

**SZENT ISTVÁN  
EGYETEM**

**THESIS OF DOCTORAL (PhD) DISSERTATION**

**INVESTMENT DECISION PROCESS AND PROJECT EVALUATION  
CRITERIA OF HUNGARIAN VENTURE CAPITAL AND PRIVATE EQUITY  
INVESTORS**

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**2018**

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**Discipline of Doctoral School: management and business Administration**

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## TABLE OF CONTENTS

<b>1. PRECEDENTS TO THE THESIS, INTENDED OBJECTIVES.....</b>	<b>4</b>
<b>2. RESEARCH AND METHODOLOGY.....</b>	<b>7</b>
2.1. Scope of researches .....	7
2.2. Research and statistical methods .....	7
2.3. Description of the investor sample used in the research .....	8
<b>3. RESULTS.....</b>	<b>10</b>
3.1. Analysis of the venture capital investment decision process .....	10
3.2. Findings of Likert-scale questionnaire .....	11
<b>4. NEW SCIENTIFIC FINDINGS .....</b>	<b>17</b>
<b>5. CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>20</b>
<b>6. PUBLICATIONS RELEVANT TO THE TOPIC OF THE THESIS.....</b>	<b>23</b>

# 1. PRECEDENTS TO THE THESIS, INTENDED OBJECTIVES

Venture capital might be one of those financial instruments which could help capital shortage of small and medium sized enterprises as they provide external, equity capital resource to enterprises eligible for investments.. Special characteristics of venture capital consist of targeting enterprises with large growth potential, typically companies running innovation-based projects or with technology intensive profile.

In my thesis I am focusing on the analysis of the investment decision-making process of venture capital firms, with various ownership backgrounds and company life cycle focus, interested in Hungarian investments projects, as well. International literature widely discusses the decision-making process of venture capitalists however most of the studies focus on general decision making or a certain stage of the decision making process. In literature, researches on evaluation and comparison of investment opportunities criteria are highly represented. However, limited number of researches try to differentiate investors based on certain characteristics though it can be predicted that they follow different decision making process.

Accordingly, my thesis has been built on two major aspects. Firstly, I will comprehensively present **the decision making process of venture capital firms operating in Hungary**, and investment activities in respective phases. In order to achieve this objective, the scope of research covers deal generation, evaluation of investment opportunities and deal structuring. Secondly, I will differentiate investors based on their ownership background and business lifecycle preference, by revealing the characteristics of their decision making process. I wish to contribute to enrich the existing literature about this subject.

In my doctoral thesis I am investigating the venture capital decision making process, by grouping the investors subject to the current analysis, by identifying significant variances between certain investor groups. Grouping of investors has been made according to their ownership background and the business lifecycle stage in which they prefer to invest. Hungarian venture capital industry between 2008 and 2017 proved to be an excellent field of investigation taking into consideration that not only state and private but so-called hybrid venture capital funds were operating whose capital was raised from state, private or both sources. Furthermore, it is important to emphasize that every company lifecycle stage was covered by the investors operating in the market. I have targeted the following objectives during my research:

- a) to investigate the structure of decision making process of venture capitalists from deal generation to deal structuring. To uncover any potential differences among decision process structures which could be associated to the investors' ownership background or their preference in business lifecycle stage in which they wish to invest. Finally to define decision making models which clearly describe investment decision making practise according to any of the above mentioned aspects (ownership background or preferred business lifecycle stage).
- b) to analyse evaluation criteria and their weight investors are using for screening investment opportunities. To identify those criteria in which group of investors with various ownership background and preferred business lifecycle stages show significant difference.
- c) to analyse activities carried out by investors during due diligence, company or project evaluation and their key factors on expected return from the investment. To identify again those activities and criteria in which group of investors with various ownership background and preferred business lifecycle stages show significant difference.
- d) finally to assess characteristics of deal structuring in case of investors subject to current analysis and highlight those according to which group of investors with various ownership background and preferred business lifecycle stages show significant difference.

When setting up hypothesis I have heavily relied on relevant international and Hungarian literature and on the results of the research I made in 2008. My hypothesis is as follows:

*H1: Decision making structure of state-funded venture capitalists operating in Hungary is more administrative and formal than that of those investors who manage funds from private and hybrid sources.*

When looking at various ownership background I mainly compared the decision making practice of state-funded investors to that of private and hybrid investors. I assumed that decision making process of state-funded investors consist of more stages and decision levels than that of the two other groups of investors which makes the decision making structure rather formalised. When examining investment decision making process from preferred lifecycle perspective, I mainly differentiate investors specialised in early and mature-stage companies. Although the decision process of late-stage private equity investors follows similar structure as that of venture capitalists, I assume that due to special characteristics at the level of decision phases it worth's treating this group of investors separately from early-stage investors. From this concludes my second hypothesis, which is the following:

*H2: Investment decision making process of late-stage private equity investors shows several characteristics which makes worth examining their decision practise separately from that of early-stage (seed or start-up) venture capital investors.*

When examining my research objectives b) and c), evaluation criteria and their importance, due diligence, evaluation methods and key factors on expected return I mainly concentrated on identifying differences between investors specialised in different business lifecycle stages because this approach allows to construct clearer hypothesis. Early literature already show that venture capital and private equity firms consider skills of management or entrepreneur, market growth potential, features of product or service and the potential return of the project as key factors. I assume that these factors are treated as highly important by investors subject to my analysis as well, independent from their ownership background or business lifecycle preference. From this concludes my third hypothesis, which is as follows:

*H3: Independent from their ownership background and company lifecycle preference, investors subject to this research, consider evaluation criteria on management, market, return potential and exit possibilities are equally of high importance when they are evaluating investment opportunities.*

However, it can be supposed that besides the key evaluation criteria, investors with different business lifecycle focus might consider different criteria as crucial.

*H4: Venture capital firms specialised in early stage investments consider entrepreneurial experience of founders, availability of prototype and patent of product or service are equally of high important when they are evaluating investment opportunities.*

*However, late stage private equity investors consider the company's results (cash flow and liabilities) and its position in market or market segment equally of high importance when they are evaluating investment opportunities.*

Venture capital investors make estimations on the business value of projects during the decision making process. There are several valuation methods, and it can be assumed that investors do not apply only one of them, it might be the lifecycle stage which has an effect on which valuation method will be the most decisive among others. This leads to my fifth hypothesis:

*H5: When estimating the business value of a project or a company, early-stage investors apply discounted cash-flow model, while late-stage private equity investors prefer the relative valuation method.*

Deal structuring deserves examination from the aspect of investors' ownership background and business lifecycle preference because both aspects reveal specific deal structuring models that can be found in the Hungarian venture capital market, too.

*H6: State-funded venture capital firms operating in Hungary provide specific financing construction with pre-determined conditions and with characteristics of both equity and debt financing.*

*Early-stage investors, due to high risk underlying in such deals, allocate capital investment in tranches based on milestones. In contrast, late-stage private equity investors typically allocate capital in one amount, and financing is often complemented by bank loans due to significant deal size.*

My research and validations of my hypothesis might contribute to the literature about the operation of venture capital firms from several aspects. It will be possible to compare the decision making procedure of Hungarian investors with models revealed by Western European, American and Central and Eastern European literature. Grouping of investors based on their ownership background and lifecycle preference will allow to identify the specific characteristics of these investor groups, which is rarely discussed in literature.

