INTRODUCTION

Many authors have researched various aspects of state involvement on venture capital market. One of the most comprehensive books is written by Gompers and Lerner (2004), which presents systematically how venture capital industry works in the United States. They examined conditions and circumstances under governments can efficiently act as venture capitalists. They concluded that governments should help in the financing of small companies as it generates a positive social effect. This conclusion is supported also by other researchers (Harding, 2000; Sohl, 1999). Lerner (1999) examined the long-term effects of US venture capital programs called “Small Business Innovation Research” (SBIR). This program has run from 1983 to 2003 and had distributed 13 billion dollars to small high-technology firms.

The OECD survey (1997) categorized government programs as follows: 1) providing sources to invest in small companies, 2) providing financial incentives for investing in small companies and 3) regulations for venture capitalists. Government venture capital schemes intend to capture public benefits in terms of increased innovation, economic growth and job creation. According to EU financial market policies the role of venture capital finance is to facilitate employment and improvement in productivity (Schelter, 2006). Garbade (2011) did a comparative analysis of venture capital financing by U.S., British, German and French Information Technology Start-ups The EU also started it’s own venture capital program called Jeremie, which we will examine in the upcoming chapters regarding the Hungarian market.

Many researches were published concerning Hungarian venture capital market and financing. Most relevant publications are presented briefly later in that article. In the upcoming chapters, we present the model of the European Union and the state involvement in the Hungarian venture capital financing.

MODEL OF THE VENTURE CAPITAL MARKET IN HUNGARY

The most important actors of the Hungarian venture capital market are displayed on Figure 1. The target companies can be distinguished based on three stages of their business development: seed, start-up and expanding enterprises. We are going to focus on seed stage enterprises that can be supported by incubator houses or accelerators. There is no sharp borderline between the two types supporting entities. The Vállalkozói Inkubátorok Szövetsége (VISZ - Association of Entrepreneurial Incubators) gives all its support market participants to found more entrepreneur incubators.

Other groups of important actors are the venture capital fund management and the capital funds. The Hungarian Private Equity and Venture Capital Association (HVCA) represents the interests of the whole private equity and venture capital sector in Hungary. Its mission is to support its members and promote adherence to the highest possible professional and ethical standards. Another important actor is the Central Bank of Hungary (CBH – in Hung. Magyar Nemzeti Bank; MNB) who plays a supervisory role. Until the year 2013 the supervision was performed by the “Pénzügyi Szervezetek Állami Felügyelete” (Financial Supervisory Authority), which merged with the CBH.

On the one hand, governmental participation appears in the foundation of venture capital fund managements on the other hand in subsidizing funds. The EU involvement manifests by providing financial sources, distributed via tenders. The tenders of the EU funds are coordinated by the Hungarian Development Bank Plc. (HDB). Earlier this task was performed by the Magyar Vállalkozásfinanszírozási Zrt. (Hungarian Business
Financing Plc) which was merged into HDB in 2015. All the plans containing state subsidy in terms of EU regulation must be announced to the authority of the State Aid Monitoring Office (SAMO). It is responsible for examining competition regulatory aspects of state subsidies. As a rule, state subsidy is banned in the EU as it distorts market competition. The state can intervene only if there are market failures in a segment.

Financial sources for starter enterprises according to different stages of their life-cycle are as follows:

- The “seed stage enterprises” often possess merely the product/service idea (“idea company”). Investors of these companies are usually business angels, seed funds, accelerators, or the 3F (Family, Friends, Fools).
- “Start-up enterprises” already developed an operating prototype and have some market response on the product or service. These enterprises are beloved targets of venture capital funds.
- The “expansion stage enterprises” have an established business but need additional financing to expand further on the market (marketing expenses, and to cover the initial losses). Venture capital funds and private equity investors are the typical investors of these companies.

In these early stages the enterprises cannot count on bank loans. But as we see venture capital funds are present in each of the three stages, emerging in several forms (Walter, 2014a).

One typical problem of starter enterprises is the lack of an economic/financial expertise to set up a business plan to present to potential investors. On the other hand, it is hard for starter companies to set up a feasible business plan, because the operation, business model has not evolved completely yet. Furthermore, the product/service creates many cases a “blue ocean” in the sector. As there are no competition and benchmark in this case, so business plan should focus on how customers could be convinced. Good examples from such innovations from the near past are: “pick pack point” that is widespread package sending method by now; the smartphone; the smartwatch; virtual reality headsets. Not only is the forecasting of revenues difficult in such cases but the estimation of costs also.

