EMPIRICAL ANALYSIS OF HUNGARIAN FIRMS ACCORDING TO VENTURE CAPITAL INVESTMENT CRITERIA

Judit Edit FUTÓ[1]

Over the past decade the venture capital industry has become more and more prominent, not just on a global level, but in Hungary, too. Thanks to the JEREMIE Program a large number of new venture capital firms are located in our country, and therefore an investment wave has started. The aim of the paper is to sort micro- and small sized enterprises in terms of how appropriate is a venture capital financing. The main topic of the paper relates to the selection of firms for venture capital investment; therefore, in the first part of the study we briefly summarize a general venture capital investment process, highlighting both the selection process and the criteria used for selection. Then we propose 3 indexes (trustworthiness index, openness index, investment index), which we have created to help venture capitalists to decide whether the targeted enterprises are appropriate for them, or not. In the main part of the paper we provide a classification of micro- and small sized Hungarian firms based on my own survey, and we analyze what kind of relationship exists between the proposed indexes and the type of the classified firms. The result of the classification is that we identify four main firm types and, based on statistical tests, it can be said that there is no significant relationship between the trustworthiness index and the clusters, but that there are between the two other indexes and the clusters.

[1] *PhD student, University of Debrecen, Faculty of Economics and Business, Hungary.*

1. Introduction

Over the past decade the venture capital industry has become more and more prominent, not just on a global level but in Hungary, too. Nevertheless, enormous variations remain in the size and success of venture capital markets around the world. (Cumming, Schmidt & Walz 2010)

Venture capital has had a prominent role in the Hungarian economy over the past 5-6 years, although it made its first appearance in the regime change of 1989 (Karsai, 2006). Most venture capital funds were foreign, because the appropriate legal and economic environment did not then exist in Hungary. The first relevant law came into force in 1998, but this did not encourage investors (Banyár & Csáki, 2006); since then, continuous improvements have been made. The path of Hungarian VC development has been affected by a number of factors, such as the underdeveloped financial system, the quality of enterprises, culture, institutions, history and public engagement (Karsai, 2012).

In a Central and Eastern European context the Hungarian venture capital industry was outstanding between 2004 and 2008, but as a result of the financial crisis it encountered serious problems. After 2007, when the financial crisis occurred, the Hungarian venture capital industry started to slow down. The reasons for the decline were, on the demand side, the intensifying competition for venture capital funds between entrepreneurs. Since the financial crisis, it has been hard to get loans from banks, and therefore the owners of companies have started to look for alternative sources of funds, such as venture capital. On the other hand, the sources of venture capital also decreased because the VC funds held back on releasing funds in order to stabilise their own portfolios, and so the founders of VC funds also affected the crisis because of the reduction of the amount of funds managed (Karsai, 2013).

The impact of the financial crisis can be observed in the decrease in the share of the private equity segment. However, the classic venture capital segment has now started to increase, due to the JEREMIE Program. (MNB, 2015) The above mentioned problem, i.e. the lack of capital, has been solved thanks to the European Union and the Hungarian government. Together they created the JEREMIE Programme, which offers 45 billion HUF (around 150 million euros) for 8 VC funds. The goal of the new 8 VC funds is to finance the innovative, micro- and small-size enterprises that previously disappeared beyond the horizons of both investors and the government (Karsai, 2013).

All of this sounds encouraging, but the questions remains as to whether there are sufficient enterprises of the right quality to be financed by venture capital funds. Many in the business community have written about this problem, highlighting the role of the growing

allocated capital but expressing scepticism about whether VC funds can find the right portfolio companies. According to investors, a mistaken classification of Hungarian enterprises is caused by incompetent management and the lack of sales activity. The consequences of the situation described above are that, on the one hand, any business - even those less suitable - can get access to capital, and, on the other hand, the investment period is extended with the JEREMIE funds (MNB, 2015).

In the introduction we gave a very brief review of the Hungarian venture capital industry as a basis for this study. Due to the current situation in Hungary, it is important to understand the main characteristics of Hungarian enterprises, in order to know whether they meet the expectations of venture capital funds. The purpose of the study is to provide a classification of micro- and small sized Hungarian firms, based on my own survey and to analyze what kind of relationship exists between the proposed indexes and the types of the classified firms.

