The analysis of the conditions needed for building venture capital industry in Lithuania

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This article includes the analysis of the conditions needed for venture capital (VC) market creation and the perspectives in Lithuania. The successful case of VC in Silicon Valley is shortly presented. The theoretical part of the article is up for revealing the differences of the venture capital concept among the regions. Going through the market analysis and statistical data, the current VC situation in Lithuania is presented. According to the opinion of the experts, the main problems that are obstacles successful VC market growth are determined. The priority sector for VC investments is also identified. In reference to accomplished theoretical and practical venture capital market perspectives' analysis, suggestions and conclusions have been done.

Keywords: Conditions for venture capital; Lithuanian market research; PEST analysis; Venture capital concept; Venture capital market creation; Venture capital market perspectives in Lithuania

INTRODUCTION

The financing of innovative, early stage development companies with the traditional financing sources is not widely spread because of the high risk which is not acceptable for the traditional financing institutions such as credit unions or leasing companies. The financing of innovative small and medium enterprises is considered to be very risky because of high transaction costs and low rate of return especially in the early stage of development. It is very difficult for that kind of companies to find the financing sources which are necessary to start or develop their new businesses. In such cases venture capital or private equity investors can suggest their model of financing which usually accepts very high risk and finances very risky projects if only the potential of a huge growth and high added value creation is seen in the future. That's why this financing model is used for financing the early stage development companies; this gives them not only financial but also intellectual capital.

It also generates a better equity leverage ratio in the structure of a balance sheet and enables them to attract additional financing sources from traditional financial institutions.

In the global scientific literature this topic is analyzed quite narrowly because this type of financing tool in the financial system occurred in 1946 in the USA. Bernile and Cumming, (2006) analyzed the structure of the venture capital funds; Groh, (2004) examined the attractiveness of the emerging markets for that kind of investment, others (L. Phalippou, 2007) did researches about venture capital funds investing process, while Lithuanian authors in this area have made very few researches and analysis which are not scientific in nature. It is worth to mention Jokubauskas (2004) and Strazdas (2003) researches. There is a lack of information in Lithuania which causes a lack of public awareness about the opportunities of venture and private equity.

Even though in Lithuania small and medium enterprises hold 99% of all markets, the government suggests various programmes to motivate the innovations and it gets harder to get external financing from traditional financing institutions, venture capital spread and it's created added value is very small when compared to the other countries which are similar to Lithuania according economic ratios. The percentage of venture capital investments from GDP in Lithuania is three times smaller than Central and East Europe average and more than 7 times smaller than all Europe average. Observing the growing demand for venture and private equity funds in West, Central and Eastern Europe, the unused capacity to attract this type of investments can be seen in Lithuania. It is therefore important to draw attention to this problem and explore possible causes in order to make proposals to accelerate the creation of the venture capital industry in Lithuania.
Problem definition and scope of research

There is a lack of scientific basis concerning this topic, the obstacles associated with assessment of venture the capital industry and the process of choosing the tools for stimulating the development of the venture capital industry in different countries.

The object of the research: The tools and conditions needed for the development of venture capital sector.

The aim of the research: To analyze theoretical venture capital market condition aspects, according to the market research and survey of experts, to explore venture capital industry perspectives in Lithuania and to come up with the suggestions for creating the venture capital industry in Lithuania.

The methods of investigation: The comparative and systemic analysis of scientific literature, systematization and classification, descriptive statistics, survey of the experts, PEST analysis, SWOT analysis and also multiple criteria method – COPRAS which is used in order to choose priority sector for venture capital investments.

Venture capital concept

Venture capital (VC) - defined as equity or equity-linked investments in young, privately held companies, where the investor is a financial intermediary who is typically active as a director, an advisor, or even a manager of the firm (Kortum, 1998). American literature understands it to be an investment by specialized venture capital organizations (VC funds) in high-growth, high-risk, often high-technology firms that need capital to finance growth (Black and Gilson, 1998). While in rare instances in Asia VC is considered as a superset, including higher risk, smaller investments and all private type investments due to a lack of start-ups or early stage high-technology companies (Wong, 2005). Concerning the classical concept of VC capital, they should more rightly be called private equity investors than venture capitalists. Van (2000) describes venture capital as a capital needed for the launch, early development and expansion of mostly high-tech companies with profit expectations.

