

# XXV IASP World Conference on Science & Technology Parks

The role of science parks in accelerating knowledge economy growth – contrasts between emerging and more developed economies



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### *The role of STPs in the creation of a venture capital market: case study of Croatia*

*Plenary Session 2:*

*Fast-tracking developing economies into the global economy - STPs as vehicles*

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# THE ROLE OF STPs IN THE CREATION OF A VENTURE CAPITAL MARKET: CASE STUDY OF CROATIA

## 1. Executive Summary

*In this paper we examine the functional relationship of developing Science & Technology Parks (STPs) as necessary prerequisites and important drivers of the regional knowledge-based economy and the developed Venture Capital (VC) market. Functional relationships between these two vehicles of economic growth are put into context and tested on projected performance indicators and impact (forecasted data) which should result from implementation of specifically targeted technology programs that were recently set up as Government incentives and are managed by the Business Innovation Center of Croatia - BICRO Ltd. in order to stimulate growth of the knowledge economy and technology-driven businesses. In our proposed model, the incentives on both the demand and the supply side of the VC market in Croatia are strong enough to encourage prevalence of the market in the hands of the private sector.*

**Keywords:** Public support programs, science & technology park, technology programs, venture capital

## 2. Secret Weapon of Development

Today emerging countries are in search of businesses that are based on more than just low-cost labor and natural resources. It is essential for a small open economy, such as Croatia, to look beyond current market trends and base its progress on identifying products of the next generation. Skipping the development gap and reaching the output per capita of developed countries is the goal of every developing nation and for some even a motive to start the so-called transition process which should through its transformations and known pitfalls steer the path toward economic progress. Once this process is complete and market capitalism is in place, the real battle, the one with economies of scale and competitive advantages is just beginning. In this global war for market share, low wages, subsidized infrastructure and tax holidays are mere weapons that countries use to attract FDI, ensure new jobs and give a substantial push to exports. But, there is a secret weapon called innovation that lies at the core of all economic programs and is the only tool powerful enough to ensure rapid economic development and catching up with developed countries. Innovative products create high added value, and therefore contribute more to the national GDP. In essentially all countries, Governments utilize their policies to promote innovation and innovation-based businesses, particularly small and medium size enterprises (SMEs). However since the budget and available financing in the developing countries are often insufficient to fund all of the phases of creating a new product, here rationalization is required. On the other hand, in developed countries Governments concentrate their support to the first and the riskiest phase of starting up a technology business (research) and leave the financing of other phases (development and commercialization) to the market. In developing economies, where the absence of risk capital is prevalent, such a policy is usually not applicable. There the creation of a developed risk capital market is an important economic objective, but the lack of second stage and alternative sources of financing is not the only obstacle. Very often transitional economies, as is the case also in Croatia, struggle with higher education institutions not sensitive enough to market needs and application, a system too

rigid to allow the free flow of technology and lack of basic technology transfer infrastructure to assist the few pioneers venturing in academic entrepreneurship.

An overview of some of the key economic parameters for the Republic of Croatia is given in Table 1. From it we can see that the country, with a population of some 4.5 million, creates almost 35 billion EUR in gross domestic product (GDP)<sup>1</sup>. With an average annual growth rate of 4.5 % for the last seven years the Croatian Government is doing the best it can to join the most developed countries and ensure higher living standards for its citizens. Recently, it became obvious to us that a growth strategy based solely on tourism and natural or healthy foods will only get one so far in the developmental chain. A new approach was needed. Encouraged by the Lisbon Strategy of the European Union, the Croatian Government announced an all new economic growth plan. One were the creation of the National Innovation System (NIS) plays an important role in promoting Croatia as a knowledge-based society. Inside that system establishment of Venture Capital (VC) funds and creation of a network of Science & Technology Parks (STPs) are crucial for the advancement of technology transfer and expansion of the technology-based SME sector.

Based on the study of functioning and successful examples of innovations systems, we concluded that for us, as well as any transitional economy, it is crucial to provide support on both the supply and demand sides of the VC market<sup>2</sup>. On the demand side, the Government should provide:

- Seed capital to innovation-based SMEs in the form of conditional grants or soft loans, because seed capital creates demand for later stage forms of financing provided by venture capital; and
- Technology infrastructure in the form of Science and Technology Parks (STPs) which should constantly be actively seeking innovative projects and providing facilities and infrastructure for the incubation of new companies as well as stimulative environments for the young companies to grow and develop into competitive market players.