Firstly, we give a general overview of the selection phase of the venture capital investment process, because this theoretical background will be used for the analysis of the survey. Secondly, for a deeper understanding we briefly describe 3 indexes, which we created to help venture capitalists to easily decide whether the targeted enterprises are appropriate for them, or not. In the last part of the paper we present and discuss the empirical results of cluster analysis and we finish with a conclusion.

2. Literature Review

After the introduction, where we briefly characterize the Hungarian venture capital industry, let us continue the literature review of the main topic of the paper.

The purpose of this section is to describe the usual process of deal-making in a venture capital firm and a few of the decision making characteristics of the deal. More important here is the kind of criteria used by venture capitalists to evaluate new venture proposals. Based on Kollmann and Kuckertz (2009); Macmillan, Siegel, and Narasimha (1985); Tyebjee and Bruno (1984); Hall and Hofer (1993); Khanin, Baum, Mahto, and Heller (2008); Fried and Hisrich (1994) we give a list of the general criteria that venture capitalists use to evaluate potential investments. These criteria are, for example, the entrepreneur's personality, ability, experience; the characteristics of the business; the character of the product/ service; the business model; competition and market growth; and of course the financial system development level. The criteria for the ranking of each investor is different, but uniform agreement can be observed in this regard that the most important aspect of the investor is the entrepreneur skills, fairness and experience. These are very subjective factors, but venture capitalists always co-operate with someone in whom they see the

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proper sympathy. In addition, another important criteria is the possibility of the exit because without a good exit the venture capitalist cannot raise new fund in the next term.

The venture capital investment process consists of 5 steps. These are deal origination, deal screening, deal evaluation, deal structuring and post-investment activity (Tyebjee & Bruno, 1984). The theory of selection is well developed in finance; it will not be reviewed here. However, we emphasise the screening and evaluation phases, where the venture capitalists or their team seek to subjectively assess the potential enterprises on a multidimensional set of criteria. Tyebjee and Bruno (1984) find 5 dimensions, namely, market attractiveness, product differentiation, managerial capabilities, environmental threat resistance, and cash-out potential. From these dimensions it is necessary to highlight the venture's ability to manage them effectively, the quality of the management team, and the product's competitive advantages and uniqueness.

Other authors (Kollmann & Kuckertz (2009); Macmillan et al. (1985); Hall and Hofer (1993); Khanin et al. (2008); Fried and Hisrich (1994)) have also written about this topic. The differences in their approach concern the type of research methods used, the sample, and how they categorize the criteria. Most of them define the following criteria: venture capital firm/fund requirements, the characteristics of the entrepreneur, the nature of the proposed business, and the economic environment of the proposed industry or country.

Zacharakis and Meyer (1998) criticize the above mentioned studies because the majority of past research relies on post hoc methodologies to understand the decision process and criteria. Zacharakis and Meyer (1998) use policy capturing and a real-time method common in cognitive psychology. Their findings suggest that venture capitalists are not good at introspecting about their own decision processes because, as more information becomes available, insight diminishes.

In order to collect the right variables for the cluster analysis we have to know what the most useful criteria in the venture screening process are. Therefore, we highlight three aspects which are used during the analysis. We think that the most important are the entrepreneur's reliability and openness; the financial methods of and the character of the product/service.

In the next section we introduce our own sample and the variables and describe the 3 indexes we have created for analysis.

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3. Data and methodology

In this section we introduce the sample, the variables and the indexes. We use a representative survey which was provided by the HÉTFA Research Institute, which consists of 300 Hungarian micro- and small-size enterprises. The survey was made at 2011 spring. The enterprises in the survey were involved in the industrial, trading and service sectors, operating in seven different regions of Hungary. The business owners were interviewed. The purposes of the survey were to understand how micro- and small-size enterprises operate on an everyday basis, and what their development plans are. (Survey, 2011)

As regards the analysis, we consider it problematic that we only use this particularly survey and its data; however, we were not involved in the editing of the survey. We added extra information to the database, such as sales, total assets, and ownership structure. In *Table 1* we list all the variables we use for the analysis. *Table 1* contains basic statistical information, such as the mean, std. deviation, minimum and maximum value of all variables. Some of the variables are dummies, but there are others which are measured in scales. In these cases we standardize these to get nominal variables whose value is between 0-1. For example, we note that the maximum value of the sales variable is 2,900,000,000 HUF; we then divide the amount of each company's sales by that maximum value. We apply the same method for the years of operation, entrepreneurs' years of activity, the age of the interviewees, the income level of the interviewees, sales, total assets, the trustworthiness index, the investment index, and the openness index.