## 2. RESEARCH AND METHODOLOGY

My research is based on questionnaires completed during person-to-person interviews in 2008 and 2014 where I rely more heavily on research results from 2014.

### 2.1. Scope of researches

The objective of research made in 2008 was to identify behavioural characteristics of venture capital and late-stage private equity investors, with various ownership background, from the following perspective: investment policy, investment process, investment monitoring, exiting and motivation system used by investment firm or fund. Interviews were made with 10 venture capitalists, 7 of them had private background, 3 investors were state-funded. The research was complemented with 2 short case studies where I described the circumstances of 2 investments, one executed by a state-funded and one by a private-funded investor.

During the research in 2014, again, I conducted interviews complemented with a Likert-scale questionnaire, while I reduced the scope of research to focus exclusively on the decision-making process of venture capitalists. Therefore, the scope of research covered deal generation, screening, evaluation of investment opportunities, due diligence and deal structuring however post-investment activities and the exit phase were out of scope.

### 2.2. Research and statistical methods

Primary data collection has been carried out, both during 2008 and 2014 researches, by using questionnaires, respondents were typically partners of venture capital and private equity fund management firms or investment companies. During both researches, personnel interviews were completed by a structured questionnaire.

**Table 1: The main groups of criteria in the 2014 Likert-scale questionnaire**

Group of criteria	Number of criteria and statements
1. Groups of project evaluation criteria	29
<i>1/a. General evaluation criteria</i>	4
<i>1/b. General evaluation criteria about the management of the project/business</i>	5
<i>1/c. General evaluation criteria about the target market</i>	6
<i>1/d. General evaluation criteria about the product/service</i>	5
<i>1/e. General evaluation criteria about the business</i>	5
<i>1/f. Other evaluation criteria</i>	4
2. Activities during due diligence	17
3. Method used for project valuation	8
4. Factors influencing required rate of return	11
5. Deal structuring techniques	25
<b>Total</b>	<b>90</b>

*Source:* edited by the author

During both researches I carried out primary data collection as well. In my 2008 research I included almost exclusively open-ended questions while in 2014 I used open questions to understand the venture capital investment decision process. The latter research also contained closed-questions, which have been compiled in Likert-scale. Likert-scale is a discrete evaluation

scale which belongs to the group of non-comparative evaluation scales. It has two extreme response categories and in between there are five response possibilities. Each statement must have an associated value to show at what extent the respondent agrees with the given statement. The distance between the values are equal and expresses the difference between the response categories. The Likert-scale compiled in 2014 research contained 90 statements and respondents were asked to evaluate them on a five-level-scale. The questionnaire covered five major topics related to the investment decision process described in *Table 1*.

It was the statistical hypothesis testing, more properly the test for homogeneity which helped me to find the proper statistical method. During hypothesis testing, one has to state the null hypothesis and the so-called alternative hypothesis. The validity of null hypothesis should be examined by statistical tests. If null hypothesis can be verified, then the alternative hypothesis has to be rejected, if not, alternative hypothesis must be treated as true, and null hypothesis has to be rejected. Statistical tests can be parametric tests or non-parametric tests, the latter is mainly used in case of small samples. Since the Likert-scale questionnaire was completed by 13 venture capitalists I have used non-parametric tests during my research.

From non-parametric tests I have used the Kruskal-Wallis H-test to examine whether samples of populations have the same distribution. This test compares the distribution of variables of at least two, independent samples by computing the test statistic and then compared to a critical value, generally obtained from the critical value table of the specific test. The analysis might lead to the conclusion whether the variables of the samples have the same distribution or not. However, if the results prove to be significant, the Kruskal-Wallis H-test does not identify how many differences exist and which samples are different. To identify which samples are different one should use post hoc tests such as the so-called Mann-Whitney U-test to identify the number of differences and the sample pairs where they exist. The Mann-Whitney U-test differs from Kruskal-Wallis H-test in a way that it can be used for comparing the distribution of variables of two independent samples. During the tests, I set the level of significance associated with the null hypothesis at 5 to 10%, or those of the Bonferroni procedure<sup>1</sup>.

After statistical tests were completed and results were analysed, I changed the approach of the research and looked for such a statistical method which is applicable for grouping a set of objects, in my research the venture capital and private equity investors, into clearly distinct homogenous groups. As a method for making groups, among multivariate statistics, I have chosen the cluster analysis. In order to verify the homogeneity of clusters, I examined the distribution of variables within the clusters, which were then compared against the distribution of the total number of variables without clustering.

### **2.3. Description of the investor sample used in the research**

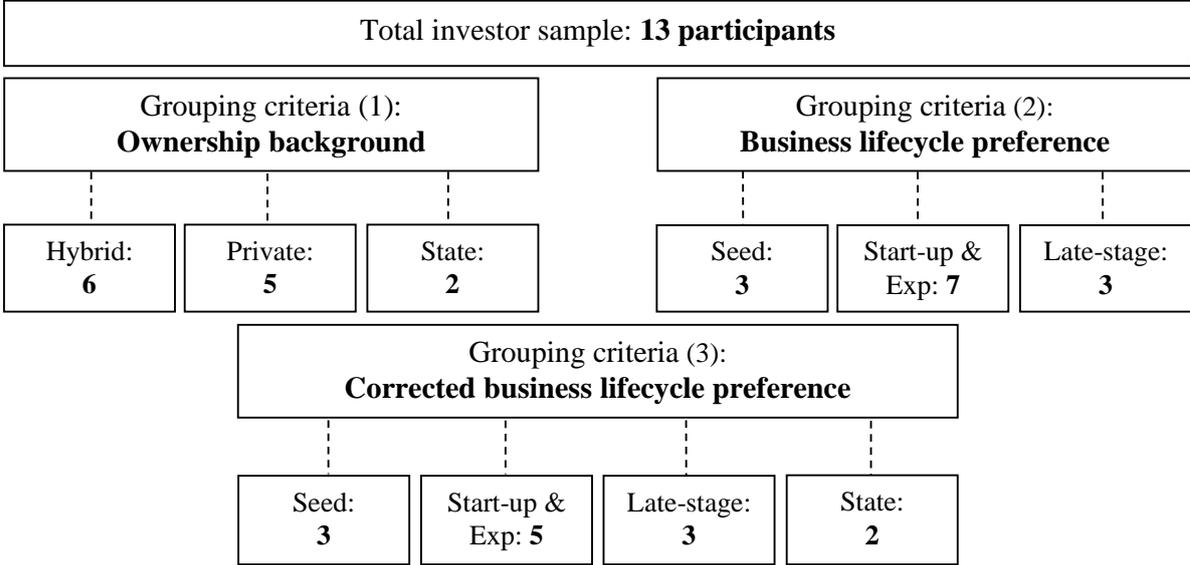
During the 2008 research, I used the list of members published in the 2008 yearbook of the Hungarian Private Equity and Venture Capital Association in order to create the sample. On the list there were 28 venture capitalists categorised as full members. Out of the 28 members, I contacted 20 investors for research purposes and finally I managed to arrange interviews with 10 investors (50% response rate). This sample consisted of 3 state-funded and 7 private-backed investors.

