres. In contrast to regional policy goals, most of the centres develop in cities and, due to their size, received almost all of the available financial support.

In Switzerland, however, there was virtually no debate concerning the use of technology and incubator centres as a regional policy instrument. There was no explicit regional technology policy at all; there was only a discussion about the necessity of an explicit technology policy in the beginning of the 1990s, but with almost no results. Technology policy in Switzerland is merely a special part of economic policy limited to design the regulations and to foster academic education, basic research and the diffusion of new technology. Technology transfer has only been seen as a responsibility of companies. In contrast to Germany or Austria, the absence of political aims and discussions led to a special mixture of private and political initiatives, in which the private initiatives claim to have ambitions in regional development. In effect, they use aims of the political discussion in neighbouring countries as a marketing instrument for their economic goals.

All in all, Switzerland does not have the typical landscape of political initiatives to build up regional networks, to influence the innovation process or to define the role of universities in the development of the economy. Good or bad, the sudden and unprecedented rise of the unemployment rate at the beginning of the 1990s began to change Swiss perception regarding economic development. Only then, federal technology and innovation policy officials began to consider their activities also with regard to employment and the establishment of new firms. Since then, entrepreneurship, new firm foundation, innovative networks and knowledge transfer have been on the political agenda.

1.1 *The definition of ITI centres*

There was a need to define the role of policy in tackling these issues. The promotion of incubator, technology and innovation centres (ITI centres) is but one possibility. To complicate the issue, there is no uniform definition of ITI centres, rather a wide range of notions are being utilized in the public as well as in the scientific debate. These notions go from 'science parks', 'research parks', 'technology centres', 'innovation centres' and 'incubator centres' to 'start-up initiatives' or 'business parks' (Sternberg 1988, Luger and Goldstein 1989). A basic feature to distinguish these centres is to look for *infrastructure*; incubator and technology centres usually offer office space and additional infrastructure geared to their specific clientele.

The notion of ITI centres used in this paper is closely related to the definition put forward by Sternberg *et al.* (1996:2–3):

a locational community of relatively young and mostly newly founded enterprises whose activities mainly consist in the development, the production or the marketing of high

quality technological products, services and processes and which, in the business incubator, have recourse to a more or less extensive offer in commonly-used facilities and advisory services.

In addition to Sternberg's definition we introduce the term 'incubator centre', because of the fact that in Switzerland many ITI centres promote the start-up of new companies but they do not physically offer any office space. These 'non-physical' incubator centres see themselves as competent coaches of newly established companies during their initial start-up phase.

Meanwhile, all across Switzerland, private as well as public ITI centres have begun 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 of the various local and regional activities. These are the reasons why there is very little awareness and very little knowledge of these centres, of their clientele and institutional aspects of successful management and the like.

ITI centres carry much hope and are put in place to follow a multitude of aims. In general management and sponsors of these centres claim to have at least one or more of the following objectives:

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

The reasons for putting up the first science or technology parks may vary in different countries. However, politicians and their political ambitions with regard to ITI centres most certainly were centred on these above-mentioned objectives. Political influence shows in two different ways: in some countries, the initiative to found ITI centres or science parks mostly stem from universities (e.g. USA, UK) and political goals had been added later. In other countries politicians have started the first ITI centre initiatives, sometimes to implement a local innovation or entrepreneurship policy, sometimes 'rather to avoid the appearance of being inert or backward' (Luger 1992: 3). For politicians, ITI centres are a handy tool for proving that their deeds are successful. 'Visible gestures such as a science park do at least demonstrate the willingness to do something and may help to raise an area's image and self confidence' (Grayson 1993: 108).