After introducing the database we summarise the structure of the indexes we mentioned earlier, because we will use them later on. In Futó – Szobonya (2012) we created 3 indexes which might be taken into account as selection criteria for venture capitalists. The first is the *trustworthiness index*, which gives information about the reliability of the manager. The second index is the *openness index*; this measures how enterprises agree to take venture capital investment which involves their own company. The third index is the *investment index,* which characterizes the company's investment objectives.

The creation of the proposed indexes started from the questions of the survey given to us. The survey consisted of 86 questions, despite the difficulties, which mentioned earlier, 16 questions could be selected to build the indexes. Thus, we began to introduce the creation of the proposed indexes. We received some help to the selection of appropriate questions from Peter Szobonya, who has taken part in several venture capital negotiation as an intermediary party, therefore he has some knowledge about the habits of and expectations of the venture capitalist. During forming the index values we used Microsoft Office Excel.

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Futó, E. J. (2016).
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Table 1. Descriptive statistics of the variables

	Minimum	Maximum	Mean	Std. Deviation	Number of respondents
Budapest	0.0000	1.0000	0.3367	0.4734	101
Debrecen	0.0000	1.0000	0.1633	0.3703	49
Dunaujvaros	0.0000	1.0000	0.0833	0.2768	25
Miskolc	0.0000	1.0000	0.1233	0.3294	37
Szeged	0.0000	1.0000	0.1200	0.3255	36
Szekszard	0.0000	1.0000	0.0567	0.2316	17
Zalaegerszeg	0.0000	1.0000	0.1167	0.3216	35
micro-size enterprise	0.0000	1.0000	0.4767	0.5003	143
small-size enterprise	0.0000	1.0000	0.5233	0.5003	157
industrial company	0.0000	1.0000	0.2933	0.4561	88
trading company	0.0000	1.0000	0.3167	0.4660	95
service company	0.0000	1.0000	0.3900	0.4886	117
the interviewee is the owner	0.0000	1.0000	0.8288	0.3774	242
the interviewee is not the owner	0.0000	1.0000	0.1712	0.3774	50
the owner is an active worker	0.0000	1.0000	0.9267	0.2611	278
the owner is not an active worker	0.0000	1.0000	0.0733	0.2611	22
vocational education	0.0000	1.0000	0.0367	0.1883	11
educated to high school level	0.0000	1.0000	0.3233	0.4685	97
graduate	0.0000	1.0000	0.6400	0.4808	192
married	0.0000	1.0000	0.8712	0.3356	257
unmarried	0.0000	1.0000	0.1288	0.3356	38
religious	0.0000	1.0000	0.6056	0.4896	172
non-religious	0.0000	1.0000	0.3944	0.4896	112
has children	0.0000	1.0000	0.9033	0.2960	271
has no children	0.0000	1.0000	0.0967	0.2960	29
male	0.0000	1.0000	0.7200	0.4497	216
female	0.0000	1.0000	0.2800	0.4497	84
member of a business organization	0.0000	1.0000	0.6133	0.4878	184
not a member of a business organization	0.0000	1.0000	0.3867	0.4878	116
poor	0.0000	1.0000	0.0517	0.2219	15
average income	0.0000	1.0000	0.8379	0.3692	243
rich	0.0000	1.0000	0.1103	0.3139	32
the owners is Hungarian	0.0000	1.0000	0.9800	0.1402	294
the owner is foreign	0.0000	1.0000	0.0200	0.1402	6
operation years_standardized	0.0800	0.9200	0.5286	0.2566	
entrepreneurs years_standardized	0.0476	1.0000	0.6988	0.2984	
age of the interviewee_standardized	0.2500	0.9750	0.6500	0.1300	
income level of the interviewee_standardized	0.0000	1.0000	0.5633	0.1711	
sales_standardized	0.0001	0.9861	0.0688	0.1191	
total assets_standardized	0.0001	0.9892	0.0589	0.1176	

