

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Diploma Thesis

Venture Capital as the Investment of Future

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DIPLOMA THESIS ASSIGNMENT

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Economics and Management

Thesis title

Venture Capital as the Investment of Future

Objectives of thesis

The main objective is to describe and to compare the venture capital using in different countries, especially in U.S., Russia and Czech Republic. The further objective is to propose the example of the venture capital financing using in the selected start-up.

In the framework of this thesis the following tasks are dealt with:

- to describe the main stages of the world experience in the development of venture business,
- to analyze the main forms and types of venture capital,
- to identify the venture capital instead of other business financing types,
- to analyze the mechanisms and results of the venture investment in the United States of America, in the Russian Federation and in the Czech Republic,
- to propose the example of the venture capital financing using in the selected start-up.

Methodology

This work includes the following structural elements: introduction, three chapters, conclusion, list of references and appendixes.

The first part of the master's thesis deals with the history of venture capital development, its usage and types at present, and with the issue of start-ups as well as a company with typical venture capital financing. This part forms the theoretical basis of the thesis. It is executed as a literary research of scientific articles and publications primarily of American and European researchers on the subject of venture investments and venture capital. The method of description will be used as well.

The second part of the thesis includes the analysis of the venture capital investments in the U.S., in the Russian Federation and in the Czech Republic. The main method of this part processing is the analysis. The following sources are the used secondary sources of information for this chapter– mainly statistics from the Venture Monitor, National Venture Capital Association, EU Open Data Portal made according to the European Commission decision, analysis from the KPMG and PWC.

On the basis of the knowledge gained by drawing up the first and second chapters the proposal for the venture investment using is created for the selected start-up.

In the conclusion, the synthesis of the results is made, and the achievement of the thesis objectives is evaluated.



The proposed extent of the thesis

60 pages

Keywords

Venture capital, innovations, entrepreneur, investment, financing, private equity, fund, start-up, business, development capital

Recommended information sources

- ČERNOHORSKÝ, Jan, TEPLÝ, Petr. Základy finance. Praha: Grada Publihing a.s., 2011. 304 p. ISBN 978-80-247-3669-3.
- Digital Equipement Corporation. Reference for Business. [online]. Advameg, Inc., 2018. <https://www.referenceforbusiness.com/history2/66/DIGITAL-EQUIPMENT-CORPORATION.html>. Accessed 20 October 2018.
- GUPTA, Udayan. The First Venture Capitalist: Georges Doriot on Leadership, Capital & Business Organization. Calgary: Gondolier, 2004. 221 p. ISBN 1-896209-93-9.
- MORRIS, Rhett. The First Trillion-Dollar Startup. TechCrunch. [online]. 26.7.2014. <https://techcrunch.com/2014/07/26/the-first-trillion-dollar-startup/?guccounter=1>. Accessed 21 October 2018.
- NICHOLAS, Tom. The Origins of High-Tech Venture Investing in America. Financial Market History. Harvard: CFA Institute Research Foundation, 2016. 304 p. ISBN 978-1-944960-13-1.

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Declaration

I declare that I have worked on my diploma thesis titled "Venture Capital as the Investment of Future" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the diploma thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on 28th March 28, 2019

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Venture Capital as the Investment of Future

Abstract

The main objective is using selected absolute indicators to describe and to compare the venture capital market in different countries, especially in U.S., Russia and Czech Republic. The part goal was to analyze the dependence of the capacity of venture capital investments on GDP growth / decline in selected countries. As a result of the comparative analysis, the following criteria for distinguishing models of venture financing in selected countries, based on which differentiation is carried out, were highlighted: the total volume of the venture capital investments and funding depending on the stage of project implementation, the volume of venture capital financing of individual sectors of the economy, typology and specificity of sources of venture financing, the number and volume of venture funds in the country, the attractiveness of counties for the venture capital investments according to the corresponding international index. Analysis was based on available information. As the selected countries use very different approaches to generating venture capital market statistics, it was not possible to completely unify and compare market indicators. Nevertheless, the work has revealed and described the specifics of methodological and practical approaches of different countries in the area of venture capital.

Keywords: venture capital, innovations, entrepreneur, investment, financing, private equity, fund, start-up, business, development capital

Venture kapitál jako investice do budoucnosti

Abstrakt

Hlavním cílem je využití vybraných absolutních ukazatelů k popisu a porovnání trhu rizikového kapitálu v různých zemích, zejména v USA, Rusku a České republice. Dílčím cílem bylo zanalýzovat závislost objemu investic venture kapitálu na růstu/poklesu HDP ve vybraných zemích. Na základě srovnávací analýzy byly zdůrazněny následující kritéria pro rozlišení modelů financování venture kapitálem ve vybraných zemích, na základě kterých se provádí diferenciace: celkový objem investic rizikového kapitálu a financování v závislosti na stupni realizace projektu, objem financování rizikového kapitálu jednotlivých sektorů ekonomiky, typologie a specifická zdrojů rizikového financování, počet a objem rizikových fondů v zemi, atraktivita zemí pro investice rizikového kapitálu podle odpovídajícího mezinárodního indexu. Analýza byla založena na dostupných informacích. Vzhledem k tomu, že vybrané země používají k vytváření statistik trhu rizikového kapitálu velmi odlišné přístupy, nebylo možné zcela sjednotit a porovnat tržní ukazatele. Práce však odhalila a popsala specifika metodických a praktických přístupů různých zemí v oblasti rizikového kapitálu.

Klíčová slova: rizikový kapitál, inovace, podnikatel, investice, financování, soukromý kapitál, fond, start-up, podnikání, rozvojový kapitál

Table of content

1 Introduction	12
2 Objectives and Methodology	14
2.1 Objectives.....	14
2.2 Methodology	15
3 Literature Review	18
3.1 Introduction to the financing of enterprises	18
3.1.1 Internal and external financing. Its advantages and disadvantages	19
3.1.2 Alternative sources of funding.....	20
3.2 The modern definition of the venture capital.....	22
3.2.1 Types of venture capital funding	23
3.2.2 Approaches to venture capital investment.....	24
3.2.3 Benefits of the venture capital	26
3.3 The history of venture capital	27
3.3.1 Silicon Valley formation.....	31
3.3.2 The beginning of the venture capital in Europe.....	32
3.3.3 The beginning of the venture capital in the Czech Republic.....	33
3.3.4 The beginning of the venture capital in Russia.....	35
3.4 Startup problematics	38
3.5 State support of venture capital financing.....	39
4 Practical Part	41
4.1 Analysis of the venture capital using in the U.S.	41
4.2 Analysis of the venture capital using in the Russian Federation	49
4.3 Analysis of the venture capital using in the Czech Republic.....	57
4.4 Dependency analysis of the venture capital investments on the GDP in the selected countries	60
4.4.1 Dependency analysis of the capacity of venture capital investments on the GDP in the U.S.	60
4.4.2 Dependency analysis of the capacity of venture capital investments on the GDP in the Russian Federation	63
5 Results and Discussion	66
5.1 The main conclusions about the U.S. experience	67
5.2 The Discussion about the venture capital in Russian Federation.....	68
6 Conclusion	71
7 References	73

List of images

Image 1 Sources of the financing.....	18
Image 2 Business Angels, Venture Capital and Private Equity.....	21
Image 3 The development of the system of venture capital elements interaction in a historical context	28
Image 4 Capacity of venture capital in selected regions, billions US dollars, 1993-1997	37
Image 5 The number of venture capital funds in the U.S., 2012-2017	42
Image 6 The capacity of venture capital funds in U.S., million US dollars, 2012-2017	42
Image 7 The capacity of venture capital investments in the U.S., billion U.S. dollars, 2012-2017.....	43
Image 8 The number of venture capital investments in the U.S., 2012-2017.....	44
Image 9 Venture capital investments allocation by the sector, the U.S., 2008-6/2018 ..	46
Image 10 Venture capital investments allocation by stages, the U.S., %, 2012-2016....	47
Image 11 Key driver performance of attractiveness index for VC investments, U.S., 2018	49
Image 12 The number of venture capital funds in Russia, 2012-2017	50
Image 13 The capacity of venture capital funds in Russia, million US dollars, 2012-2017	51
Image 14 The capacity and the number of venture capital investments in Russian companies, 2012-2017	51
Image 15 Venture capital investments allocation by stages, the Russian federation, %, 2012-2017.....	53
Image 16 Venture capital funds – state and private, by the capacity, the Russian federation, %, 2012-2017	55
Image 17 The industry preferences of venture capital funds in Russia, %, 2012-2017.	55
Image 18 Key driver performance of attractiveness index for VC investments, Russia, 2018	57
Image 19 The capacity of Private Equity and venture capital investments in the Czech Republic, EUR, 2012-2017	58
Image 20 Key driver performance of attractiveness index for VC investments, Czech Republic, 2018.....	60
Image 21 Linear model of correlation GDP / VC investment capacity, mil. U.S. dollars, the U.S., 2012-2017	61

Image 22 Model of correlation GDP / VC investment capacity, mil. U.S. dollars, the Russian Federation, 2012-2017	64
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List of tables

Table 1 The value of venture capital investment per capita, the U.S., 2012-2016, mil. U.S. dollars	45
Table 2 Venture capital investments allocation by U.S. region, the U.S., %, 2012-2017	48
Table 3 The capacity of venture capital investment per capita, Russian federation, 2012-2017, mil. U.S. dollars	52
Table 4 Venture capital investments allocation by the sector, the Russian federation, %, 2012-2017	54
Table 5 Venture capital investments allocation by the federal districts, the Russian federation, %, 2012-2017.....	56
Table 6 GDP, current USD and the capacity of VC investments in the U.S., mil U.S. dollars, 2012-2017	61
Table 7 Results of the correlation analysis (Excel Analysis ToolPak) – the U.S.....	62
Table 8 GDP, current USD and the capacity of VC investments in the Russian Federation., mil U.S. dollars, 2012-2017.....	63
Table 9 Results of the correlation analysis (Excel Analysis ToolPak) – the Russian Federation	64
Table 10 Comparison of venture capital investment in selected countries, million US dollars, 2016	66

1 Introduction

The main characteristics of the modern stage of the scientific and technological revolution are the increased dynamism of economic processes, accelerated updating of the consumer goods range, technological solutions, the emergence and development of fundamentally new industries, whose products seek to maximize customer satisfaction, not limited by existing achievements. Corporations, regions, countries and the whole world use innovations, which determines the innovative type of the global development of the so-called innovative type of economic systems.

The global use of innovations has a significant impact on improving the competitiveness of individual products, companies and national economies as a whole. The presence and multiplication of competitive advantages in the national economy is the key to the prosperity of the nation and ensuring a respectable place for the country in the world economy.

Meanwhile, the emergence of innovations requires a review of the combination of all factors in the economy and the search for their optimal combination. It leads an appearance of new complex factors corresponding to the current stage of market development. One of such complex factors is venture capital, which takes into account the increased risks, the instability of the economic environment, the cyclical nature of innovations, the lack of management skills and knowledge of the investment process of innovative entrepreneurs.

Venture capital (Czech "*rizikový kapitál*") is the capital used to finance the activities of private expanding companies so that the capital of the company will increase by the amount of the venture capital. The question here is the difference between venture funding and other sources of finance that also enter the company and increase its basic capital.

For more than two decades, venture capital has been one of the rapidly evolving industries. The venture industry reached its greatest development in the United States, where it began to take shape from the middle of the 20th century. In the 70s venture capital investments became more active in Europe and, above all, in Great Britain, which took over much of the experience from the U.S. Now the European venture capital industry is the second after the U.S.

This thesis focuses on comparing the venture capital usage in different countries of the world. Attention is paid mainly to the USA, the Russian Federation and the Czech Republic.

Furthermore, there is an example of the venture capital investments usage in a selected start-up.

Due to the growing importance of technology, the rapid development of start-ups, globalization and the growing competition in the markets, the topic of financing new growth businesses and also risky companies is very topical.

Venture capital is an element of the innovation infrastructure that unites owners of capital and authors of new technologies in the sector of starting innovation projects. All this sets fundamentally new tasks not only for business, but also for the state, and therefore all development institutions, both in our country and abroad, deserve special attention.

This thesis is also topical, because just an analytical comparison of the venture investment mechanism in the U.S. and other countries can help identify the priority development directions of this field in the selected countries. When analyzing the current state of the venture industry in the selected countries, it is useful to draw on the experience of the U.S., as the country with the most developed venture capital investment sector. Based on the long-term and prosperous experience of this country, the successful proposal of a venture capital using in the selected start-up can be made.

The main partners of a venture capital firms (also called venture capitalists) are usually experienced managers, in other words, they are professionals in the investment business. By exploring experiences and examples of venture capital funding, it is possible to gain valuable knowledge, which is then applicable in practice. Because of this, it can be argued that work and its results are very useful.

2 Objectives and Methodology

This section includes definition of the main objectives of the master's thesis „Venture Capital as the Investment of Future“ and description the methods, used for the objectives achievement.

2.1 Objectives

The diploma thesis analyzes the form of venture capital investment, which belongs to alternative assets. The situation in the Czech Republic is not viewed in isolation, because the degree of development is basically a relative feature. So the thesis is focuses on different countries: the U.S., Russian federation and the Czech Republic.

The main objective is using selected absolute indicators to describe and to compare the venture capital market in different countries, especially in U.S., Russia and Czech Republic. The part goal was to analyze the dependence of the capacity of venture capital investments on GDP growth / decline in selected countries.

As a result of the comparative analysis, the following criteria for distinguishing models of venture financing in selected countries, based on which differentiation is carried out, were highlighted:

- the total volume of the venture capital investments (in dollars, as an absolute indicator for the whole country, and per capita, or for 1 million inhabitants),
- the total volume of venture funding depending on the stage of project implementation (as an absolute or relative indicator),
- the volume of venture capital financing of individual sectors of the economy,
- typology and specificity of sources of venture financing (state, private funds etc.),
- the number and volume of venture funds in the country,
- the attractiveness of counties for the venture capital investments according to the corresponding international index.

Analysis was based on available information. As the selected countries use very different approaches to generating venture capital market statistics, it was not possible to completely unify and compare market indicators. Nevertheless, the work has revealed and described the specifics of methodological and practical approaches of different countries in the area of venture capital.

In the framework of this thesis the following tasks are dealt with:

- to describe the main stages of the world experience in the development of venture business, especially in the selected countries (the U.S., the Czech Republic, the Russian federation),
- to identify the venture capital instead of other business financing types,
- from the study of modern professional literature to describe the main forms and types of venture capital,
- to find out and to compare the venture capital markets in the U.S., in the Russian Federation and in the Czech Republic, using the described above selected indicators.

2.2 Methodology

This work includes the following structural elements: introduction, three chapters, conclusion, list of references and appendixes.

The first part of the master's thesis deals with the history of venture capital development, its usage and types at present, and with the issue of start-ups as well as a company with typical venture capital financing. This part forms the theoretical basis of the thesis. It is made as a literary research of scientific articles and publications primarily of American and European researchers on the subject of venture investments and venture capital. There is used the method of description too. Numerous materials and publications are taken from the Venture Investment Associates and National StartUp Associations of different countries.

The second part of the thesis includes the descriptive and comparative analysis, the method of time series on the subject of the venture capital investments in the U.S., in the Russian Federation and in the Czech Republic. There are used secondary sources of information – mainly statistics from the Venture Monitor, National Venture Capital Association, EU Open Data Portal made according to the European Commission decision, analysis from the KPMG and PWC.

In the work it was decided to carry out the actual investigation using the **regression analysis method**. This is a popular statistical research method that is used to identify the degree of dependence of one indicator on another.

The following indicators (variables) were identified:

- Variables X1: GDP (current U.S. dollars, mil.),

- Variables Y1: the capacity of venture capital investments, in U.S. dollars,
- Variables Y2: the number of venture capital investments, deals.

This means that it has been insisted on whether the capacity of VC investments and also the number of VC deals depends on growth, respectively on decrease of GDP in the selected country.

Microsoft Excel and its tools - **CORREL function, Plotted Graphs and Analysis ToolPak (Correlation)** were used for calculations.

The formula used in the MS Excel (CORREL Function) to determine the correlation strength between two variables was as follows:

$$\text{Correl}(X, Y) = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

The value of the **correlation coefficient** is obtained in the range [-1; 1]. Values close to 1 or -1 indicate a high degree of correlation between the selected variables (positive values – positive correlation, negative values – negative correlation).

The correlation was also analyzed on the basis of the **plotted graphs**, where the values of the X axis correspond to the values of the variables X, the values of the Y axis to the variables Y. The graph will help determine which type of correlation goes – positive linear, negative linear, non-linear correlation or no correlation.

The next method used is **Analysis ToolPak (Correlation)**. As a result, a table is displayed, on the basis of which it is possible to carry out variance analysis and analysis of some coefficients, to determine model relevance, correlation significance, error and other context.

The table contains 3 parts.

The first part (regression statistics) shows these indicators:

- The multiple R: the critical value of the F criterion at a choosed significance level of 0,05. If the resulting multiple R is more than the critical value of F (intended from statistic tables), therefore regression can be considered significant – there is a significant statistical relationship between variables. If the resulting multiple R is less than the critical value of F - therefore regression cannot be considered significant.
- R-square: if the value of it is high, the analysis is relevant and conversely.

- Normalized R-square: adjusted (adapted) coefficient of determination. If it is high, it is also good.
- Standard error: shows the S estimate of the standard deviation σ of the net error ε .
- Observations: show the sample size.

The second part (analysis of variance) shows:

- df: the number of degrees of freedom associated with the number of units of the aggregate model,
- SS: the sum of the squares of the deviations of the values of the sign Y,
- MS: the dispersion by one degree of freedom,
- F and Significance F: check the significance of the regression equation, i.e. they help to determine whether a mathematical model that expresses a relationship between variables corresponds to experimental data and whether there are enough explanatory variables (one or several) included in the equation to describe the dependent variable.

The third part shows some coefficients for the Y- intersection and variable X':

- Coefficients
- Standard error
- T-statistic
- P-Value: the probability to determine the significance of the regression coefficient. If the value is less than 0.05, so both independent variables affect the model.
- Bottom 95%
- Top 95%

Y- intersection shows what Y will be if all variables in the model are equal to 0. The variable X1' shows the weight of the variable X on Y. If the value is high, it indicates a high positive (+) or negative (-) dependence of the selected variables.

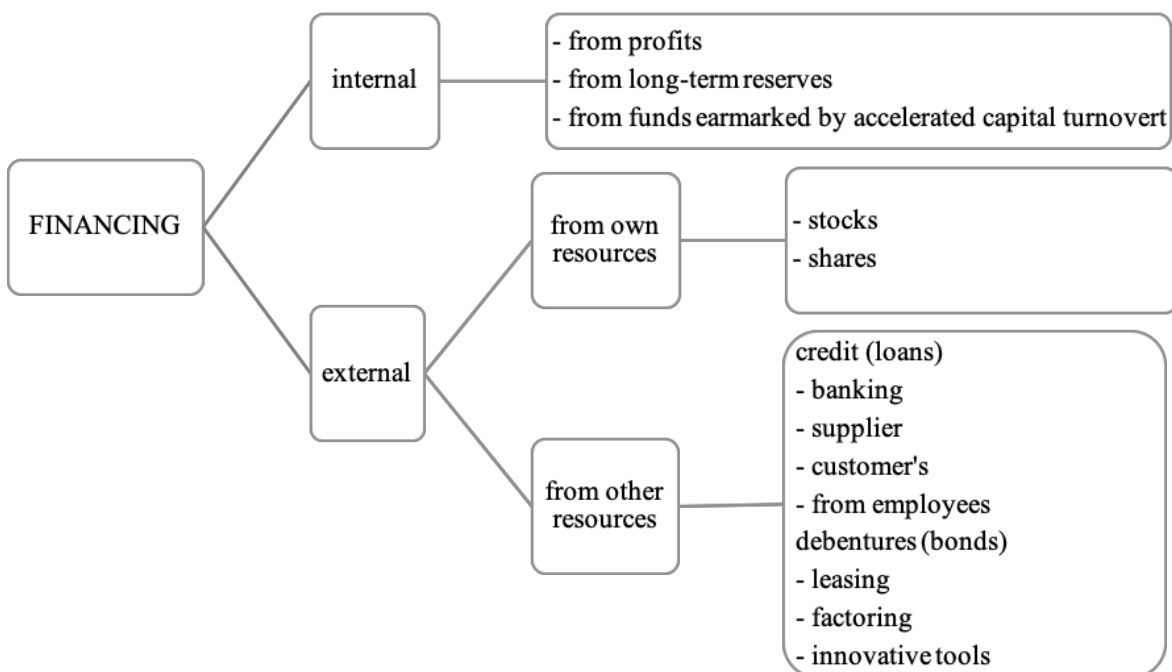
In the conclusion the synthesis of the results is made and the achievement of the thesis objectives is evaluated.