1.2 Existing research in the field

As mentioned above, Switzerland is a late adopter of the 'ITI-paradigm'. Relevant research thus comes from other countries in Europe and North America. Several studies analyse the aims, structures and spatial impact of ITI centres and similar initiatives. In some countries, lengthy and comprehensive impact evaluations have already been conducted. With respect to ITI centres, Germany (Sternberg 1988, Pett 1994, Behrendt 1996, Sternberg *et al.* 1996, Tamásy 1996, Seeger 1997) and the United Kingdom (Monck *et al.* 1988, Massey *et al.* 1992, Westhead and Storey 1994) may still be the best researched countries. More or less comprehensive evaluations are found in other countries such as the USA (Allen 1988, Luger and Goldstein

1991, Wilem 1991, Mian 1997), Canada (Shearmur and Doloreux 2000), Austria (Tödtling and Tödtling-Schönhofer 1990), Israel (Felsenstein 1994), Sweden (Sahlin-Anderson 1991) or for the whole of the European Union (European Commission 1996).

In general, these evaluations reveal a mixed picture about the success and regional impact of ITI centres and science parks. Luger and Goldstein (1991:181), for example, conclude in their study that half of the science parks are failures and another quarter have to change their goals, because the parks did not live up to their expectations; only one-quarter of all science parks can be regarded as being successful. Most of these successful science parks appeared to be the existing older science parks, which may have an effect of decreasing demand for additional, later built facilities. Furthermore, the success of these science parks seems to be related to large agglomerations with an existing basis in R&D, high-tech activities, universities, a well-developed infrastructure, business-related services and insightful and effective political, academic, and business leaders. However, all these factors still do not guarantee success. On the other hand, success in peripheral regions is possible but only through 'good leadership, good luck, and good planning' (Luger and Goldstein 1991: 176); consequently, Luger and Goldstein advise against new science parks.

Sternberg *et al.* (1996) reached similar results in their evaluation of 108 technology and incubation centres in Germany. Although the authors found some successful technology centres in Germany, still most of the evaluated centres do not live up to their expectations and do not have an observable effect on either the local or regional economy, or on the labour market and structural change within a region. An important reason for this fact is the sub-critical size of these centres in order to have visible effects.

2. The Swiss case study

2.1 *The background*

The evaluations mentioned above had more or less influence in the debate about setting up and managing ITI centres. The evaluation results surely helped to view ITI centres more realistically and pragmatically and less as a political myth for regional development. This change in perception went along with improved understanding in the regional science of core factors for regional development, e.g. more and better knowledge of innovative milieux and networks, of the life-cycle of technology-oriented start-ups and of the complexity of the innovation process in general (Maillat 1998, Maillat and Kebir 1999). Today it seems that in many highly industrialized countries, ITI centres are seen as a part of a network that is designed for regional development purposes. However, the situation in Switzerland is slightly different: cultural and geographical diversity have influenced the *political system* a great deal and have led to a system of dispersed power where the central government has only limited power (Linder 1994). Thus regional development policy and innovation policy were never endorsed strongly by central government but were delegated to the next federal level, the cantons, or to private initiatives (Thierstein and Egger 1998). This background should make it clear that central government had no systematic knowledge about ongoing activities with regard to ITI centres. That deficit, in return, was the starting point for the research presented in this paper.

2.2 *The research questions*

Starting from this background, the authors would like to give a first impression of the present situation in the Swiss ITI landscape, which can serve as an inventory but not as a fully-fledged evaluation. This inventory on the state of the art can serve as the basis for a follow-up evaluation on mid-term impacts and long-term outcome of ITI centres in Switzerland. It is important to mention again that we included not only incubator, technology and innovation centres that offer ‘hardware’ such as office space and software like consulting and networking but also those incubator centres that do not offer rental space but nevertheless promote and coach the start-up of new companies.

The following sections are organized around the main research questions that deal with the structure and goals of ITI centres in Switzerland. Where appropriate comparisons are made with results from evaluations on technology and incubator centres in selected countries. The research questions are as follows:

- who takes the initiative?
- what do ITI centres offer?
- which motives exist for establishing ITI centres?
- which branch and technological orientation does the clientele of ITI centres have?
- are start-ups limited in their stay in ITI centres?
- how far away does an ITI centre attract start-ups?
- how are the start-ups being selected?