In the 2014 research my objective was to establish a group of investors which is heterogeneous from the perspective of ownership background and their business lifecycle preference. For the purpose of sample collection I contacted 27 investors out of which I interviewed 13 firms, hence,

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<sup>1</sup> The objective of the procedure is to define a corrected significance level by the quotient of the initial significance level and the number of compared, independent samples.

I reached 48% response rate, similar to my first research. I grouped the total sample according to three following aspects, firstly their ownership background, then based on their business lifecycle preference. From the aspect of the latter one, I made the grouping by following two approaches, firstly I created three groups containing seed and start-up venture capitalists and late-stage private equity investors. Secondly I put the state-funded investors into a separate category, based on their special financing construction, (Figure 1).



**Figure 1: The grouping of the total investor sample in the 2014 research**  
*Source: edited by the author*

Despite the low number of samples, the results can be treated as representative from the perspective of capital allocated for investments by the venture capital and private equity investors in scope of the research. When Likert-scale questionnaire was made, a total capital of 140 billion HUF was allocated directly for Hungarian investments, excluding capital volume raised by mezzanine and buy-out funds specialised in executing buy-outs in the Central-Eastern European region. When the interviews were carried out, total capital of investors, in scope of my research, managed a total of 83-84 billion HUF, which represented 60% of total allocated capital. As an excess, buy-out funds allocated approximately 600 billion HUF capital for investments, however it is not known what proportion has been allocated for only Hungarian investments. It is essential to note that it was very difficult to persuade respondents to provide information and attend personal interviews. Their reluctance was explained by lack of time and the confidentiality of business information.

### 3. RESULTS

#### 3.1. Analysis of the venture capital investment decision process

In line with general venture capital decision making practise, investors subject to my research started their procedure by deal generation phase. Investment projects might reach them via cold calls, when the entrepreneur or project initiator directly contacts the investor, or via their personal network. **Investors do not show general picture from the perspective of their deal generation strategy.** Active deal generation strategy is typical of recently founded funds or of investors establishing new funds, which is understandable since they must emphasize their market presence in order to reach the required deal flow.

The second phase of the investment decision process is the **screening** phase, when investors aim to select among projects and chose those projects they wish to analyse deeply. Screening may have two steps, where the first is a general screening phase, when the investor evaluates the projects against his key criteria (for example, management, market, analysis of product or service). The second phase might be a so-called investor specific screening phase, where criteria might be influenced by investor's ownership, the source of funds and the fund management company's investment policy.

If investors become interested in a project, subsequent phase of the decision making procedure will follow, which is named differently by questioned professionals. Some refer to this phase as "*initial due diligence*", while others name it as "*business plan analysis*" or "*business plan due diligence*". To achieve comprehensive understanding investors collect further information about the project, business model and potential risk, from personal meetings with the management and their own research. In this phase investors do not tend to engage external consultants. Investor's formal commitment for project financing is expressed with indicative investment offer, or preliminary investment agreement or "*term sheet*" which is signed by both parties. The offer details conditions of future cooperation, amount of capital and its allocation method, ownership ratio, transaction structure, investor's control, optional, exit and priority rights, NDA and exclusiveness.

After the term sheet is signed by the parties, the investor approves the document based on an investment memorandum and makes decision that the project can proceed to due diligence phase. „Due diligence” phase is generally completed by engaging external consultants, coordinated by the investor. **Due diligence covers legal, financial, accounting, auditing, taxation, technology, and in some cases, patent perspective, and might last from 2-3 weeks to 2-3 months, depending on its complexity and lifecycle phase of the company.** Respondents claimed that investment opportunities are rarely rejected in due diligence phase, they are rather approved, making an end to the decision making process and the transaction is closed.

**Despite the similar structure of decision making process, the research aimed to differentiate between the decision making process of investors having different ownership background and preferred lifecycle, which enabled to correct and complement literature.** As for ownership background, state-owned investors' decision making procedure showed special characteristics, while from the aspect of preferred business lifecycle, late-stage private equity investors (buy-out funds) deserved separate analysis.

State-owned venture capital investors proved to be unique as they accept projects by completed standard documents and application forms. Neither hybrid, nor private funded investors apply such formal procedure during initial contact and screening phase. In order to familiarise

themselves with the projects, they expect a short, maximum two-page summary (sometimes called as „teaser” or „one-pager”) which covers key information for guidance purpose.

Screening phase is influenced by the source of capital or the investor entities of the fund. State-owned and hybrid fund managers usually manage capital directly from the European Union or the government. This will have an effect on the so-called fund-specific screening which may be called program specific screening in case of hybrid funds, because the latter shall verify the project’s compliance with the Jeremie program requirements. Private fund managers should not consider economy policies or other pre-defined formal conditions, they rather screen on project size and business lifecycle in this phase.

When analysing investment decision making process, I identified differences in the number of decision levels and formal decision rounds. With regard to decision levels, state-funded and hybrid investors, both, have two levels of formal investment decision, investment committee and board. **As for the number of decisions, investors in research show homogenous practise**, majority of investors make two formal decisions where the first is usually made for the approval of the term sheet, while the latter is made after the due diligence phase, in order to close the deal. Buy-out fund managers, due to their complex organisation structure, or certain state-owned investors sometimes make three formal decisions. I have observed higher project approval rate by **state-owned investors** which is not due to the speed of their decision making process but their operational characteristic which is that their **financing requirements are more favourable** than that of private fund managers.

Decision making process of buy-out funds show their first characteristics right at the beginning of the process, they **engage specialised intermediary companies during deal generation**. These companies are typically advisory firms who provide transaction and corporate finance services, therefore they search for acquisition and investment projects, on the sell-side, and look for potential investors on the buy-side. **Buy-out funds, in addition, typically participate at Public Auctions** where investors, with other buy-out funds, make public offer for projects presented at these events. Buy-out funds, as well, perform screening in two phases, before the general screening they make their **investor-specific screening where they evaluate whether the project size reaches their desired minimum value**. Respondents claimed that their **preferred corporate size based on revenue is between 30 and 150 billion euro, and EBDITA between 3 and 20 billion euro**. Making an indicative offer, at certain investors, have two stages, first they prepare a so-called „letter of intent (LOI)” which is followed by the „term sheet”. LOI is a legal document like a preliminary legal statement which is issued by the investors to show their interest in the investment deal. It is mainly signed by the investor solely. LOI covers the transaction structure, the acquisition and company value, warranties ensured by both parties, indemnity against risks and liabilities discovered during the subsequent due diligence phase, and agreement on holding a certain part of the acquisition value until some criteria are met („escrow”). „Term sheet” is also considered as a preliminary contract and has the same function as for the already presented groups of investors. Term sheet is signed by the investee, too, its content is very similar to that of the „letter of intent”, one important difference is that term sheet describes investment conditions in more details. When term sheet is approved by the investment committee, the due diligence phase begins when buy-out funds engage external advisors, similarly to already presented groups of investors.