Conditions needed for developing Venture Capital Industry (VCI)

Thomas Hellmann (2000) classifies VCI factors into 5 groups: financial market structure, human resource availability, source of opportunities and government policy. The author illustrates these factors by using metaphor of the human body. The five institutional forces that affect the vitality of the venture capital industry are shown as the head and limbs. The happy venture capitalist stands on the two feet of financial market structure and human resource availability. Sources of opportunities and supporting institutions are the two hands; government policy is the head.

Francis and Winston (2002) analyzed experiences of VCI development and indicated that one of the VCI development engines is innovations. The basic environment for innovation to thrive includes: An economy open to trade and investment; A sound infrastructure; A sensible approach to intellectual property rights; A risk-taking and achievement-oriented culture; An open-door policy to global talents; And as well as the authors mentioned above they emphasize a robust financial system.

Andrea, (2000) analyzed the impact of public subsidies on VC investments in start-up enterprises and as a result got the conclusion that public subsidies can make sense when the supply of venture capital for high technology start-ups is very low and very few venture capitalists have the appropriate expertise important for financing enterprises with high risks. So the government subsidies can also make the contribution to the VC investments.

Etzkowitz, (2003) developed the model of double helixes (university–industry, government – university, industry–government) and the new model version of triple helixes (government, university, industry) which emphasizes the collaboration of 3 public institutions as a condition which can make the countries attractive for VC investments. Indeed, the most important change in the model has been the move from bilateral interactions to trilateral interactions. The networks connecting the productive sector and the government are emphasized by the Triple Helix model to enhance economic development and competitiveness.

The model postulates an interaction among the institutional spheres to foster the condition for innovation and to make the country attractive to Venture Capitalists (Etzkowitz and Leydesdorff 1998, 2000; Etzkowitz 2002, 2004; Cowan and Jonard 2004; McEvily et al., 2004).

In the survey, executed by National Venture Capital Association in 2010, the factors which create non-favourable climate for venture capital were determined (See figure 1). In order to build a market open to VC investments, these negative factors should be eliminated.

Silicon Valley

It is important to analyze the successful venture capital industries such as Silicon Valley and Route 128 in order to identify reasons of their success and apply their strengths to the venture capital development model in Lithuania.

Silicon Valley (http://en.wikipedia.org/wiki/Silicon_Valley) is the southern part of the San Francisco Bay Area in Northern California, United States. The term originally referred to the region's large number of silicon chip
innovators and manufacturers, but eventually came to refer to all the high-tech businesses in the area; it is now generally used as a metonym for the American high-tech sector. Despite the development of other high-tech economic centres throughout the United States, Silicon Valley continues to be the leading high-tech hub because of its large number of cutting-edge entrepreneurs, engineers and venture capitalists.

Numerous innovative high-tech enterprises have been founded in this region and have created thousands of jobs. Hewlett Packard, National Semiconductor, Intel, AMD, Oracle, Apple, Cisco Systems, Yahoo! eBay and Google, just to mention the best known companies, were founded and are based in Silicon Valley. In 2005, there were 1.15 million jobs and 22,000 companies in Silicon Valley (Joint Venture, 2008). Historically, this region is characterized by a high rate of start-up creation. From 1990 to 2000, 2100 high-tech companies were founded annually on the average (Zhang, 2007). In terms of number of patents registered, eleven of the top twenty cities in the United States in 2006 were located in Silicon Valley (Joint Venture, 2008). From 1995 to 2005, $111 billion was invested in Silicon Valley by venture capitalists. This represents 32.48 per cent of VC investments made in the US in this period ($341 billion. Source: PriceWaterhouseCoopers) and almost as much as was invested in Europe ($119 billion. Source: European Venture Capital Association).

Michel and Mark (2009) in their study of venture capital industry determined that the main reason why Silicon Valley can be presented as an exemplary Venture Capital Industry is the network of agents collaborating in between. They expanded Etzkowitz triple helixes model into multiple agents’ model with 9 parties involved (see Table 1).

This view is also shared by the French researcher Hervé (2007). In his interview about what Europeans can learn from Silicon Valley he indicates 6 main ingredients needed for Venture Capital industry: university of world class, professionals (entrepreneurs with industrial experience), service providers (lawyers, providers of any services that are needed to establish business). All these ingredients Europe has but there are other very important critical factors needed for VC industry that Europe lacks. That is a pioneering culture, people ready to take the risk and exchange ideas.