On the supply side, the Government should initiate establishment of market-driven VC investment funds to provide additional sources of capital for innovation-based companies. STPs with their role in facilitating development of new products and innovation-based companies can provide a real connection to the creation of a functional VC market.

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<sup>1</sup> Croatian National Bank, Report 133, January 2008; available at <http://www.hnb.hr/>

<sup>2</sup> “Business Incubation and Venture Capital: An International Survey on Synergies and Challenges”; paper by E. Callegati, S. Grandi, G. Napier, January 2005

**Table 1: Economic indicators for the Republic of Croatia**

	2000	2001	2002	2003	2004	2005	2006
Surface (in km <sup>2</sup> )	56.538	56.538	56.538	56.538	56.538	56.538	56.538
Population (in millions)	4,381	4,437	4,443	4,442	4,439	4,442	4,441
GDP (in millions of EUR, current prices)	19.977	22.171	24.468	26.232	28.681	31.263	34.220
GDP per capita (in EUR)	4.560	4.997	5.507	5.905	6.461	7.038	7.706
GDP - annual growth rates (in %)	2,9	4,4	5,6	5,3	4,3	4,3	4,8
Average annual inflation rate	4,6	0,4	1,7	1,8	2,1	3,3	3,2
Foreign debt (in millions of EUR)	12.264	13.609	15.143	19.884	22.933	25.748	29.258
National currency: Croatian Kuna (HRK)							
Exchange rate on the 31st of December (HRK : 1 EUR)	7,5983	7,3700	7,4423	7,6469	7,6712	7,3756	7,3451
Unemployment rate (ILO definition)	16,1	15,8	14,8	14,3	13,8	12,7	11,2

Source: Croatian National Bank, Report 133, January 2008.

How can STPs help to increase the deal flow and what can fund managers deliver as their value-added to STPs? How can they together form and strengthen the National Innovation System and push the national economy towards sustainable development and prosperity? This paper will show that, based on the output projections of several newly introduced technology programs, the creation of a VC market without a network of STPs providing infrastructure and soft services to the innovation-based companies is extremely hard or even impossible. STPs that provide renting facilities, business development support services, networking opportunities and access to finance have become essential to creating knowledge-based businesses in today's developed countries.

### 3. The Growing Impact of Risk Capital in an Effort to Achieve Convergence

To promote risk capital investments in SMEs the European Union, in its Guidelines on State Aid, identified an equity gap in the risk capital market inside the Community<sup>3</sup>. This persistent capital market imperfection prevents supply from meeting demand at a price acceptable to both sides, which negatively affects European SMEs, especially high-tech innovative and mostly young firms with high growth potential. Is this story any different in transitional countries? It is definitely not. In any country, the supply of VC or risk capital is critical to help build technology-based companies. For young innovative companies getting access to finance, particularly in the early start-up stages often is difficult. The risk of failure is particularly high and discourages traditional investors, therefore creating a high entry barrier to capital markets. On the other hand, investors in risk capital are willing to take higher risks in exchange for above average returns generated by the companies that typically have high growth potential. The relationships formed between these companies and VC investors create significant spill-over effects in terms of benefits for the

<sup>3</sup> "Community Guidelines on State Aid to Promote Risk Capital Investments in Small and Medium-Sized Enterprises", Official Journal of the European Union, 2006/C 194/02

economy by creating jobs, growing faster than other companies, investing heavily in R&D and accessing international markets. Many developing countries and even some EU countries strive to increase the supply of VC which is valued as one of the major economic policy goals, particularly in transitional economies such as Croatia.

On average in the EU countries some 39.8 billion EUR are raised annually by various private equity funds<sup>4</sup>. VC funds contribute to that amount with 30% but still further development of the VC market is seen as an important objective. In 1997 the first private equity fund was registered in Croatia. Since then, five more have been in operation, together they managed to raise 127.92 million EUR and invested in 45 Croatian companies. These funds operated in the whole Southeast European region and the capital was allocated for investments coming from the entire region not only Croatia, therefore the real size of private equity market in Croatia is difficult to ascertain, but it is obviously underdeveloped. For detailed information on the private equity market please see Table 2 below.