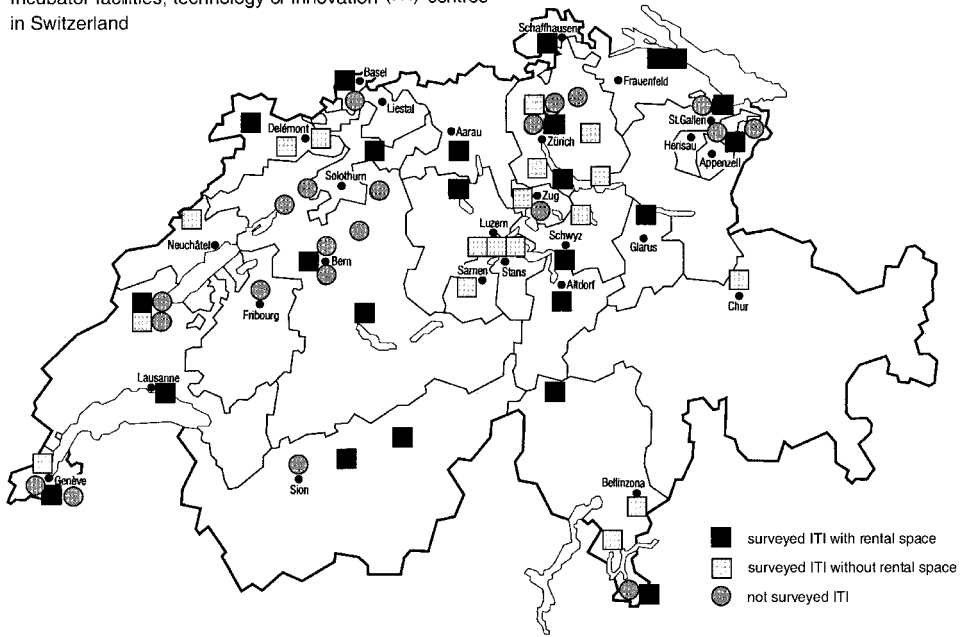
2.3 *The design of the survey on ITI facilities in Switzerland*

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 centres that are located within their cantonal boundary. This approach produced a total of 40 facilities across Switzerland, but with a tendency to agglomerate in the Swiss Plateau, that is the densely populated economic area stretching from west to east (figure 1). One year later, a follow-up survey showed the high volatility of this ‘incubator business’, because there were now 61 centres. This indicates that the 1998 survey did not fully cover all the ITI centres then existing: certain centres 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 centres for an in-depth postal survey. This time it was the managers of the centres who provided the answers to the questionnaire. These nine centres were selected with respect to their geographical location – German, French and Italian speaking parts of Switzerland – and with respect to their focus on start-up activities and services. It has to be mentioned once again at this time that there is no uniform definition of these notions. It almost seems that labels are

Incubator facilities, technology or innovation (ITI) centres
in Switzerland



Source: Thierstein *et al.* (1999).

Figure 1. Spatial distribution of incubator facilities, technology or innovation (ITI) centres in Switzerland.

used at random or to deliberately create an image of modernism or high-tech although quite a number of these centres are not much more than common business parks.

The basic definition of the present authors relates closely to the one put forward by Sternberg *et al.* 1996 (see section 1 in this paper) but adds those ITI centres that promote the start-up of new companies but do not physically offer any office space to rent. These 'non-physical' incubator centres see themselves as highly competent and practiced coaches of newly established companies; an aspiration that shows in some of their web-pages (e.g. URL: <http://www.genilem.ch/>)

3. The results of the survey

3.1 Who takes the initiative?

In Switzerland, 43% of all ITI centres were established by a joint public-private effort. Table 1 shows that ITI centres are most commonly a combination of public business promoters and private companies or other private institutions such as foundations or business associations. Public institutions are engaged in 75% of all ITI centres, private companies engaged in 67% of all ITI centres. One-quarter of all ITI centres were established exclusively by private companies.

In Germany, technology and incubator centres often include the characteristic of being a publicly run facility for regional economic promotion (Behrendt 1996). By

Table 1. Who takes the initiative to establish an ITI centre?