3 Literature Review

3.1 Introduction to the financing of enterprises

Every business needs material and other economic resources in addition to its capable managers and manpower. These resources is possible to name as assets, i.e. all inputs that are the result of past events and are expected to make future economic benefits to the enterprise.¹ To obtain the necessary assets, the enterprise needs financial resources, capital. There are several criteria that can be used to classify these financial resources (image 1).

Image 1 Sources of the financing



Source: SYNEK, M. et al., 2000, p. 236.

Based on the origin of funds, the sources of finance can be divided into equity and foreign capital. The equity of the enterprise consists of all assets after deducting liabilities. Typical examples of equity financing are material deposits and stock issues. Today, the business does not seem to be enough with self-financing in practice and will have to use foreign sources. As an example, they can include loans (bank, commercial), leasing, bond issues, etc.

¹ LANDA, M. *Účetnictví*. 2005, p. 94.

Financing by purpose is sometimes named as division according to regularity. First form is regular financing, which is based on the normal operation of the enterprise. This includes, in particular, day-to-day processing and spending money on purchases of material, payroll, short-term payables, rent. The second form is extraordinary funding, which is actively used only at extraordinary activities or events. For example, when setting up a business, at one-off acquisitions, liquidation of the company, but also in the case of natural disasters, thefts.

In case of the financing by maturity the timing of the financial usability is decisive. However, it only applies to foreign sources, since only those are subject to repayment. Own resources are permanent.² If the maturity is up to one year or less, it is the financing of the company's assets from short-term sources. For long-term sources the due date is longer than one year. From a logical point of view, it should apply that long-term assets are financed by long-term resources.

3.1.1 Internal and external financing. Its advantages and disadvantages

The division based on the criterion of funds origin consists of internal financing and external financing. Internal financing can be characterized as the use of financial resources that an enterprise gets from its economic activity: non-distributed earnings, depreciations, long-term reserve funds and the funds released by the faster capital return. Financing from external sources uses capital coming from outside. The main sources are the deposits and shares of founders, owners and co-owners, all kinds of bonds, credits and loans. There is also the possibility of financial support from the state.³

The creation and use of enterprise internal resources is called self-financing, which has its advantages and disadvantages. The benefits of self-financing are as follows:

- there is no separation of ownership rights – there is no increase in the number of shareholders or creditors,
- it reduces the financial risk of its own debt, as there is no debt to the company and the possibility of financial distress,

² LANDA, M. *Účetnictví*. 2005, p. 185-186.

³ SYNEK, M. et al. *Manažerská ekonomika*. 2007, p. 323.

- the enterprise is not burdened with emission costs and retained earnings are cheaper than share issues,
- it enables to finance higher-risk investments that are difficult to find external resources.⁴

The main drawbacks of self-financing are:

- it is a relatively unstable financial resource (small profit stability),
- it is a relatively more expensive financial source than debt.⁵

Also external funding has its advantages and disadvantages compared to self-financing. The main advantages are:

- it allows flexibility to respond to changes in the need for funds,
- in the case of leasing, no one-off spending of funds,
- interest and leasing payments increase costs and thus reduce taxable profits.

The disadvantages include:

- expanding the number of shareholders, shareholders or creditors who influence decision making,
- the costs of an enterprise are increased, such as the cost of shares, fees, interest,
- there are increasing demands for maintaining liquidity, as commitments have to be repaid at a predetermined time.⁶

In addition to traditional sources of funding such as own funds, bank loans, loans, etc., there are alternative sources of financing for business needs.

3.1.2 Alternative sources of funding

Although there is no authoritative technical definition of alternative sources of funding, these resources can be characterized as financing from non-bank loans or equity or bond markets. Most of these forms have grown in recent years as a result of the financial crisis, especially among small and medium-sized enterprises. The various forms of alternative funding that exist in practice do not fit into any specific, mutually exclusive category. Many of these alternative tools overlap and some aspects are combined. In addition, some definitions emphasize the direct involvement of charitable investors, often

⁴ HRDÝ, M., KRECHOVSKÁ, M. *Podnikové finance v teorii a praxi*. 2013, p. 89.

⁵ Ibid, p. 89.

⁶ ČERNOHORSKÝ, J., TEPLÝ, P. *Základy financí*. 2011, p. 271.

through on-line platforms. Creditors range from individual investors to non-bank credit companies.

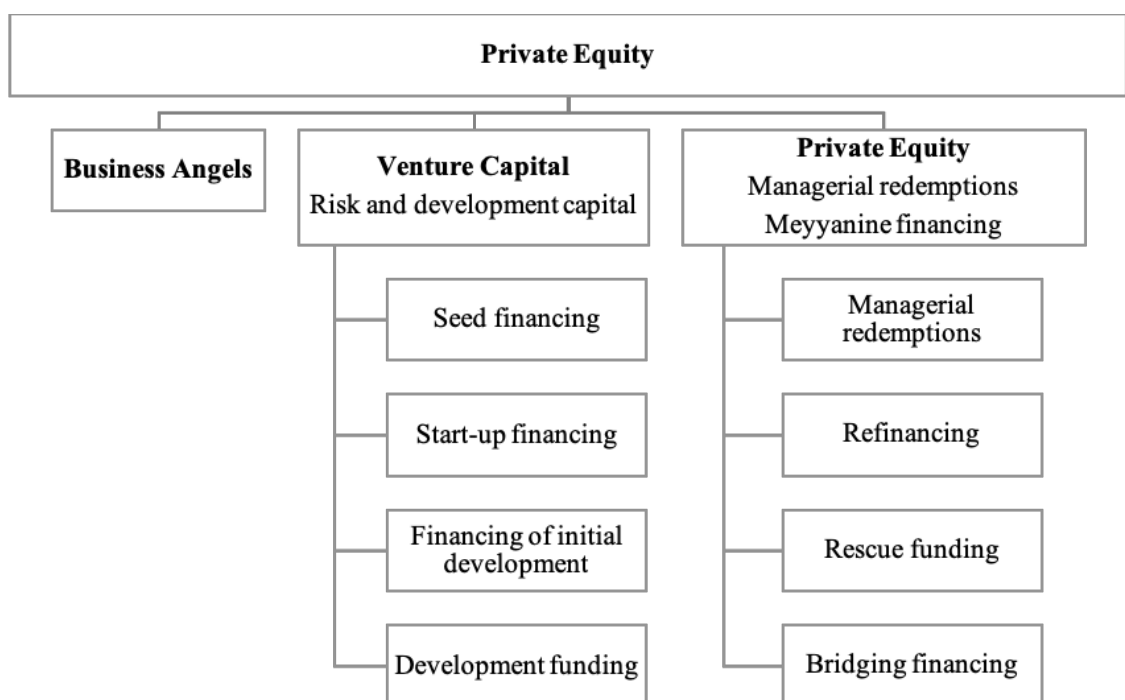
The main feature of alternative forms of financing is that they do not have a traditional scheme where the company acquires funds and then acquires property or acquires property and then repays it.⁷ Among the best known alternative forms of financing are:

- leasing,
- factoring,
- forfaiting,
- crowdfunding,
- venture capital,
- business angels.

However, instruments that are alternatives to classic debt financing exist much more.

Venture capital falls into the Private Equity category as well further forms of investment, as can be seen in the following image 2.

Image 2 Business Angels, Venture Capital and Private Equity



Source: NÝVLYTOVÁ, R., REŽNÁKOVÁ, M., *Mezinárodní kapitálové trhy: zdroj financování*. 2007, p. 104.

⁷ HRDÝ, M., KRECHOVSKÁ, M. *Podnikové finance v teorii a praxi*. 2013, p. 125.

3.2 The modern definition of the venture capital

„Venture capital is a subset of private equity (i.e. equity capital provided to enterprises not quoted on a stock market) and refers to equity investments made to support the pre-launch, launch and early stage development phases of a business.“⁸

As defined by the American National Venture Capital Association (NVCA), venture capital is capital provided by firms made up of professionals who invest such capital in young, fast-growing or reorganizing companies that have such a potential that will help them develop into competitive players in regional, national or international markets.⁹ Therefore, in the USA, the term “venture capital” serves to refer to investments in companies that are in the early stages of development, as well as investments in high-tech companies that are not listed on the stock exchange.

European experience shows that in these countries there are practically no differences between the concepts of direct investment and venture capital, both terms are often used as synonyms. In Europe, venture capital investments are included in direct investment.

Venture capital represents the funds used to invest in very fast growing innovative projects, it is based on the investor's entry into the selected business by increasing its registered capital. This financial instrument offers venture capital funds. The fund enters into a business and provides the necessary capital to obtain the relevant, usually minority share. In addition to financial resources, the investor also has an active approach to managing the company through strategic, business and financial advice. Such an investment should encourage the company's progress to the next stage of its development and contribute to the growth of its market value. The investor also determines the so-called exit - the planned exit from the company, which is usually realized by selling the stake to another investor or, the original owner of the company. The term venture capital is often referred to as venture capital - in this case, the risk is mainly the investor because its funds are mostly put into projects of companies in the early phase of their life cycle or, during the next expansion of the company. Both variants represent the unpredictable growth potential of the company, which means that there may not be a planned appreciation of the favored project - the investment. By

⁸ OECD. *Entrepreneurship at a Glance*. [online]. 2016, p. 136. https://www.oecd-ilibrary.org/docserver/entrepreneur_aag-2016-34-en.pdf?expires=1541596780&id=id&acname=guest&checksum=EADD5CA9262EA12E473239BDEBCB21F1. Accessed 25 October 2018.

⁹ KUZNETSOVA, M. N. Models of venture financing in the developed countries: methodological aspect. *Finance and loan*. [online]. 2013, p. 24. http://elar.urfu.ru/bitstream/10995/54961/1/vestnik_2013_2_012.pdf. Accessed 20 March 2019.

taking on the investor a greater risk associated with the implementation of the project, he expects a significant appreciation in the form of future revenues.

The mechanism of the venture capital investments can be easily explained as follows. On the one hand, there is an organization that wants to implement its innovative idea, but is not able to finance its project independently and, as a result, to implement it. On the other hand, there is a private venture investor („business angel“) or a venture fund (a financial intermediary), which invests in the implementation of an innovative project. For this, he buys a certain share in the authorized capital or a block of shares, and after a while sells it. As a rule, at the time of sale, the business is much more expensive than at the beginning of its development, so the value of the investor's share also increases. The difference between the sale and buying will be profit.

Unlike banks, the venture capital investor does not decide on the repayment guarantees but on the attractiveness of the projects. There are different lists of the main criteria taken into account when venture capital investor decides, e.g.:

- strong management of companies, cooperation with owners is based on common interest, business behavior “like owners”,
- very attractive market opportunity – it should be excellent and promising in the growing market,
- length of the investment and the possibility of easy exit from the firm.¹⁰

3.2.1 Types of venture capital funding

Venture capital investors differ not only in size and industry orientation, but also in focusing on a particular stage of company development.

The first type is seed capital. It is about financing the development of a product for which only a company will be established in the future. An example is the provision of finance to enthusiasts who develop a new product at home in the garage.

The second type is start-up capital. Finance is provided to a company that has a prepared product, management and organizational sales security, and a clearly defined market to which it intends to penetrate.

Another type is early stage expansion capital. It's mostly a company that has been operating for less than three years, which has not yet made a profit. These first three types

¹⁰ REŽŇÁKOVÁ, M. *Efektivní financování rozvoje podnikání*. 2012, p. 45.

of venture capital investments represent the greatest risk. The investor does not see any past achievements of the company and must rely primarily on their intuition and their own experience. Other types can generally be seen as capital to accelerate the development of existing businesses.

Expansion capital is mainly used to increase the company's working capital, to introduce another product or service, to attack the geographically distant market, and to the cost of getting more additional funds. In Europe, this is the most common focus of venture capital.

There is also an acquisition capital. It can be observed the increasing tendency of private companies to buy each other, take over the ownership interests of passive shareholders through the active and growing property ambitions of management. For this type management buy-out and management buy-in also take part.

Many companies have experienced the ruthless pressure of high interest combined with over-indebtedness. Promising projects get into a short-term loss causing cash-flow collapse. Debt substitution takes place here, when a venture capitalist pays part of the company's debt and acquires a stake in it.

A special type of venture capital investment is rescue capital. Management of a loss-making company is supported in its rescue effort. Essentially, the rescue capital is associated with the emergence of new management buy-in.

It is quite common that a venture capital investment can not be classified into any of the above types, but that it is a combination of types. Acquisitions are often linked to the need for additional resources for development, development funding often requires debt financing, etc. Venture equity investors can also be divided by their founders, that is, by the way they get money for their business.¹¹

3.2.2 Approaches to venture capital investment

Many investment funds require that they be able to control their investment. This is usually the case for investment managers to control the company's governing body. Firstly, the fund will require that one of the managers linked to the investment company become a member of the executive body, thereby ensuring that conduct within management is effective and will address relevant issues. This measure also addresses the information requirements of fund managers, through the appointed member, the detailed data gets into the hands of

¹¹ MARINIČ, P. Rizikový kapitál (Venture capital). *Český finanční a účetní časopis*. 2006, p. 147-148.

investment managers. In addition to the majority investor, insurers will often insist on taking over the funds, which will only gain a minority through their capital entry. The second area of interest associated with the governing body is ensuring the right to appoint or replace a member of the management, as well as gaining influence on procedures and actions within the body. This will ensure that management, for example, meets regularly and that the decisions taken are valid only in the presence of a representative of the fund.¹²

There are some approaches to venture capital investment depending on the intensity of involvement of managers of investment companies. They are usually divided into two basic types: hands-on approach and hands-off approach.¹³

Some funds use a **hands-on approach** and provide the business with the business contacts they have gained in previous investments, which can bring new customers, suppliers, or incentives to acquire other businesses. More frequent are the advices and recommendations from investment managers on general business strategy topics, expansion to foreign markets, eventually acquisition activities or indebtedness.¹⁴ These are areas where less active funds are involved.

If there is a good relationship between the venture and the fund, the managers representing the private equity company are trying to be an instructor and an advisor in the company's essential business decisions. However, this does not mean that an investment company is engaged in a normal operating activity, always leaving it under the supervision of the original entrepreneur. Managers of the management company will normally require information on the performance of the company, records from the management body's meetings, important business decisions will be conditioned by consultations and sometimes by approval.

The activity of access does not only concern the prudence of specific managers or fund, but also the nature of the transactions and the businesses in which they are invested. An active approach is thus much more common for companies in the germ or start-up phase, where the venture capital company by its participation wants to partially mitigate existing risks. It is also assumed that the management of emerging businesses may not be too experienced and that is why there is active on-site access. Investment managers are also intensively involved in businesses where credit financing has been partially used for the

¹² PEARCE, R., BARNES, S. *Raising Venture Capital*. 2006, p. 146.

¹³ ARUNDALE, K. *Raising Venture Capital Finance in Europe*. 2007, p. 144.

¹⁴ BVCA. *A Guide to Private Equity*. 2010, p. 43.

transaction, usually for managerial redemptions. In particular, the active approach is explained primarily by the experience of fund managers that they can use to structure the entire transaction. Close cooperation with fund managers will be mainly in the area of planning and monitoring of cash flows generated by the enterprise as they are key to repaying the acquisition loan.

On the other hand, a **hands-off approach** is a position where the fund manager does not interfere with the existence of the business to which he has invested. However, it closely monitors the development of the company and, above all, its financial data. As a result, the passive investor would have learned about the unfavorable development and would probably switch to a more active role with the effort to solve the problems.

At first glance, it is clear that passive access to venture capital is a priority. It is associated with less effort and labor, which results in lower investment costs. Passive approach is applied to mature companies that already have experienced management knowledge in the industry, and private equity firm from its position of financial investor (often with limited knowledge of the field) would not benefit the company's development and therefore avoids excessive interference with its running.¹⁵

3.2.3 Benefits of the venture capital

Enterprise financing in the form of venture capital has the following benefits:

- capital is provided by the investor to a new or existing firm with an abnormal growth potential that, in other circumstances, would find it difficult to find other alternative sources without the further expansion of the firm, given the uncertain outcome of its plan,
- venture capital investment is not a one-time provision of finance, but a direct entry to equity capital, which makes the investor usually a shareholder with the right to sentence in some crucial decisions,
- this multi-year process of co-operating with a venture capital investor to help develop a company, or a project that regularly monitors the company's current situation, which for a funded company means resigning certain parts of decision-making independence, particularly strategic management and decision-making,
- in addition to investment and expertise, the investor brings more importance to the development of the company than the investment means itself,

¹⁵ KHAN, M. *Financial Services*. 2013, p. 10-9.

- the connection of business planners and existing owners of the company and venture capitalist must lead to an above-standard high valuation of funds. When the company fails, the investor loses the funds deposited. On the contrary, it will succeed only if the business planner succeeds and earns.¹⁶

For the above reasons, therefore, funds invested in the form of venture capital says „smart money.“

Founders of venture capital funds have mostly optimistic views on the possibilities of using capital. For example, in the opinion of J. Beneš¹⁷, the head of the fund GGEF, the establishment and development of venture capital funds is also a major career opportunity. The founders are convinced that there are a number of companies with experienced management in the market who have the ambition to further develop their business activities. There is also a large number of growing companies active in innovative fields that can effectively capitalize on venture capital. At the same time there are also many family businesses that deal with the succession of the original founders. These questions can help resolve venture capital.

On the other hand, there are also problems in financing by the venture capital form, such as a small number of profitable projects or owner fears of losing self-sufficiency and leakage of information.

The success of such companies as Microsoft, Intel, Google, and others is due to investments in their development of venture capital investors. Many examples of successful venture capital use come from the well-known Silicon Valley.

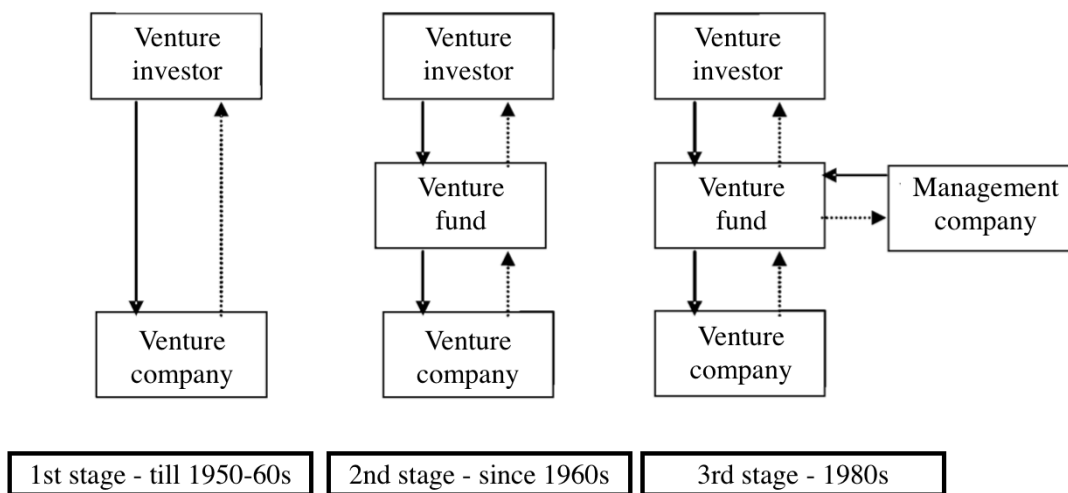
3.3 The history of venture capital

The development of the system of venture capital elements interaction (from simple interaction of venture investors and recipients to the complex structure of their interaction with the participation of venture funds and venture capital management companies) is presented by image 3.