**Table 2: Information on the private equity market in Croatia**

No.	Name of management company	Size of fund	Average size of investments	Total size of all investments to date	Total number of investments to date	Total number of venture capital investments	Overall results of the fund
		in M €	in M €	in M €	#	#	good - average - poor
1	Horizonte Venture Management	20,00	n/a	n/a	2	2	average
2	SEAF Croatia	5,30	0,19	4,53	21	21	good
3	Copernicus Capital	19,40	n/a	16,81	6	5	good
4	Quaestus Private Equity Partners	35,00	2,92	11,67	4	4	average
5	Vienna Capital Partners	40,00	9,00	38,00	4	1	average
6	Croatian Bank for Reconstruction and Development	8,22	0,51	4,10	8	8	poor
<b>TOTAL</b>		<b>127,92</b>	<b>12,62</b>	<b>75,11</b>	<b>45,00</b>	<b>41,00</b>	

Source: "The Market for Venture Capital in Croatia at the Present Time", paper by V. Cvijanovic and A. E. Young published in the proceedings from the 3<sup>rd</sup> Int. Conf. "An Enterprise Odyssey"

Having these poor figures in mind the Croatian Government initiated a Risk Capital Industry Development Program in order to accelerate establishment of VC funds. This program is based on a public-private partnership model, whereby the Government is contributing 30% of the fund's assets, acting as an anchor investor to attract private sector capital. These hybrid funds are managed by a private-sector management company selected in an open bidding process. A

<sup>4</sup> Market analysis and statistical data from the research done by the European Venture Capital Association; available at <http://www.evca.com/>

market-driven approach is mandatory and the Government has no influence on decision-making. The whole program was created based on the Israeli model of the YOZMA program, which is widely viewed as one of the most successful Government programs implemented to boost the VC industry. In almost every country that has tried to establish a sustainable VC market a similar public effort was required. The US is the only economy in the world where the VC market has been self-established and demand-driven right from the beginning. By starting this program the Croatian Government decided to take on two out of three inputs necessary for engineering of the venture capital market. These are: Long term capital and specialized financial intermediaries. The remaining input is represented by business ideas and companies that have the capacity to grow quickly and provide an acceptable exit strategy for the VC investors. These are usually companies based on high technology or with high technology content. Consequently, it can be stated that the VC market is oriented towards financing of technology-based companies.

#### 4. Fostering Development of Technology-Based Companies through STPs

Technology transfer is dependent on the organization and functioning of the NIS, a wide range of government policies, as well as the local entrepreneurial climate and values of society. Typically, European countries such as Denmark, United Kingdom and Finland which have strong NISs, wide ranging supportive policies in all areas impacting innovation (for e.g. matching innovation and technology policy with SME-related policy), favorable legislation for getting new products onto the market and a degree of entrepreneurial freedom and high social awareness for innovation and entrepreneurship, rank continuously well in the World Economic Forum competitiveness ranking. Croatia ranks 57 in the GCI 2007-2008<sup>5</sup>. Additionally, the World Economic Forum Report ranks technology transfer from universities to business particularly low in Croatia. The cooperation of the business sector with higher education institutions and research institutes is still unsatisfactory and as a result technological capabilities of the industry, particularly smaller companies and SMEs are inadequate and suffering. According to current published reports, the level of innovativeness is 10 times lower than in EU countries and the technological lag is discernable<sup>6</sup>. This inability to commercialize innovations at a level comparable to the EU and also to several transitional economies raises a number of questions that seek answers and more importantly immediate actions.

Today enterprises in Croatia are faced with the problem of adjusting to a new, highly competitive business environment. Literally, in tendency there is no market that would allow survival of companies unless there is strong and steady effort related to innovation generation, adoption and above all, commercialization. Many of the traditional markets for Croatian products and companies have declined or disappeared over the last two decades as a result of the break-up of the former Yugoslavia, the demise of many long established large companies, and the overall economic situation in the country. In addition, protection from foreign competition has left many businesses ill-equipped to deal with the realities of a more open market. There is also a mismatch, for historical reasons, between the research base and the needs of industry, amplified by the implosion of R&D potential, especially in the business sector. The incentives for innovation commercialization were still weak until recently.