**Incubator houses and accelerators**

On the Hungarian market there is always confusion in distinguishing incubator houses and accelerators in their name and also in their provided services. **Incubator houses** do not invest, they just provide professional business support and infrastructure – e.g. office space, office and business related services – to start-ups on a favorable price in the growth stage of development. In Hungary, the Vállalkozói Inkubátorok Szövetsége coordinates the main traditional incubator houses:

- Közép-dunántúli Regionális Innovációs Ügynökség Nonprofit Kft.
- Prímom Vállalkozói Inkubátorház és Innovációs Központ
- Dél-Dunántúli Regionális Innovációs Ügynökség Nonprofit Kft.
- Főnix Inkubátorház és Üzleti Központ
- Budapesti Politechnikum Alapítvány
- Bács-Kiskun Megyei Angol-Magyar Kisvállalkozási Alapítvány
- Vállalkozói Központ Közalapítvány, Székesfehérvár

**Accelerators** support starter enterprises in implementing their business idea. The starter entrepreneurs take part in a training to develop the given business activity. The program usually lasts for a couple of months. Entrepreneurs can meet business mentors via the business network of the accelerator, and establish their presence in the given industry sector. Certain accelerators – in return for a small equity share – occasionally even provide capital for the start-up company. It becomes common, that venture capital investors establish accelerators to finance the most
promising enterprises from their own seed funds. An example for this is the SeedStar accelerator of DBH Investment Plc., which defines itself as an incubator house and as an accelerator. It organized the SeedStar Battle start-up competition in April, 2015, where the presenting starter enterprises were evaluated by a professional jury, moreover competitors had the opportunity to meet venture capital investors as well.

VENTURE CAPITAL FUND MANAGEMENT AND FUNDS

The VC fund management is legally separated from the fund it handles. The fund management collects liquid funds from different investors into the VC capital fund. The fund itself is without legal personality, and its role is to finance investments made by the capital fund management. One of the legal requirements for the establishment of a fund is the completion and authorization of the Management Guidelines. Among many conditions, it fixes the investment strategy, the target industry, the target development stage of the enterprises and also determines the expected return and investment tenor. Similarly, to the stages of development by start-up enterprises, we can differentiate “seed”, “start-up” and the “expansion funds” based on their investment strategy.

The fund management charges a fund with management fee for their services. It mainly covers the cost of the operation of the fund management (infrastructure and employees). With the expiration of the fund’s lifetime the accumulated amount in the fund must be paid back to the investors.

It is important to differentiate the expected return from a single investment and the expected return of a total fund. Table 1 shows the returns expected of a single investment by the US venture capital investors in different stages of development by the enterprises. Obviously, the expected return of a single investment is the highest at companies in the seed stage, where the chance of survival is the lowest. As the enterprise develops, the probability of survival becomes higher and the expected return of the investment decreases.

<table>
<thead>
<tr>
<th>Life cycle</th>
<th>Expected returns of Venture Capital in the US</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seed</td>
<td>&gt;80%</td>
</tr>
<tr>
<td>Start-up</td>
<td>50-70%</td>
</tr>
<tr>
<td>Expansion 1st round</td>
<td>40-60%</td>
</tr>
<tr>
<td>Expansion 2nd round</td>
<td>30-50%</td>
</tr>
</tbody>
</table>

Source: Sahlman-Scherlis (2003)

While some of the investments produce great returns, several of them end up with a failure. That is why the expected return of one single investment is high, but realized return of the fund is much lower. (See Table 2 in case of US venture capital funds). It can be seen that in the seed stage expected return if 80% for a single investment, while the realized three-year-long annual return was 4.9% and the biggest return was 32.9% during a ten-year-long interval.