¹⁶ MARINIČ, P. Rizikový kapitál (Venture capital). *Český finanční a účetní časopis*. 2006, p. 146.

¹⁷ BENEŠ, J. in: Vzniká fond pro menší firmy s velkým potenciálem růstu. *Economics Magazine*. [online]. 2018. <https://www.ekonomickymagazin.cz/2018/05/vznika-fond-pro-mensi-firmy-s-potencialem-rustu/>. Accessed 14 February 2019.

Image 3 The development of the system of venture capital elements interaction in a historical context



Source: Malashenkova, O. *Venture Investment in the World: Experience and Development Tendencies*. 2009, p. 41.

At the stage of venture capital beginning, venture investors were persons, who invested their own funds in venture enterprises and projects. Later, from the 60s of the 20th century, venture investors began to act as the venture capital funds, representing their collective interests. The final scheme of venture capital elements interaction was formed as a result of the asymmetric information on the highly organized market of venture capital investment. The imperfection of the market required the emergence of professionals who could eliminate for venture investors the lack of information regarding the properties of the proposed products, the characteristics of the potential sales markets, the coherence of the venture company's management, etc. These factors led to the emergence of an interaction scheme when managerial functions of the venture capital investment went to professional intermediaries – venture capital management companies. Today, venture capital management companies play a key role in realizing the goals of venture investment activities.

If we go back to the beginning of venture capital companies and funds, it is necessary to describe the history of ARD founding (American Research and Development). ARD was the venture capital firm, established in 1946 in Boston, the greatest success of which was Digital Equipment Corporation (DEC). In 1957 31-years old Ken Olsen and his partner, 28-years old Harland Andersen asked ARD for 70 thousand dollars to establish a new computer company. The head of ARD, Georges Doriot, advised Olsen and Andersen not to use the

word „computer“. Heeding this advice, the new company began to produce printed circuit modules instead of computers and made 94 thousand dollars during the first year of company activity on the market.¹⁸ As a result of the next progress the market value of Digital Equipment Corporation was 37 million dollars in 1968.¹⁹

Georges Doriot, the professor of Harvard Business School, helped start one of the first institutional venture-capital funds.²⁰ Venture capital was for Doriot a „missionary activity“ and he tried to find other people, who believed in the mission. It was a difficult way, because people at that time didn't know venture capital existed. Marketing and communication needed a lot of money and time.²¹ In spite of complications ARD expanded its activity and pointed its attention to finding great entrepreneurs and to the technologies: *“The good entrepreneurs had to be hard working, have vision, good experience dedication. They had to have the ability to find good people, intelligent.”*²² These characteristics are nowadays typical for start-ups.²³

The development of high-tech investment finance in the United States made the history of the venture capital: *“with an ultimate focus on high-tech ventures and “creative capital,” ARD marked a turning point in the institutionalization of US VC. ARD's DEC investment was one of the most important in VC history and set a precedent for what would follow.”*²⁴

A famous example of the first venture capital use was the development of transistors in U.S. In 1940, William Shockley invented the transistor while working for Bell Labs. Soon he realized that in this company he could not achieve more and, having quit, began to think about what to do next. After spending some time at the California Institute of Technology in Washington, he decided to establish his own company – Shockley Semiconductor. For this, Shockley began to search for the best engineers around the country. In 1956, he recruited a team of employees and officially opened his own business. Although Shockley was a

¹⁸ Digital Equipment Corporation. *Reference for Business*. [online]. Advameg, Inc., 2018. <https://www.referenceforbusiness.com/history2/66/DIGITAL-EQUIPMENT-CORPORATION.html>. Accessed 20 October 2018.

¹⁹ SCHEIN, E. *DEC is Dead, LLong Live DEC*. 2003, p. 147.

²⁰ GUPTA, U. *The First Venture Capitalist: Georges Doriot on Leadership, Capital & Business Organization*. 2004, p. 5.

²¹ GUPTA, U. *The First Venture Capitalist: Georges Doriot on Leadership, Capital & Business Organization*. 2004, p. 66.

²² *Ibid*, p. 70.

²³ Today there is no uniform definition of the term „start-up“. Many companies are called start-ups, but in fact they are not. Due to the complexity of the start-up definition, the special chapter of this thesis deals with this problem.

²⁴ NICHOLAS, T. The Origins of High-Tech Venture Investing in America. *Financial Market History*, 2016, p. 228.

brilliant inventor, he was simply terrible as a manager. In 1957, just a year after the founding of the company, eight of his colleagues ran out of patience – they could no longer put up with Shockley’s leadership style. In September, these people, who were later dubbed “the Traitorous Eight” quit. The next day, they signed a 1,3 million dollars contract with Fairchild Camera and Instruments, a New York-based company, and founded their own company, Fairchild Semiconductor. Their goal was to create transistors according to their technology, and not in the manner dictated by Shockley. These engineers were Julius Blank, Victor Grnich, Jean Hoerni, Eugene Kleiner, Jay Last, Gordon Moore, Robert Noyce and Sheldon Roberts. Some of them later founded their companies – Intel, AMD, Nvidia and Kleiner Perkins.²⁵ When Steve Jobs was starting his career, he often visited the Robert Noyce’s house and spent hours listening to the advices of the older businessman. The first investor of famous Apple was also a former Fairchild employee.²⁶

The invented transistors gradually began to be used in all devices – radio, telephones and computers, and then electronics manufacturers wanted something new. Of course, the transistors were smaller than the vacuum tubes, but for some samples of the newest electronics, they were too large. The solution to this problem almost simultaneously found two people. Independently of each other, Jack Kilby and Robert Noyce realized that it was possible to make all the details of the circuit from silicon, not just the transistor. While Kilby was developing a technology for the production of individual components of the scheme, Noyce came up with a much more convenient way of connecting all these parts into one. So was created an integrated circuit. Silicon is used to create integrated circuits and now is used in almost all electronic equipment. For this reason Silicon Valley got its name.²⁷ The most successful venture capital companies were concentrated in this special area, for example Kleiner and Perkins (invested to Amazon, Google, Sun Microsystems, Segway) and Sequoia Capital (invested to Google, Apple, Yahoo, Cisco, YouTube).²⁸

²⁵ SIDOROVA, E., IHODL. The Silicon Valley History. *IHODL Journal*. [online]. 2017. <https://ru.ihodl.com/analytics/2017-08-27/istoriya-kremnievoj-doliny-tranzistory-stanford-i-venchurnyj-kapital/>. Accessed 21 October 2018.

²⁶ MORRIS, R. The First Trillion-Dollar Startup. *TechCrunch*. [online]. 2014. <https://techcrunch.com/2014/07/26/the-first-trillion-dollar-startup/?guccounter=1>. Accessed 21 October 2018.

²⁷ SIDOROVA, E., IHODL. The Silicon Valley History. *IHODL Journal*. [online]. 2017. <https://ru.ihodl.com/analytics/2017-08-27/istoriya-kremnievoj-doliny-tranzistory-stanford-i-venchurnyj-kapital/>. Accessed 21 October 2018.

²⁸ KLÍMOVÁ, V., ŽÍTEK, V. *Regional Innovation Systems and Factors of their Success*. 2016, p. 204.

3.3.1 Silicon Valley formation

Silicon Valley (SV) is the name, created by journalists and is used for the part of valley Santa Clara Valley in the southern San Francisco Bay Area of Northern California. San Jose is the largest city of Silicon Valley and it ranks third in the world after Zurich and Oslo due the GDP per capita.²⁹ But the main sight of Silicon Valley is not from the real economy area, but rather from the virtual economy. This is a phenomenon of venture capital investment. Over the years of its existence, Silicon Valley has become a successful example of its use. The most part of Silicon Valley's companies is made by enterprises and start-ups, created on venture capital. Californian success formula was even developed: intellectual capital plus venture capital.³⁰

Why did the Silicon Valley become a leader of the venture capital industry? Geography and history factors are the answer. The West Coast was dominated in the IT development because of the federal funds at Stanford and Berkley, sunny weather and the higher level of meritocracy, where young specialists could lead businesses and young bankers could help them.³¹

The famous venture capital firm in Silicon Valley was Davis and Rock, founded by Arthur Rock and Tommy Davis with 5 million dollars and then played a key role in formation of Intel, Apple and other high-tech businesses. Other large venture capital firms were Bee Partners, Allegis Capital (3-5 million dollars investment to technologies), Altos Ventures (1-3 million dollars do software, digital media, infrastructure), ATEI Ventures, Inc. (6 million dollars to life sciences, software and technology), Bessmere Venture Partners, Norwest Venture Partners, Greylock Partners, Mayfield Fund, Venrock and others. The list of these companies is very long.

Nowadays one-fifth of American venture capital companies is concentrated in California, mainly in San Francisco. On average, each venture company finances seven projects per year. In case of venture financing of the Silicon Valley projects, 20–30 per cent of new enterprises give an actual income of 200–300 per cent, 10–20 per cent go bankrupt, and the rest have a profit rate of 40 percent. Nowhere in the world so many people have

²⁹ HALL, G. San Jose has world's third-highest GDP per capita Brookings says. *Silicon Valley Business Journal*. [online]. 2015. <https://www.bizjournals.com/sanjose/news/2015/01/23/san-jose-has-worlds-third-highest-gdp-per-capita.html>. Accessed 21 October 2018.

³⁰ YAGUDIN, S. *Venture business. Franchising*. 2013, p. 93.

³¹ RAO, A. Greybeard Funders: venture Capital in its Clubby Days. *A History of Silicon Valley*. [online]. 2010. <https://www.scaruffi.com/politics/arun3.html>. Accessed 22 October 2018.

become millionaires in a short time, and this brings more and more money to the Silicon Valley.³²

The U.S. leadership in the rapid development of business and new models of financing to a certain extent contributed to the rapid development of the New World in the 18th-19th centuries. Many experts believe that the first impetus to the development of the modern market was the implementation of truly high-risk projects at the turn of the century – the construction of railways and the first textile factories. The socio-psychological factor also played a significant role: the migrants of that time were a class of today's entrepreneurs who are prone to adventurism, i.e. taking high risk and steadily believing in the success of their events. Conservative Europe could not give such people a chance to realize themselves and they left it, preferring to start everything else from scratch. The sense of relative freedom that they gained strengthened their faith in success. No other place in the world has such favorable conditions for the development of entrepreneurship. The undeveloped mainland, the accumulated knowledge of people and the experience of existing countries – this combination predetermined the dominant position of the U.S. in the IT start-ups and risk financing.

Gradually the interest of venture capital companies grew to Asian companies – especially in China, Japan, Korea, Singapore.

The peculiarity of the Chinese startup system, financed by the venture capital, was that companies were trying to copy the idea and adapt it to their market, while Silicon Valley entrepreneurs were buying a new product and the entire project team.

3.3.2 The beginning of the venture capital in Europe

Since that time was venture capital considerably expanded in the United States, than in Europe and it is now expanding in the developing countries too. But U.S. still accounts the most part of all global venture capital activity.

At the beginning, venture capital was used to finance start-ups and growing businesses in Europe.³³ In 1945, the first British venture capital fund was founded by International and Commercial Financial Corporation. During the after-war period, the venture capital concept

³² YAGUDIN, S. *Venture business. Franchising*. 2013, p. 94.

³³ LANDSTORM, H., MASON, C. *Handbook of Research on venture Capital: Volume 2 A Globalizing Industry*. 2012, p. 9.

spread across Europe and Asia, and investments in the 1950s were mainly focused on technology projects.³⁴

The need for significant improvement in efficiency in a competitive environment has become a key factor in the significant expansion of technology-oriented projects at the turn of the 1980s and 1990s.³⁵

In **Germany** the developments in the area of venture capital in the beginning have been very late in comparison with other countries, including the European ones. In 1965, the first venture capital fund was set up to finance medium-sized stable enterprises. As early as 1971, investors became more interested in smaller businesses and, with time, also in financing startups. At the same time, support of venture capital investment was launched by the first state programs. A large expansion of the German fund was started in 1983. At the turn of the 1980s and 1990s, eastern and western Germany was united, which meant new opportunities in the area of venture capital and there was a considerable need for investment in the less developed eastern part of Germany.³⁶

In **UK** the largest growth of venture capital market took place in the 1980s. This type of financing became one of the factors that contributed to the strong growth of the UK economy. In the early 1990s, the British venture capital market was showing signs of a mature market. The number of realized investments stabilized, but the size of the average investment has risen. The largest capacity of newly created and independent funds was made in 1994 and amounted to more than 2 billion pounds.³⁷

3.3.3 The beginning of the venture capital in the Czech Republic

The development of venture capital in the **Czech Republic** dated to the early 1990s. The reason for its development after 1990 is the change in the political situation. Communism and democracy have fallen in the Czech Republic. Democracy in the Czech Republic has brought a number of changes, for example, in business and other spheres.

The first venture capital investments were the Czech-American Business Fund (also called the Bush Fund) founded in 1991 and funded by the United States government and two funds set up by the then Ministry of Economy of the Czech Republic – the Regional Business

³⁴ TALMOR, E., VYSVARI, F. *International Private Equity*. 2011.

³⁵ DVOŘÁK, I., PROCHÁZKA, P. *Rizikový a rozvojový kapitál*. 1998, p. 78.

³⁶ DVOŘÁK, I., PROCHÁZKA, P. *Rizikový a rozvojový kapitál*. 1998, p. 78.

³⁷ Ibid.

Fund in Ostrava and the Venture Capital Fund in Prague, funded from the EU Phare program. Afterwards, a number of other international companies have been gradually expanding their activities to the Czech Republic to realize venture capital investments from private investors. The total capacity of risk investments in the Czech Republic in 1996 can be estimated at 565 million CZK.³⁸

The biggest boom in the funds was in 1997, when the number of venture capitalists have entered the venture capital market. In many European countries the so-called venture capital associations were created. These associations began to cooperate with the largest umbrella association – European venture capital association (EVCA). In the Czech Republic such organization was called Czech venture capital association (CVCA). Despite the fact that CVCA is operating on the Czech market, knowledges about Czech venture capital funds are poor. During a long time there were no comprehensive information about how to use venture capital or for example, about the exact number of entities that offer this type of financing. The reason of that the exact number was unknown, is that international companies didn't create their daughter companies in the Czech republic: they simply made some investments and the company building in the country wasn't payed.³⁹

According to the Economic newspaper⁴⁰ in 1996 there were about 10 venture capital funds in the Czech Republic. Most of them were focused not only on the Czech Republic but on the entire Central European region. Perhaps the most significant event of the Czech venture capital market in 1996 was the transformation of the Regional Entrepreneurship Fund (REF), established in 1994 with the help of the EU Phare program. Since that time it was administered by the Fund for the Regional Development, established by the Ministry of Regional Development and the EU Commission. After more than a year of negotiation, the original REF, whose funds in the amount of about 300 million CZK were invested in fifteen promising companies in the period since its establishment, was supplemented by another Czech Private Equity Fund. The founding investors of the new fund were ČSOB, ING Bank, EBRD and the Dutch development bank FMO. The aggregate funds in both funds reached

³⁸ DVOŘÁK, I., PROCHÁZKA, P. Venture kapitál se zabydluje v České republice. *Hospodářské noviny*. [online]. 1998. <https://archiv.ihned.cz/c1-950641-venture-kapital-se-zabydluje-v-ceske-republice>. Accessed 15 January 2019.

³⁹ DVOŘÁK, I., PROCHÁZKA, P. *Rizikový a rozvojový kapitál*. 1998, p. 80-81.

⁴⁰ DVOŘÁK, I., PROCHÁZKA, P. Venture kapitál se zabydluje v České republice. *Hospodářské noviny*. [online]. 1998. <https://archiv.ihned.cz/c1-950641-venture-kapital-se-zabydluje-v-ceske-republice>. Accessed 15 January 2019.

1,5 billion CZK. This transaction, which culminated the original Phare project, the big Czech bank first entered the venture capital market. This is undoubtedly a positive signal for the whole Czech economy.⁴¹

In 1996 the number of venture capital funds per million inhabitants was 1,9 times higher in the **UK** and 3,1 times higher in the **Netherlands** than in the Czech Republic. By contrast, **Austria** has three times less capital venture companies per million inhabitants than the Czech Republic, and venture capital investments per capita were ten times lower than in the Czech Republic. However GDP per capita in the UK, Netherlands and Austria were five to six times higher than in the Czech Republic.⁴²

3.3.4 The beginning of the venture capital in Russia

The history of the Russian venture capital market began in 1993 with the arrival of large private equity funds managed by the European Bank for Reconstruction and Development (EBRD) to Russia. At that time, a program of creation of 11 regional venture funds was launched. Each regional fund served its part of Russian territory, having a capital of 10–30 million US dollars, to which an additional 20 million US dollars was added to finance the work of management companies and to other costs. Each fund was intended for investment in companies with a number of employees from 200 to 5000 people, privatized in accordance with the program of the Russian government. These were funds of the later stages, and their main objects of activity were medium and large enterprises. Innovative start-ups were outside the sphere of interests of these funds. Some precedents of investment in innovative start-up schemes took place in 1988–1993 within the system of cooperatives and centers of scientific and technical creativity of youth (cooperative ANT, RostInvest and a number of other initiatives).⁴³

Following the EBRD, the International Finance Corporation (IFC)⁴⁴, an investment unit of the World Bank specializing in private sector financing in transition economies, became another major player at the stage of direct and venture capital investment. The

⁴¹ Ibid.

⁴² Ibid.

⁴³ KRAEVSKI, I. *The development of the venture industry in Russia*. 2011, p. 3-4.

⁴⁴ IFC. *IFC History*. [online]. World Bank Group, 2019. https://www.ifc.org/wps/wcm/connect/CORP_EXT_Content/IFC_External_Corporate_Site/About+IFC_New/IFC+History/. Accessed 25 October 2018.

bilateral Russian-American investment program was also launched, which resulted in the emergence of the US-Russia Investment Fund, established in 1994 and had the capital of 440 million US dollars.⁴⁵ The fund's goal was direct and venture capital investments in Russian enterprises. Then other large funds came to Russia, including those representing the capital of large Western institutional investors (pension funds, insurance companies, etc.).

Due to country risks of the 1990s foreign investors viewed all Russian investments of private equity funds as venture, regardless of their stage and direction. The economic crisis of 1998 was a turning point for the still fragile industry of venture capital investments, since approximately 40 of the funds operating at that time were forced to screw up their activities, and out of 11 EBRD management companies, only 3 of them remained: Quadriga, Eagle and Norum. Within two years after the crisis of 1998, the capacity of venture investments in Russia, in contrast to the countries of Central and Eastern Europe, declined.⁴⁶

Since the beginning of 2001, the capacity of venture investments in Russia began to grow. This is due to a serious improvement in the country's macroeconomic indicators after the crisis and an increase in consumer demand. Investments in technology companies, including small ones, also made themselves known. One of the main catalysts for this process was the worldwide Internet boom of the late 1990s. The surge in Internet investment in Russia peaked at the beginning of 2001, after the end of the boom in the rest of the world. In 2000–2001 a number of Russian Internet companies were invested, e.g. Yandex, Ozon, Rambler. Then came the recession associated with a global decline in venture capital investments. Since the end of 2002, the volume of investments in Russia has increased again, and the development of the industry has continued. The number of precedents for investing in small innovative companies at the start-up stage is gradually increasing.⁴⁷

Today there are already a number of statistical materials that allow to characterize the segment as a whole. These are analytical data of the Russian Venture Capital Association (RVCA), research materials by Y. Ammosov, presentations and websites of large investment funds.

The aggregate data about the number and capitalization of funds by RAVI show that for the period 1994–2005 the number of private equity and venture capital funds increased

⁴⁵ VAROLI, J. Technology, Russia tries to catch up. *New York Times*. [online]. 16.7.2001. https://www.ifc.org/wps/wcm/connect/CORP_EXT_Content/IFC_External_Corporate_Site/About+IFC_New/IFC+History/. Accessed 25 January 2019.