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<sup>5</sup> "The Global Competitiveness Report 2007-2008" published by The World Economic Forum; available at <http://www.gcr.weforum.org/>

<sup>6</sup> "Outline Status Report on Croatian Industry, Finance, Science and Technology" published by the Institute of Economics Zagreb, Croatia. December 2002

Supporting STPs and other similar vehicles which assist technology business start-up and entrepreneurs to adopt innovation in product or process development are among the most widely recognized and employed innovation support measures that the Governments use to promote the culture of innovation and competitiveness, and increase the creation and growth of technology-based companies. In Croatia, some 50 or so technology infrastructure facilities (including technology centers, business incubators and technology parks) have been implemented in the recent decade<sup>7</sup>. Exact quantification is difficult since some operate under similar name or as business centers within free zones, with varying activities<sup>8</sup>. Nonetheless, this could in itself be considered an achievement, serving as potential for business development. However, only 10% of those centers can be linked with technology content or aiming at predominantly technology-based businesses. Even fewer can be linked (either formally or through networks) to a University or some other technology source or provider. The centers and parks established in Croatia consist of a shareholder structure coming mostly from the public sector, with local authorities such as cities and municipalities playing a major role, and only very few have been implemented together with a private partner or company. This puts them in real danger of not being sufficiently market-driven. A recent survey conducted on 26 technology parks and business incubators around the country indicated that 17 out of 19 are funded through some form of government subsidy, and only 4 out of 17 have reached self-sustainability levels between 70-100%, while most (9 out of 17) operate at around 30-50% self-sufficiency. The major revenue source and at the same time the main product offered to their clients, is renting of space. Interestingly, most state as their principal concern insufficient space capacity and lack of funding<sup>9</sup>.

This current status of technology infrastructure facilities in Croatia is quite conceivably a consequence of no integrated incubator or science park policy and a rather extemporaneous approach in the past. Coupled by inadequate funding and lack of interest from stakeholders in the process, the results are perhaps not surprising. However, recently the Government has taken steps to create an adequate framework for the creation of infrastructure facilities that would fit the needs of the local economy and key stakeholders in the process - the Universities and R&D institutions on the technology supply side, and the business sector with small and medium-size enterprises searching for a technology edge and international companies looking to acquire promising technologies on the demand side of this technology transfer equation. Through its agency BICRO Ltd. (Business Innovation Center of Croatia) a framework of five technology programs has been created that should extend a significant push towards assisting development of the NIS. BICRO's task is to strengthen economic structures in Croatia through implementation of technology support programs, with the aim of facilitating technology transfer and commercialization activities primarily in the SME sector, contributing to the creation and development of private equity industry, especially VC, and promoting the establishment and development of STPs, incubators and other related infrastructure. In 2006 BICRO began carrying out the following technology support programs:

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<sup>7</sup> "Competitive Croatia - Making Technology Work" a report by Fritz Ohler and Dick de Jager, Technopolis Forschungs- und Beratungsgesellschaft mbH, Wien. October 2003

<sup>8</sup> "Benchmarking of Business Incubators" European Commission Enterprise Directorate-General Final Report by the centre for Strategy & Evaluation Services. February 2002

<sup>9</sup> [Survey - Entrepreneurship Incubators and Technology Parks in Croatia 2007.] in *Croatian*, a study published by the Entrepreneurship Incubator BIOS Ltd. and Audeo Agency. January 2007

- A Seed Capital Program directed at innovation commercialization which aims to ensure a direct and sustainable increase in the number of knowledge-based start-ups and SMEs by offering conditional loans on a 70:30 participation bases to fund innovative product development and commercialization.
- The Technology Infrastructure Development Program aims to provide matching grant funding based on competitive selection to demand-driven technology infrastructure projects in order to extend support to commercialization of research outputs and development and growth of knowledge-based SMEs by ensuring appropriate infrastructure and soft services.
- A Risk Capital Industry Development Program is set up as an initiative in order to encourage potential fund managers to start venture capital funds in Croatia by providing a 30% anchor investment per VC fund.
- The Research & Development Program is intended to stimulate SMEs to invest in R&D activities by providing matching grants for starting cooperative projects together with public research institutions.
- The Business Competitiveness Upgrading Program assists SMEs to become more competitive by investing in processes to increase their productivity, improve product quality, upgrade business organization, helping in the patenting procedure, product design and environmental protection.

These programs fund innovative technology projects with the aim of increasing the competitiveness of Croatian SMEs and creating other conditions, which are necessary for the successful exchange and flow of ideas and knowledge between the scientific community and the business sector. In the following chapters of this paper we will focus on the two programs that should provide pillars to the entire process.