Source: Authors' calculations

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The trustworthiness index consists of 4 questions and each refers to how the owner-manager considers certain irregularities to be acceptable, such as tax fraud or kickbacks. The truths of statements are marked from 1 to 10 scale. A value of 1 means "never allowed", while 10 is "always permissible". The final value of the index is a weighted average of the 4 answers to that, so the value of the trustworthiness index are between [1-10]. If the value of the index is 1, then we say that the owner of the company is reliable, and higher value from 1 means the owner is unreliable.

Connected to the openness index, 10 questions were considered appropriate to evaluate the openness, so there are types of questions we put as "I could not bear that the company falls into the hands of another, not even if I get good price for it" or "I could not bear to an external financial investor as a co-owner interfere in the management of the company" or "for the company's growth use of venture capital is conceivable". The openness index is composed of 10 different questions, which were needed to scale firstly, and then the answers were classified so that they strengthen or weaken or neutralize the openness index. If the answer to a question strengthened the openness index we give a 1, if it weakened -1 and 0 if neutral. Then we summarized the value of the answers to the questions that are weighted equally in the index. The possibility of variation in the openness index moves in quite a wide range. The most ideal case, the maximum index value is 8 and the minimum is -7.

Finally, the investment index is related to the company's future investment plans and financing issues. In the case of the investment index, three categories were distinguished during the forming: "absolutely inappropriate", "medium" and " highly relevant". The "absolutely inappropriate" category is relevant to a company that does not plan to expand or invest by venture capital. The "medium" rating is given to companies that plan to research and development and / or new services, new product introduction and / or expansion of equipment, but in the first round do not intend to finance these plans by involvement of an external investor. Those companies which plan to the above listed investments and financed by external investors are in the "highly relevant" category. In later it would be difficult to carry out an analysis with group names, thus we simply added values to each groups, but it is irrelevant what the number of the value is. The highly relevant group received 1, the medium got 2, and absolutely inappropriate group got 3.

For the best investment opportunity; therefore, you must search for the following criteria: the trustworthiness index should be 1, the openness index should be positive and the investment index should be 1.

In the study (Futó – Szobonya 2012) we made a regression analysis in SPSS to find out which variables the success of a venture capital investment depends on. The explanatory

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power of regression models was not considered appropriate, and thus I do not wish to present the results here again; consequently, we continue with the cluster analysis.

The purpose of the clustering is to identify different groups in order to characterize the typical company which could meet the requirements of venture capitalists. Firstly, we form the clusters; then we briefly summarize the best-fitting traits. After this, we conduct a relationship analysis with the explanatory variables, the missing variables and the 3 indexes. For all these we make a K-mean cluster analysis in the SPSS program.

The process of the analysis involves all the variables available to me selected for the clustering; we tested how they contribute to cluster formation. We start with the standardization of the explanatory variables and remove the atypical cases (outliers) which would distort the clustering. The dendrogram can provide a starting point to determine the number of clusters. In this case, we have a sample with 300 elements; it is hard to read the exact number of clusters from the dendrogram, but the conclusion is that the correct number of clusters is 4 or 5. We carry out some random K-mean clustering in various cluster cases, and then we choose 4 as the number of the cluster. In making the decision it is important that there is a good distance between the cluster centres, so that they will be interpreted accurately. If 6 or 8 clusters are formed, the expected results will be lost from the analysis.

To find the final explanatory variables we need to use One-way ANOVA, which provides a statistical test of whether or not the means of several groups are equal, and therefore generalizes the *t*-test to more than two groups. As a starting point we use all the variables to form 4 clusters, and we analyse the ANOVA table (in *Table 2*) to find the best variables which contribute significantly to cluster formation and those which can be disregarded.

We have to consider those variables which have a significant level of zero and also those between 1 and 5 per cent, such as the structure of the ownership, the income level of the interviewed, and total assets. Completely insignificant variables include married, religious, the entrepreneurs' age, and the age of the interviewee. The signification level of the years of operation variable is above 5 per cent, but in the descriptive table it can be seen that the missing validity is the highest here, and therefore we lose one third of my sample during the clustering. To find the best clusters we omit a few explanatory variables such as the married, religious, children, male, poor and average income variables, the entrepreneurs' age, and the age of the interviewee.