⁴⁶ KRAEVSKI, I. *The development of the venture industry in Russia*. 2011, p. 4.

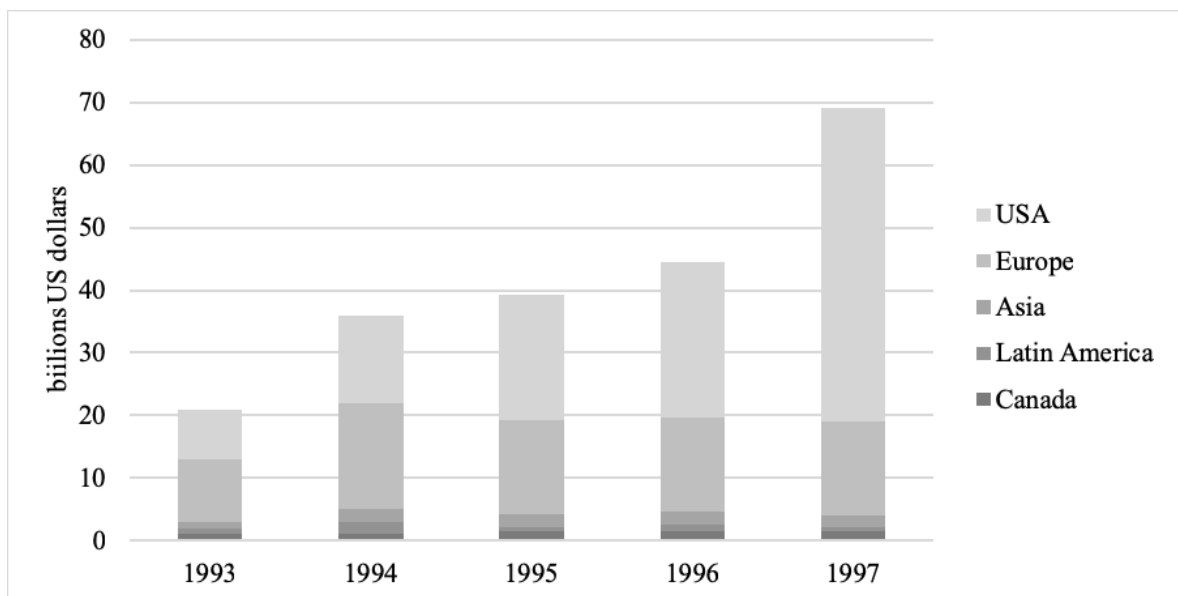
⁴⁷ KRAEVSKI, I. *The development of the venture industry in Russia*. 2011, p. 4.

by about 15 times.⁴⁸ The period 1999–2001 became a period of relative decline in the market as a whole. According to the RAWI reviews, there were 71 funded companies in 2003-2004 and already 33 companies – in 2005. The average trade size in 2004 was 5,14 million US dollars, in 2005 – 7,5 million US dollars.⁴⁹

Finally, there is a graph (image 4) that shows changes in the capacity of venture capital investments in selected regions during the period of the greatest development of venture capital.

At present, venture capital is well developed and is growing and expanding around the world. It is heavily influenced by globalization and the current state of the market. The most developed regions are mainly Northern America, Western Europe, and some Asian regions, but the importance of investment is also growing in the emerging economies of some countries.⁵⁰

Image 4 Capacity of venture capital in selected regions, billions US dollars, 1993-1997



Source: Malashenkova, O. *Venture Investment in the World: Experience and Development Tendencies*. 2009, p. 53.

⁴⁸ RVCA. *Analytical Digest. Overview of direct and venture investments market in Russia (1994-2004)*. [online]. 2004, p. 6. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 25 January 2019.

⁴⁹ RVCA. *Analytical Digest. Overview of direct and venture investments market in Russia for 2006*. [online]. 2007, p. 83. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 27 January 2019.

⁵⁰ TALMOR, E., VYSVARI, F. *International Private Equity*. 2011.

3.4 Startup problematics

Startup is the first necessary step in the life cycle of innovation. The study of foreign experience demonstrates that paradoxical is the limited range of theoretical studies on the methodology of startup business and its financing.

According to P. Graham startup is “*a company designed to grow fast.*”⁵¹ N. Blumenthal says, that a startup is “*a company working to solve a problem where the solution is not obvious, and success is not guaranteed.*”⁵² This definition has already highlighted the risk taken into account by the investor in financing such businesses.

The prerequisite for the startup stage financing is presence of an already created product or service, a functioning company's management, and the necessary market surveys. Incorporated capital should therefore help, above all, with the entry of a new product into the market. Venture capital should make this entry accelerated and simplified.⁵³

As mentioned earlier in the work, startups were not always willingly funded by venture capital investments. This was especially true of small businesses, with little experience and a high level of risk. The risk is very high at the startup stage financing and therefore the start-up financing is offered only for around 5 % of companies on the market. The return on investment rate (ROI) is not very different from pre-start funding, ranging from 5 to 10 years.⁵⁴

The unattractiveness of investing to startups for venture capital investors is one of the main problems of modern startup development.

The portfolio of the vast majority of investors mainly includes investments with acceptable risk and the highest appreciation, which are primarily transactional investments (acquisition financing, mergers, managerial redemptions). Nevertheless, the biggest impact on the economy is in particular start-up and development investment, which also entails the greatest risk.⁵⁵ It is clear that investors do not take into account the macroeconomic interests of the state when deciding their investments, since they are mainly for their own benefit. For

⁵¹ GRAHAM, P. *Want to start a startup?* [online]. 2012. <http://www.paulgraham.com/growth.html>. Accessed 27 January 2019.

⁵² ROBEHMED, N. What is a Startup? *Forbes*. [online]. 2013. <https://www.forbes.com/sites/natalierobehmed/2013/12/16/what-is-a-startup/#4e662dd64044>. Accessed 30 January 2019.

⁵³ RYBKOVÁ, L. *Trh venture kapitálu*. 2012, s. 17.

⁵⁴ FETISOVOVÁ, E. *Rizikový kapitál – Alternatívny zdroj financovania podnikov*. 2007.

⁵⁵ RYBKOVÁ, L. *Trh venture kapitálu*. 2012, s. 19.

this reason, in most developed countries, different state support schemes for start-up investments were created.

An active startup support system is the basis for enhancing innovation in activities, the growth of innovative products, and the export of high-tech goods.

3.5 State support of venture capital financing

Their goal of state support programs is to encourage and encourage venture capital investments, to increase the interest of private investors in this possibility of investing funds, or to directly influence the structure of venture capital projects so that they are favorable from the point of view of the state.

The support for venture capital investments in developed countries always consists of two types: non-specific and specific support.⁵⁶

Non-specific support is focuses on facilitating and removing obstacles to business in general. This means that it does not focus solely on business connected to venture capital investments. These include, in particular, measures in the area of tax and customs administration, creditor protection, court efficiency, export support, state procurement, capital market regulation, and all direct and indirect taxes and a large number of other regulations. The main objective of all state measures of this type is to create a suitable and business-friendly economic environment that will stimulate talented and active individuals to do business.

The main reason for almost no investor interest in embryonic or startup types of venture capital investments is the unfavorable risk-benefit ratio. A targeted change in this ratio, which is crucial for each investor, is done by specific state support of venture capital. This support is implemented in advanced economies in three possible ways: tax concessions, direct state investment, and the provision of state guarantees to venture capital investors.

Specific and non-specific support cannot precisely include specific legislative support, which is at the borderline between these two types. It is including of special provisions, which are advantageous for venture capital funds, directly into statutory standards, such as the Commercial Code or the Investment Companies Act.⁵⁷

⁵⁶ DVOŘÁK, I., PROCHÁZKA, P. *Rizikový a rozvojový kapitál*. 1998.

⁵⁷ DVOŘÁK, I., PROCHÁZKA, P. *Rizikový a rozvojový kapitál*. 1998.

Views on state funding for innovative business in the Czech Republic vary. Currently, the state finishes with the preparation of a seed fund, which will distribute nearly 1,3 billion CZK of European money among start-up promising entrepreneurs. However, according to people in the start-up scene, the state is not in a position to spend this money efficiently. State money may, moreover, distort the market. In the opinion of some experts, there is paradoxically more money on the market than quality projects. People who move in the world of startups consistently claim that the state should help promising firms in other way – e.g. by simplifying bureaucracy, or suggests that startups in which venture capital funds are invested do not pay in the first years of taxes and employee levies: “*The state should not have the ambition to replace private investors, but it should help to open the door.*”⁵⁸

⁵⁸ PETŘÍČEK, M. Stát podniká se start-upy. Peníze pro ně moou být polibkem smrti. *iDnes.cz: Ecnomics.* [online]. 2018. https://www.idnes.cz/ekonomika/domaci/start-up-stat-podpora-projektu-miliardy-podnikani.A180123_132413_ekonomika_jn. Accessed 1 February 2019.

4 Practical Part

The global venture capital market is experiencing another stage of rapid growth now. According to various reports and reports published by leading research companies, 2018 was the most successful year in many indicators of market dynamics.

Analysts at PwC / CB Insights estimate that in total, in 2017, venture capital invested more than 11 thousands transactions worldwide, totaling 164,4 billion U.S. dollars.⁵⁹ Researchers at KPMG Enterprise give a slightly different estimate – 155 billion U.S. dollars, but also recognize it as a record for the global venture capital market.

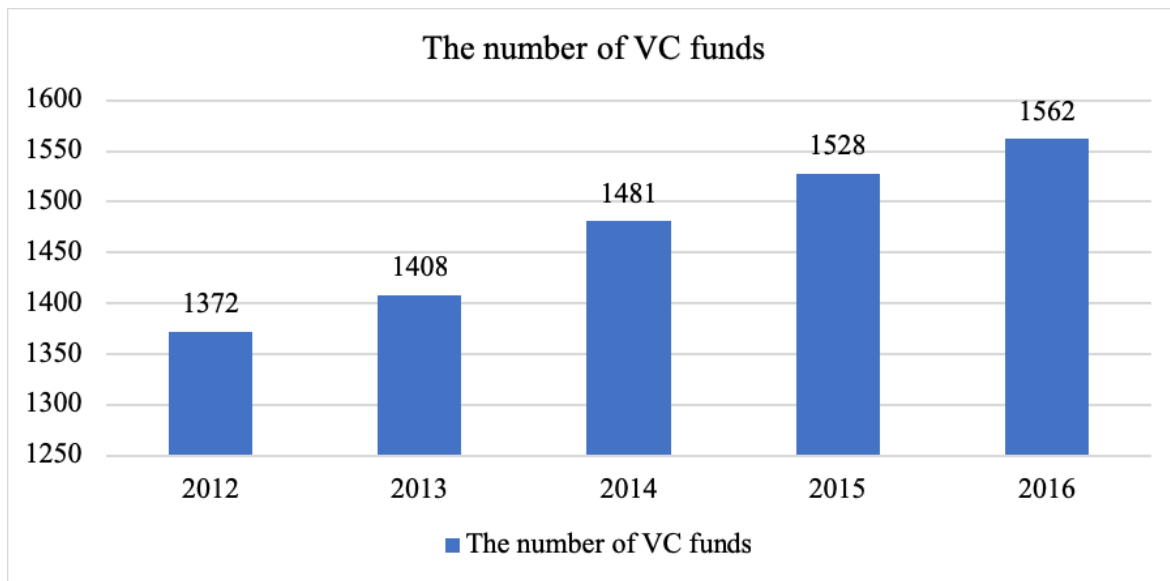
4.1 Analysis of the venture capital using in the U.S.

The United States of America is the cradle of venture capital. Everything connected with venture capital started here. It later enabled the development of venture capital in Europe and in the Czech Republic. The beginning of venture capital in the U.S. belong to the 1980s. As elsewhere, of course, there has been a change in growth and decline in this type of funding, but in spite of all the rapidly growing developments in Europe and other areas, the American market has maintained some inimitable and unique. Just because it is the oldest and most developed market in this area, it is good to choose it as a starting point for comparing developments in Europe.

The image 5 shows the dynamics of number of existing venture capital funds in the U.S. from 2012 to 2017. The next image 5 shows the total cumulative capital of these funds. A growing trend is visible.

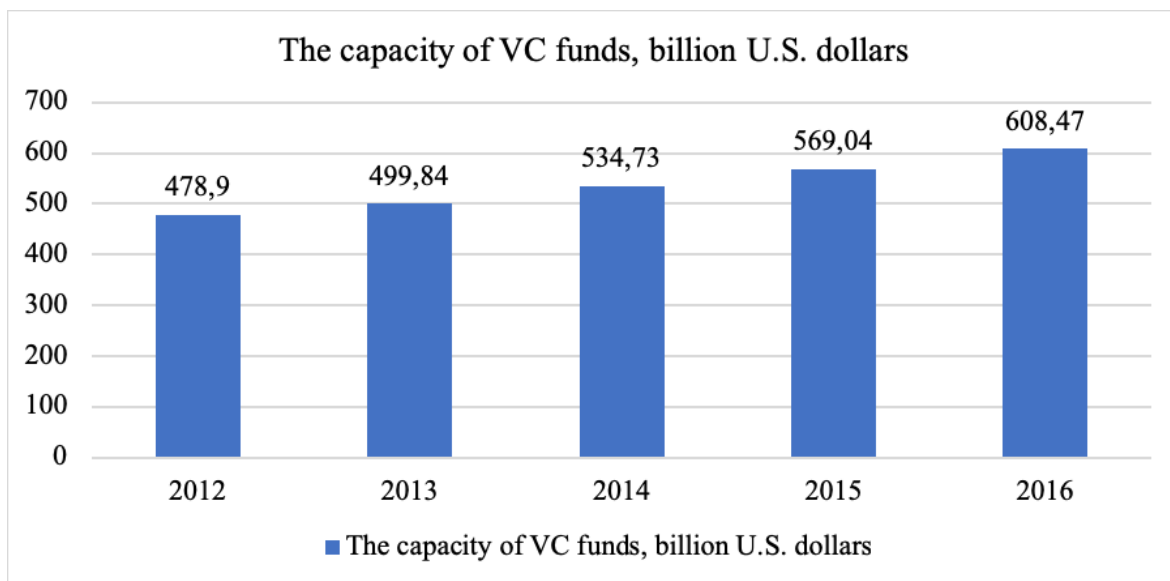
⁵⁹ PWC. CB Insights Money Tree Report Q4 2017. https://www.pwc.com/us/en/moneytree-report/assets/RegnlAggrData_Q1_2017_Final.xlsx. Accessed 19 March 2019.

Image 5 The number of venture capital funds in the U.S., 2012-2017



Source: NVCA. 2017 Yearbook. [online]. 2017. <https://1790media.files.wordpress.com/2017/09/nvca-2017-yearbook.pdf/>. Accessed 1 March 2019.

Image 6 The capacity of venture capital funds in U.S., million US dollars, 2012-2017



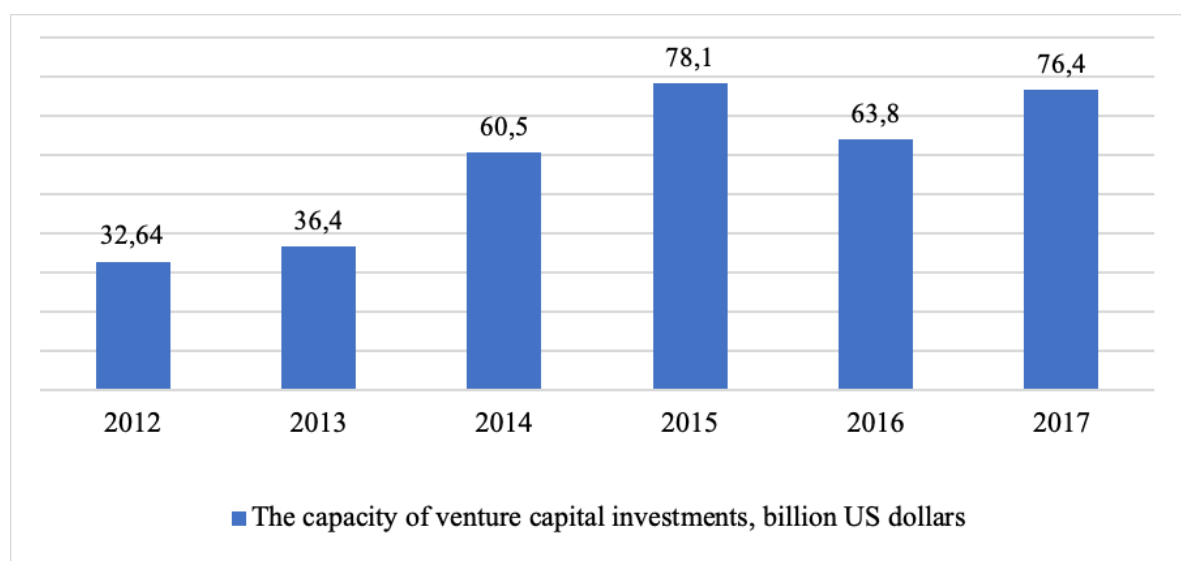
Source: NVCA. 2017 Yearbook. [online]. 2017. <https://1790media.files.wordpress.com/2017/09/nvca-2017-yearbook.pdf/>. Accessed 1 March 2019.

Since 2002, there has been a clear upward trend in the volume of venture capital investments in the U.S. In 2007–2008 a record amount of venture investment in the U.S. was reached – more than 30 billion U.S. dollars a year. However, in 2009, against the background of the global financial crisis, the volume of investment became record low – 19,7 billion

U.S. dollars. The decline in the venture capital market was accompanied by a significant reduction in the number of venture funds. So, in 2007 there were 237 funds operating, in 2009 – only 160, by the beginning of 2012 the situation had improved a little – 181 funds were already functioning.

By the beginning of 2010, venture capital began to gain momentum again and has reached the pre-crisis level in some years. The development of the venture capital investment capacity during 2012-2017 shows image 7.

Image 7 The capacity of venture capital investments in the U.S., billion U.S. dollars, 2012-2017



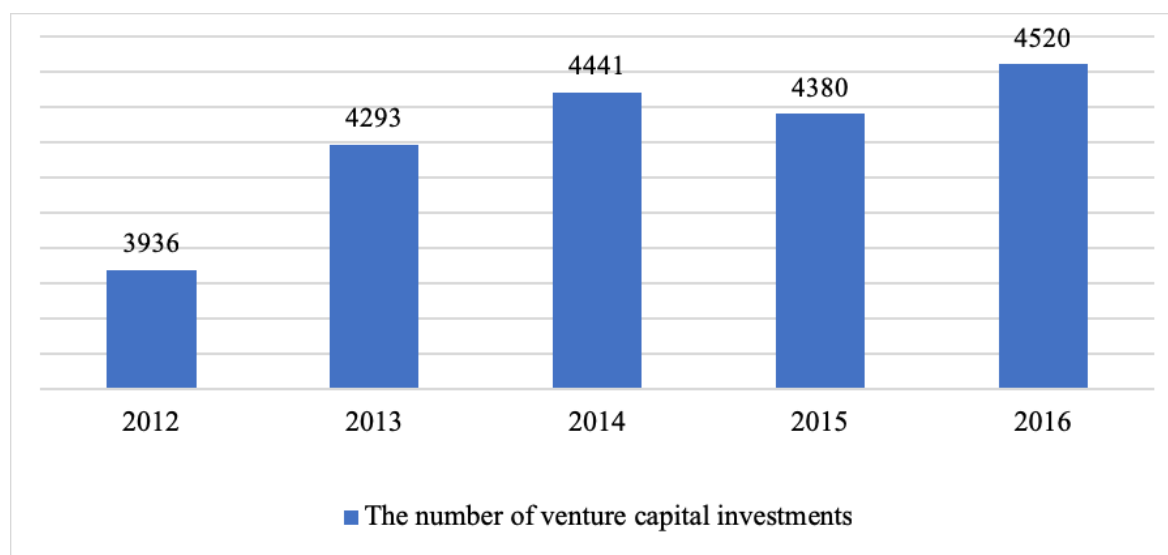
Source: PWC. CB Insights Money Tree Report Q4 2017 VC by State. [online]. https://www.pwc.com/us/en/moneytree-report/assets/RegnlAggrData_Q1_2017_Final.xlsx. Accessed 19 March 2019.