## 5. To Incentives the Supply - YOZMA Approach

Risk capital industry needs to be based on private ordering, a form of contracting structure that was developed in the US to manage the extreme uncertainty, information asymmetry and agency costs that inevitably threaten early stage, high technology financing<sup>10</sup>. That means that the first step in creating a VC market is to replicate the US venture capital contracting template and implement it in the local investment practices. Second step in engineering a venture capital market is confronting a simultaneity problem, which states that three central inputs, mentioned earlier, are necessary to the engineering process. Where each of these inputs will materialize if the other two are present, but none will surface in separation of the others. In the US, as explained before, the simultaneity problem was solved organically, but in the countries looking to develop a venture capital market it is up to the government to solve the problem. Different Government programs are a result of public intervention in the development of a venture capital market. Most such programs, however, have been unsuccessful due to the reason that most

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<sup>10</sup> “Engineering a Venture Capital Market: Lessons from the American Experience”; paper by Ronald J. Gilson, November 2002, Stanford Law School



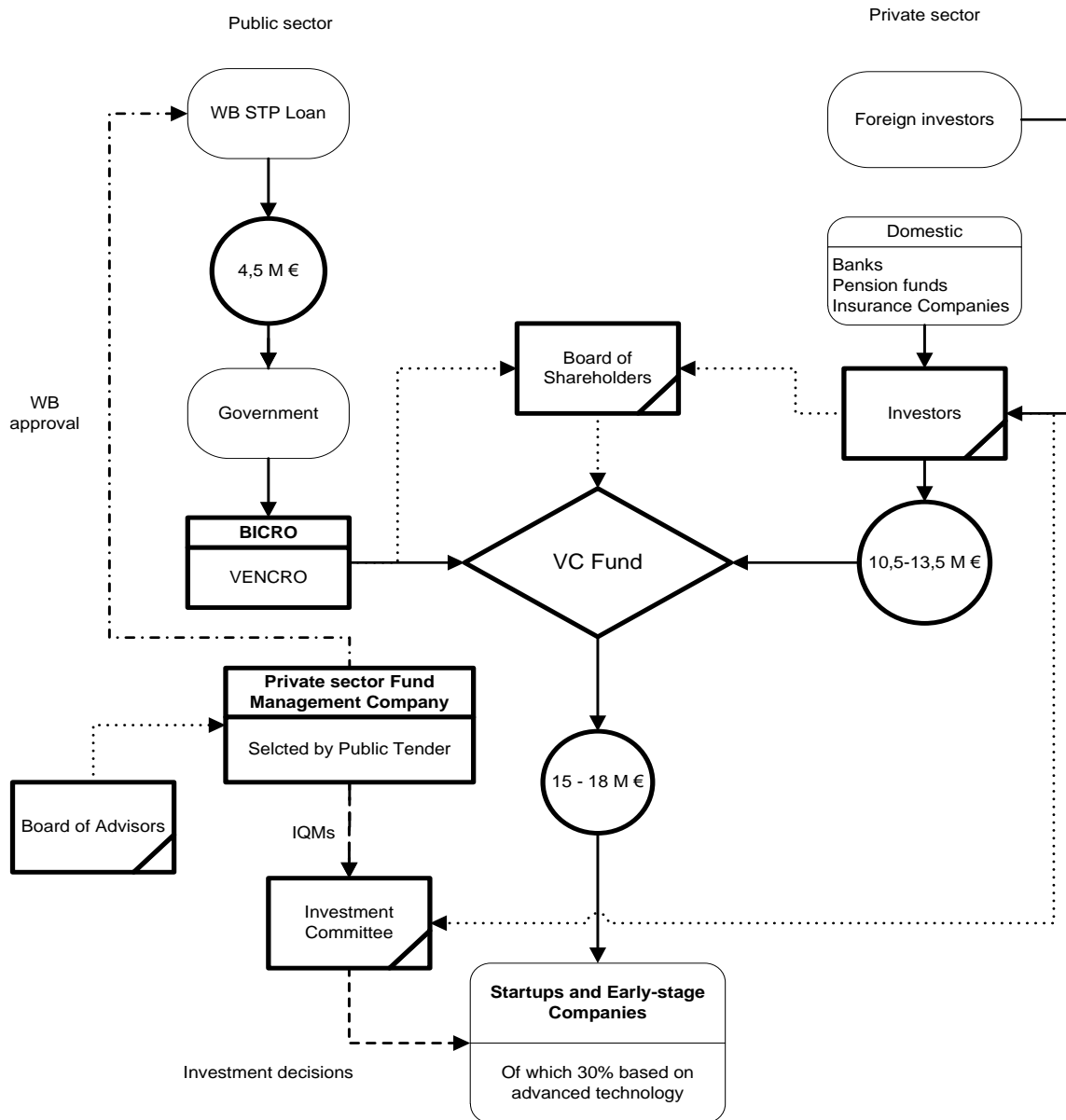
Government programs have tried to deal with the simultaneity problem by having the Government both provide capital and itself act as the financial intermediary. That is why our Croatian program has been specially designed to target the specific needs of the supply side of the venture capital market. And as such, the main objective of the program is to develop a risk capital industry in Croatia. In order to succeed, where many have failed, a private sector capital allocation decision plays an important role in providing capital to willing entrepreneurs, where the role of the Government is to provide incentives for all the participants, and initiate establishment of local VC Funds, by taking upon itself the role of being the anchor investor. Beside this important role, the Government also has an important task in creating the appropriate legislation framework for risk capital investment funds.