### 3.2. Findings of Likert-scale questionnaire

With regards to general key project evaluation criteria, findings of the research are in line with statements of international literature. **Key evaluation criteria are indeed concern management, market and exit-return, where management proved to be crucial**. The

research verified that evaluation of management is made not only from objective but subjective aspects, including personality traits of managers and investors' intuition. During the investment decision process a general and an investor-specific screening are performed. During the latter, as my research revealed, lifecycle stage and size are relevant for buy-out funds, while geographical location is relevant for hybrid funds. The industry of the projects is not a key criteria for Hungarian fund managers due to their generalist approach. Generalist approach can be associated with economic factors, as compared to developed countries, in Hungary there are less companies operating in each sector, hence **investors have fewer investment opportunities they can choose**. Research showed, however that venture capital investors follow a rather rigorous decision making procedure with several check points and they are rather selective among investment opportunities. From this concludes that relatively few companies are able to meet expected growth, return or size requirements. Investors, hence, cannot restrict their operation to one single sector, they must have an overview on each sector when companies with significant growth potential might appear.

From the aspects of ownership and the project's geographical location, it is the state-funded investors that differ significantly from the other two groups. The project's geographical location is neutral for state-funded investors because **they try to reach different geographical regions in the country with their capital infusion**. In contrast, most of the hybrid investors, due to the Jeremie program requirements, shall invest outside the Central-Hungarian region, therefore this is a key criteria for them.

**Table 2: Project evaluation criteria showing significant difference between venture capital and private equity investors with different lifecycle preferences**

Variant	Project evaluation criteria	H-statistics and p-value	Significance
V3 <sup>†</sup>	The project's geographical location	(H = 6,31); (p = 0,098)	( $\alpha < 10\%$ )
V8* <sup>†</sup>	Manager's entrepreneurial experience	H = 8,57; (H = 9,6) p = 0,014; (p = 0,022)	$\alpha < 5\%$ ( $\alpha < 5\%$ )
V12* <sup>†</sup>	Product or service targets a niche segment of an existing market	H = 5,68; (H = 6,59) p = 0,058; (p = 0,086)	$\alpha < 10\%$ ( $\alpha < 10\%$ )
V20* <sup>†</sup>	Availability of prototype	H = 9,63; (H = 9,65) p = 0,008; (p = 0,022)	$\alpha < 1\%$ ( $\alpha < 5\%$ )
V22*	Solid cash flow	H = 5,42; p = 0,067	$\alpha < 10\%$
V29 <sup>†</sup>	The project has above-average return potential	(H = 6,24); (p = 0,1)	( $\alpha = 10\%$ )

\*Significant difference from the aspect of preferred lifecycle stage; Kruskal-Wallis H-test; degree of freedom (df) = 2; number of participants in samples: N<sub>SE</sub> = 3, N<sub>SU</sub> = 7, N<sub>LS</sub> = 3; where SE = seed-stage investors, SU = start-up investors, LS = late-stage investors

<sup>†</sup> Significant difference based on corrected grouping from the aspect of preferred lifecycle; Kruskal-Wallis H-test; degree of freedom (df) = 3; p, H and significance values are in brackets; number of participants in samples: N<sub>SE</sub> = 3, N<sub>SU</sub> = 5, N<sub>LS</sub> = 3, N<sub>ST</sub> = 2; where ST = state-owned investors

Variances marked with both \* and <sup>†</sup> symbols mean that significant difference was observed both from the aspect of original and corrected grouping of preferred lifecycle

Source: research by the author

Table 2 shows project evaluation criteria where significant difference was observed in case of investors with different lifecycle preference. Early stage investors consider uniqueness of product or service, entrepreneurial experience of founder or project initiator and patent protection of high importance. Early stage investors emphasized availability of prototype as key criteria. In the **Hungarian venture capital market there are very few seed funds, start-up investors are unwilling to undertake risks of prototype development, hence, despite their interest in early-stage funding, they expect the future investee to have a prototype. Late-**

**stage investors rather focus on the investee’s cash flow.** In addition, buy-out funds **look for companies which target a restricted market segment**, if possible, already in market leader position or with potential, within few years’ time. My research identified, in relation to project evaluation criteria, **the unique financing model of state-owned investors, their relatively low return requirement, interest in economic policy aspects and traditional industries as well.**

Main activities during the due diligence phase are conducting interviews with the management, engaging external advisors, verification of reference of key project members and negotiations with present and potential suppliers and buyers. Due diligence covers legal, financial, accounting, auditing, taxation and technology perspective, in some special cases. Special financing model of state-owned investors show their characteristic in due diligence phase, too, as number of potential exit options has low importance for them, in contrast, they examine feasible financial conditions of buy-out, by company founders, at the end of investment period. Early stage investors emphasized **patent protection**, which means that the importance of this criteria has been present all throughout the investment process, from screening until due diligence (*Table 3*).

**Start-up and late-stage private equity investors show significant difference from the aspect of analysing buyers and sellers of the investee.** This activity was less typical of start-up investors during the due diligence, where the reason might be that due to the early lifecycle stage, companies might lack of solid business partnerships which could serve as base for validation. In contrast, for late-stage private equity investors this is an appropriate approach to obtain relevant information because late-stage companies are likely to have built several solid, strategic partnerships. After running cluster analysis tests, in case of early-stage investors, a new valuation criteria appeared, the **review and modification of required capital**, which can be explained by the investment experience of such investors, as they can precisely estimate the capital need of start-up projects. On the other hand, in early-stage investments it often happens that the required capital is so low that its allocation is not effective for the investors. In order to avoid such situation, investors might suggest the financing of a longer growth period when a bigger amount of capital is allocated in tranches based on milestones.

**Table 3: Investor activities during due diligence, where significant difference was observed between investors with different lifecycle preference**

Variants	Investor activity	H-statistics and p-value	Significance
V37*	Contacting existing or past buyers, suppliers, partners	H = 5,21; p = 0,074	$\alpha < 10\%$
V44*†	Availability of patent protection or its accessibility.	H = 8,57; (H = 8,65) p = 0,014; (p = 0,034)	$\alpha < 5\%$ ( $\alpha < 5\%$ )

\*Significant difference from the aspect of preferred lifecycle stage; Kruskal-Wallis H-test; degree of freedom (df) = 2; number of participants in samples: N<sub>SE</sub> = 3, N<sub>SU</sub> = 7, N<sub>LS</sub> = 3; where SE = seed-phase investors, SU = start-up investors, LS = late-stage investors

† Significant difference based on corrected grouping from the aspect of preferred lifecycle; Kruskal-Wallis H-test; degree of freedom (df) = 3; p, H and significance values are in brackets; number of participants in samples: N<sub>SE</sub> = 3, N<sub>SU</sub> = 5, N<sub>LS</sub> = 3, N<sub>ST</sub> = 2; where ST = state-owned investors

Variations marked with both \* and † symbols mean that significant difference was observed both from the aspect of original and corrected grouping of preferred lifecycle

*Source:* research by the author

Investors in scope of my research apply standard corporate valuation methods also discussed by literature. **Importance and popularity of relative valuation has increased among Hungarian investors which I believe is due to the development of the Hungarian venture capital industry. In other words, local investors have gained experience on project valuation methods widely used in developed countries.** Growth of M&A market has contributed to this

change which enabled an increasing number of corporate acquisitions, whose valuation was accessible by venture capital firms if the transaction was public.