In 2018 venture capital activity in the U.S. had the highest level since the beginning of the new millennium. The capacity of venture capital investments jumped to 76,4 billion U.S. dollars in 2017 and to 99,5 billion U.S. dollars in 2018. It was the highest level recorded total since the 2000's peak (119,6 billion U.S. dollars in 2000). Over the period 2013-2018 total venture capital investments in U.S. nearly triples. In 2018 annual venture capital invested surpassed 100 billion US dollars for the first time since the dot-com period. In 2019

the largest amount (131 billion US dollars) was reached.⁶⁰ According to the US Ventures Leader at PwC, Tom Ciccolella, „2018 was a phenomenal year for US venture capital.“⁶¹

Although the whole capacity of venture capital investments, the number of them (the number of completed deals) is not stable. The last time investors are focuses on placing bigger bets on a smaller number of companies. Some deals are called „mega-deals“, because they accounted more than 1 billion investments. For example, in Q4 2017 three new U.S. companies got „mega-deals“: ride-hailing company Lyft (1,5 billion U.S. dollars), cancer-screening biotech Grail Technology (1,2 billion U.S. dollars) and automotive financing company Faraday Future (1 billion U.S. dollars).⁶²

Image 8 The number of venture capital investments in the U.S., 2012-2017



Source: KSIAZKIEWICZ, R. Useful Stats: Share of U.S. venture capital activity and per capita investment by state, 2010-2016. *SSTI*. [online]. 2017. <https://ssti.org/blog/useful-stats-share-us-venture-capital-activity-and-capita-investment-state-2010-2016>. Accessed 1 February 2019.

The value of venture capital investment per capita in the U.S. is now about 200 U.S. dollars.

⁶⁰KSIAZKIEWICZ, R. Useful Stats: VC investments nearly triple in past six years. *SSTI*. [online]. 2019. <https://ssti.org/blog/useful-stats-vc-investments-nearly-triple-past-six-years-31-states-outperformed-5-year-average>. Accessed 1 February 2019.

⁶¹CICCOLELLA, Tom In PwC. CB Insights Money Tree Report Q4 2018. [online]. 2019, p. 10. <https://www.pwc.com/us/en/moneytree-report/moneytree-report-q4-2018.pdf>. Accessed 17 March 2019.

⁶²KPMG. Venture Pulse Q4 2018. [online]. 2019, p. 39. <https://assets.kpmg/content/dam/kpmg/xx/pdf/2018/01/venture-pulse-report-q4-17.pdf>. Accessed 19 March 2019.

Table 1 The value of venture capital investment per capita, the U.S., 2012-2016, mil. U.S. dollars

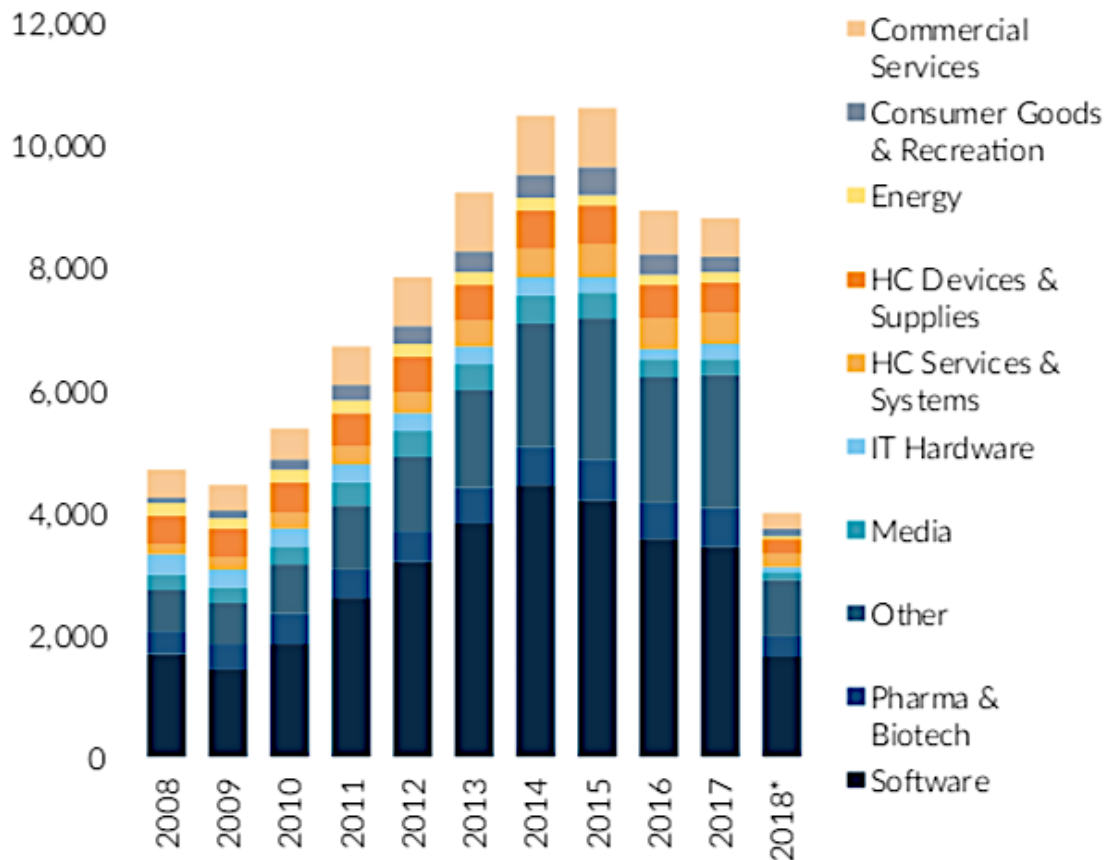
Year	The capacity of VC investments per 1 mil inhabitants, mil US dollars
2012	87,80
2013	95,71
2014	159,41
2015	182,97
2016	181,32

Source: PWC. CB Insights. VC by State. [online]. https://www.pwc.com/us/en/moneytree-report/assets/RegnlAggrData_Q1_2017_Final.xlsx. Accessed 19 March 2019.

Significant success of venture capital market and its dynamic development attracted the heightened interest of financial and governmental structures. There was an objective need to create a modern infrastructure for venture financing and improve relationships in the investment sector as a whole. In connection with this should be mentioned the formation of National Corporate Capital Association (NVCA) in 1973, the creation of an automatic quotation system for the National Association of Securities Dealers (NASDAQ). Separately, it is necessary to highlight the program for investing in small business – the Small Business Investment Companies (SBIC), a unique program of public-private partnership, through which venture financing of more than 150 thousand small and medium-sized enterprises in the amount of 90 billion U.S. dollars was carried out.

According to the results of last years, the key positions in the US venture capital industry are: software, biotechnology, medicine, energy, and IT services. Software has dominated deal count: over 40 % of deal value goes to this sector. It is visible the growth value of pharma and biotechnologies.

Image 9 Venture capital investments allocation by the sector, the U.S., 2008-6/2018

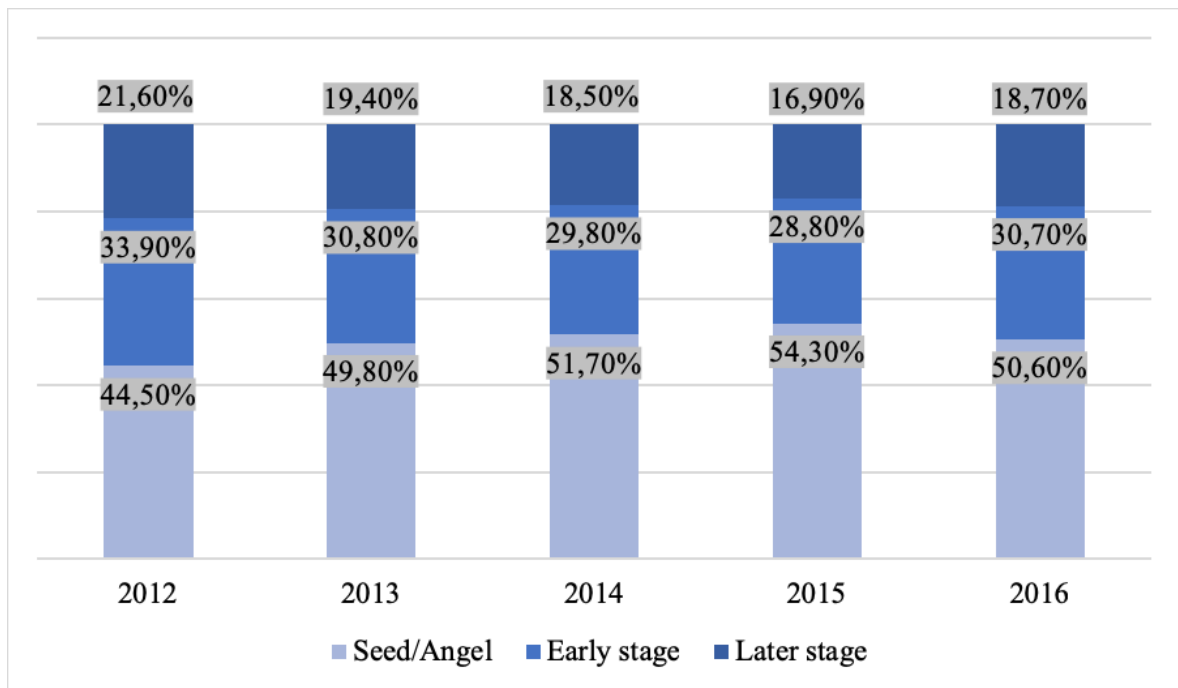


Source: NVCA. Venture Monitor. [online]. 2018. https://nvca.org/wp-content/uploads/delightful-downloads/2018/07/2Q_2018_PitchBook_NVCA_Venture_Monitor.pdf. Accessed 1 March 2019.

Investors in the U.S. remain focused on late-stage deals. The decline in seed deals was the most prominent – dropping to less than about 30 % in 2017. Although the number of these deals dropped, the size of these deals also increased.⁶³

⁶³ KPMG. Venture Pulse Q4 2018. [online]. 2019, p. 39. <https://assets.kpmg/content/dam/kpmg/xx/pdf/2018/01/venture-pulse-report-q4-17.pdf>. Accessed 19 March 2019.

Image 10 Venture capital investments allocation by stages, the U.S., %, 2012-2016



Source: calculation on the ground of: NVCA. 2017 Yearbook. [online]. 2017. <https://1790media.files.wordpress.com/2017/09/nvca-2017-yearbook.pdf/>. Accessed 1 March 2019.

According to U.S. statistics, one of the main sources of high-risk venture capital is pension funds, which have the right to invest, however, partially, their funds in high-tech projects to create high-tech products characterized by a high degree of risk. Pension funds are one of the most stable sources of venture capital in the United States. This source provides a large number of investments in knowledge-intensive high-tech enterprises.

A significant place among the sources of venture capital is also occupied by large industrial and trading corporations, insurance companies, and various investment funds. Individuals also play a significant role in the venture investment of knowledge-intensive high-tech enterprises in the United States. The conditions for venture investment in innovative projects to create hi-tech products in this case may be more profitable and less stringent than by other organizations and professionals in the venture capital industry.

Dearing many years the most of venture capital investments went to companies in California, New York and Massachusetts. Only California had in 2018 3 957 deals totaling

42,8 billion US dollars, New York – 1 411 deals and 13,5 billion US dollars, Massachusetts – 869 deals, 11,7 billion US dollars.⁶⁴

The table presents venture capital allocation by U.S. region. The quarter belonged to the North Bay Area in Q1 2017. The volume of venture capital invested is gradually growing in the New England region - by 4.3% since 2014-15.

Table 2 Venture capital investments allocation by U.S. region, the U.S., %, 2012-2017

Region	2012	2013	2014	2015	2016	Q1, 2017
Alaska/Hawaii/Puerto Rico	0,1%	0,1%	0,0%	0,1%	0,0%	0,0%
Colorado	3,2%	1,7%	1,5%	1,4%	1,2%	2,5%
DC/Metrolplex	3,3%	4,1%	2,4%	3,4%	4,6%	3,6%
LA/Orange County	8,9%	7,0%	6,3%	7,9%	8,4%	6,7%
Midwest	5,0%	4,5%	4,4%	3,2%	3,7%	3,2%
New England	12,7%	11,0%	9,5%	9,5%	10,7%	13,8%
New York Metro	7,9%	11,7%	10,3%	11,8%	13,2%	10,7%
North Central	1,4%	1,1%	1,7%	0,9%	0,9%	0,9%
Northwest	3,6%	3,0%	3,1%	2,9%	2,3%	2,4%
Philadelphia Metro	1,7%	1,6%	0,9%	1,1%	1,0%	0,6%
Sacramento/Northern California	0,5%	0,5%	0,4%	0,4%	0,5%	0,3%
San Diego	3,9%	2,7%	2,3%	2,0%	2,2%	1,5%
San Francisco (North Bay Area)	20,8%	20,4%	28,1%	33,9%	31,2%	25,0%
Silicon Valley (South Bay Area)	16,1%	17,3%	17,4%	12,4%	11,1%	19,8%
South Central	0,2%	0,4%	0,2%	0,1%	0,1%	0,0%
Southeast	4,3%	5,9%	5,4%	4,3%	4,7%	5,0%
SouthWest	2,6%	2,0%	2,1%	1,7%	1,6%	2,0%
Texas	3,4%	4,6%	4,0%	2,6%	2,3%	1,5%
Unknown	0,0%	0,0%	0,0%	0,0%	0,2%	0,0%
Upstate New York	0,2%	0,3%	0,1%	0,2%	0,1%	0,6%

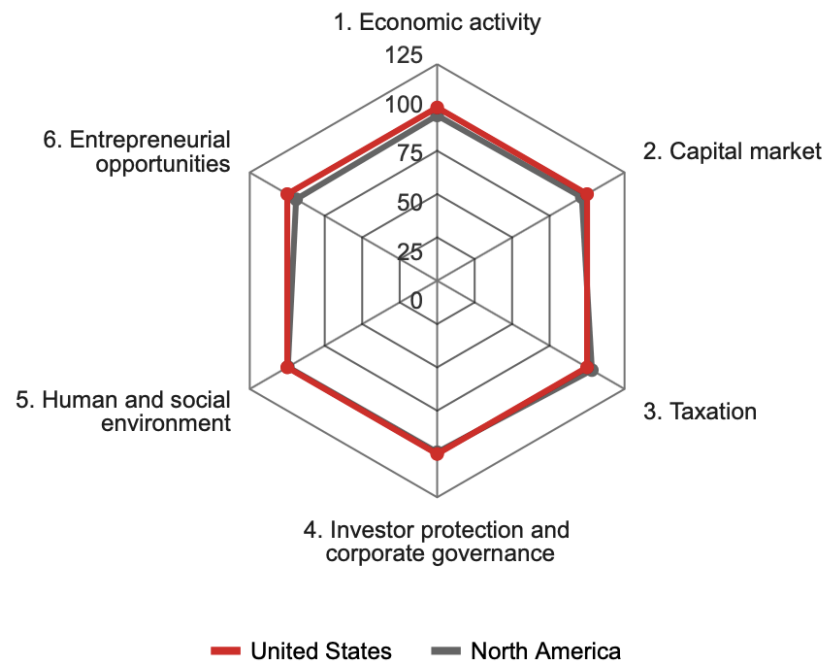
Source: PWC. RegnlAggrData_Q1_2017_Final. [online]. 2017. https://www.pwc.com/us/en/moneytree-report/assets/RegnlAggrData_Q1_2017_Final.xlsx. Accessed 17 March 2019.

According to the Venture Capital & Private Equity Country Attractiveness Index⁶⁵ U.S. was in 2018 on the 1st place with a score 100 among other 125 countries. Image below performs the key indicators used for the Index. Taxation in U.S. was ranked as 59th among other countries, other key drivers were ranked very well (1-3th ranks).

⁶⁴ KSIAZKIEWICZ, R. Useful Stats: VC investments nearly triple in past six years. *SSTI*. [online]. 2019. <https://ssti.org/blog/useful-stats-vc-investments-nearly-triple-past-six-years-31-states-outperformed-5-year-average>. Accessed 1 February 2019.

⁶⁵ IESE. United States 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/unitedstates/>. Accessed 5 February 2019.

Image 11 Key driver performance of attractiveness index for VC investments, U.S., 2018



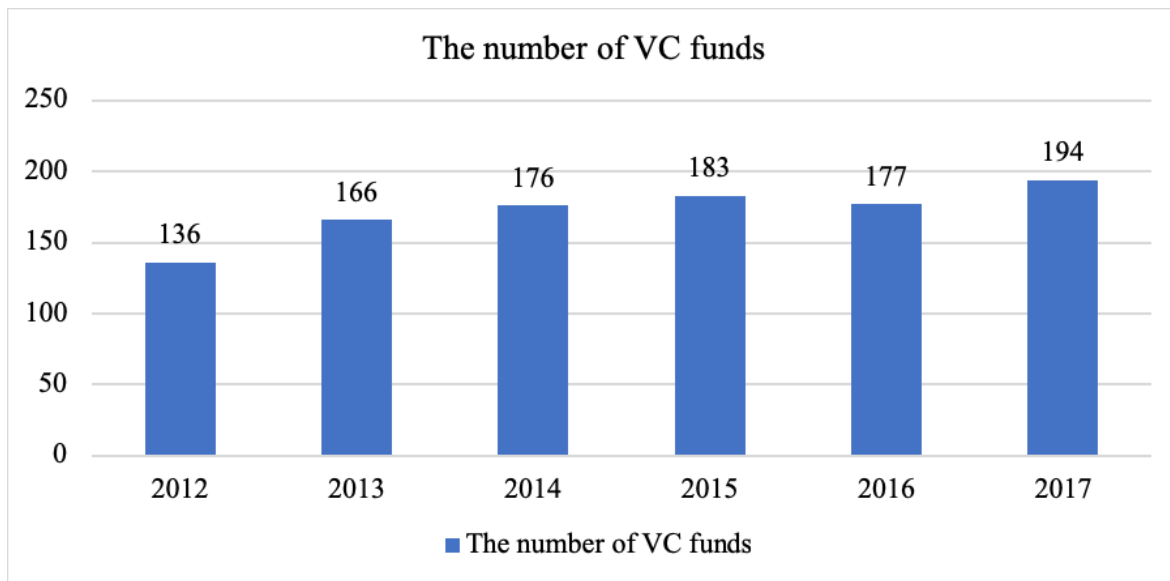
Source: IESE. United States 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/unitedstates/>. Accessed 5 February 2019.

4.2 Analysis of the venture capital using in the Russian Federation

The statistics about the venture capital market are usually prepared by the Russian Venture Capital Association (RAVI) together with the Venture Investment Fund. The last one was made for the year 2017.

According to this statistic results, the positive dynamics of the venture capital market was noted in Russia for the first time since 2013. The increase was about 8 % or 290 million US dollars. The cumulative number of venture capital funds grew by 10 % (before this, the largest growth indicator was in 2014 – 6 %) and amounted the 194 funds (Image 12). At the same time, it cannot be argued that the positive dynamics is due only to an increase in the number of new funds on the market – this indicator remains relatively stable over the past four years. It is rather about the completion of a substantial outflow of already existing funds from the market. Since 2013 about 17 funds were liquidated annually, then in 2017 this figure was only 5 funds.