<table>
<thead>
<tr>
<th>Investor / index type</th>
<th>3 years</th>
<th>5 years</th>
<th>10 years</th>
<th>20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early/seed VC</td>
<td>4.90%</td>
<td>5.00%</td>
<td>32.90%</td>
<td>21.40%</td>
</tr>
<tr>
<td>Balanced VC</td>
<td>10.80%</td>
<td>11.90%</td>
<td>14.40%</td>
<td>14.70%</td>
</tr>
<tr>
<td>Later stage VC</td>
<td>12.40%</td>
<td>11.10%</td>
<td>8.50%</td>
<td>14.50%</td>
</tr>
<tr>
<td>All VC</td>
<td>8.50%</td>
<td>8.80%</td>
<td>16.60%</td>
<td>16.90%</td>
</tr>
</tbody>
</table>

**Table 2. Returns Earned by Venture Capitalists Looking Back from 2007**

<table>
<thead>
<tr>
<th>Benchmarks:</th>
<th>3 years</th>
<th>5 years</th>
<th>10 years</th>
<th>20 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>NASDAQ index</td>
<td>3.60%</td>
<td>7.00%</td>
<td>19.0%</td>
<td>9.20%</td>
</tr>
<tr>
<td>S&amp;P index</td>
<td>2.40%</td>
<td>5.50%</td>
<td>1.0%</td>
<td>8.00%</td>
</tr>
</tbody>
</table>

Source: Damodaran (2009)

Based on the numbers of the two tables we can state that the realized returns achieved by the venture capital fund are deeply under the expected returns of a single investment, but over the returns of some stock market indexes like NASDAQ index and the S&P index.

On the Hungarian market Karsai (1997) estimates the expected return to 35-50% in 1997 and to 30-40% in 2002. Estimations were made by interviews with venture capital investors active on the local market. We must mention that the state owned “Széchenyi Tőkealap-kezelő Zrt.” (Széchenyi Capital Fund Management Plc.) expects a return of 12% to 15% from its investments, which is much lower than the expected return of one single investment by other Hungarian or foreign fund managements. It must also be noted that this expected return range only applies to companies with at least 2 years of operating history at the Széchenyi Tőkealap-kezelő Zrt.

Table 3: Composition of the capital for Venture Capital and Private Equity Investments

<table>
<thead>
<tr>
<th>Type of sponsors</th>
<th>Proportion of total funds provided</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government organizations</td>
<td>58.52%</td>
</tr>
<tr>
<td>Banks</td>
<td>18.00%</td>
</tr>
<tr>
<td>Private investors</td>
<td>10.48%</td>
</tr>
<tr>
<td>Corporate investors</td>
<td>4.41%</td>
</tr>
<tr>
<td>Other asset managers</td>
<td>3.86%</td>
</tr>
<tr>
<td>Superannuation funds</td>
<td>1.39%</td>
</tr>
<tr>
<td>Family asset managers</td>
<td>1.33%</td>
</tr>
<tr>
<td>Other</td>
<td>1.08%</td>
</tr>
<tr>
<td>Fund manager contributions</td>
<td>0.46%</td>
</tr>
<tr>
<td>Academic institutions</td>
<td>0.40%</td>
</tr>
<tr>
<td>Funds of funds</td>
<td>0.07%</td>
</tr>
</tbody>
</table>

Source: MNB (2015)
Venture capital funds usually invest equity into starter or early phase enterprises as target companies. The maturity of investments is 5-7 years with exiting plans after the investment horizon. The main difference between venture capital and private equity is that private equity finances the enterprises that are already over the starting phase and enter the expansion stage. The target investments are typically very risky, the expected return of the investors is also high, and the realized return on the investments must compensate the losses produced by investments failed.

**Historical overview**

From the 1989 to 1992 the Hungarian market was dominated only by the so-called “country-funds”, the funds that invest in a defined country. This time privatization played a central role in the investments. The average size of these funds was around 50 million dollars. From 1992 the so-called “regional funds” entered the market too, who concentrated on the Central-Eastern-European region. The size of these funds reached the volume of 100 to 200 million dollars. Until about the year of 2000 the focus of investments was mainly on technological financing. In the early years of 2000 classic venture capital investors have also appeared who made their first investments into start-up companies (Karsai, 2011). From 2005 to 2008 the so-called global funds have also launched their activity in Hungary.

The Hungarian market was especially attractive for new investments after joining the EU. Working capital investments continuously increased until the crisis of 2007. Between 2007 and 2009 the market gained some attractiveness even from the fact that the pace of Western-European investments became slower. By 2010 the crisis heavily affected the Hungarian VC capital market as well, and the volume of investments decreased significantly (Karsai, 2012).

In 2009 the Jeremie I. program was launched in Hungary. Sources were distributed among the funds in more stages through a tender system. The Jeremie program was founded by the European Committee together with the European Investment Fund. The program supported micro-, small- and medium-sized enterprises. This capital infusion gave a new impulse to the Hungarian venture capital investments. These days – partly due to the Jeremie program –, culture of start-up enterprises have become well known and accepted.