<i>Initiators</i>	<i>Number</i>	<i>%</i>
• Start-up companies themselves	4	10.0
• Economic promotion of cantons	4	10.0
• Other public institutions Including other departments of public administration on cantons, cities or other public agencies, public institutions of higher and public testing laboratories	9	22.5
• Other private companies Including foundations or business associations	6	15.0
• Joint or co-operative partnership	17	42.5
Public involvement	30	75.0
Private involvement	27	67.0

n = 40.

Source: Thierstein *et al.* (1999).

definition they serve as an instrument of innovation policy (Tamásy 1996) because almost all such centres in Germany are run by at least one public institution. In the USA, it is universities – in 60% of the science parks analysed by Luger and Goldstein (1991) – that are engaged as owners or involved with the administration of science parks. The definition of British science parks from the United Kingdom Science Park Association includes the link to a university or to a higher educational institution (Grayson 1993), mostly because such institutions established most of the science parks in the UK. However, it is not clear if the science parks in the USA or the UK should be labelled as private or public.

Regarding the share of private initiatives, the Swiss ITI centres are more similar to the Anglo-American approach. If you look at the number of universities engaged in ITI centres and on the general administrative and legal restrictions to start-ups, the ITI centres in Switzerland are more similar to the situation in Germany. However, this situation is changing in Germany, since universities are more engaged in running technology and incubator centres; any such centres have been supplemented with a technology or business park open to non-start-ups (45 cases in 1993/94; Behrendt and Tamásy 1998: 44).

3.2 What do ITI centres offer?

Table 2 shows that in Switzerland more than half of all ITI centres offer space to rent; 18 ITI centres provide rates below market level. In addition to subsidized rents, 21 ITI centres make available joint amenities such as meeting rooms, secretariat, fax machine, photocopier, etc. Centres with this kind of services typically are called *incubator and technology centres* (Sternberg 1988). In contrast, 43% of Swiss ITI centres do not make available any rental space or technical infrastructure. They are labelled *start-up support initiatives*, which cannot be compared to incubator and technology centres in Germany or science parks in the UK or the USA, because they are excluded from the definition.

Joint amenities are supplied in 21 cases, but training and educational programmes are mostly lacking. More than two-fifths of all ITI centres do not have their own

Table 2. Space and infrastructure of an ITI centre.

<i>Space and infrastructure</i>	<i>Space available/not available</i>	<i>Rent below market level</i>	<i>With joint amenities</i>	<i>With training and education programmes</i>	
				<i>Only pass on information</i>	
ITI with rental space	23	18	21	5	5
%	57.7	45.0	52.5	12.5	12.5
ITI without rental space	17	–	–	5	1
%	42.5	–	–	12.5	2.5

n = 40; partially multiple answers.

Source: Thierstein *et al.* (1999).

Table 3. Services for target groups of ITI centres.

<i>Services of ITI</i>	<i>In-house service</i>		<i>Refer to out-of-house services only</i>	<i>No service</i>
	<i>Number</i>	<i>%</i>		
<i>Consulting</i>	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*	85.0	–	6
Support beyond start-up phase	18	45.0	–	22
<i>Rental space</i>	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.

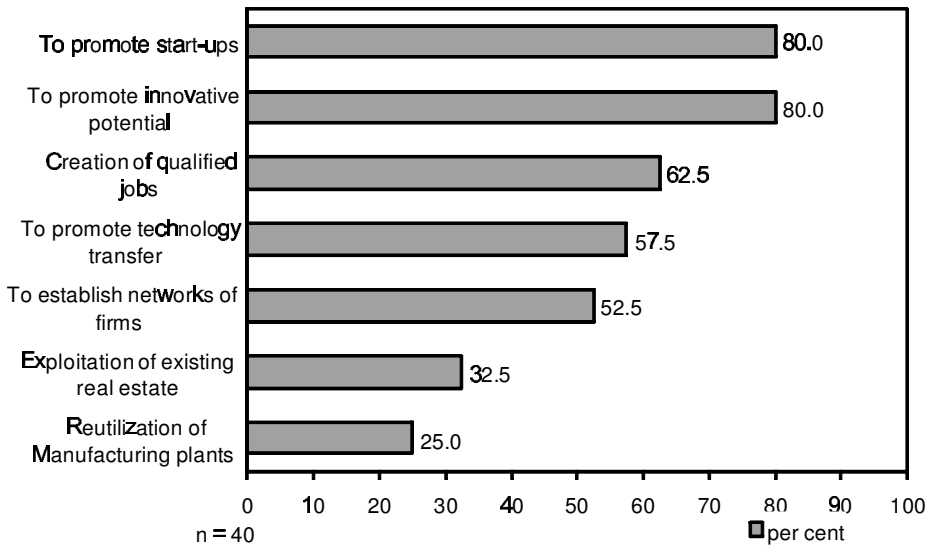
* Three ITI centres included that only offer support beyond the start-up phase.