Image 12 The number of venture capital funds in Russia, 2012-2017



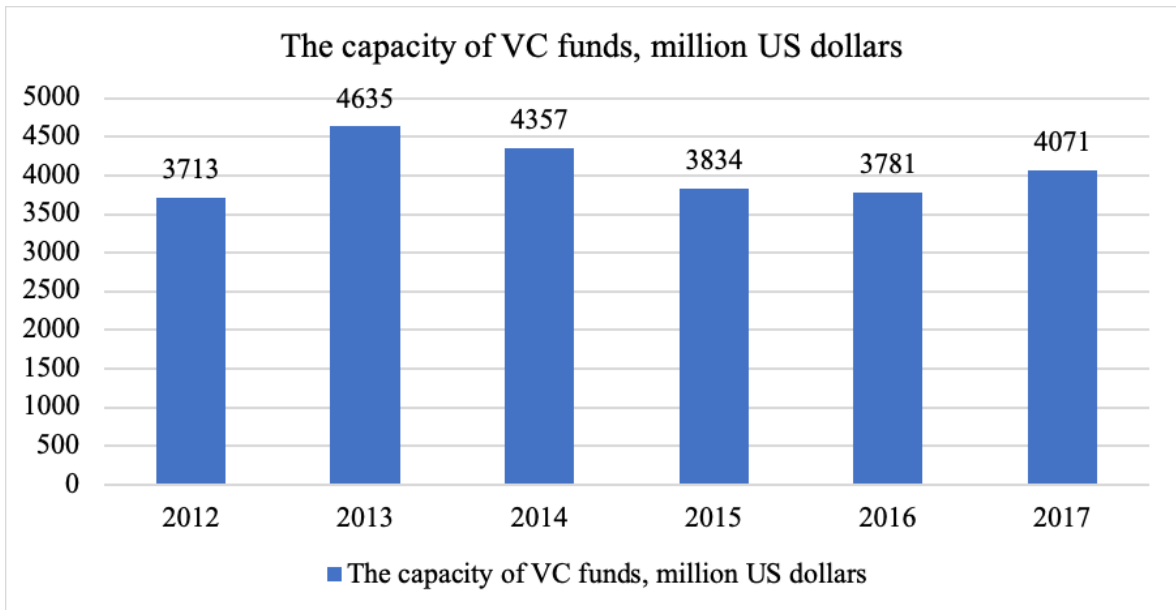
Source: RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017, p. 11. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

The most popular association of venture investors is the Moscow Network of Business Angels (IASB). New organizations, such as TUSRIF, SEAF, Framlington funds appeared on the market, investing in promising companies. The Russian Technological Fund also started its work. The National Venture Fund “Green Grant” was registered by the Russian group “Rostinvest”. All of them are aimed at financing developing companies.⁶⁶

Positive dynamics is also observed in the capacity of capital of funds. After a continual decrease since 2013, the market showed its growth at first. At the end of 2017, the total capital of venture funds operating in the market increased by 8 % and reached 4 billion US dollars (image 13).

⁶⁶CORPORATION DEVELOPMENT. *Venture investments. Information and analytical service*. [online]. July 2018, p. 4. <http://belgorodinvest.com/it/analytics/cat/digests/>. Accessed 1 March 2019.

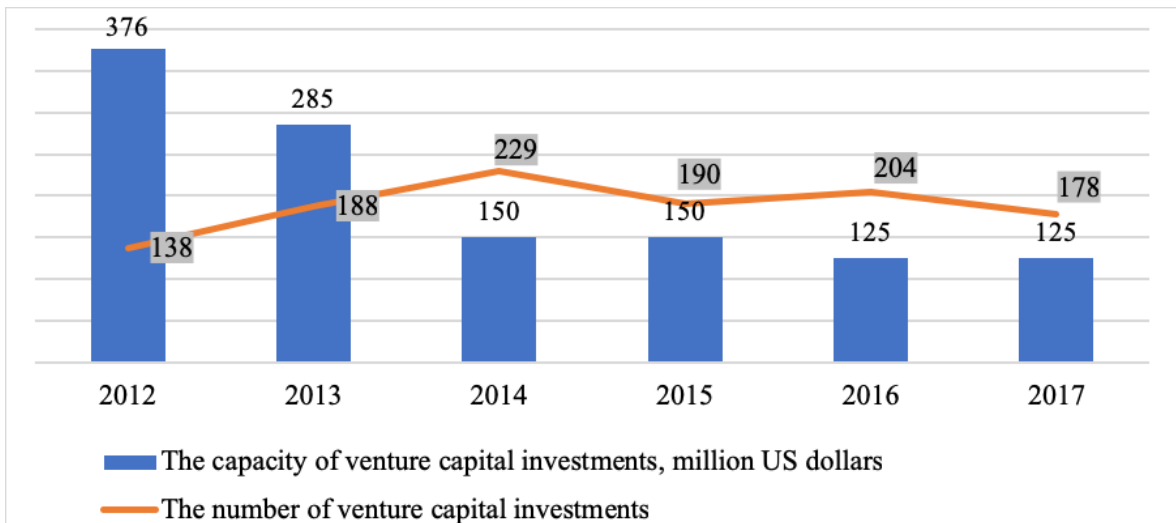
Image 13 The capacity of venture capital funds in Russia, million US dollars, 2012-2017



Source: RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017, p. 11. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

The capacity of venture capital investments in Russian companies is shown by the image 14.

Image 14 The capacity and the number of venture capital investments in Russian companies, 2012-2017



Source: RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

The value of venture capital investment per 1 million inhabitants (in million US dollars) in the Russian federation is illustrated by the table 3. This index is not counted in official statistics, so it was calculated in this thesis.

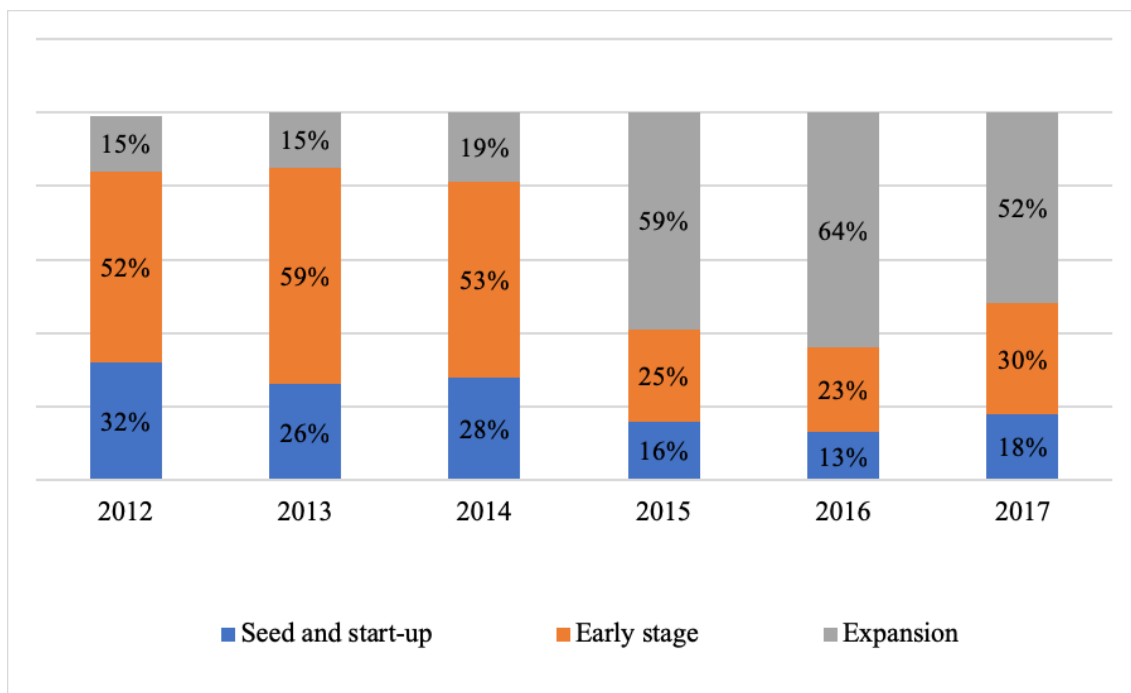
Table 3 The capacity of venture capital investment per capita, Russian federation, 2012-2017, mil. U.S. dollars

Year	The capacity of venture capital investments, mil US dollars	Population, inhabitants	The capacity of VC investments per capita, US dollars
2012	376	143 249 506	2,62
2013	285	143 347 100	1,99
2014	150	143 666 900	1,04
2015	150	146 270 033	1,03
2016	125	146 330 004	0,85
2017	125	146 389 999	0,85

Source: calculation on the ground of: RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

After 2013, investors caution in the Russian federation was reflected both in the revision of phased preferences towards more mature stages, and on the “average check”: if in 2012 and 2013 the average investment was 2,7 and 1,5 million US dollars, respectively, then starting from 2014, it has stabilized and fluctuates at the level of 0,6-0,8 million US dollars.

Image 15 Venture capital investments allocation by stages, the Russian federation, %, 2012-2017



Source: RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017, p. 30. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

A characteristic indicator of that time was the search for investors and new points of growth. In 2017, the sector of information and communication technologies, remaining traditionally the leader of industry preferences of investors, still significantly lost ground: its share in total investment decreased compared with the previous year and amounted to 58 %. The second place went to the industrial equipment sector – it accounted for 11 % of the total investment. Investments in medicine and health accounted for 10,7 % of the total investment. The distribution of venture capital investments by sector is shown by the table 4.

Table 4 Venture capital investments allocation by the sector, the Russian federation, %, 2012-2017

Sector	2012	2013	2014	2015	2016	2017
Biotechnologies	0,5%	4,9%	0,0%	1,8%	0,2%	0,2%
Computers	3,4%	3,4%	7,8%	2,9%	10,8%	0,2%
Light industry	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%
Medicine / Health	3,7%	5,0%	6,2%	13,6%	9,2%	6,7%
Consumer market	0,0%	1,8%	1,1%	0,6%	5,2%	10,7%
Industrial equipment	2,2%	1,7%	3,3%	1,4%	4,1%	11,1%
Agriculture	7,4%	0,0%	0,0%	0,8%	0,3%	0,0%
Building	0,0%	0,0%	1,2%	0,0%	0,4%	0,0%
Telecommunications	58,4%	61,3%	73,7%	73,8%	65,7%	57,8%
Transport	8,0%	1,1%	0,2%	0,7%	1,8%	0,0%
Financial services	0,0%	2,9%	0,1%	0,0%	0,0%	0,0%
Chemical materials	2,6%	2,3%	0,4%	2,1%	0,0%	0,7%
Ecology	1,0%	0,0%	0,0%	0,0%	0,0%	0,3%
Electronics	4,4%	3,7%	2,1%	0,4%	0,2%	1,4%
Power industry	2,0%	1,6%	1,0%	0,3%	1,3%	8,4%
Other	6,4%	10,4%	2,8%	1,7%	0,7%	2,5%

Source: RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

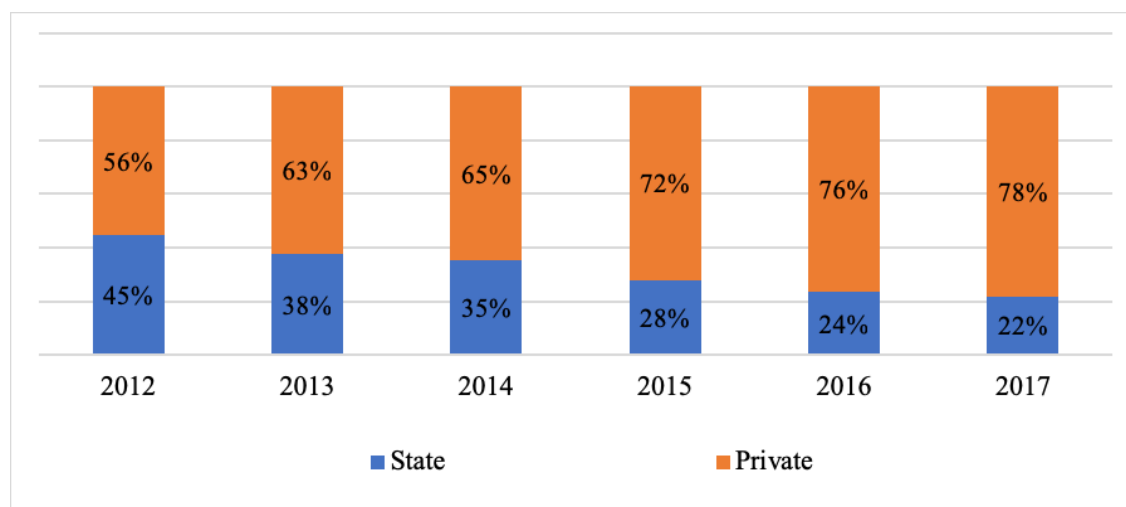
It should be noted the continuing active position of the state, which in 2017 provided almost a third of the capital of the entire Russian market and a little more than 20 % of the total number of venture funds. A similar proportion is preserved in the statistics of new venture capital funds – 4 funds (18 % of all 22 newcomers) can be attributed to the state ones.

Although the capacity of the Russian state venture capital funds falls. The largest capacity reached state venture capital funds investments in 2013. After the crisis and certain political events in 2014, the capacity of state funds investments began to fall. In 2017, venture capital investments of state funds amounted to 888 million US dollars, approximately two times less than in 2013.

The distribution of venture capital funds by sources (state / private) shows the image

16.

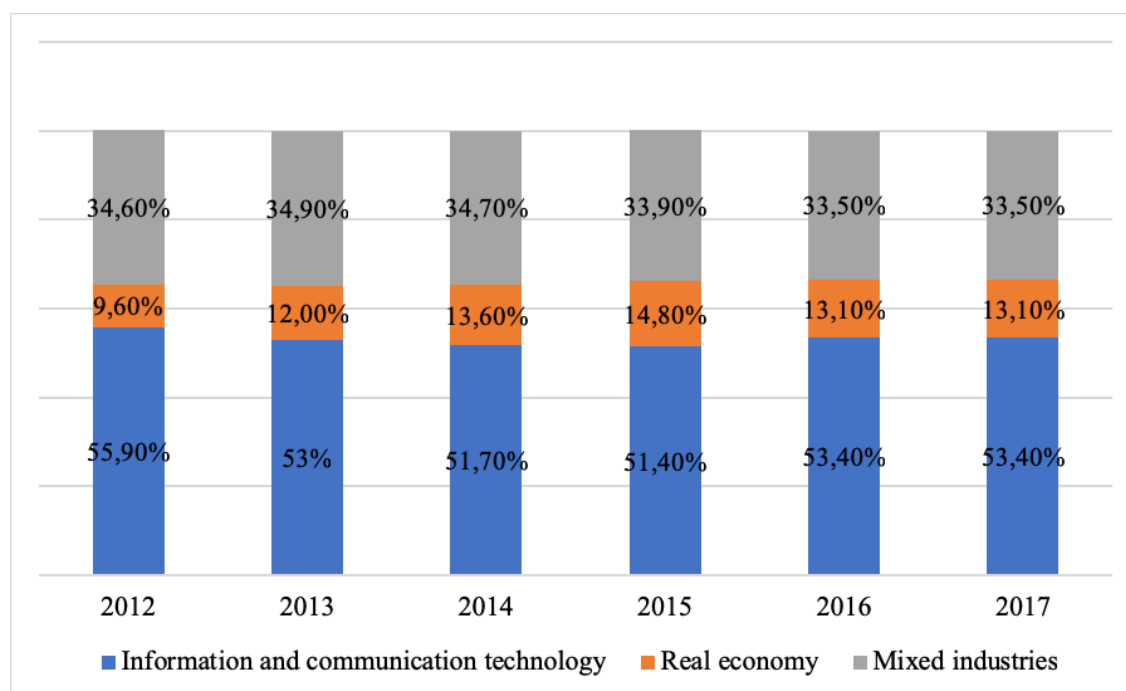
Image 16 Venture capital funds – state and private, by the capacity, the Russian federation, %, 2012-2017



Source: RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

At the same time, state-owned venture funds remain the dominant source of venture capital investments for start-ups outside the information and communication technology sector: 89 % of them are focused on investments in the real economy or have mixed industry preferences.

Image 17 The industry preferences of venture capital funds in Russia, %, 2012-2017



Source: RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017, p. 14. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

More than half of all venture capital investments in Russia are directed to recipient companies located in the Central Federal District, as can be seen in the table 5. This value is greatly influenced by the disproportion in the distribution of seed funds in the country. The share of seed funds located in regions other than the Central Federal District, in 2015, accounted for 14% of the total number and 1,2% of the total capital of seed funds.

Table 5 Venture capital investments allocation by the federal districts, the Russian federation, %, 2012-2017

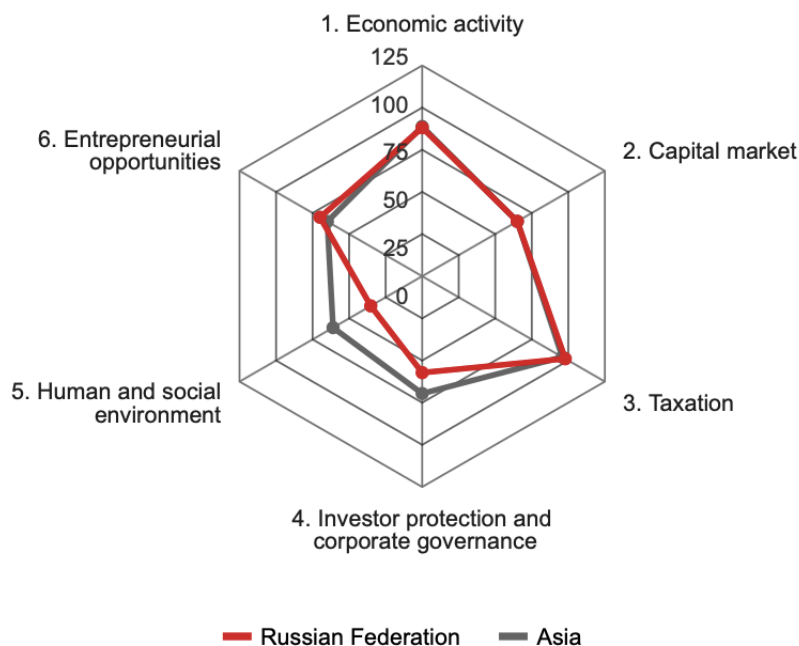
Federal district	2012	2013	2014	2015	2016	2017
Central	84,1%	87,4%	88,3%	91,6%	96,4%	95,6%
Northwestern	2,1%	2,2%	2,0%	2,2%	0,7%	1,7%
Volga region	9,6%	7,3%	6,7%	4,4%	2,4%	2,2%
South	0,7%	0,6%	0,5%	0,4%	0,0%	0,0%
North Caucasian	0,4%	0,3%	0,3%	0,0%	0,0%	0,0%
Ural	0,6%	0,2%	0,3%	0,2%	0,2%	0,2%
Siberian	2,4%	1,9%	1,7%	1,1%	0,2%	0,2%
Far Eastern	0,0%	0,2%	0,1%	0,1%	0,1%	0,1%

Source: RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

According to the Venture Capital & Private Equity Country Attractiveness Index⁶⁷ Russia was in 2018 on the 39 place with a score 63,5. Image below performs the key indicators used for the Index. Human and social environment in Russia got the worst score – 35,2 (especially labor regulations were badly evaluated – score 24). Tax incentives and administrative burden got a very good score – 97,9. In comparison with other countries Russia has better economic activity – 21st rank and entrepreneurial opportunities – 29th rank.

⁶⁷ IESE. Russian Federation 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/russianfederation/>. Accessed 5 February 2019.

Image 18 Key driver performance of attractiveness index for VC investments, Russia, 2018



Source: IESE. Russian Federation 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/russianfederation/>. Accessed 5 February 2019.

4.3 Analysis of the venture capital using in the Czech Republic

Just as in the whole of Central and Eastern Europe, venture capital financing in the Czech Republic could be created thanks to support from the EU and the United States.