Table 4 describes significant differences on project valuation methods and the factors affecting required rate of return by investors, from the aspect of different lifecycle preference. As for EBITDA or EBIT multiples, **seed funds** showed significant difference from start-up and buy-out funds, then from state-owned investors too. Likert-scale questionnaire revealed that seed-investors are much less likely to use this project valuation method which can be explained by the fact that **they evaluate projects when the company has not been founded yet, or it has not got financial history or results that could be evaluated**. Therefore valuation methods using past results cannot be relevant. With regards to the valuation based on P/E ratios, tests proved significant difference only between seed and late-stage private equity investors, however, that latter almost showed difference from start-up investors too. Difference is due to the fact that valuation based on P/E multiples is rather used by late-stage private equity investors because their target companies have reached the required size to estimate their value with a P/E ratio applied from similar public companies.

**Table 4: Project valuation methods and factors affecting required rate of return where significant difference was observed between investors with different lifecycle preference\***

Variants	Project valuation methods and factors affecting required rate of return	H-statistics and p-value	Significance
V47 <sup>†</sup>	Discounted cash flow valuation models	(H = 7,48) (p = 0,058)	( $\alpha < 10\%$ )
V52* <sup>†</sup>	Valuation based on past EBITDA or EBIT multiples	H = 7,19; (H = 7,49) p = 0,027; (p = 0,058)	$\alpha < 5\%$ ( $\alpha < 10\%$ )
V53*	Valuation based on (P/E) rate multiples	H = 5,38; p = 0,068	$\alpha < 10\%$
V58*	Expected holding period of investment	H = 5,55; p = 0,062	$\alpha < 10\%$
V64* <sup>†</sup>	Industrial background of projects	H = 5,91; (H = 6,93) p = 0,052; (p = 0,074)	$\alpha < 10\%$ ( $\alpha < 10\%$ )

\* Significant difference from the aspect of preferred lifecycle stage; Kruskal-Wallis H-test; degree of freedom (df) = 2; number of participants in samples: N<sub>SE</sub> = 3, N<sub>SU</sub> = 7, N<sub>LS</sub> = 3; ahol SE = seed-phase investors, SU = start-up investors, LS = late-stage investors

<sup>†</sup> Significant difference based on corrected grouping from the aspect of preferred lifecycle; Kruskal-Wallis H-test; degree of freedom (df) = 3; p, H and significance values are in brackets; number of participants in samples: N<sub>SE</sub> = 3, N<sub>SU</sub> = 5, N<sub>LS</sub> = 3, N<sub>ST</sub> = 2; where ST = state-owned investors

Variants marked with both \* and <sup>†</sup> symbols mean that significant difference was observed both from the aspect of original and corrected grouping of preferred lifecycle

Source: research by the author

Expected rate of return might be affected by the investment holding period, technological aspects, corporate lifecycle, general macroeconomic environment and the investors' ownership background. The research verified that due to high risk in early-stage deals, investors require higher return, between 30 and 45%. **In case of financing early-stage deals, high risk is mainly associated with the expected holding period of investment**, which is well considered by seed and start-up investors. **Private-backed investors set the highest required rate of return, while hybrid and state-funded investors are satisfied with much lower levels**. Relatively low required rate of return of hybrid funds correlates with the Jeremie program requirements. On one hand, major part of the allocated capital is raised from public and governmental sources, therefore risk is only limited to the proportion of private capital contribution of the fund. On the other hand, the program ensures favourable return distribution conditions for private investors, and coverage of majority of loss by the state, which further decreases risk undertaken by private investors. **Buy-out funds require a rate of return between 20 and 30%, the actual required**

**rate of return may depend on the type of financing**, mezzanine, hybrid financing may include a rate of return below 20%.

**State-owned venture capital investors apply unique pricing method where they rely on a given reference interest rate or yield, as base, to which adds a premium, which depends on the estimated project risk.** Investors create risk categories where they associate a certain premium, therefore premium component of return requirement itself can be considered as pre-defined. **Risk evaluation of potential investees can be considered as a rating, which makes pricing method of state-owned venture capitalists similar to the interest rate calculation of banks applied for loans.** Actual rates of returns are rather low, below 20% annually. **Low return requirement is not in line with the early-stage lifecycle preference of state-owned venture capitalists**, which could justify a higher required rate of return rate seen in the case of hybrid fund managers and private investors, targeting the same lifecycle stage.

As for deal structuring, investors in scope of my research apply techniques described in international literature, therefore it can be concluded that **venture capital and private equity investors operating in Hungary could adapt deal structuring techniques used by developed Western-European and American venture capital and private equity investors.** Techniques include financing by securities that ensure priority rights, veto rights in strategic decisions, liquidation preference, special exit rights, various control rights and capital allocation linked to milestones. In Hungary, it is typical that investors finance limited liability companies without buying shares, which makes it difficult to claim certain provisions, which have been defined for shares, widely used in countries with developed venture capital and private equity market. Investors' ownership stake depends on their lifecycle preference early-stage investors are often satisfied with minority interest, while late-stage private-equity investors insist on majority interest. Allocation of capital in tranches, arising from the significant risk of early-stage deals, proved to be typical of early-stage investors, while „vesting”, widely used in Western-European and American start-up financing, gradual reallocation of shares of company founders at defined intervals is not applied by early-stage investors in scope of this research.

**Table 5: Deal structuring techniques where significant differences were observed from the perspective of the investors lifecycle preference \***

<b>Variants</b>	<b>Deal structuring techniques</b>	<b>H-statistics and p-value</b>	<b>Significance</b>
V67 <sup>†</sup>	Using bank loans.	(H = 7,7) (p = 0,053)	( $\alpha < 10\%$ )
V72 <sup>†</sup>	Life insurance requirement for the key members of the project or company	(H = 6,24) (p = 0,1)	( $\alpha = 10\%$ )
V74 <sup>†</sup>	Capital allocation linked to milestones.	(H = 9,94) (p = 0,019)	( $\alpha < 5\%$ )

<sup>†</sup> Significant difference from the aspect of corrected preferred lifecycle stage; Kruskal-Wallis H-test; degree of freedom (df) = 3; p, H and significance values are in brackets; number of participants in samples: N<sub>SE</sub> = 3, N<sub>SU</sub> = 5, N<sub>LS</sub> = 3, N<sub>ST</sub> = 2; where SE = seed-phase investors, SU = start-up investors, LS = late-stage investors, ST = state-owned investors

Source: research by the author

**Late-stage private-equity investors allocate capital in one amount, often by using bank loan. In order to manage risk, some part of the transaction value (10-25%) is often retained on a locked account („escrow account”), and the amount is released and allocated to the investee when certain milestones are completed.** As for targeted ownership ratio, **late-stage private equity investors endeavour getting majority ownership** which also applies for the number of delegated board members. *Table 5* shows significant differences in deal structuring from the perspective of different lifecycle preference of investors.

As for investors' ownership background, one of the major findings of the research is that state-funded investors apply financing based on pre-determined conditions which has characteristics of both equity and debt financing. This means that state-funded investors define investment holding period in the term sheet, the expected rate of return, time and even method of exit, where latter means that founders must buy back the ownership stake of investors. Features of this unique model can be observed at other stages of decision making process, for example, during pricing they pre-define a reference yield or interest rate and a premium, during due diligence, they examine if founders will be able to buy back the ownership stake of the investor at the end of investment holding period. Bank loan-like characteristic of their financing model is further reinforced by the practise that certain state-owned investors request collaterals from the investee, for example in the form of guarantees, mortgage or call option right to claim buying out the investor. Non-parametric tests justified that financing based on pre-determined conditions is typical of state-owned investors, because fixed investment duration period, date of exit and claiming the buy-out of investors as the single exit method where all variants were significant differences between state-owned investors and other groups of investors (*Table 6*).