The program was started with the intent to initiate a VC Fund to help build viable technology-based enterprises. The Fund is operated by a private sector management company selected based on the pre-defined criteria through a public tender. During the tender, the following criteria were most important:

- Management team & advisory board track record
- Access to the sources of deal flow
- Quality of post-investment support as a form of added value for the portfolio companies.

In the application period seven separate expressions of interest were received, and in the end three final applications were submitted. All of them were very good, but because of the limited budget only one received the mandate to establish the first public-private VC fund in Croatia. As a result of the program's activities a Mistral VenCro Fund was established recently. Through the Business Innovation Center of Croatia the Government invested 4.5 M Euros and it is expected that the Management team will raise additional 15 M Euros from the private sector. The purpose of this pilot fund is to check the current market conditions for VC investments in Croatia and if successful, to stimulate foreign and local investors to invest in equity of Croatian technology-based firms. The various funding processes of the program are summarized in the following diagram:

Diagram 1: Risk capital industry development program



It is expected that the fund will invest in 12-15 early-stage companies. The VC industry best practice indicates that for this number of investments it is necessary to go through 30 to 40 business plans per investment. In transitional economies this number is even higher, due to a low quality deal flow, so it is either expected that the management team should go through at least 600 business plans, or the quality of the deal flow should be increased. This is where the STPs come into play. Their purpose in screening commercially viable projects and ideas, in helping to commercialize them, and in incubating promising technology-based start ups and helping them to grow and develop can significantly contribute to the creation of stable deal flow for the VC investor, both in quantity and quality. It is a mutually rewarding process since the firms that are

housed within or using services of the STPs are often in need of second stage funding in order to grow and become global market players.

## **6. Demand Creation - Targeting Commercially Viable Technologies**

The aforementioned Technology Infrastructure Development Program at BICRO is set up to attract projects for establishing, upgrading and developing suitable technology infrastructure facilities, providing both affordable office, laboratory and production space for technology-based start ups and even more importantly, appropriate business development services for the young innovative companies (YICs) to grow and become profitable. The program grants up to 50% of total project costs to Technology Centers, STPs, Technology Incubators and R&D Centers, including external management fees and services. The projects are selected by competitive open calls and screened for market viability, self-sustainability, services portfolio and output indicators. Management must be outsourced to non-public entities, private companies or NGOs in order to provide incentive and share the risk. Last year the program funded six smaller-scale regional technology projects. Three more larger and topic-oriented projects are in the immediate pipeline, including for establishment of the first university-affiliated STP in Croatia. Six new projects are in the phase of preparing business plans using technical assistance of the program. Table 3 gives an overview of the current developments in this program and sector.