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Table 2. ANOVA output of the explanatory variables

	F	Sig.
Budapest	72.04664	0.00000
Debrecen	2.51597	0.05941
Dunaujvaros	2.40790	0.06830
Miskolc	5.74449	0.00086
Szeged	7.19590	0.00013
Szekszard	4.85193	0.00278
micro-size enterprise	6.22926	0.00046
industrial company	93.07387	0.00000
trading company	7.80426	0.00006
the interviewee is the owner	4.87335	0.00271
the owner is an active worker	5.20694	0.00174
educated to high school level	608.08470	0.00000
graduate	1061.17825	0.00000
married	**0.73782**	**0.53060**
religious	**0.46087**	**0.70992**
has children	**1.05956**	**0.36735**
male	**1.53146**	**0.20750**
member of a business organization	9.51449	0.00001
poor	**1.62141**	**0.18557**
average income	**1.23437**	**0.29831**
the owners is Hungarian	4.54388	0.00417
operation years_standardized	2.32203	0.07629
entrepreneurs years_standardized	**0.65810**	**0.57874**
age of the interviewee_standardized	**0.62937**	**0.59683**
income level of the interviewee_standardized	3.29161	0.02163
sales_standardized	4.18256	0.00671
total assets_standardized	3.32937	0.02059

Source: Authors' calculations

4. Empirical Results

To explain the clusters we use the output of the final cluster centres and the ANOVA output, which can be found in *Table 3* and *Table 4*.

Based on the geographic variables, 4 clusters are formed. Two out of the four are mixed groups, which means the enterprises operate in any part of the country. In the third cluster there are only Budapest based enterprises, and in the fourth cluster there are only enterprises in rural areas. For this reason we have named the third cluster Budapest-only businesses, while the

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fourth cluster is called the rural businesses group. If we wish to distinguish between the first and second clusters, it can be said that in the second cluster there is a slightly higher proportion (60%) of enterprises operating in towns in Western Hungary. So this becomes the group of businesses in western towns. Last but not least, the first cluster - where there are companies from each region – is called the mixed enterprises group.

Table 3. The main features of the final cluster centres

	1	2	3	4
Budapest	0.3182	0.2979	1.0000	0.0000
Debrecen	0.1818	0.1915	0.0000	0.1980
Dunaujvaros	0.1364	0.1064	0.0000	0.0990
Miskolc	0.1136	0.1064	0.0000	0.2277
Szeged	0.0909	0.0638	0.0000	0.2475
Szekszard	0.0455	0.0638	0.0000	0.0891
micro-size enterprise	0.7045	0.4255	0.4074	0.4059
industrial company	0.0000	0.6170	0.2037	0.3168
trading company	0.7273	0.0000	0.3704	0.2673
the interviewee is the owner	0.9091	0.8936	0.6481	0.8911
the owner is an active worker	0.9773	0.9787	0.8148	0.9703
educated to high school level	0.8864	0.8936	0.0000	0.0000
graduate	0.0000	0.0000	1.0000	0.9901
member of a business organization	0.2955	0.5319	0.6667	0.7525
the owner is Hungarian	1.0000	1.0000	0.9259	0.9901
operation years_standardized	0.4736	0.5174	0.5230	0.5739
income level of the interviewee_standardized	0.5455	0.5021	0.5981	0.5792
sales_standardized	0.0573	0.0319	0.1248	0.0654
total assets_standardized	0.0290	0.0268	0.0974	0.0660

Source: Authors' calculations

In this section we characterize these four clusters with the help of explanatory variables. It must be mentioned that the function of the enterprises (such as industrial, trading and services) is not significant according to ANOVA, due to the stratified sampling, which means there is not a great difference between the groups in terms of these variables.

We identify only the main characteristics of each group. The feature of the first cluster - the mixed enterprises group – is that 70.45% of the enterprises are micro-sized enterprises, a higher proportion than in the other clusters. As mentioned above, the industry classification is not as significant as the next feature; i.e. that around 98% of the business owners are involved in the operational work of the firm. The owners of the companies are only high school graduates; around 30% are members of some type of enterprise development organization.