Source: Thierstein *et al.* (1999).

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 centre improve its market profile: around 90% of all Swiss ITI centres offer consulting services or recommend consultants via third persons. A total of 34 ITI centres support start-up firms in their early stages; 18 centres in addition make services available that go beyond the start-up phase (table 3). Our survey only covered the supply side of ITI centres. Further research, including evaluations of outcome of ITI facilities, should ask the start-up firms if the quantitative and qualitative supply of services is matching their demand. Furthermore it is evident that some of the start-ups do not want consulting services but mainly want to profit from cheap accommodation.

The question of whether special developments of ITI centres exist in Switzerland can be answered only approximately: on the one hand it can be assumed that specialized forms of selection procedures and promotion of enterprise founders have been developed in Switzerland, which are based on various private initiatives for the establishment of ITI centres. On the other hand there seems to be no comparable survey on



Source: Thierstein *et al.* (1999).

Figure 2. Motives for establishing ITI centres.

such initiatives in German-speaking countries. For Switzerland both ITI centres with and without space supply must be defined as innovative forms of the promotion of enterprise founders. The difference between innovative and more conventional ITI centres should be looked up in the combinations of different characteristics. The actors involved and the differences of motives, which led to the establishment of ITI centres, might be the most important factors to form different types of ITI centre.

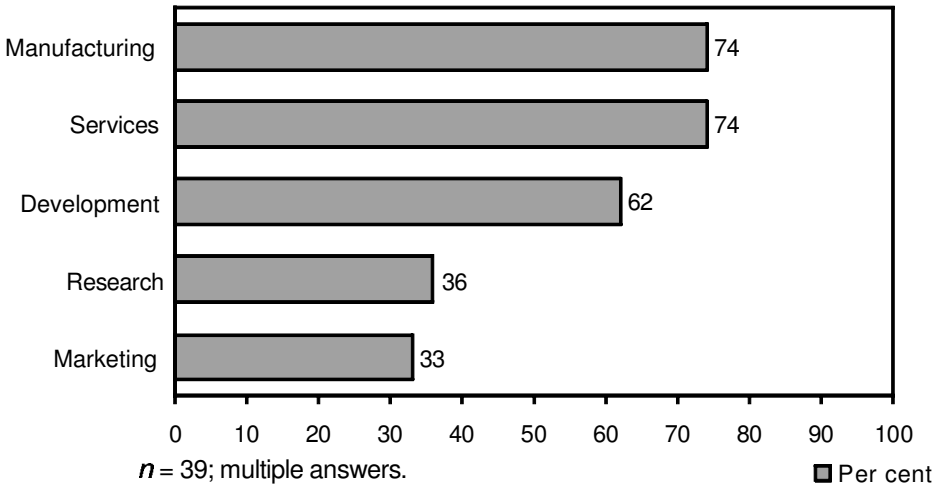
3.3 Motives for establishing ITI centres

The main motive for the creation of ITI centres is to promote start-ups and the innovative potential (80%, figure 2); 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 an ITI centre to concentrate on. More than 60% of the ITI centre focuses on the labour market argument of creating new and qualified jobs. Exploitation of real estate and the re-utilization of manufacturing plants obviously play a minor role.