**Table 3: Technology Infrastructure Development Projects implemented or in preparation in Croatia**

No.	STP Project	Lead institution	Region	Available space for incubation	Projected number of incubated tech-based companies
					5 year period
1	BIOCenter - Biotechnology Incubator	Business - Innovation Center of Croatia - BICRO	CE	3.550	31
2	Science and Technology Park Rijeka	University of Rijeka	A	2.550	19
3	Mariculture Business Innovation Center	University of Dubrovnik	A	N/A	50
4	Technology Park Varazdin	Technology Park Varazdin Ltd.	NW	900	25
5	Robotics and Mehatronics Educational Center	Zadar County Development Agency Ltd.	A	500	15
6	Technology Business Center Medjmurje	Regional Development Agency Medjmurje	NW	850	25
7	Product Development Center	Faculty of Mechanical Engineering and Naval Architecture	CE	N/A	N/A
8	Center for Technology, Innovation and Consultancy	Faculty of Electrical Engineering and Computing	CE	N/A	N/A
9	Industrial Product Development Center	Center of Technology Transfer Ltd.	CE	500	10
10	Science Incubation Center	Technology Development Center Osijek Ltd.	CE	1.200	45
11	Science and Technology Incubator	University of Split	A	N/A	N/A
12	Business Incubator Technology Department	Business Incubator BIOS Ltd.	CE	2.000	N/A
13	TIBRO	Technology Innovation Center Rijeka Ltd.	A	600	10
14	Innovation and Spin-off Department	Technology Center Split Ltd.	A	1.080	25
15	Business - Innovation Center Nova Gradiska	Industrial Park Nova Gradiska Ltd.	CE	1.160	30
<b>TOTAL</b>				<b>14.890</b>	<b>285</b>

\* Regions of Croatia: A = Adriatic Croatia, CE = Central and Eastern Croatia, NW = North-West Croatia

The size of the physical premises ranges from 700 square meters to 5.500 square meters in net floor area. On average this is enough to accommodate around 20-25 tenant companies at any one time. Typical services provided by the program's infrastructure projects include accounting, legal and other related services; feasibility study and business plan preparation, market research, sales and marketing assistance; help with raising grants, seed capital, venture and bank financing; business planning and forming a company; training to develop business skills; advice on development of new products and services, help with patenting application, etc.

A few of our new projects target specifically the following types of services: pre-incubation and incubation packages and programs, commercialization strategies and licensing, contract manufacturing of specific products, as well as contract research and development. We have

observed that the projects that tend to have a more structured and specialized services portfolio have a higher success rate and shorter payback period for their stakeholders. Typically, the projects can facilitate development of 2-5 new technology-based start-ups annually. In Croatia, to achieve this goal the STPs must take pro-active and aggressive steps towards raising awareness for the value of innovation and benefits of commercial exploitation of research results, because to a prevailing academic, inventor of a potentially interesting technology, and sometimes even to the R&D institutions themselves, the benefit is not always self-evident.

In order to help development of successful new high technology companies, the STPs must have carefully structured incubation programs consisting of attracting and screening interesting business ideas out of their immediate environment. The most promising business ideas go through an admission process whereby they are admitted as tenant projects or companies to the STP and granted incubatee status. Incubatee companies have access to pre-defined business development packages consisting of mentoring and consultancy support, ad hoc advice by business development specialists in their focus area, and sometimes small financial support of the STP for proof-of-concept, patenting or similar process. In effect, STPs are ideally placed to help filter the companies with the most promising business plans and potentially marketable technologies and pitch them to VC investors at the appropriate stage of their business development.