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Furthermore, the owners of the enterprises are wholly Hungarian. Based on accounting information, the average revenue is around 166,170,000 HUF, while the average total assets are 72,500,000 HUF.

Table 4. ANOVA output of the classification

	F	Sig.
Budapest	146.9319	0.0000
Debrecen	4.2500	0.0060
Dunaujvaros	2.3669	0.0715
Miskolc	5.7814	0.0008
Szeged	8.2422	0.0000
Szekszard	1.7964	0.1485
micro-size enterprise	4.3484	0.0053
industrial company	17.7850	0.0000
trading company	24.5875	0.0000
the interviewee is the owner	6.9288	0.0002
the owner is an active worker	6.6339	0.0003
educated to high school level	411.7613	0.0000
graduate	4611.6674	0.0000
member of a business organization	10.7146	0.0000
the owner is Hungarian	3.5157	0.0159
operation years_standardized	**1.7435**	**0.1587**
income level of the interviewee_standardized	3.4463	0.0174
sales_standardized	5.5286	0.0011
total assets_standardized	4.6712	0.0034

Source: *Authors' calculations*

The second cluster is the western towns cluster. In this group, 57.45% are small-sized enterprises and, compared to other groups, most of the business owners are actively involved in their companies. Most of the owners - around 90% - have graduated from high school. The owners of the enterprises are wholly Hungarian. Compared to the other groups, this is the smallest group in terms of the number of elements, e.g. the extent of the accounting information. Average sales revenues are around 92,510,000 HUF, while total assets are 67,000,000 HUF.

Based on the accounting data the third group, namely the Budapest-only enterprises group, has the largest companies. The average sales value of the cluster centre is around 361,920,000 HUF, while the total asset value is 243,500,000 HUF. This group consists of 54 enterprises, of which 40-60% are divided between micro- and small-sized enterprises. An important difference compared to the other groups, is that 64.81% of the respondents are also the owners, and only

80% of these owners are actively involved in the daily operations of the business. This fact is related to the ownership structure, as in this group some companies have foreign owners. 100% of the managers are highly educated.

Finally, the fourth group, the rural businesses group, consists of 101 micro- and small-sized enterprises and is therefore the biggest. The total sample size is 300, of which 54 enterprises have been excluded because of the variables. It also emerges that 3% of the owners are non-active participants and some owners are foreign. In terms of educational level, almost everyone has a degree. In terms of the accounting data, these companies are in second place, and considering the values of the cluster centres, it seems the revenue is 189,660,000 HUF, while the total asset value is 165,000,000 HUF.

Following this description of the clusters we attempt to identify whether there is a difference between each cluster and the three indexes, and if so, of what kind. Therefore, we carry out an independence test and an analysis of variance. The results of these tests only summarize the level of significance (Table 5). Because we use nominal variables during the analysis, together with the test of homogeneity of variance, we also carry out an ANOVA test, and the robust test of equality of means (Welch). From the result of these tests it is clear that the trustworthiness index is not significant, so there is not a great difference between the indexes and the clusters. However, with the openness index and the investment index there is significance, according to the ANOVA test.

Table 5. ANOVA output of the classification

	Test of Homogeneity of Variances Sig.	ANOVA Between groups Sig.	Robust Test of Equality of Means (Welch) Sig.
trustworthiness index	.0260	.31219	.2632
openness index	.2152	.00001	.0000
investment index	.0016	.02305	.0184

Source: *Authors' computation*

The descriptive output (*Table 6*) also helps with the evaluation. From the assessment of the results it is clear that there is no great difference between the clusters and their means on the trustworthiness index. Apart from this, the third group is highlighted because here the average value of the trustworthiness index is 1.4265, which is the highest average value compared to the other clusters. The reliable value of the trustworthiness index is 1, and if an individual has more than one it means that the owner of the enterprise is untrustworthy. Therefore there are several owners who could be prone to fraud.