3.4 Branch and technological orientation of ITI centres

Our survey shows that the target branches of Swiss ITI centres are predominantly manufacturing, services, and development activities (figure 3). Research and marketing activities are of much lower importance. The start-up companies in the ITI centres therefore concentrate on more applied and service-oriented activities.

What level of technological competence do start-up firms display? The basic assumption behind this question is as follows: regional economic development is



Source: Thierstein *et al.* (1999).

Figure 3. Dominant activity of firms in ITI centres.

mainly spurred by new technology-based firms (NTBF) in the manufacturing sector (Malecki 1983, Autio and 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 and Philippe 1993). These technology-oriented activities tend to concentrate in more dense areas or in agglomerations in order to profit from positive agglomeration effects, such as proximity to customers, suppliers, business-related services and venture capitalists (Saxenian 1991, Torre and Gilly 2000).

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

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

To limit the time span that start-ups are allowed to stay within a centre and to use their facilities can be seen as an indication that the ITI centre 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 centres.

Table 4 shows that more than one-half of all ITI centres do not limit the length of stay for their 'customers'.² Three centres in addition keep the option to limit the stay of firms. Thus it can be concluded that these centres are not primarily aiming at

Table 4. Length of stay in ITI centres.

<i>Length of time to stay in centre</i>	<i>Numbers of ITI centres</i>	<i>Stay is limited to:</i>		
		<i>1 year</i>	<i>3 to 4 years</i>	<i>5 to 6 years</i>
Limited	9*	3	2	3
%	29.0			
Partially limited	6	0	3	3
%	19.4			
Unlimited	19	–	–	–
%	61.3			

n = 31; three cases with multiple answers.

* One answer without clear cut declaration on time limits; in certain cases an average time span is used.

Source: Thierstein *et al.* (1999).

promoting the maximum possible numbers of start-ups; they instead focus on employing their facilities to capacity.

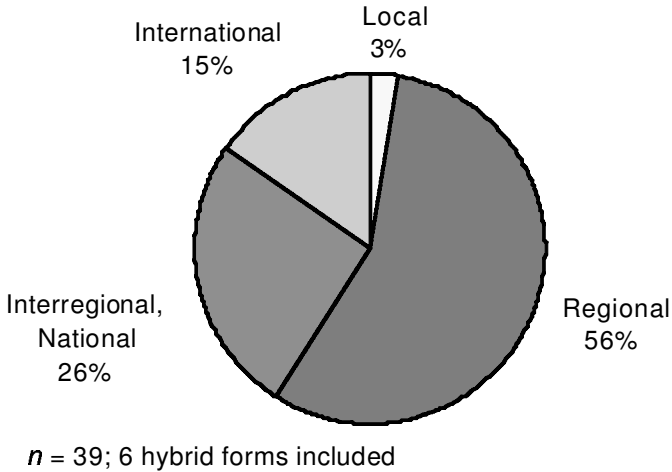
Beside the large number of ITI centres without time limits it is this very time limit itself that is interesting: three centres only give a very temporary support (1 year) while the other 11 ITI centres orient themselves more along the 'natural' life cycle of start-ups. These centres either limit the length of stay to a more 'incentive like' basis of 3–4 years, while others give a more generous margin of 5–6 years. When comparing tables 2 and 4 there seems to be an inconsistency regarding the number of ITI centres offering rental space (23 in table 2) and the total number of ITI centres answering the length of stay (31 in table 4). Evidently, there was a number of ITI centres without rental space, which nevertheless answered the question about staying in ITI centres; these answers then concern the time limit of supplying services to start-ups.

Overall, the survey gives the impression that the ITI centres are not preoccupied with the time span for which start-ups are invited to stay within a centre. One indication is the rather large number of non-responses to that very aspect in the questionnaire (9 centres). Besides problems of comprehension, one reason for the attitude of the ITI centre 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 What is the spatial reach of ITI centre activities?

The centres were asked how far in geographical or spatial terms do their activities reach? Four options were given in the questionnaire: 'local' (close to the location of the ITI centre), 'regional', 'interregional/national' or 'international'. The centres were asked about the locations from where their start-up firms originated.