The New Hungary Venture Capital Program (also called as Jeremie I) distributed funds between 8 winning venture capital funds and their management companies. The total volume of these funds was about 48 bn HUF with at least 30% private sector investment and with a maximum of 70% state involvement in each fund. The size of the smallest and the largest fund was 4 bn HUF and 7,36 bn HUF respectively (MV Zrt., 2013).

Table 3. shows that the biggest investors are governmental institutions (58,52%). A great amount of EU resources was distributed to venture capital funds through the “Jeremie program” which we will detail later.

The Hungarian state provided 27 billion HUF equity to local venture capital investors in 2012. Main sources came from the European Regional Development Fund in the framework of the New Széchenyi Venture Capital Program - Economy Development Operative Program 4. This program was also called Jeremie II. program. In the program 6 billion HUF could be invested via the so called Common Seed Fund subprogram to finance micro- or SMEs established within 3 years with a maximum annual sales revenue of 200 million HUF. The funds could invest the remaining 22,5 billion HUF through the Common Growth Fund subprogram to micro companies, SMEs and to medium-sized companies established within 5 years with a maximum sales revenue of 5 billion HUF (Invitation to Tender, 2012). The total size of all the funds was 41 bn HUF, the size of the smallest fund was 2.14 bn HUF, and the largest fund received 6.5 bn HUF (MV Zrt. 2013).

The subprogram of the Széchenyi Capital Program Common Growth Fund expanded further in several steps. In the stage named as Jeremie III. eight venture capital fund managements received 3 billion HUF each. (Project Result Proclamation, 2013).

Several events and meeting opportunities are organized for the leaders of the start-up enterprises and potential investors. Such an event was the IVSZ Start-up Conference in the organization of the Informatikai, Távközlési és Elektronikai Vállalkozások Szövetsége (Association of IT, Communication and Electronical Enterprises) and the Start-up Underground Events, which was organized at the Corvinus University of Budapest in 2013.

**Seed capital funds today in Hungary**

Despite Sahlman-Scherlis (2003) who considers the seed funds primarily as investors who finance idea companies, investment guidelines of the seed companies in Hungary often ask for a prototype and market validation from the target companies. On Figure 2 the distribution of the venture capital funds is presented according to the lifecycles of the target companies. Between 2010 and 2014 the seed stage companies received 13,43% of total funds distributed.

![Figure 2: Distribution of Venture Capital Investments According to Lifecycle between 2010 and 2014](image-url)
The Hungarian accelerator called Traction Tribe set the objective to sell target companies to US venture capital investors, in other words to take them to the Silicon Valley, to one of the centers of starter companies. Between 2010 and 2015 39% of the US venture capital investments were executed in companies based in Silicon Valley (NVCA, 2016). Young start-up entrepreneurs come here from all over the world hoping that their idea will attract the investors' attention. As an example, iCatapult, a Hungarian Accredited Technological Incubator, also received a state subsidize. iCatapult also urges their supported start-up companies to build up US relations, to step onto the US market and contact US investors (Website of iCatapult). This is in strong contrast with the statement in the announcements of the National Research, Development and Innovation Office. Based on the statements, the goal of the program is to keep local start-up enterprises at home (NKFIH 2015).

STATE INVOLVEMENT ON THE VENTURE CAPITAL MARKET

The state is present on the market both as a venture capital investor and as a venture capital management. On the one hand the state appears as an equity holder in the capital funds, on the other hand there are venture capital fund management companies in state possession that invest state and EU funds. State intervention into the market mechanisms is necessary anyway if market failures occur. Market failures indicate that market mechanisms cannot create optimal market (Kovácsné 2011). These can appear in several forms and all can indicate market distortions: problems with public goods, presence of monopolistic and oligopolistic market participants, asymmetric information, transaction costs and externalities. (Lovas 2015). These latter three market failures are especially relevant from venture capital point of view. These failures are also responsible for the lack of financing for start-up companies, a typical market feature.

- The problem of asymmetrical information is very much in focus since the publication of Akerlof (1970). Akerlof demonstrates this effect on the lemons market, which we can interpret as example for financing start-up enterprises. Only the entrepreneur has any kind of information concerning the risk of the enterprise, the investor can just guess it (Leland–Pyle 1977). As the investor takes the average when it determines the conditions of financing, he sets conditions that are adequate for the "bad" enterprises and not for the good ones. These conditions include also the investor's expected return. The investor's expected return for good start-up enterprises is too high, for the bad ones it is too favorable. In this case, the state can enter as the financer, as the expected return of one single investment of a state-owned capital fund manager is lower than the expected return of the private market capital funds.