**Table 6: Deal structuring techniques where significant differences were observed from the perspective of investors' ownership background\***

Variants	Deal structuring techniques	H-statistics and p-value	Significance
V70	Pre-defined investment duration period	H = 5,53; p = 0,063	$\alpha < 10\%$
V74	Capital allocation in tranches linked to milestones	H = 6,27; p = 0,044	$\alpha < 5\%$
V89	Claiming the buy-out of investors as exit method	H = 6,95; p = 0,031	$\alpha < 5\%$
V90	Defining time of exit	H = 5,34; p = 0,069	$\alpha < 10\%$

\*Kruskal-Wallis H-test; degree of freedom (df) = 2; number of participants in samples:  $N_{ST} = 2$ ,  $N_{JE} = 6$ ,  $N_{PR} = 5$ ; where ST = state-owned investors, JE = hybrid funds, PR = private-owned funds

*Source:* research by the author

**Syndicated investments, in cooperation with several investors are not typical in Hungary, among respondents in the research, only buy-out funds participated in such deals.** In these cases, syndication was chosen due to transaction volume, or the fact that the financing constructions provided for the deal were different though well completing each other. **Syndication is rare in early-stage investment deals**, although in Anglo-Saxon regions, such deals are often executed by several investors. Reason for the low importance of syndication might be that **there are few really valuable projects**, hence investors, if found, they wish to realise financing themselves. **Another reason might be transaction size**, which is significantly smaller than in developed venture capital markets. **Small transaction size does not allow for investors to participate in many projects, as they must execute several financing rounds in their proprietary projects as well.** This restricts investors opportunity to allocate capital for syndicated deals. In addition, syndicated projects might not have enough growth potential that could ensure the required rate of return for all participating investor.

## 4. NEW SCIENTIFIC FINDINGS

The following results of my research could enrich present knowledge about decision making procedure of venture capital investors.

- 1. The decision making process of venture capital and private equity investors operating in Hungary has similar structure and phases (deal generation, screening, term sheet, due diligence, deal structuring) to the decision making process of investors in well-developed countries. However, it worth's differentiating investors from the perspective of their ownership background and business lifecycle preference, because both approach reveal typical characteristics.**

It is the investor's company size and ownership background that mainly decides the formal nature of the whole investment decision making process. State-owned investors compared to the other groups of investors, follow a more administrative and formal decision making process, with up to three decision levels and decision making rounds. Project evaluation happens by using standard forms and documents, prepared in advance, and self-made financial model for each project. Among private-funded venture capital investors, late-stage private equity investors dedicate a more important role for external advisors and agents, all throughout the process, than early or seed-stage investors, or state-funded investors. Advisors and agents actively participate in due diligence, deal generation, deal structuring and exit phase. In case of buy-out funds, deal generation generally happens at public auctions, though there is one fund manager in my research that established an originator team dedicated for deal generation purpose.

- 2. State-owned venture capital investors have a special position in the Hungarian venture capital market which can primarily be explained by their financing construction that is based on pre-determined conditions, debt and equity financing features.**

The special financing construction of state-owned investors arises from the fact that they define expected rate of return, investment duration and exit method in advance. They have favorable return conditions which allow this type of financing for companies in traditional sectors, with low return potential. Required rate of return is defined similarly to banks, by using a reference interest rate and a premium, where the latter often depends on the rating of the target company. State-owned investors might require bank collaterals and prefer minority ownership of the investee. From the above concludes that this construction does not comply with traditional venture capital investment, decisions are based not purely on business rationale but regional development and economic policy objectives.

- 3. Venture capital and private equity investors operating in Hungary, independent from their ownership background and lifecycle preference, when evaluating projects, consider the same general valuation criteria important as investors in countries having a well-developed venture capital and private equity industry. These criteria include management, market growth potential, exit and return potential. Sectoral background of the projects is not considered as relevant criteria, which refers to the fact that Hungarian venture capital and private equity investors have general approach. Criteria considered during evaluation depend on the investors' ownership background and their lifecycle preference.**

As for management, investors prefer teams with several members; their valuation depends on their positive attitude, former entrepreneurial experience and functional diversity. Investors

preferring early-stage investment, during project evaluation including screening and due diligence, consider availability or accessibility of patent protection, availability of prototype and entrepreneurial experience of management members as key valuation criteria. Early-stage investors target unique, high-tech projects, however, only seed-funding investors participate in prototype development; start-up investors are not willing to do so. Late-stage private-equity funds consider size of investee (based on income or EBITDA), solid cash flow, capital structure and market leader position or its short-term possibility as key evaluation criteria. Regarding management, it is important that its members cover the key functional areas and they shall be independent from owners.

**4. Venture capital and private equity investors operating in Hungary apply standard corporate valuation methods to estimate the market value of projects. Among valuation methods, relative or multiples valuation are getting widely used which complies with valuation methods of countries having a well-developed venture capital industry. Investors generally apply more than one method, however, their lifecycle preference decides which will be their primary one.**

Seed funds mainly apply discounted cash flow (DCF) valuation model where they rely on project development costs to forecast the cash flow which will secure the return for their investment. Start-up investors, in contrast, prefer relative valuation, which refers to the fact that even early-stage investors are able to adapt the know-how related to the usage of this method, and that they have reference data of public transaction values they can rely on during valuation. This ability describes the development of the Hungarian mergers and acquisitions (M&A) market over the last two and a half decades. Late-stage private-equity funds apply relative valuation mostly, more precisely, they prefer multiples valuation based on future results, and in addition, besides EBIT and EBITDA values, they rely on P/E rate values that require stock exchange data.

**5. Private funded venture capital investors, operating in Hungary (as well), define their required rate of return in line with their preferred business lifecycle phase, and this rate is close to the required rate of return of investors operating in countries having a well-developed venture capital industry. Hybrid and private funded funds show inconsistency between their required rate of return and their lifecycle preference which is represented in more favorable return conditions than those of private investors’.**

Required rate of return of venture capital and private equity investors is primarily defined by their strategic lifecycle preference. Early-stage deals invoke high financing risk, hence these deals have the highest required rate of return. Risk factors include investment duration period, uncertainty of funds needed for project development and other project-specific aspects. Hybrid and state-owned investors are satisfied with a lower rate of return compared to market standards, which causes inconsistency between financing risk arising from lifecycle preference and the respective actual required rate of return. Inconsistency can be explained by the fact that the cost of investment is lower for both groups of investors and fund management companies participating in the Jeremie program risk only the private contribution of capital allocated to the fund.