Aoki, (2000) is of the view that the factors that had contributed to the success of these entrepreneurial clusters include a stable social and political environment, acceptance of immigrant talent and a culture of risk taking.

Other key success factors for Silicon Valley include: (i) a large talent pool, (ii) a large network of suppliers, (iii) access to venture capital, and (iv) access to excellent educational facilities and research institutions.

The key aspects of the Silicon Valley culture can be broadly categorized as (i) meritocracy; (ii) tolerance of failure, and (iii) enthusiasm for change and new ideas. The emphasis on meritocracy in Silicon Valley is an attraction to immigrant talent who wants to pursue entrepreneurial ambitions. Silicon Valley is also quick to forgive and forget mistakes made by would-be entrepreneurs.

**SWOT analysis of Lithuania’s market**

The strength and weak points as well as opportunities and threats were analyzed from 4 aspects: political, economical, social and technological environments.

If we take political aspects it is mentionable that the biggest strength is money resources and financial support from EU structural funds with JEREMIE initiative in order to develop SME business segment and stimulate
venture capital industry (Lithuania gets the biggest amount of money from JEREMIE initiative compared to other EU countries – 210 million EUR. Source: [http://www.eif.europa.eu/what_we_do/jeremie/index.htm](http://www.eif.europa.eu/what_we_do/jeremie/index.htm). But on the other hand, there is a problem of finding potential global oriented business start ups in order to invest JEREMIE initiative money because we lack the investment scheme and priorities. Moreover Lithuanians are not tolerant for the high risk level, so mainly investments are made to the expansion stage companies which cannot be called real venture capital. According to American understanding of venture capital, the money should be invested in high potential business projects in order to get big profit. In other words saying, Lithuania doesn’t take opportunity to get bigger profit. There is a lack of legal regulatory laws for venture capital funds (especially establishment). Today there are only 3 venture capital funds in Lithuania: BaltCap, LitCapital and Business Angels fund. Lithuania also lacks tax advantages for VC investors and SME businesses but in the nearest future the law concerning VC investments should be renewed. Moreover Lithuania lacks experience in venture capital market which causes slow decision making process and investing with low risk. The opportunities can be seen because the existing government is the friendliest for venture capital industry creation, so now is the best time for innovation approach. According to Lisbon strategy priorities, the biggest attention should be paid to a knowledge-based society creation and focus on competitiveness and eco-innovation. Weak points are that there is no venture capital industry in Lithuania and it’s complicated to create it from the

### Table 1. Agents involved in creating venture capital industry

<table>
<thead>
<tr>
<th>Agents</th>
<th>Formal functions</th>
<th>Informal functions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universities</td>
<td>Nurture innovations</td>
<td>Incubate start-ups</td>
</tr>
<tr>
<td></td>
<td>Accumulate expertise</td>
<td>Socialize agents</td>
</tr>
<tr>
<td></td>
<td>Provide trained workers</td>
<td></td>
</tr>
<tr>
<td>Large firms</td>
<td>Nurture innovations</td>
<td>Incubate start-ups</td>
</tr>
<tr>
<td></td>
<td>Develop innovations</td>
<td>Acquire start-ups</td>
</tr>
<tr>
<td></td>
<td>Accumulate expertise</td>
<td>Partner with start-ups</td>
</tr>
<tr>
<td></td>
<td>Provide trained workers</td>
<td>Socialize agents</td>
</tr>
<tr>
<td>Law firms</td>
<td>Accumulate legal expertise</td>
<td>Embed start-ups</td>
</tr>
<tr>
<td></td>
<td>Handle legal issues</td>
<td>Network the cluster</td>
</tr>
<tr>
<td>Recruitment agencies</td>
<td>Favor labor market</td>
<td>Network the cluster</td>
</tr>
<tr>
<td>Media</td>
<td>Circulate information</td>
<td>Publicize start-ups</td>
</tr>
<tr>
<td>Consulting groups</td>
<td>Accumulate business expertise</td>
<td>Provide trained workers</td>
</tr>
<tr>
<td></td>
<td>Supply expertise to start-ups</td>
<td></td>
</tr>
<tr>
<td>CPA’s (Certified Public Accountant)</td>
<td>Accumulate accounting expertise</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Handle accounting issues</td>
<td></td>
</tr>
<tr>
<td>Investment banks</td>
<td>Organize IPO of start-ups</td>
<td>Signal start-ups</td>
</tr>
<tr>
<td></td>
<td>Organize acquisitions of start-ups</td>
<td></td>
</tr>
<tr>
<td>Commercial banks</td>
<td>Enable financial transactions</td>
<td></td>
</tr>
</tbody>
</table>
basics and there is much bureaucracy and venture capital funds establishment process takes a long time.