As expected, most of the ITI centres are focused on the region (figure 4). Nevertheless around 40% see their relations on a national or international level. The local level obviously is of very minor importance. As already mentioned it seems that for almost all ITI centres the local context has a too narrow potential



Source: Thierstein *et al.* (1999).

Figure 4. Spatial orientation of ITI centres.

for technology-based new firms to successfully run an ITI centre in the Swiss situation.

3.7 Selection of *would-be start-ups*

Selecting the 'right' and 'potentially successful' start-up is just as important for an ITI centre as the coaching of new enterprises during the establishment phase. A selective screening mechanism could prevent the establishment of firms that have no chance of survival. Further, it can prevent unnecessary bankruptcies, which are due to insufficient knowledge, lack of contacts or resources, even if the business idea and the business plan indicate a real market potential. Correct evaluation and selection of business ideas can minimize business failures.

At the end of this research project, a moderated workshop was organized where the survey results were presented and recommendations were discussed in depth. Eight managers of Swiss ITI facilities participated along with two representatives of the Swiss Federal Office for Economic Development and Labour. The workshop identified three different selection methods used in Swiss ITI centres (Thierstein *et al.* 1999: 45).

- *The champion method:* In a first phase, ideas for new enterprises are collected and the young entrepreneurs are being sent to courses to learn how to set up a firm. The second phase is called the 'grill phase', where the best ideas are evaluated by a committee of experts. The would-be founders have the opportunity to present their idea within a time span of 15 min and to answer questions afterwards. Both the business idea and the personality of the founders are assessed. Whoever gets into phase three will end up in front of a board of nine entrepreneurs. Would-be-founders who 'survived' that last procedure, receive free business consulting services over a period of 3 years. So far the procedure seems to work satisfactorily and first licenses have already been sold to France (URL: <http://www.genilem.ch/>).

- *The pragmatic method:* The pragmatic method relies on the personal experience of the ITI management in selecting successful founders. The main tool to assess the business idea and the personality of a would-be entrepreneur is an in-depth interview. This intuitive procedure also seems to produce satisfying results; however, the approach strongly relies on personal experience, which must be acquired in the first place.
- *The business plan focused method:* The third method goes more for formal and ‘hard’ criteria and is based particularly on a correct business plan. Technology, financing and the market potential are the most important criteria to assess a business idea. If all criteria fit in, the founder is accepted and gets his or her chance with the ITI centre. It is important to note that trial and error is an intended and explicit part of the game.

Overall, the workshop discussion showed strongly that there is no single success mechanism to select only start-up firms, which will survive over the long run. The overall objectives of an ITI centre facility necessitate a different approach to screening the adequate clientele.

4. Concluding discussion

4.1 General remarks

The following section concentrates on general recommendations for operating incubator centres in Switzerland. The first boom phase of incubator and technology centres in the neighbouring countries of Germany and Austria did not affect Switzerland much. This is due not only to the very low unemployment rate in this country but also 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.

Foreign experiences can help to avoid wrong ways and dead end streets. In this regard slow adaptation of international concepts seem to be more of an advantage. It can give time to carefully evaluate and then draw conclusions. The German experience especially shows that the initial euphoria and expectations that were attached to that instrument did not materialize, although it was important for putting the instrument on the political agenda. Scaling down of expectations and the growing experience in the coaching of young entrepreneurs brought a shift in focus from the original supply-side approach to a demand-side approach of ITI centres. The factual demand within a region sets the capacity and determines the services of ITI centres. This approach prevents high-flying ‘cross-the-board’ services being supplied in the centres.

One very important fact for Switzerland – in comparison to other countries – is the high percentage of private owners or initiators of ITI centres, which want to be profitable on a full cost basis. The reverse side of this coin is that these dynamic private initiatives create a certain lack of transparency about the ITI centre. In general there is little consolidated knowledge about strategies, services and such.³ Considering the comparatively large share of private centres, the instrument of ITI centres has not been utilized much for the purposes of regional economic development.