**6. Venture capital and private equity investors operating in Hungary apply the same contractual instruments during deal structuring as investors in countries having a developed venture capital sector. Investors’ ownership structure and lifecycle preference have an effect on the contractual instruments that are applied in particular transactions.**

Investors subject to my research apply priority rights, special rights enabling exit and veto rights regarding the company's strategic decisions, similarly to Western-European and Anglo-Saxon venture capital and private equity investors. Post-investment monitoring happens with similar methods, for example regular reporting requirement and membership in the governing body of the company. Early-stage investors, due to their investment lifecycle preference, allocate capital in tranches, based on milestones, and generally they do not wish to obtain majority ownership. Buy-out funds, instead, allocate capital in one amount, obtain majority ownership in the company and finance transactions by using bank loans as well. *Table 7* shows the evaluation of my hypothesis set in the Introduction chapter of my thesis, according to main research areas.

**Table 7: Evaluation of hypothesis examined in this doctoral thesis**

<b>ID of hypothesis</b>	<b>Research area</b>	<b>Applied method</b>	<b>Evaluation of hypothesis</b>
<i>H1-H2</i>	Investment decision making process	Analysis of decision making process with open questions	<b>VERIFIED</b>
<i>H3</i>	Project evaluation criteria	Non-parametric tests, cluster analysis	<b>VERIFIED</b>
<i>H4</i>	Project evaluation criteria	Non-parametric tests, cluster analysis	<b>PARTLY VERIFIED</b>
<i>H5</i>	Estimation methods for business value of projects	Non-parametric tests, cluster analysis, variance analysis	<b>PARTLY VERIFIED</b>
<i>H6</i>	Deal structuring	Non-parametric tests, cluster analysis, variance analysis	<b>VERIFIED</b>

*Source:* edited by the author

My research verified most of the hypothesis. H1 and H2 hypothesis have been verified by the analysis of venture capital decision making process, by using respective open questions and evaluation of results. H3 and H6 hypothesis covered research objectives valued by using Likert scale questionnaire, where results were evaluated by non-parametric tests and cluster analysis. I consider H4 and H5 hypothesis partly verified.

## 5. CONCLUSIONS AND RECOMMENDATIONS

Analysis of investment decision making process demonstrated that decision making mechanism of venture capital and private equity investors operating in Hungary is very similar to decision making procedure of investors in developed countries, which have been revealed by international researches. Decision making structure consists of the same phases, similar investor activities happen in screening, preliminary evaluation, due diligence and deal structuring phases, moreover, term sheets contain the same key elements which are used by Western-European or Anglo-Saxon investors. From this we **can conclude that during the development of the venture capital and private equity industry, Hungarian investors were able to adapt investment decision making practise widely used in developed markets.** Industry development is also supported by the fact that among investors in my research there is one investor who managed to establish solid position in the market, proves valuable track record and realised several successful exits with significant return. **By having valuable reputation based on references, investors do not need to active deal generation in order to attract significant deal flow.** Deal generation activity rather depends on whether the investor is a new player in the market or whether the lifetime of its managed fund is still in early phase. Criteria observed during investment screening is affected by the investors' ownership background, source of managed funds and investment strategy, including the preferred lifecycle stage. **The industry sector, where the potential investee operates, has not proved to be relevant factor, which shows that Hungarian venture capital and private equity investors follow generalist approach,** their investment portfolio is rather heterogeneous in this aspect.

**Venture capital investors operating in Hungary apply methods,** which are **in compliance with international standards** during project and company valuation. Discounted cash flow and relative valuation methods are both used, investors apply several methods for the same projects, although their preferred method might be decisive. My research revealed that **the relative valuation is getting popular among Hungarian venture capital investors,** which again can be associated with the adaptation of valuation methods used in developed markets and the growing experience of investors. Financing is mainly executed through ownership stakes with priority rights, however, **Anglo-Saxon practise of using preference shares has growing importance. This is essential to be emphasised because Anglo-Saxon investors' deal generation practise has been developed for financing by shares, therefore its adaptation might be seamless if Hungarian investors can finance investments via preference shares also.** Legal agreements between the investor and the investee cover special rights helping the exit (tag-along and drag-along), while provisions enabling gradual returning of ownership to original founders and provisions protecting against dilution of investors' ownership have not become widespread yet. My research showed that investors do not necessarily insist on seizing majority ownership in investee companies, they are satisfied with minority ownership as well. Investors even with minority ownerships can consider their position in safe because they can enforce their special priority rights.

Hungarian venture capitalists consider the same key criteria during project evaluation as fellow investors in developed markets. **Investors pay the most attention to management, market and aspects on exit and return potential.** My research identified that investment strategy, more precisely the preferred lifecycle stage has effect on project evaluation, since besides general key criteria, early-stage investors consider totally different criteria important than buy-out funds. **Early-stage investors prefer unique high technology projects,** they endeavour to ensure patent protection and trust those members of management who have entrepreneurial experience. **Within early-stage, start-up investors do not want to undertake risk of developing prototype,** they are rather interested in opportunities where there is a product or service already in function. Seed funds, in contrast finance prototype development, but it proves to be

problematic that there are only few seed funds on the Hungarian market. **It would be essential if players of the venture capital market could follow the whole evolution of companies and if there were enough investors available in the market. Expected investment duration period is a key risk factor** for early-stage deals, because it cannot be foreseen how long the investor should participate in the life of investees until appropriate return is reached at exit, and it is also difficult to estimate how much further financing is needed for that purpose. Research result shows that investors, except for state-owned and hybrid funds, have a return requirement in line with the risk of their lifecycle preference, so early-stage investors claimed higher required rate of return than late-stage private equity funds.

When analysing decision making process of **late-stage private equity funds**, I concluded that they **devote special attention to deal generation**, where **they participate in public auctions** and compete with fellow investors to finance projects. Despite that public auctions provide ground for **buy-out funds**, due to the pressure on increasing valuation, rather **look for proprietary financing opportunities with the hope of favourable positions**. External corporate and transactional advisory firms and investment banks play key role from due diligence to exit phase. When screening investment opportunities, company size is a key factor, and investors target companies with solid cash flow and healthy capital structure whose management is independent from the owners and the company is a key player in the market. Increasing the market value of portfolio companies often happens via additional corporate acquisitions, therefore **late-state private equity funds pay special attention to consolidation opportunities in the industry segments**. Since transactions are realised with fundamental changes in the investee's ownership structure, and the investors reorganise company operations, acquiring majority ownership is a key criteria during the deal structuring phase.

**Activities during decision phases and project evaluation criteria are defined by the preferred business lifecycle stage** in case of private-funded investors. Early-stage funds follow a simple decision making process, moreover, seed funds sometimes do not have formal decision making body in the organisation. Research revealed that **private-funded investors set the highest required rate of return**, which can be explained by the fact that these fund management companies must transfer returns to limited partners, and **their losses are not covered by any third party (for example, by the state). Therefore, they must add companies to their portfolio where they can realise such return upon exit which can compensate write-offs arising from loss-making deals**. Finally, motivation system of fund management companies enable that certain percentage of exit value is given to fund managers, making them interested in the highest possible selling price of portfolio companies.