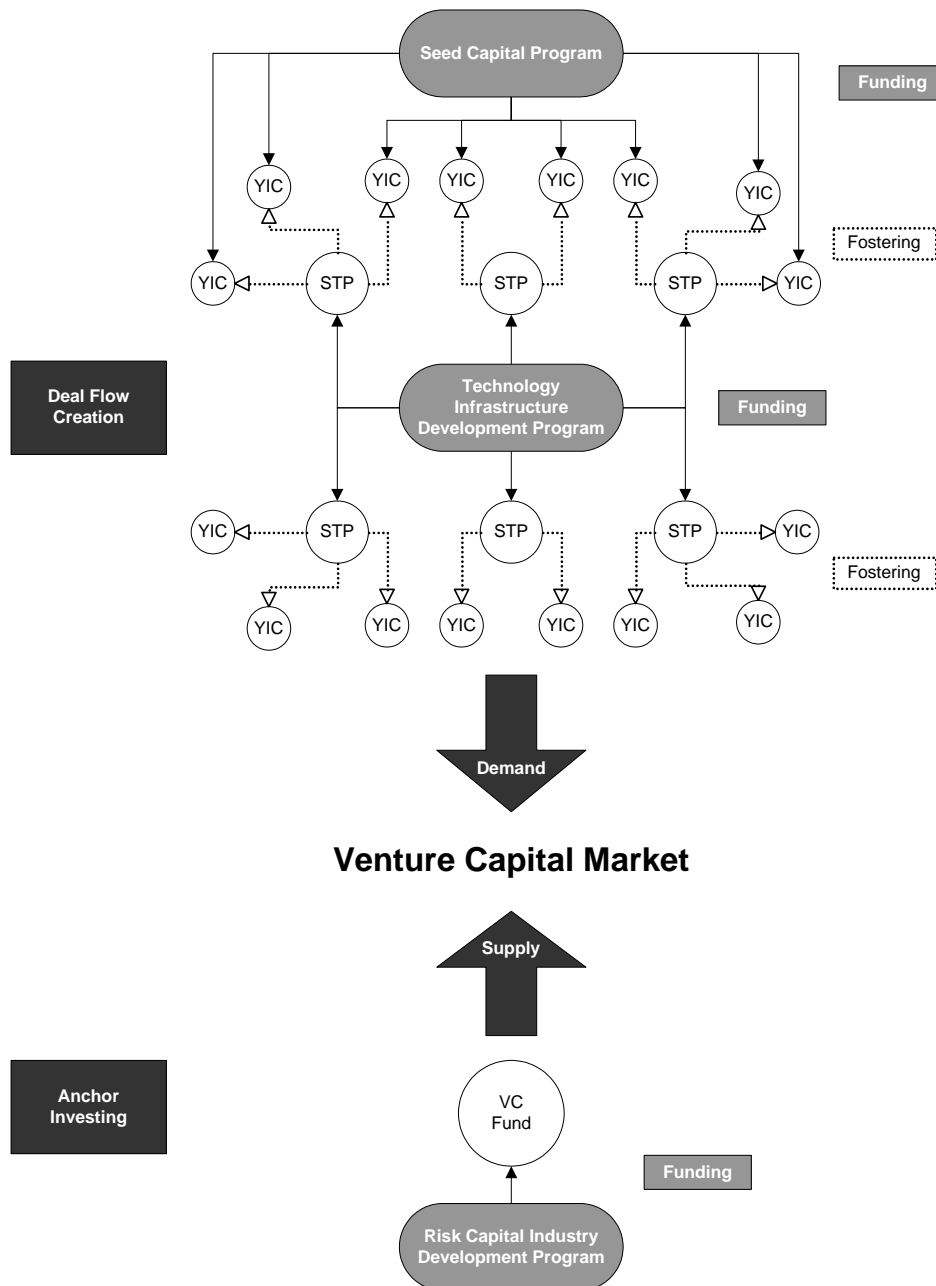
## 7. Conclusion

In order to push Croatia towards a knowledge-based economy the creation of a VC market is of utmost importance. The role of STPs in the process of creation of deal flow and of fostering young innovative companies (YICs) is crucial for developing the venture capital industry. Successful interaction between VC investors and STP counterparts, on the supply and demand side respectively, forms a stimulative environment for the commercialization of technology and generation of new ideas.

In the case of Croatia as presented in this paper, the established Mistral VenCro Fund should invest into 10-12 high technology companies and to do so, the fund managers will have to screen 200-300 high quality business plans. The STP network that is being developed through the Technology Infrastructure Development Program should help increase the availability of business plans acceptable to VC investors. Our projections of the number of incubated companies by this network suggest that this scenario is probable since almost 300 new technology-based companies should be incubated.

In our model, shown in diagram 2, the incentives on both the demand and supply side of the VC market in Croatia are strong enough to encourage prevalence of the market in the hands of the private sector.

Diagram 2: Engineering a VC market - the Croatian experience



The Business Innovation Center of Croatia - BICRO Ltd., as the main technology financing agency in Croatia, has recently launched, based on the above considerations and findings, technology programs which support creation of the supply and demand side of the risk capital market in order to transform the national innovation system and bring a transitional economy more towards knowledge-based. Our Seed Capital Program provides initial financing to technology-based start ups for the development of new and innovative products. The Technology Infrastructure Development Program supports establishment and growth of STPs by providing grants and soft loans to projects which demonstrate a value-added services portfolio for their clients and

community and project self-sustainability after the fifth year of operations. The Risk Capital Industry Development Program has an objective to provide alternative sources of finance to innovative technology companies by establishing venture capital investment funds currently lacking in Croatia. Each program assumes equal participation of the public and private sector.

We stipulate that the success in the creation of a developed VC market in Croatia is dependent on the outcome of these programs as well as the ability of STPs to identify, encourage and provide appropriate services to innovative individuals and projects in their early stages and encourage as well as enable technology transfer and growth of innovation-based companies.