Economical weaknesses of Lithuania are dependent on a small number of resources which causes production limitations (shortage of raw materials) and continuous negative trade balance. Opportunities can be seen in agriculture and fishery sectors because they were influenced by the crisis the least. The main asset of Lithuania which can be exported and given the benefit is related with high technology. There is also a number of individuals making economical activity which shows high level of entrepreneurship and generation of new business ideas. Threats are negative GDP growth rates in all the sectors, what makes country unattractive for foreign investors. Export and import depend on the global trends such as foreign currency rates and prices of the petrol because of globalization.

From the social side Lithuania can be attractive for the VC investors because of relatively low labour cost and continuous growth of an educated population (professionals with the university degree). The problem is that local entrepreneurs have very limited knowledge about venture capital. Surveys about VC show that 93% of entrepreneurs don’t know any Lithuanian venture capital fund, 91.5% of respondents couldn’t mention any Lithuanian company which was supported by VC funds. The trend for the social system because of decreasing young population can be the opportunity for the pension funds which are sources of money for venture capital. But on the other hand, this can be problematical in a long perspective because of a lack of labour force. Unemployment can also be assumed as an opportunity - the pool of unemployed active population is ready to work in new created job vacancies.

From the technological side it is mentionable that there is the unfilled high technology niche in the areas of biotech, ICT, renewable energy, optics etc. The problem is that the local market for new technologies/products is limited because most businesses are not technologically or culturally prepared.

Main problems of creating venture capital industry in Lithuania

5 experts, working in the areas related with Lithuania’s economical growth and promotion were surveyed concerning the questions about venture capital perspectives, all 5 surveyed experts agreed that the venture capital approach is an essential tool for economical growth because Lithuania is a small country and it’s important to find the niche and specialize in order to go global.

The main advantages associated with building the VC industry in Lithuania are: Tax incentives for investments into new technologies and Research and Development (R&D); 9% taxation on dividends when an investor controls at least 10% of voting shares in the enterprise for the period of at least 12 months. Tax “holidays” in 2 free economic zones; Lithuania is an active participant in JEREMIE initiatives and gets practically most support from the EU to stimulate SMEs; Skilled human resources; Crossroads of three huge markets (Scandinavian, East and West); One of the best-educated people in Central and Eastern Europe; We have 3 Lithuanian VC funds.

According to experts, the main problems and disadvantages which obstacle venture capital industry development are: Low investment culture; Lack of knowledge about VC; Local investors are keener to invest abroad instead of creating local enterprises; Lack of business angels; Mentality based on seeking for grants; the governmental efforts and initiatives are not well structured: that can be called “Coffee for all”, this means that government shares limited recourses for the wide spectrum of areas; lack of financial instruments in order to stimulate VC investments (micro loans, business angels’ networks etc.); lack of innovative and globally oriented business projects; It is hard to become global; problems of international development; bad funds management quality caused by the lack of experience in VC market.

Talking about priority sector for VC investments, experts have mentioned a wide variety: clean technology, engineering, food industry, biotech –World-class progress; production does not have equivalents in Central and Eastern Europe, plastics--with three huge plants leading in the region, lasers –globally acknowledged production and inventions, IT, biomedicine, low type of energy, improving services, making them more innovative, agriculture, media/advertising, electronics, health care.

The priority sector for VC investments according to COPRAS model

The methodology described in this part enables one to choose the priority sector according to 9 evaluation criteria. First of all, the importance of each criteria should be determined. For this purpose 5 experts who have the experience in venture capital investments have to fill the questionnaire (table 2). For each criteria they can give from 1 to 100 points. The better evaluation has the higher point.