The main reasons for a certain lack of transparency with respect to ITI centres are as follows. First, there is no vertical co-ordination between the three levels of political organization in Switzerland, that is the federal, the cantonal and the municipal level. Second there also is very little horizontal co-ordination between the ITI centres themselves. Certainly, there is a so-called 'Club of technology centres' in Switzerland, which exchanges experiences on a regular basis. However a lot of ITI centres with lower technology orientation give themselves a very ambitious mission statement that sometimes prevents closer co-operation. On the other hand it is often public bodies that operate with exaggerated expectations of the delivery capacity of such ITI centres.

To sum up, ITI centres find themselves confronted with a three-fold tension:

- to fulfil 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 centres follow a multitude of objectives*

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

- The *Continental European model* is predominantly publicly funded and focuses on public policy objectives such as 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 co-operation with and proximity to universities and higher educational and research institutions. One has to keep in mind that universities established many science parks in the USA and in Great Britain.

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

The ITI centres in Switzerland usually follow a *multitude of objectives*, quite often focused on goals of regional development in the larger sense. One main reason is the big share of privately operated ITI centres, which have a quite different economic logic than do public funded institutions. They are interested in employing the centre at full capacity and are therefore focused 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 centres go to the largest clientele possible. Looking at ITI centres from a regional development angle, these centres are torn between being profitable and running at full capacity on the one hand or serving as many start-ups as possible on the other.

Nevertheless privately run ITI centres with no limited time to stay also have positive effects on regional development. They offer very specific quality services,

which in turn add up to a favourable climate for start-ups in general and may thus foster a regional 'start-up culture'.

4.3 *Incubator centres: the labour market argument*

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

The more ITI centres are focused on technology and research activities the more these centres are located in larger cities, urban agglomerations and are drawing, in turn, know-how from universities and higher technical institutions. Instrumentalization of ITI centres for regional development in unfavourable economic environments, as they prevail quite often in peripheral regions, will make sense only when the centres target their activity towards non-high-tech and 'everyday economic activities' start-ups that have to be integrated into a well functioning regional network.

4.4 *Concluding remarks*

All participants in the present study observed with enormous surprise the extent of ITI centres already in place and operating in Switzerland. First, the survey only wanted to focus on incubator centres which solely support 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 centres, 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 has developed a growing number of ITI centres within the last 5 to 6 years. It is until now a more or less bottom-up, self-organizing process, fuelled by private initiative and proactive public authorities, which leads to the above described multitude of centres and initiatives in Switzerland. By doing so, the ITI centres establish, as a by-product, a new instrument for regional economic development, noteworthy without deliberate public intention.

Nevertheless, it has to be added that this dynamic development is not without *problems*. Lack of horizontal co-ordination between the various ITI centres and the still very underdeveloped public discourse might lead to a picture of ITI centres 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.

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

- *Public authorities* should consider mandating ITI centres with certain tasks and with 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 are under way in many countries and in many public administrations.

- *Incubator, technology and innovation centres* get the opportunity to take on not only some public functions but also some formerly private activities. For example, regional or local chambers of commerce are increasingly challenged by their member firms to deliver effective and up-to-date services. It is this dynamic that qualifies ITI centres to take on start-up related tasks from private business associations or vocational institutions.

Finally, the survey on features and various activities of ITI centres 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 on glamorous high-tech start-ups with expectations for rapid firm growth and consequently high return on investment.

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Notes

1. This paper draws mainly from the recently published book: Thierstein, A., Wolter, S. C., Wilhelm, B. and Birchmeier, U. 1999 *Der stille Boom: Gründerinitiativen im Aufwind* (Bern, Stuttgart, Wien: Paul Haupt). The Swiss Federal Office for Economic Development and Labour and the Institute for Public Services and Tourism at the University of St. Gallen, Switzerland, jointly executed the study. The Swiss Federal Office for Economic Development and Labour provided funding.
2. It has to be remembered that the managers of the centres themselves produced these answers and not the firms in the centres.
3. That exactly was the reason to publish the book mentioned in note 1.

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