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Table 6. Descriptive of the proposed indexes

		N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
						Lower Bound	Upper Bound		
Trustworthiness index	1	43.0000	1.3314	0.8233	0.1255	1.0780	1.5848	1.0000	4.2500
	2	47.0000	1.3847	0.7564	0.1103	1.1626	1.6068	1.0000	4.3300
	3	51.0000	1.4265	0.7319	0.1025	1.2206	1.6323	1.0000	4.0000
	4	101.0000	1.2302	0.4926	0.0490	1.1329	1.3274	1.0000	3.7500
	Total	242.0000	1.3195	0.6677	0.0429	1.2350	1.4041	1.0000	4.3300
Openness index	1	44.0000	-0.6591	2.1775	0.3283	-1.3211	0.0029	-6.0000	4.0000
	2	47.0000	-0.9574	2.3587	0.3440	-1.6500	-0.2649	-6.0000	5.0000
	3	54.0000	1.2407	2.5693	0.3496	0.5395	1.9420	-6.0000	6.0000
	4	101.0000	-0.5644	2.5746	0.2562	-1.0726	-0.0561	-6.0000	5.0000
	Total	246.0000	-0.2602	2.5820	0.1646	-0.5844	0.0641	-6.0000	6.0000
Investment index	1	44.0000	2.7045	0.4615	0.0696	2.5642	2.8449	2.0000	3.0000
	2	47.0000	2.5532	0.5441	0.0794	2.3934	2.7129	1.0000	3.0000
	3	54.0000	2.3889	0.5636	0.0767	2.2351	2.5427	1.0000	3.0000
	4	101.0000	2.4851	0.5023	0.0500	2.3860	2.5843	2.0000	3.0000
	Total	246.0000	2.5163	0.5246	0.0334	2.4504	2.5821	1.0000	3.0000

Source: Authors' computation

Continuing the interpretation of the relationship between the openness index and the clusters, it can be seen from the ANOVA test that the significance level of the openness index is zero, which means there is a difference between the clusters and the openness index. It is necessary to highlight the third cluster because here the mean of the openness index is the highest. It can be concluded that owners of the enterprises in the third cluster could be more open to venture capital than those in the other three clusters.

We briefly summarize the evaluation of the openness index for further analyses. The higher the value of the openness index, the more open the owner is to receiving venture capital. This means that the business owner likes or accepts a venture capitalist as a possible new co-owner. In this case, the minimum value is -6 and the maximum value is 6. In order to calculate the exact mean value of each cluster it is necessary to do the following calculation. From the descriptive table the standardized value is selected and then multiplied by six, and then twelve is subtracted from the total. Therefore, the mean value of the openness index in the third group is 1.2407, which is the highest. For the other three groups the recorded average values are negative and are less than one, which means they are in neutral position vis-a-vis VC. Entrepreneurs in the third cluster, which consists of businesses from Budapest, should be considered more open than those from the other clusters. Before the analysis we expected to find that Budapest enterprises are more open than those operating in rural towns, and the results conforms this.

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The subject of the next analysis is the investment index. This has a significance level of less than 5%, so there are some differences between the groups and the investment index. The best value that an enterprise could be given is 1. For this it needs to be involved in innovative investments and to be financed by external investors, such as venture capitalists, and not by a bank. In this regard, we mention the third group also because in this cluster the investment index has the lowest average. This means that this group includes those businesses that wish to be financed by venture capitalists.

The study continues with an analysis of the missing variables. We use similar tests to ones used previously: a test of homogeneity of variances, ANOVA and Welch, and the results are given in *Table 7*.

The missing variables are married, religious, children, male, poor, average income, entrepreneurial activity in years, and the age of the interviewee, with significance levels above 10% (*Table 1*). It can be clearly seen from *Table 7* that there is no, or very little, difference between the groups and the missing variables. I only emphasize the male variable because here there is a visible difference. Consequently, no more analysis will be conducted, because it does not contribute to a better understanding.

Table 7. The results of the statistical tests of the missing variables

	Test of Homogeneity of Variances Sig.	ANOVA Between groups Sig.	Robust Test of Equality of Means (Welch) Sig.
married	.0003	.2455	.1010
religious	.1298	.3762	.3912
children	.0753	.6369	.6050
male	.0000	.0687	.0404
poor	.0057	.3753	.3787
average income	.0194	.4931	.4828
entrepreneurial activity in years	.0411	.1615	.1954
age of the interviewee	.5234	.1465	.1478

Source: Authors' computation

Finally, we include a table summarizing the frequency of the indexes in each cluster (*Table 8*) because it is important to know the values for each cluster. To do this, we give a short evaluation of the indexes. If you are a venture capitalist you are looking for the best investment opportunity; therefore, you must search for the following criteria: the trustworthiness index should be 1, the openness index should be positive and the investment index should be 1.