1. The sum of each criteria is counted by formula:

$$S_i = \sum_{j=1}^{n} b_{ij}, \quad j = 1, n \quad (1.)$$

Where bij . i criteria j expert evaluation points;

2. The average of all criteria is counted by formula:
Table 2. COPRAS criteria evaluation (done by authors)

<table>
<thead>
<tr>
<th>No.</th>
<th>Criteria</th>
<th>E₁</th>
<th>E₂</th>
<th>E₃</th>
<th>E₄</th>
<th>E₅</th>
<th>Sᵢ</th>
<th>Ranking</th>
<th>ΔSᵢ</th>
<th>ΔSᵢ²</th>
<th>Importance</th>
<th>S⁺</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EU Financial programmes and initiatives</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>90</td>
<td>95</td>
<td>485</td>
<td>1</td>
<td>388</td>
<td>150544</td>
<td>0.092117759</td>
<td>97</td>
</tr>
<tr>
<td>2</td>
<td>Dynamics of GDP</td>
<td>80</td>
<td>90</td>
<td>60</td>
<td>85</td>
<td>60</td>
<td>375</td>
<td>8</td>
<td>300</td>
<td>90000</td>
<td>0.071225071</td>
<td>75</td>
</tr>
<tr>
<td>3</td>
<td>The level of foreign trade</td>
<td>85</td>
<td>90</td>
<td>60</td>
<td>85</td>
<td>70</td>
<td>390</td>
<td>5</td>
<td>312</td>
<td>97344</td>
<td>0.074074074</td>
<td>78</td>
</tr>
<tr>
<td>4</td>
<td>Foreign direct investment</td>
<td>90</td>
<td>100</td>
<td>75</td>
<td>80</td>
<td>60</td>
<td>405</td>
<td>4</td>
<td>324</td>
<td>104976</td>
<td>0.076923077</td>
<td>81</td>
</tr>
<tr>
<td>5</td>
<td>Number of SME</td>
<td>75</td>
<td>50</td>
<td>50</td>
<td>40</td>
<td>20</td>
<td>235</td>
<td>9</td>
<td>188</td>
<td>35344</td>
<td>0.04634378</td>
<td>47</td>
</tr>
<tr>
<td>6</td>
<td>Number of students</td>
<td>65</td>
<td>80</td>
<td>75</td>
<td>85</td>
<td>80</td>
<td>385</td>
<td>7</td>
<td>308</td>
<td>94864</td>
<td>0.073124406</td>
<td>77</td>
</tr>
<tr>
<td>7</td>
<td>Number of researchers</td>
<td>90</td>
<td>100</td>
<td>80</td>
<td>85</td>
<td>100</td>
<td>455</td>
<td>3</td>
<td>364</td>
<td>132496</td>
<td>0.086419753</td>
<td>91</td>
</tr>
<tr>
<td>8</td>
<td>Active population</td>
<td>65</td>
<td>80</td>
<td>90</td>
<td>70</td>
<td>85</td>
<td>390</td>
<td>6</td>
<td>312</td>
<td>97344</td>
<td>0.074074074</td>
<td>78</td>
</tr>
<tr>
<td>9</td>
<td>Expenses to R&amp;D</td>
<td>80</td>
<td>100</td>
<td>95</td>
<td>90</td>
<td>100</td>
<td>465</td>
<td>2</td>
<td>372</td>
<td>138384</td>
<td>0.088319088</td>
<td>93</td>
</tr>
</tbody>
</table>

\[
S^* = \frac{\sum S_i}{m}, \quad i = 1, m
\]

(2.)

Where \( S_i \) is the sum of criteria \( i \); \( m \) is the amount of the criteria.

3. Deviation from the mean rank sum is calculated by formula:

\[
\Delta S = S_i - S^*.
\]

(3.)

4. The determination of the importance.

\[
q_i = \frac{S_i}{\sum S_i}.
\]

(4.)

The next step is to fill in the table with the sectorial data according to the evaluating criteria. Table 3. Sectorial data has to be recounted with the purpose to bet the dimensionless meaning. The results are presented in the table 4.