- The second market failure is related to the topic of transaction costs. Start-up enterprises searching for financing occasionally require too negligible amounts. These amounts are not economic from private VC investors’ point of view due to the relatively high transactional costs, administrative fees, and expert fees. For VC investors, it is not worth financing under a certain investment size (15 to 20 million). However, state actors may accomplish investments under this threshold.

- Finally, we also must mention externalities as a reason for market failures. State intervention on the venture capital market can stimulate local innovation, and social-economic development in a wider sense. It can follow more goals than pure profit goals, like the development of local, regional economy, job-creation, or increasing tax incomes as a fundamental base of social services. These can be translated as a positive externality that can justify state intervention.

State owned venture capital fund management and their funds

There were and there are many state-owned capital fund managers in Hungary during the last decade. The currently operating funds are as follows: Széchenyi Tőkealap-kezelő Zrt. (Széchenyi Capital Fund Management Plc.) manages the Széchenyi Tőkealap (Széchenyi Capital Fund). In 2002 the Informatikai Kockázati Tőkealap-kezelő Zrt. (IT Venture Capital Fund Management Plc.) started to manage a fund of 3 bn HUF. It was taken over by the Corvinus Tőkealap-kezelő Zrt. (Corvinus Venture Capital Fund Management Plc.) in 2015. At the end of 2016 “Corvinus Tőkealap-kezelő Zrt.” was renamed to HiVenture Venture Capital Fund Management Plc. It is planned to manage state fund of 50 bn HUF provided by the EU, in cooperation with the Hungarian Development Bank Plc. and the “Nemzeti Kutatási Fejlesztési és Innovációs Hivatal” (National Research, Development and Innovation Office).

State owned venture capital fund management manages only state owned funds. Their expected returns are lower than those of the privately-owned capital fund managers, but investment decisions and processes are much more controlled. Therefore, the decision-making process is longer, which is also apparent during the cooperation phase with the target company after the investment.

Comparison of the characteristics of the private and the state venture capital

The investment structure of the state venture capital investors materially differs from those of the private venture capital investor companies. Venture capital fund management invests into equity. In the investment contracts, they define exit opportunities, the practice of
ownership rights, voting rights, the decisional scopes of stakeholders, and the right to delegate members into distinct positions and boards (supervisory board members, board of directors, the person of the CEO, etc.) To identify the differences let us examine the characteristics of the private venture investment deals first.

The private venture fund managers concentrate on getting as big ownership stake as possible. If the target company becomes more valuable, then investors can realize substantial returns by the exit. The private investors focus on getting a majority share in the target companies to get control rights. They like to emphasize that they are strategic investors and partners with business network, market know-how. They also usually insist on including in the contract the so-called drag-along right, which obligates the founders to sell their shares together if the venture capitalist could set up an exit.

As opposed to that, state venture capital investors are typically financial investors: they do not wish to intervene into the everyday operation. They do not necessarily acquire a majority share in the target companies, their share usually remains under 49%. Thus, they leave the leadership in the hands of the original founders. Furthermore, state venture capital investors limit their profit potential on individual investments. The exit plan is that the target company will repurchase the fund’s share at the exit with a defined fixed expected rate of return. Capital investments are often combined with an ownership loan with continuous amortization to the exit. This can be considered as a risk mitigation step, which transforms state capital investments similar to hybrid financing. By these loans of course a lower interest is charged than the level of expected return on the equity.

State involvement creates the opportunity that the successfully developed enterprise could stay in the possession and control of the original founders and will not be sold necessarily to third (mainly foreign) investors.

**CONCLUSION**

Seed companies are in a difficult position in terms of financing. State intervention intends to solve this kind of market failure by providing state and EU funds. Distribution and utilization of EU funds are controlled by the state. On the Hungarian venture capital market two models of state intervention have been developed. The first form of state involvement is the indirect, when the state and the private sector cooperate. In that case, private venture capitalists manage funds containing state and EU sources, and the private venture capitalist attitude is dominating the investment process. The second form of state involvement is the direct intervention, when the state-owned venture fund managers directly control and monitor the investment process until the exit. Target companies can decide whether they need an active partner with higher return expectation or they would like to run their business alone beside a lower expected return from the financing partner.

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szechenyi-kockazati-toke-program

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