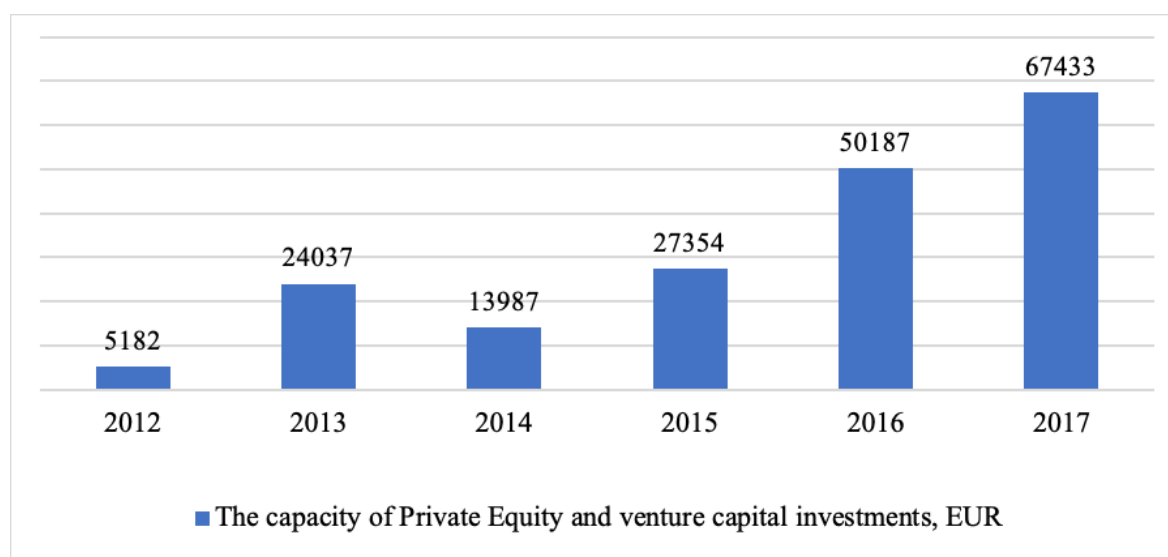
Therefore, as pension funds and insurance companies are not the source of funds for venture funds, investors remain as a fund of funds, as well as banks, private and corporate investors, other active managers, and the government. According to the ČNB, 467 investment funds (January 2019) are registered in the Czech Republic.⁶⁸

The reason for the individual growths and decreases in the development of venture capital marketing is therefore the change of the investors. E.g. the growth in 2007 is due to the growth in the number of private investors and banks interested in investing in venture capital funds this year. In 2009, 42 % of the bank, 25 % of government agencies, 22 % of fund funds and more were the largest sources of funds. Most of the money sources come from Europe, with very few Czech investors.

⁶⁸ ČNB. List of investment funds. ČNB. [online]. 2019. https://www.cnb.cz/en/statistics/money_and_banking_stat/lists_mbs/list_fki/. Accessed 5 March 2019.

Czech statistics usually relate to both private equity and venture capital and use the euro. The total capacity of investments is according the CVCA and Deloitte less then 100 thousand EUR.⁶⁹ OECD shows another value – 4,65 million U.S. dollars in 2016.⁷⁰

Image 19 The capacity of Private Equity and venture capital investments in the Czech Republic, EUR, 2012-2017



Source: CVCA, DELOITTE. *CVCA Private Equity Report Reflecting on 2017*. [online]. June 2018. <https://www2.deloitte.com/content/dam/Deloitte/cz/Documents/survey/cz-deloitte-cvca-private-equity-report-2017.pdf>. Accessed 5 March 2019.

According to the analysis of CVCA and Deloitte Czech Private Equity and venture capital market was continuing its fast pace against the backdrop of positive macroeconomic developments, contributing to the execution of transactions and capital raising. Market optimism thus followed the higher level of activity from 2015 and 2016. In next years representatives of the Private Equity and venture capital sector expect at least similar results as in 2017.

Major trends resulting from the statistics are:

- increasing activity of Czech funds outside the Czech Republic, capacity of transactions at the highest level since 2011,
- share of venture capital and buyout deal are at the same level,

⁶⁹ CVCA, DELOITTE. *Czech Private Equity & Venture Capital Association 2013 Activity Report*. [online]. https://www2.deloitte.com/content/dam/Deloitte/cz/Documents/survey/cvca_2014.pdf. Accessed 5 February 2019.

⁷⁰ OECD. *Venture capital investments. Entrepreneurship at a Glance 2017*. [online]. Paris: OECD, 2017, p. 125. DOI: https://doi.org/10.1787/entrepreneur_aag-2017-25-en. Accessed 5 February 2019.

- foundation of several funds focused on SMEs.

CVCA President Jiri Benes⁷¹ said on the results of 2017 that during 2017 it was again seen a substantial increase in private equity investments, both in terms of the capacity of invested funds and the number of companies invested. Benes also said, that he was optimistic about the expected investments in next years, especially given the successful fundraising of a number of funds in the Czech Republic and the Central European region.

Ondrej Vicar from Genesis Capital sees 2017 as extremely successful year: “*In 2017, we have successfully implemented five new investments through Genesis funds, making this year the most active year in our company's 20-year history. The number of assessed investment opportunities was also record-breaking.*”⁷²

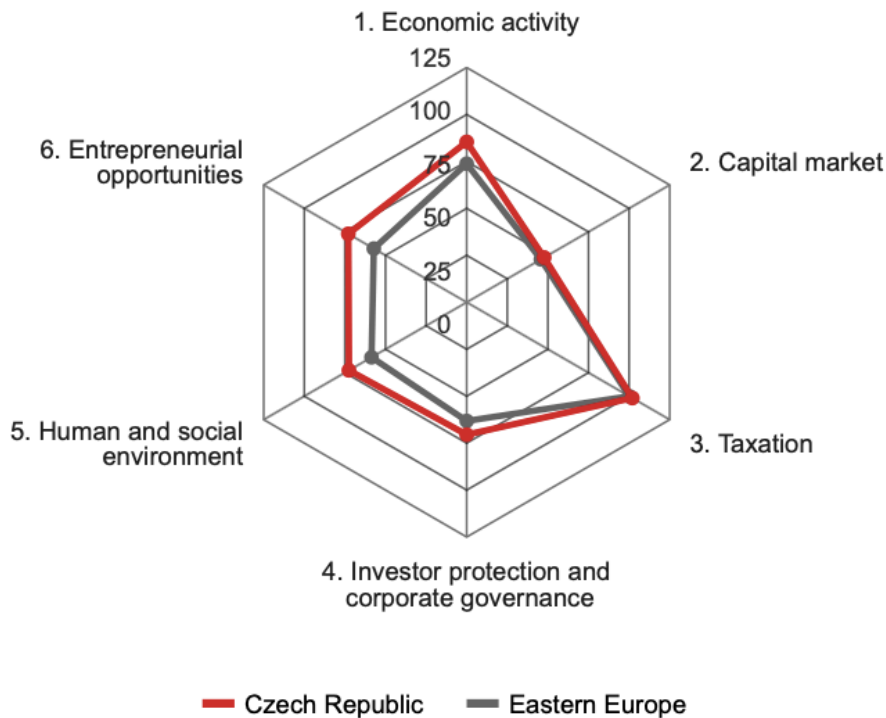
According to the Venture Capital & Private Equity Country Attractiveness Index⁷³ Czech Republic was in 2018 on the 33 place with a score 65,7. Image below perfoms the key indicators used for the Index. Tax incentives and administrative burden got a very good score – 102, while capital market was ranked worth – score 47,7. In comparison with other countries Czech Republic has better human and social environment – 18th rank and economy activity – 28th rank.

⁷¹ BENES, Jiri In CVCA. Czech market of private equity continue to grow. Prague, 2018. https://www.cvca.cz/images/cvca_UK-Ke-stazeni/138-file-File-2017_Activity_Report_TZ.pdf. Accessed 5 March 2019.

⁷² BENES, Jiri In CVCA. Czech market of private equity continue to grow. Prague, 2018. https://www.cvca.cz/images/cvca_UK-Ke-stazeni/138-file-File-2017_Activity_Report_TZ.pdf. Accessed 5 March 2019.

⁷³ IESE. Czech Republic 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/czechrepublic/>. Accessed 5 February 2019.

Image 20 Key driver performance of attractiveness index for VC investments, Czech Republic, 2018



Source: IESE. Czech Republic 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/czechrepublic/>. Accessed 5 February 2019.

4.4 Dependency analysis of the venture capital investments on the GDP in the selected countries

4.4.1 Dependency analysis of the capacity of venture capital investments on the GDP in the U.S.

Monitored variables:

- X1: GDP (current), mil. U.S. dollars in the U.S.
- Y1: The capacity of venture capital investments, mil. U.S. dollars, in the U.S.

Time: 2012-2017.

The correlation force was investigated first on the basis of the correlation coefficient (formula and method of calculation – see the Methodology of the thesis).

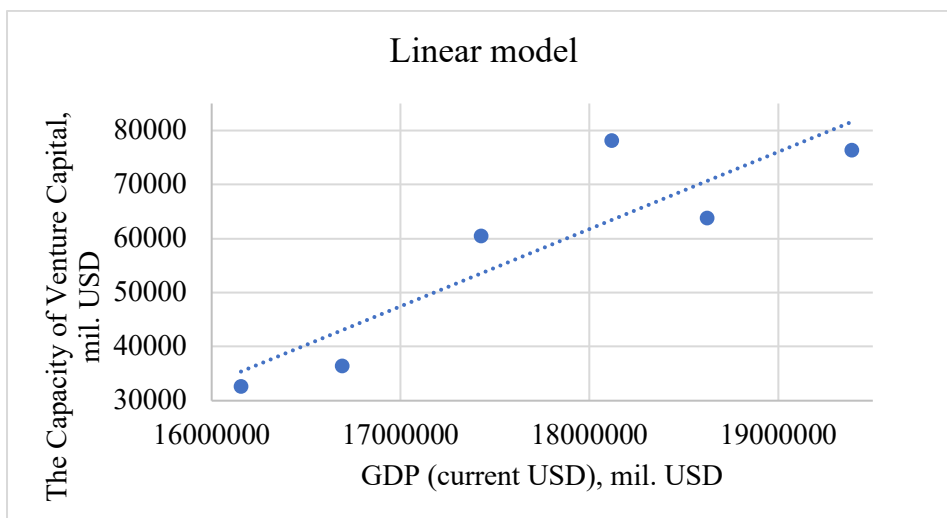
Table 6 GDP, current USD and the capacity of VC investments in the U.S., mil U.S. dollars, 2012-2017

	X1	Y
	GDP (current USD), mil. USD	The capacity of VC investments, mil. USD
2012	16 155 255	32 640
2013	16 691 517	36 400
2014	17 427 609	60 500
2015	18 120 714	78 100
2016	18 624 475	63 800
2017	19 390 604	76 400
Correl coefficient	0,8915 (high linear correlation)	

Source: THE WORLD BANK. GDP (current US\$). *The World Bank*. [online]. <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=US>. Accessed 20 March 2019; STATISTA. Value of venture capital investment in the United States from 1995 to 2018 (in billion U.S. dollars). *Statista*. <https://www.statista.com/statistics/277501/venture-capital-amount-invested-in-the-united-states-since-1995/>. Accessed 20 March 2019.

Based on the data from the table, a regression graph was constructed using trend lines. This graph helped to determine what type of correlation is going on – it is positive linear correlation.

Image 21 Linear model of correlation GDP / VC investment capacity, mil. U.S. dollars, the U.S., 2012-2017



Source: author.

Then was used the Excel Analysis ToolPak for identification of some important characteristics of correlation in the model. The results are shown and described in the next table.

Table 7 Results of the correlation analysis (Excel Analysis ToolPak) – the U.S.

Results (used Analysis ToolPak: Correlation)						
I. Regression Statistics						
Multiple R	0,89152893	The critical value of the F criterion at a significance level of 0.05–19.33. The resulting multiple R is less than the critical value of F, therefore regression cannot be considered significant – there is no significant statistical relationship between variables. The probability of error is great.				
R-square	0,79482384	The analysis is relevant, because R-square is pretty high (79,5 %).				
Normalized R-square	0,7435298	Is also high, it is good.				
Standard error	614426,003	Shows the S estimate of the standard deviation σ of the net error ε .				
Observations	6	The sample size is 6.				
II. Analysis of variance						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	1	5849*10 ⁹	5849*10 ⁹	15,4954421	0,01701082	
Remainder	4	15101*10 ⁹	377*10 ⁹			
Total	5	73599*10 ⁹				
III. Analysis of coefficients						
	<i>coefficients</i>	<i>Standard error</i>	<i>t-statistic</i>	<i>P- Value</i>	<i>Bottom 95%</i>	<i>Top 95%</i>
Y-intersection	14511566,7	856437,633	16,9441021	0,00007113	12133714,6	16889418,7
variable X1'	55,6025012	14,1251264	3,93642505	0,01701082	16,3848632	94,8201391

Source: author.

In the third part of the table there are some coefficients, which are needed to describe. In this table, the first line, called "Y-intersection", displays information for the coefficients ... $b_0 = 14511566,7$ is the unknown b_0 estimate. The standard error (856437,6) is the estimate of the standard deviation for b_0 , which shows the accuracy of the calculated $b_0 = 14511566,7$:

$T_{tab} = |b_0 / S(b_0)| = |14511566.7 / 856437.6| = 16.944$ – displayed in the t-statistics column and intended to test hypothesis $H_0: b_0 = 0$, p-value = 0.00007113 found by tables and shows that, at the significance level $\alpha = 0.05$, the hypothesis that the coefficient is equal to zero should be rejected, since p is smaller than α on the 95% confidence interval.

For b_0 is equal: $12\ 133\ 714,59 < b_0 (14\ 511\ 566,7) < 16\ 889\ 418,74$. That is, the accuracy of ε estimation = $16\ 889\ 418,74 - 14511566,7 = 2\ 377\ 852,04$, which is 2

377 852,04 / 14 511 566,7 = 16,4% of the calculated value. Thus, the estimate $b_0 = 14511566,7$ lies in the specified interval of the lower and upper values, which is 16,4 % of the calculated value, therefore, the accuracy of the estimate cannot be considered excellent, and as a result it is recommended to increase the sample size.

Result:

The simple correlation sample and the graph shows the linear correlation of the observed variables, but the examination of other coefficients shows that the dependence is not statistically significant, whereas the correlation model is considered relevant.

The capacity of VC investments in the U.S. can grow with the country's GDP growth and, conversely, decline with GDP decline, but little (correlation is statistically insignificant).

4.4.2 Dependency analysis of the capacity of venture capital investments on the GDP in the Russian Federation

Monitored variables:

- X1: GDP (current), mil. U.S. dollars in the Russian Federation
- Y1: The capacity of venture capital investments, mil. U.S. dollars, in the Russian Federation

Time: 2012-2017.

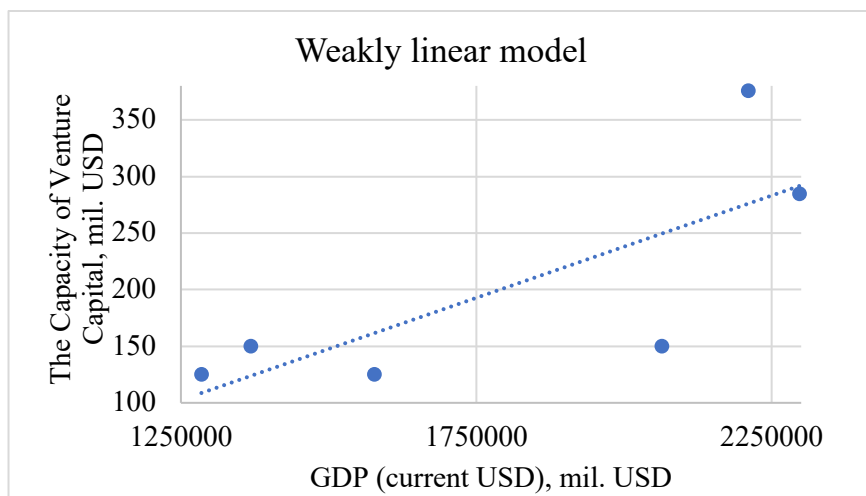
Table 8 GDP, current USD and the capacity of VC investments in the Russian Federation., mil U.S. dollars, 2012-2017

	X1	Y
	GDP (current USD), mil. USD	The capacity of VC investments, mil. USD
2012	2210256,98	376
2013	2297128,04	285
2014	2063662,67	150
2015	1368400,71	150
2016	1284727,6	125
2017	1577524,15	125
Correl coefficient	0,76905754 (high linear correlation)	

Source: THE WORLD BANK. GDP (current US\$). *The World Bank*. [online]. <https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?locations=US>. Accessed 20 March 2019; RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.

The next graph helped to determine what type of correlation is going on – it is very weakly linear correlation.

Image 22 Model of correlation GDP / VC investment capacity, mil. U.S. dollars, the Russian Federation, 2012-2017



Source: author.

The results of the Excel Analysis ToolPak are shown and described in the next table.

Table 9 Results of the correlation analysis (Excel Analysis ToolPak) – the Russian Federation

Results (used Analysis ToolPak: Correlation)						
I. Regression Statistics						
Multiple R	0,76905754		The critical value of the F criterion at a significance level of 0.05–19.33. The resulting multiple R is less than the critical value of F, therefore regression cannot be considered significant – there is no significant statistical relationship between variables. The probability of error is great.			
R-square	0,59144949		The analysis is relevant, because R-square is pretty high (59,1 %).			
Normalized R-square	0,48931187		Is also high, it is good.			
Standard error	74,5616263		Shows the S estimate of the standard deviation σ of the net error ϵ .			
Observations	6		The sample size is 6.			
II. Analysis of variance						
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>	
Regression	1	32193,0889	32193,0889	5,79071118	0,07384304	
Remainder	4	22237,7445	5559,43612			
Total	5	54430,8333				
III. Analysis of coefficients						
	<i>coefficients</i>	<i>Standard error</i>	<i>t-statistic</i>	<i>P- Value</i>	<i>Bottom 95%</i>	<i>Top 95%</i>
Y-intersection	-123,42623	138,550132	-0,8908416	0,42335586	-508,10306	261,250608
variable X1'	0,00018067	0,00007508	2,40638966	0,07384304	-0,00002778	0,00038913

Source: author.

In the third part of the table there are some coefficients, which are needed to describe. In this table, the first line, called "Y-intersection", displays information for the coefficients ... $b_0 = -123,42$ is the unknown b_0 estimate. The standard error (138,55) is the estimate of the standard deviation for b_0 , which shows the accuracy of the calculated $b_0 = 14511566,7$:

$T_{tab} = -0,8909$ – displayed in the t-statistics column and intended to test hypothesis $H_0: b_0 = 0$, p-value = 0,42336 found by tables and shows that, at the significance level $\alpha = 0,05$, the hypothesis that the coefficient is equal to zero should be accepted, since p is higher than α on the 95% confidence interval.

Result:

The graph shows the weakly linear correlation of the observed variables. The examination of other coefficients shows that the model doesn't meet the condition for the correlation.

The capacity of VC investments in the Russian Federation are not connected to the country's GDP growth or decline.

5 Results and Discussion

The global venture capital market exceeded 127 billion US dollars per year and continues to grow, growing new technology giants from small startups.

The size of the venture capital market is very different in selected countries. For example according to OECD the capacity of venture capital investment in 2016 in the U.S. was 66626,56 million U.S., in the Russian Federation – 46 million U.S. dollars, in Czech Republic – 4,65 million U.S. dollars.⁷⁴

Table 10 Comparison of venture capital investment in selected countries, million US dollars, 2016

	U.S.	Russian Federation	Czech Republic
capacity of venture capital investment	66626,56 mil U.S. dollars	46 mil U.S. dollars	4,65 mil U.S. dollars
number of venture capital-backed companies	6009	n/a	9

Source: OECD. Venture capital investments. Entrepreneurship at a Glance 2017. Paris: OECD, 2017. DOI: https://doi.org/10.1787/entrepreneur_aag-2017-25-en. p. 125.

According to the Venture Capital & Private Equity Country Attractiveness Index, made by IESE Business School and Em Lyon Business School the most attractive countries for risk capital investors in 2018 were: U.S. (score 100), UK (94,4), Canada (92,6), Hong Kong (91,2) and Japan (91,2). Czech republic was in 2018 on the 33th place (score 65,7), Russia – on the 39th place (63,5 score). Both of these countries registered the increasing trend over a five-year period.⁷⁵

America remains the "cradle" of venture capital investment and start-ups. North America, San Francisco in particular, is the leader in venture capital inflow into the country. Investors are inspired by success stories in the market of companies such as Google, Uber, etc.