1. Normalized criteria meanings are counted by formula

\[
d_{ij} = \frac{x_{ij}}{\bar{x}_j}, \quad i = 1, m, \quad j = 1, n.
\]

(5)

where \( x_{ij} \) is mean of the criteria \( i \);
\( m \) is amount of the criteria \( (m = 9) \);
\( n \) is amount of the sector alternatives;
\( q_i \) is the importance of the criteria.

2. \( S_{ij} \) the sums of standardized maximizing ratios are counted by the following formula:

\[
S_{ij} = 0.015775965 + 0.016187168 + 0.011688719 + 0.004352122 + 0.014081196 + 0.008708531 + 0.00467681 + 0.015315328 = 0.090785798
\]

\[
S_{i2} = 0.0189702 + 0.0195668 + 0.0127768 + 0.0236492 + 0.0141565 + 0.0050789 + 0.0188692 + 0.0153153 = 0.1283829
\]

3. \( S_j \) the sums of standardized minimized ratios are:

\[
S_{j1} = 0.004458457
\]

\[
S_{j2} = 0.0048406
\]

The relative importance of the comparable options is set on the basis of the positive and the \( S_{ij} \) and \( S_j \) negative characteristics describing them. The relative importance of each sector is determined by formula:

\[
Q_j = P_j + \frac{\sum_{i=1}^{m} R_{ij}}{R_j \sum_{i=1}^{m} R_{ij}}
\]

(6)

After all the priority series is determined (table 4), the sector which should be priority for venture capital investments in Lithuania should be the food industry.

Suggestions on how to build venture capital industry in Lithuania

According to all the analyzed data the suggestions of the models on how to build venture capital industry in Lithuania are made.

Risk diversification model

The investment culture in Lithuania is relatively low for a few reasons. Firstly, investors don’t have enough
knowledge about investment tools. According to experts’ opinion, there are not many Lithuanians who know what venture capital is. They are used to investing in a conservative way, by buying real estate, which doesn’t require much knowledge. But as crisis came, and the real estate sector became not an investment option most people just don’t know what to do with their money. Other reason is the very low risk acceptance. Lithuanians are afraid to invest their money because of high risk. In order to lower the risk and increase the expectation of the rate of return, the following model is suggested (Figure 2).

The model suggests that the government will make 100% subsidy for the investment in venture capital. To put it simple, if the investor wants to invest 100 000 litas to high risk business start up, the government adds the same amount 100 000 litas in order to diversify the risk and to increase the returns. So if the start up succeeds and goes public the investor gets let’s say 25% profit not only from his 100 000 litas but from double amount which is double sum (25% from 200 000 litas is 50 000 instead of 25 000 that would be without government help), if the start up fails, the investor looses half of the portfolio (his 100 000 litas) and the government looses as well. The government should be interested in this option because VC gives a huge impact to social and economical growth. Moreover talking about Litauania’s case, the money from JEREMIE initiative can be used in order to implement this model. A similar model successfully works in Israel, so it can be seriously taken into account.

**Public venture capital fund**

Even though there are three funds of VC in Lithuania they are specialized not in the very early stage investments but mostly investing at the expansion stage to the companies which already have 2-3 years history, positive money flows and these investments cannot be really called venture capital investments. According to the American understanding of VC it should be invested into very early „idea’s” stage with very high profit expectation (at least 60%). So another suggestion would be to establish the governmental fund which would be specialized into very high risk VC early stage investments.

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**Table 3. Sectorial data according to the evaluation criterias (done by authors)**