**Hybrid management companies**, with the launch of Jeremie program, are relatively new players in the Hungarian venture capital market. Their **decision making model show signs of a transition between that of state-owned and private funded investors**. This means that their decision making practise is less formal than that of state-owned investors, but more formal than early stage, private funded investors. Hybrid funds, due to Jeremie program requirements, **shall consider program specific criteria when they evaluate investment opportunities**, and these criteria are not always in line with operating principles of the venture capital industry. One of these criteria is **the geographic location of the potential investee**, which shall be outside of the Central Hungarian region for most Jeremy program funds. Geographic restriction causes problems from various aspects. Firstly, it is not realistic, because the **Hungarian venture capital market is concentrated in the Central Hungarian region**, start-up and innovation activity is outstanding, and most of highly educated professionals live in this region. Secondly, this **restriction holds backs the operation of fund management companies** as they must meet administrative requirement, however, investors do not judge valuable projects based on their geographic location, therefore, they find the way to meet requirements and retain valuable

projects at the same time. **Requirements on investment limit and the number of years of companies' operation make efficient capital allocation difficult.** Research demonstrated that the **required rate of return of hybrid investors is not fully in line with their lifecycle preference, their required rate of return is lower than that of private investors' specialised in the same lifecycle stage.** The reason for difference underlies in the program conditions, which are valid motivational techniques to direct investors' attention to early-stage deals, however, **it is questionable whether such motivation will have counterproductive effects in financing.**

When looking at venture capital investors from the perspective of ownership background, the main finding of the research was **revealing the unique operating model of state-backed venture capital investors.** Decision making practise of state-funded investors follow a formal, administrative structure, characterised by several decision making rounds and levels, formal decision making body and set of prepared documents and forms during project evaluation phase. **When evaluating projects, investors do not only consider business aspects,** they assess economic policy factors and directives on EU funds, because the capital they are managing originates from governmental or European Union sources. Convergence of lagging regions and creating new workplaces through increasing capital allocation of SMEs are key economic policy objectives. **Geographic location of project is a neutral aspect, investors endeavour to allocate financing in each region countrywide.** As for their lifecycle orientation, **they prefer early-stage deals,** which is in line with their economic policy objectives. They rarely work on very early stage deals, rather they are interested in early-growth phase. **Uniqueness of technology does not prove to be important for them, their approach to patent protection is controversial,** it can be concluded that their investment strategy covers **capital allocation in traditional industry segments** as well. Their **financing conditions are more favourable** than private funded investors which contradicts to their lifecycle preference, similarly to the previous group of investors. **State-owned investors, in advance, define time of exit therefore determine investment duration and required return** which generally consists of a reference yield or interest and a premium.

## 6. PUBLICATIONS RELEVANT TO THE TOPIC OF THE THESIS

### Publications in Hungarian journals:

1. *Konecsny Jenő – Csernák József (2013):* Vállalati eredményesség és jövedelmezőség vizsgálat az iparági hovatartozás kontextusában. *Acta Carolus Robertus*, 3. évfolyam, 2. szám, 2013. augusztus, Károly Róbert Főiskola, Gyöngyös, 95-104. pp. ISSN: 2062-8269
2. *Konecsny Jenő – Havay Dóra (2012):* A magyarországi részvénykockázati prémium becslése különféle eljárásokkal. *Gazdaság és Társadalom folyóirat különszám*, 4. évfolyam, 2012. május, Nyugat-magyarországi Egyetem Kiadó, Sopron, 26-53. pp. ISSN: 0865 7823.
3. *Konecsny Jenő – Havay Dóra (2011):* A kockázati tőke-befektetések jelentősége Magyarországon a statisztikai adatok tükrében. *Gazdaság és Társadalom folyóirat különszám*, 3. évfolyam, 2011. március, Nyugat-magyarországi Egyetem Kiadó, Sopron, 62-84. pp. ISSN: 0865 7823.

### Publications in international journals:

1. *Jeno Konecsny – Jozsef Csernak (2013):* Private equity investments in Hungary and the financial crisis. *International Journal of Economics and Finance Studies*, Vol. 5., No. 1, 2013. The Social Sciences Research Society, 202-212. pp. ISSN: 1309-8055.
2. *Jeno Konecsny – Dora Havay (2012):* Venture capital and private equity investments in Hungary – characteristics and prospects. *International Journal of Business and Management Studies*, Vol. 4, No. 2, 2012. The Social Sciences Research Society, 91-100. pp. ISSN: 1309-8047.
3. *Jeno Konecsny – Dora Havay – Szilard Hegedus (2012):* Venture capital and private equity investments in the Central-Eastern European region. *Journal of International Scientific Publications, Economy & Business*, Volume 6, 2012, Science & Education Foundation, 211-220. pp. ISSN: 1313-2555.
4. *Jeno Konecsny – Dora Havay (2011):* The importance of state's role in the Hungarian venture capital market. *International Journal of Economics and Finance Studies*, Vol. 3, No. 2, 2011. The Social Sciences Research Society, 159-168. pp. ISSN: 1309-8055.

### Publications in Hungarian conference studies:

1. Konecsny Jenő (2017): A 2009-2016-os magyarországi JEREMIE kockázati tőkeprogram vizsgálata regionális szinten. 97-110. pp. In: Takács István (szerk.): *Az együttműködési attitűdök gazdasági-társadalmi hatótényezői az Észak-Magyarországi régióban működő kkv-kban*. Gyöngyös, 190. pp. ISBN: 978-963-12-8815-5
2. Konecsny Jenő (2016): A Jeremie program Magyarországon – Tények a kockázati tőke-befektetési program eddigi teljesítményéről és preferenciák a befektetői oldalról. XV. Nemzetközi Tudományos Napok. Innovációs kihívások és lehetőségek 2014-2020 között. Károly Róbert Főiskola, Gyöngyös, 2016. március 30-31. 877-885. pp. ISBN: 978-963-9941-92-2.
3. *Konecsny Jenő – Végh Klaudia (2013):* A kockázati tőke-befektetések vizsgálata a makrogazdasági helyzet tükrében Magyarországon. *Innováció – hatékonyság –*

munkahelyteremtés – A gazdasági fejlődés fő hajtóerői, Nemzetközi Tudományos Konferencia, Nyugat-magyarországi Egyetem Közgazdaságtudományi Kar, Sopron, 2012. november 12. 1116-1131 pp. ISBN: 978-963-359-000-3.

4. *Végh Klaudia – Konecsny Jenő (2013):* A pénzügyi-gazdasági válság hatásai a magyarországi megtakarításoknál. Innováció – hatékonyság – munkahelyteremtés – A gazdasági fejlődés fő hajtóerői, Nemzetközi Tudományos Konferencia, Nyugat-magyarországi Egyetem Közgazdaságtudományi Kar, Sopron, 2012. november 12. 1116-1131 pp. ISBN: 978-963-359-000-3.
5. *Konecsny Jenő – Havay Dóra (2011):* Új állami kezdeményezés a magyarországi kockázatitőke-piacon – a JEREMIE-program. Erdei Ferenc VI. Tudományos Konferencia, Kecskeméti Főiskola, Konferencia kiadvány, I. kötet, 2011. augusztus 25-26, Kecskemét, 66-70. pp. ISBN: 978-963-7294-99-0.

Publications in international conference studies:

1. *Jeno Konecsny – Szilard Hegedus (2013):* Comparative analysis between the European and United States' venture capital market. Proceedings of the 4th International Conference on Economic Sciences, Kaposvár University, 9-10 May, 2013. 471-477 pp. ISBN: 978-963-9821-62-0.