Table 8. Frequency of each index in each cluster

Clusters	Value of the Trustworthiness index		Value of the Openness index			Value of the Investment index		
	1	**above 1**	**negative**	**zero**	**positive**	**1**	**2**	**3**
1	31	13	22	10	12	0	13	31
2	33	14	29	9	9	1	19	27
3	29	25	13	7	34	2	29	23
4	74	27	58	11	32	0	52	49
Missing	39	15	28	9	17	3	17	34
Sum	206	89	150	46	104	6	130	164

Source: Authors' computation

Only two businesses from the sample meet these criteria and both are in the third cluster. Because of data confidentiality these companies cannot be named, but we have been able to characterize them on the basis of the explanatory variables. We do not want to repeat the most important features of the third cluster before we interpret it, but the main difference between the two is the number of years of operation. One of them has been in operation for 20 years, while the other is younger.

Because the difference between the openness index and the clusters is significant, it should be mentioned that there are 58 enterprises from the fourth cluster which reject venture capitalists and there are 34 that are open to venture capital, something which cannot be explained from this analysis. Although the unique feature of the fourth cluster is that it only includes enterprises that operate in rural towns, I think that further conclusions cannot be drawn from this feature.

4. Conclusions

In the literature review we present the selection criteria and based on these we proposed three indexes in order to evaluate a potential business perspective of venture capital financing. In the international literature there are few such intention, so the forming of the indexes is filling a niche. Furthermore, we agree with the criteria set out in the literature and we consider the most important criteria is the owner / manager personality and ability.

Following the introduction of the JEREMIE Program, new venture capital has been allocated and invested over the past few years. Futó – Szobonya (2012) started to analyze which Hungarian micro- and small-size businesses were able to accommodate a potential venture capital investment.

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We have modified the methodology used in their approach, and we have provided a classification of these micro- and small-size firms based on this survey. Our finding is 4 main types of firms. Two out of the four are mixed groups, which means that the enterprises operate in any part of the country. In the third cluster there are only Budapest based enterprises and in the fourth cluster there are only enterprises in rural areas. Based on the accounting information, the third cluster includes the largest companies which can be found in the sample, while the second cluster contains the smallest firms. Another important difference is that the majority of businesses who have foreign owners are in the third cluster. However, there is no great difference between the clusters in terms of the years of operation and the industrial sector. According to the sorting we could say that the third cluster's companies have got the best features by which may be acceptable for venture capitalist during the selection process. Because these firms operate in Budapest this gives them a competitive advantage. Budapest is the capital city in Hungary, therefore the economic environment is more inspiring so the companies have more chance to grow faster.

Subsequently, we analyzed what kind of relationship exists between the proposed indexes and the type of firm classified, because this could help to understand which firms could be potential targets for venture capital investment. The purpose of the analysis is to discover which type of company could be appropriate for venture capitalists based on the proposed indexes. Based on statistical tests, it can be established that there is no significant relationship between the trustworthiness index and the clusters, but that there is between the two other indexes and the clusters. We conclude that - based on the openness index and investment index - venture capitalists need to focus on enterprises which operate in Budapest, i.e. those corresponding to the characteristics of the third cluster. Furthermore, it can be said that only two companies out of 300 are acceptable according to the 3 proposed indexes criteria. These two firms belong to the third cluster so this also confirms that Budapest as capital city has good effect on the companies life.

Our research work does not end here, because a follow-up is necessary in order to determine how successful a venture capital selection made with the help of the proposed indexes is, and so in the future our research work will continue on this path. We plan to contact with Hungarian venture capital firms to offer our indexes to them to try it during a real investment process. Beside this we want to remake/calculate the proposed indexes for those companies, who won venture capital from Jeremie's venture capital firms. Therefore we want to see what kind of index values have they reached, and could we classify them to our 4 groups.

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