<table>
<thead>
<tr>
<th>Criterias</th>
<th>Unit</th>
<th>Importance of criteria</th>
<th>Agriculture</th>
<th>Food Industry</th>
<th>Plastics</th>
<th>Electronics/ Optics</th>
<th>Biomedicine/ chemistry</th>
<th>Energetics</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU Support</td>
<td>Million Lt</td>
<td>0.09212</td>
<td>2005,495</td>
<td>2411,561</td>
<td>2539,865</td>
<td>5</td>
<td>2539,865</td>
<td>622,507</td>
</tr>
<tr>
<td>Dynamics of GDP</td>
<td>Million Lt</td>
<td>0.07123</td>
<td>2707,299</td>
<td>3272,543</td>
<td>657,038</td>
<td>675,774</td>
<td>1412,624</td>
<td>3187,094</td>
</tr>
<tr>
<td>Export</td>
<td>Million Lt</td>
<td>0.07407</td>
<td>2644,8</td>
<td>2891</td>
<td>2750,80</td>
<td>4779,4</td>
<td>3694,7</td>
<td></td>
</tr>
<tr>
<td>Foreign direct</td>
<td>Litas</td>
<td>0.07692</td>
<td>278520</td>
<td>1513460</td>
<td>283800</td>
<td>91358</td>
<td>95450</td>
<td>2660210</td>
</tr>
<tr>
<td>Number of SME</td>
<td>units</td>
<td>0.04463</td>
<td>748</td>
<td>752</td>
<td>357</td>
<td>217</td>
<td>101</td>
<td>196</td>
</tr>
<tr>
<td>Number of students</td>
<td>persons</td>
<td>0.07312</td>
<td>703</td>
<td>410</td>
<td>764</td>
<td>1192</td>
<td>2556</td>
<td>278</td>
</tr>
<tr>
<td>Number of researchers</td>
<td>persons</td>
<td>0.08642</td>
<td>462</td>
<td>1864</td>
<td>1864</td>
<td>2392</td>
<td>1244</td>
<td>711</td>
</tr>
<tr>
<td>Free vacancies</td>
<td>persons</td>
<td>0.07407</td>
<td>70</td>
<td>120</td>
<td>120</td>
<td>159</td>
<td>618</td>
<td>76</td>
</tr>
<tr>
<td>Expenses to R&amp;D</td>
<td>Million Lt</td>
<td>0.08832</td>
<td>276,5</td>
<td>276,5</td>
<td>276,5</td>
<td>219</td>
<td>269,5</td>
<td>276,5</td>
</tr>
</tbody>
</table>

---

**Figure 2.** Risk diversification model in order to stimulate venture capital investments
Table 4. Choosing the most important sector (Done by authors)

<table>
<thead>
<tr>
<th>Criterias</th>
<th>Unit</th>
<th>Importance of criteria</th>
<th>Agriculture</th>
<th>Food Industry</th>
<th>Plastics</th>
<th>Electronics /Optics</th>
<th>Biomedicine /chemistry</th>
<th>Energetics</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU Support</td>
<td>million litas</td>
<td>+</td>
<td>0,092117759</td>
<td>0,015775965</td>
<td>0,01998</td>
<td>0,01997952</td>
<td>0,00489687</td>
<td>0,0125157</td>
</tr>
<tr>
<td>Dynamics of GDP</td>
<td>million litas</td>
<td>+</td>
<td>0,071225071</td>
<td>0,016187168</td>
<td>0,0195668</td>
<td>0,003928</td>
<td>0,00404051</td>
<td>0,0084462</td>
</tr>
<tr>
<td>Export</td>
<td>million litas</td>
<td>+</td>
<td>0,074074074</td>
<td>0,011688719</td>
<td>0,0127768</td>
<td>0,012157</td>
<td>0,0211226</td>
<td>0,01632876</td>
</tr>
<tr>
<td>Foreign direct investment</td>
<td>Litas</td>
<td>+</td>
<td>0,076923077</td>
<td>0,004352122</td>
<td>0,0236492</td>
<td>0,004435</td>
<td>0,00142755</td>
<td>0,0149149</td>
</tr>
<tr>
<td>Number of SME units</td>
<td>units</td>
<td>+</td>
<td>0,044634378</td>
<td>0,014081196</td>
<td>0,0141565</td>
<td>0,006721</td>
<td>0,00408505</td>
<td>0,00190134</td>
</tr>
<tr>
<td>Number of students persons</td>
<td>persons</td>
<td>+</td>
<td>0,073124406</td>
<td>0,008708531</td>
<td>0,0050789</td>
<td>0,009464</td>
<td>0,0147661</td>
<td>0,03166288</td>
</tr>
<tr>
<td>Number of researchers persons</td>
<td>persons</td>
<td>+</td>
<td>0,086419753</td>
<td>0,00467681</td>
<td>0,0188692</td>
<td>0,018869</td>
<td>0,02421413</td>
<td>0,01259297</td>
</tr>
<tr>
<td>Free vacancies</td>
<td>persons</td>
<td>-</td>
<td>0,074074074</td>
<td>0,004458457</td>
<td>0,0048406</td>
<td>0,007643</td>
<td>0,01012707</td>
<td>0,0393618</td>
</tr>
<tr>
<td>Expenses to R&amp;D</td>
<td>million litas</td>
<td>+</td>
<td>0,088319088</td>
<td>0,015315289</td>
<td>0,0153155</td>
<td>0,015315</td>
<td>0,01213037</td>
<td>0,01492756</td>
</tr>
<tr>
<td>The sum of the maximizing normalized weighted indicators</td>
<td></td>
<td></td>
<td>0,004458457</td>
<td>0,0048406</td>
<td>0,007643</td>
<td>0,01012707</td>
<td>0,0393618</td>
<td>0,0048406</td>
</tr>
<tr>
<td>The sum of the minimizing weighted indicators</td>
<td></td>
<td></td>
<td>0,108697925</td>
<td>0,1448809</td>
<td>0,101318</td>
<td>0,10965168</td>
<td>0,09427695</td>
<td>0,1192839</td>
</tr>
<tr>
<td>The importance of the sector alternative</td>
<td></td>
<td></td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>6</td>
<td>2</td>
</tr>
</tbody>
</table>

with the same goal – to give the opportunity to as many potential business start ups as possible. The experts emphasize that the biggest problem until now was to choose the priority sector into which all the VC investment activities should be directed to. It is not possible to expect to go globally in all the sectors. In other words saying, small amount of support for every sector will not give the significant results. If all the efforts would be directed to one specific sector it is more believable to expect significantly better results. COPRAS method was used to find out this priority sector. It showed up that in today’s situation (according to statistical data and criteria evaluation of the experts) the most favourable sector for VC investments is the food industry. Moreover the PEST analysis confirms that in the crisis time the fishery’s and agriculture sectors were the most resistant for negative changes. But to have global success there is a need to be innovative, so the IT systems projects to support food production should be seriously taken into account.

CONCLUSIONS

This research carried out Lithuanian and foreign venture capital case study and revealed that the understanding of
a concept varies in different regions: in the USA venture capital is described as the investment in high-growth, high-risk, often high-technology firms that need capital to finance growth. While in rare instances in Asia VC is considered as a superset, including higher risk, smaller investments and all private type investments due to a lack of start-ups or early stage high-technology companies. In Europe venture capital investments are mostly made not into the early development stage but into the expansion stage.

Literature analysis has shown that the main conditions, needed to create venture capital industry are: appropriate financial market structure, human resources availability, source of opportunities, supporting institutions and government policy. As well the collaboration between universities, private companies and governments is essential.

The authors who were analyzing the venture capital investments success of Silicon Valley emphasized that the main key factors for creating that industry are: innovations, a stable social and political environment, acceptance of immigrant talent and a culture of risk taking.

The survey of experts confirmed the importance of VC market creation and enabled the identification of the favourable conditions which are: tax incentives for investments into new technologies and RandD, tax “holidays” in 2 free economic zones, good geographical position, 3 Lithuanian VC funds. Among the negative conditions it is mentionable low investment culture, lack of business angels, nation’s mentality based on seeking for grants, the governmental efforts and initiatives are not well structured: government divide limited resources for the wide spectrum of areas, lack of financial instruments in order to stimulate VC investments (micro loans, business angels’ networks etc.), lack of innovative and globally oriented business projects, problems of international development, financial institutions give support for their own projects.

The multiple criteria COPRAS method enabled the researcher to choose the priority sector into which all the governmental and public forces should be focus on. The priority sector should be the food industry. In order to increase venture and private equity market development in Lithuania the active state’s role in promoting and stimulating VC investment activities is necessary. One of the possible ways could be the establishment of the governmental VC fund which would specialize into very high risk VC early stage investments with the goal – to give the opportunity to as many potential business start ups as possible. Because now there are 3 VC funds in Lithuania, mainly investing in expansion stage, so many good ideas are killed in the early stage because they lack of financing.

Talking about country’s role it is mentionable that the state should not create competition for the private investors who invest in the target market but rather to encourage them to take bigger risk and invest greater resources. For that purpose it is suggested to follow Israel’s example and use risk diversification model which suggests that the government would give the 100% subsidy for the investment in a very risky innovative business start ups. In other words saying, state should give the support for private investors in order to diversify the risk and to increase the returns.

REFERENCES