⁷⁴ OECD. Venture capital investments. Entrepreneurship at a Glance 2017. Paris: OECD, 2017. DOI: https://doi.org/10.1787/entrepreneur_aag-2017-25-en. p. 125.

⁷⁵ IESE. Ranking 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/ranking/>. Accessed 5 February 2019.

In general, investors have become more prudent and are trying to invest in sustainable businesses with clear prospects. More and more money is invested in companies that have already been funded. Therefore, the average transaction volume increases. There is a decrease in the share of financing at the early stages, both in the number of transactions and in the total volume of investments.

On the other hand, for promising projects, investors are willing to take increased risks and pay more in the early stages. Investors take risks, because a breakthrough of at least one project makes it possible to cover all costs and increase investments. Such a strategy creates the prerequisites for the formation of the next “financial bubble”.

5.1 The main conclusions about the U.S. experience

Looking at the experience of U.S. venture capital investment, it becomes obvious that government support plays an important but not decisive role, since only the actions of market mechanisms organize the balance between the demand for innovations and the proposals of the same innovations. Excessive state intervention in the country's venture capital system may introduce a significant imbalance, which will take time to resolve.

Exploring the example of the United States, we can conclude that the presence of a large number of developed venture financing mechanisms helps to cause a balanced development of the venture capital ecosystem. Proceeding from this, it becomes obvious that other countries (as Czech Republic or Russia) need to expand the set of mechanisms that would be used in order to stimulate the venture business, and also provide state guarantees for borrowed funds of venture capital funds. This mechanism has been repeatedly and effectively used in the USA, and thanks to it, the risks of investing in debt securities of venture investment firms have been reduced.

A comparative analysis also determined that the presence of experience in running a venture business and qualification specialists is a necessary guarantee of success. That is why it is important to invite professionals working at the global level who can bring their experience, thereby contributing to the internalization of the venture capital system. In this matter, the creation of an attractive innovative business plays a significant role. Investors and so-called business angels from foreign countries financing projects can make a significant contribution to the development of the venture capital ecosystem in the each country.

Russia seeks to take its place in the investment market: a development strategy has been developed, institutions have been created, financing has been allocated. But while investors from Russia are more focused on the world market. Russia also faces many other problems.

5.2 The Discussion about the venture capital in Russian Federation

The Executive Director of RAVI, Albina Nikkonen⁷⁶, says that the upheaval of the first post-crisis years have given way to confident stabilization of indicators. It gives market participants a reason for an optimistic view of its near future. At the same time, risk factors may be the relative inaccessibility of foreign capital, as well as the reorientation of the geographical focus of a number of Russian funds to foreign markets in search of new industry growth points: blockchain, virtual reality, etc.

The general director of RAVI, Alexander Povalko⁷⁷ says, that after three years of recession, the venture capital market found an equilibrium point, for the first time since 2013, and the decline in the volume of venture capital funds has stopped. Nevertheless, on an absolute scale, the venture capital industry in Russia still remains fairly compact. To move to a new stage of development, a number of tasks have to be solved, one of which is the expansion of the supply of venture capital, including at the expense of large business funds, business angels, and non-state pension funds. Taking into account the instruments for stimulating the industry that are currently being created, it is expected a positive trend for future years.

Since the venture capital market in Russia has appeared relatively recently, it is quite natural that there are some problems in this market. One of the main problems is that not all regions have access to the infrastructure of innovation support – companies and institutions that provide the services needed to create and run an innovative business. These include scientific and high-tech industrial parks (technology parks), business incubators and accelerators, technology transfer centers, engineering centers and prototyping centers.

⁷⁶ NIKKONEN, Albina In RAVI. RAVI presented the VC market overview 2017. *RAVI*. [online]. 2018. <http://www.rvca.ru/rus/news/2018/03/26/RVCA-yearbook-2017-Russian-PE-and-VC-market-review/print/>. Accessed 10 March 2019.

⁷⁷ POVALKO, Alexander In RAVI. RAVI presented the VC market overview 2017. *RAVI*. [online]. 2018. <http://www.rvca.ru/rus/news/2018/03/26/RVCA-yearbook-2017-Russian-PE-and-VC-market-review/print/>. Accessed 10 March 2019.

The solution could be the development of innovation infrastructure in the regions at the state level. Today, there are already developed ecosystems to support innovation. According to the rating of the Association of Innovative Regions of Russia (AIRR) for 2018⁷⁸, Kazan, Tomsk, Kaluga, Nizhny Novgorod, Novosibirsk, Samara, Ufa and Krasnoyarsk can be attributed to such regions in addition to Moscow (and Moscow region) and St. Petersburg.

Today, discussions are underway to improve the situation in the regions. And an important role in the development of regional infrastructure is given to universities. According to Yevgeny Kuznetsov, former deputy general director of Russian venture company⁷⁹, now Russian politics is moving in the paradigm that a university is such a key institution that ensures the transformation of society in a particular region or in a particular country. Universities create competence centers, business incubators and accelerators, prototyping centers and fab labs, coworkings, and activities for start-up entrepreneurs that are open to everyone.

However, at the moment, not all universities have come to this paradigm. Many universities do not have teams that are able to form and develop a startup community. Therefore, leading universities create programs to transfer their experience to the regions. In particular, ITMO University has an Interregional network program of start-up schools with acceleration functions, the purpose of which is to promote the socio-economic development of the Russian regions through the activation of innovative and technological entrepreneurship, ensuring the success of the innovation infrastructure and organizing effective interaction between the subjects of the region's innovation ecosystem. As part of this program, the university team, as an educational and methodological center, organizes work on the formation and training of the regional program team (local operator) in the “train the trainers” format. This format of work allows you to create an effective team within the regions involved in the project for the further development of the innovative and entrepreneurial potential of the relevant subjects of the Russian Federation. Under this

⁷⁸ AIRR. Rating of the innovation regions of Russia 2018. *AIRR*. [online]. 2019. <http://i-regions.org/images/files/airr18.pdf>. Accessed 15 March 2019.

⁷⁹ KUZNETSOV, Yevgeny In NTI. Universities of NTI. *National technological initiative*. . [online]. 18.2.2016. <http://www.nti2035.ru/media/speech/university-nti>. Accessed 16 March 2019.

program for 2016–2017 ITMO University implemented initiatives and program activities in 15 regions of the federation, more than 300 start-up projects took part.⁸⁰

To achieve the formation of a balanced venture capital system, Russia has to go a long and difficult way. The main task on this path is the active involvement of the business community in this process. Private investment should gradually replace an oversupply of public investment, which will ensure the efficiency of the venture capital mechanism, which the state has a great deal to help shape. The value of government incentives for innovation and venture capital activity should decrease. It is advisable, together with the maintenance of venture entrepreneurship, to implement and support the infrastructure of venture entrepreneurship. It is necessary to develop an entrepreneurial culture in higher education structures and to solve the problem of the venture system for staffing.

⁸⁰ EGOROVA, Anastasia a Aleksadra FEDENYOVA. The regional distribution of venture capital investments and the role of infrastructure in the solution of the imbalances distribution. Materials of the IV Intern. scientific-practical conf. Moskva: MTSNO, 2017, 3(4), pp. 120-124. <https://nauchforum.ru/conf/inno/iv/22772>. Accessed 16 March 2019.

6 Conclusion

The main objective was using selected absolute indicators to describe and to compare the venture capital market in different countries, especially in U.S., Russia and Czech Republic. The part goal was to analyze the dependence of the capacity of venture capital investments on GDP growth / decline in selected countries. As a result of the comparative analysis, the following criteria were highlighted and interpreted: the total volume of the venture capital investments and funding depending on the stage of project implementation, the volume of venture capital financing of individual sectors of the economy, typology and specificity of sources of venture financing, the number and volume of venture funds in the country, the attractiveness of countries for the venture capital investments according to the corresponding international index.

To summarize, comparing the venture capital structure of Russian Federation, Czech Republic and the United States is not easy. The value of individual indicators is often incomparable.

The United States should be used in many cases as a positive example, but take into account the negative specifics of this country. The main disadvantage of doing business in the United States and especially in the Valley – the high cost. Here, start-up costs are among the highest in the world, and this is one of the reasons why rounds are growing, development is outsourced in India, Russia or China.

In Russia and the Czech Republic, a positive trend is evident. Two decades ago, no one understood what venture capital investment is, now it is on the right track. The Czech Republic uses the experience and support of the EU, which should provide it with a slow but steady growth in the field of venture investment. As for Russia, if, by adopting laws, it is possible to take the technological sector out of political influence and resolve issues with a legal basis, exit-market and size of funds, in 10 years it is quite possible to make Russia an attractive investment market.

Along with the general optimism regarding venture capital market, it is a risk of its overheating. For example, there is talk of a “bubble” in the market of high-tech startups in Silicon Valley. Venture investors become more careful when choosing investment targets and the investment stage of the companies.

On the basis of a regression analysis, it can be argued that the dependence between GDP growth / decline and VC investment growth / decline is positive and linear, albeit very

weak: in the U.S. is statistically insignificant, but slightly more pronounced than in Russia. In the Russian Federation, the correlation has a less pronounced linear trend and is totally insignificant.

7 References

- AIRR. Rating of the innovation regions of Russia 2018. *AIRR*. [online]. 2019. <http://i-regions.org/images/files/airr18.pdf>. Accessed 15 March 2019.
- ARUNDALE, Keith. *Raising Venture Capital Finance in Europe*. London: Kogan Page Ltd., 2007. ISBN 978-0-7494-4894-3.
- BENES, Jiri In CVCA. Czech market of private equity continue to grow. Prague, 2018. https://www.cvca.cz/images/cvca_UK-Ke-stazeni/138-file-File-2017_Activity_Report_TZ.pdf. Accessed 5 March 2019.
- BVCA. *A Guide to Private Equity*. London: BVCA, 2010. 52 p. https://www.bvca.co.uk/Portals/0/library/Files/Website%20files/2012_0001_guide_to_private_equity.pdf Accessed 14 February 2019.
- CORPORATION DEVELOPMENT. *Venture investments. Information and analytical service*. [online]. July 2018, p. 4. <http://belgorodinvest.com/it/analytics/cat/digests/>. Accessed 1 March 2019.
- CVCA, DELOITTE. *CVCA Private Equity Report Reflecting on 2017*. [online]. June 2018. <https://www2.deloitte.com/content/dam/Deloitte/cz/Documents/survey/cz-deloitte-cvca-private-equity-report-2017.pdf>. Accessed 5 March 2019.
- CVCA, DELOITTE. *Czech Private Equity & Venture Capital Association 2013 Activity Report*. [online]. https://www2.deloitte.com/content/dam/Deloitte/cz/Documents/survey/cvca_2014.pdf. Accessed 5 March 2019.
- ČERNOHORSKÝ, Jan, TEPLÝ, Petr. *Základy finance*. Praha: Grada Publihing a.s., 2011. 304 p. ISBN 978-80-247-3669-3.
- ČNB. List of investment funds. *ČNB*. [online]. 2019. https://www.cnb.cz/en/statistics/money_and_banking_stat/lists_mbs/list_fki/. Accessed 5 March 2019.
- Digital Equipment Corporation. *Reference for Business*. [online]. Advameg, Inc., 2018. <https://www.referenceforbusiness.com/history2/66/DIGITAL-EQUIPMENT-CORPORATION.html>. Accessed 20 October 2018.
- DVOŘÁK, I., PROCHÁZKA, P. Venture kapitál se zabydluje v České republice. *Hospodářské noviny*. [online]. 1998. <https://archiv.ihned.cz/c1-950641-venture-kapital-se-zabydluje-v-ceske-republice>. Accessed 15 January 2019.

- DVOŘÁK, Ivan, PROCHÁZKA, Pavel. *Rizikový a rozvojový kapitál*. Praha: Management Press, 1998. 170 p. ISBN 80-85943-74-3.
- EGOROVA, Anastasia a Aleksadra FEDENYOVA. The regional distribution of venture capital investments and the role of infrastructure in the solution of the imbalances distribution. Materials of the IV Intern. scientific-practical conf. Moskva: MTSNO, 2017, 3(4), pp. 120-124. <https://nauchforum.ru/conf/inno/iv/22772>. Accessed 16 March 2019.
- FETISOVOVÁ, Elena. *Rizikový kapitál – Alternatívny zdroj financovania podnikov*. Bratislava: Ekonóm, 2007. 96 p. ISBN 978-80-225-2289-2.
- GRAHAM, Paul. *Want to start a startup?* [online]. 2012. <http://www.paulgraham.com/growth.html>. Accessed 27 January 2019.
- GUPTA, Udayan. *The First Venture Capitalist: Georges Doriot on Leadership, Capital & Business Organization*. Calgary: Gondolier, 2004. 221 p. ISBN 1-896209-93-9.
- HALL, Gina. San Jose has world's third-highest GDP per capita Brookings says. *Silicon Valley Business Journal*. [online]. 23.1.2015. <https://www.bizjournals.com/sanjose/news/2015/01/23/san-jose-has-worlds-third-highest-gdp-per-capita.html>. Accessed 21 October 2018.
- HRDÝ, Milan, KRECHOVSKÁ, Michaela. *Podnikové finance v teorii a praxi*. Praha: Wolters Kluwer, 2013. 268 p. ISBN 978-80-7478-077-0.
- IESE. Czech Republic 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/czechrepublic/>. Accessed 5 February 2019.
- IESE. Ranking 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/ranking/>. Accessed 5 February 2019.
- IESE. Russian Federation 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/russianfederation/>. Accessed 5 February 2019.
- IESE. United States 2018. *The venture capital & Private Equity country attractiveness index*. [online]. 2019. <https://blog.iese.edu/vcpeindex/unitedstates/>. Accessed 5 February 2019.
- IFC. *IFC History*. [online]. World Bank Group, 2019. https://www.ifc.org/wps/wcm/connect/CORP_EXT_Content/IFC_External_Corporate_Site/About+IFC_New/IFC+History/. Accessed 25 October 2018.

- JAGUDIN, Semen. *Venture business. Franchising*. St-Petersburg: „Piter“, 2013. 258 p. ISBN 978-5-459-00402-1.
- KHAN, M. *Financial Services*. 7th edition. New Delhi: McGraw Hill Education Private Ltd., 2013. ISBN 978-1-25-902686-7.
- KLÍMOVÁ, Viktorie, ŽÍTEK, Vladimír. *Regional Innovation Systems and Factors of their Success*. Brno: Masarykova univerzita, 2016. 178 p. ISBN 978-80-210-8415-5.
- KPMG. Venture Pulse Q4 2018. [online]. 2019, p. 39. <https://assets.kpmg/content/dam/kpmg/xx/pdf/2018/01/venture-pulse-report-q4-17.pdf>. Accessed 19 March 2019.
- KRAEVSKI, Igor. The development of the venture industry in Russia.. *Economics, business and law*. 2011, 1(3), pp. 3-11. ISSN 2222-534X. <https://creativeconomy.ru/lib/8814>. Accessed 25 January 2019.
- KSIAZKIEWICZ, R. Useful Stats: VC investments nearly triple in past six years. *SSTI*. [online]. 24.1.2019. <https://ssti.org/blog/useful-stats-vc-investments-nearly-triple-past-six-years-31-states-outperformed-5-year-average>. Accessed 1 February 2019.
- KSIAZKIEWICZ, Robert. Useful Stats: Share of U.S. venture capital activity and per capita investment by state, 2010-2016. *SSTI*. [online]. 23.3.2017. <https://ssti.org/blog/useful-stats-share-us-venture-capital-activity-and-capita-investment-state-2010-2016>. Accessed 1 February 2019.
- KUZNETSOV, Yevgeny In NTI. Universities of NTI. *National technological initiative*. . [online]. 18.2.2016. <http://www.nti2035.ru/media/speech/university-nti>. Accessed 16 March 2019.
- KUZNETSOVA, M. N. Models of venture financing in the developed countries: methodological aspect. *Finance and loan*. [online]. 2013, p. 24. http://elar.urfu.ru/bitstream/10995/54961/1/vestnik_2013_2_012.pdf. Accessed 20 March 2019.
- LANDA, Martin. *Účetnictví*. Praha: Eurolex Bohemia, s.r.o., 2005. 163 p. ISBN 80-726-1123-2.
- LANDSTORM, Hans and Colin MASON. *Handbook of Research on venture Capital: Volume 2 A Globalizing Industry*. Cheltenham: Edward Elgar, 2012. 295 p. ISBN 978-184980-168-3.
- MALASHENKOVA, O. Venture Investment in the World: Exprience and Development Tendences. *Belarus and World Economic Processes: a Collection of Scientific*

- Articles. Release 6.* Minsk: BGU, 2009 (6), pp. 38-60. ISBN 978-985-518-169-0.
<http://elib.bsu.by/handle/123456789/5195>. Accessed 21 January 2019.
- MARINIČ, Pavel. Rizikový kapitál (Venture capital). *Český finanční a účetní časopis*. Praha: VŠE, 2006, 1 (2), pp. 146-152. ISSN 1802-2200.
- MORRIS, Rhett. The First Trillion-Dollar Startup. *TechCrunch*. [online]. 26.7.2014.
<https://techcrunch.com/2014/07/26/the-first-trillion-dollar-startup/?guccounter=1>.
 Accessed 21 October 2018.
- NICHOLAS, Tom. The Origins of High-Tech Venture Investing in America. *Financial Market History*. Harvard: CFA Institute Research Foundation, 2016. 304 p. ISBN 978-1-944960-13-1.
- NIKKONEN, Albina In RAVI. RAVI presented the VC market overview 2017. *RAVI*. [online]. 2018. <http://www.rvca.ru/rus/news/2018/03/26/RVCA-yearbook-2017-Russian-PE-and-VC-market-review/print/>. Accessed 10 March 2019.
- NVCA. 2017 Yearbook. [online]. 2017.
<https://1790media.files.wordpress.com/2017/09/nvca-2017-yearbook.pdf/>. Accessed 1 March 2019.
- NVCA. Venture Monitor. [online]. 2018. https://nvca.org/wp-content/uploads/delightful-downloads/2018/07/2Q_2018_PitchBook_NVCA_Venture_Monitor.pdf. Accessed 1 March 2019.
- NÝVLYTOVÁ, Romana, REŽŇÁKOVÁ, Marie. *Mezinárodní kapitálové trhy: zdroj financování*. Praha: Grada Publishing a.s., 2007. 224 p. ISBN 978-80-247-1922-1.
- OECD. *Entrepreneurship at a Glance*. [online]. 2016, p. 136. https://www.oecd-ilibrary.org/docserver/entrepreneur_aag-2016-34-en.pdf?expires=1541596780&id=id&accname=guest&checksum=EADD5CA9262EA12E473239BDEBCB21F1.
 Accessed 25 October 2018.
- PEARCE, Rupert, BARNES, Simon. *Raising Venture Capital*. New York: John Wiley & Sons, 2006. 258 p. ISBN 978-0470027578.
- PETŘÍČEK, Martin. Stát podniká se start-upy. Peníze pro ně moou být polibkem smrti. *iDnes.cz: Economics.* [online]. 24.1.2018.
https://www.idnes.cz/ekonomika/domaci/start-up-stat-podpora-projektu-miliardy-podnikani.A180123_132413_ekonomika_jn. Accessed 1 February 2019.

- PWC. RegnlAggrData_Q1_2017_Final. [online]. 2017. https://www.pwc.com/us/en/moneytree-report/assets/RegnlAggrData_Q1_2017_Final.xlsx. Accessed 17 March 2019.
- RAO, Arun. Greybeard Funders: venture Capital in its Clubby Days. *A History of Silicon Valley*. [online]. 2010. <https://www.scaruffi.com/politics/arun3.html>. Accessed 22 October 2018.
- RAVI. The market overview 2017: direct and venture investments in Russia. [online]. 2017. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 1 March 2019.
- REŽŇÁKOVÁ, Marie. *Efektivní financování rozvoje podnikání*. Praha: Grada Publishing a.s., 2012. 142 p. ISBN 978-80-247-1835-4.
- ROBEHMED, Natalie. What is a Startup? *Forbes*. [online]. 16.12.2013. <https://www.forbes.com/sites/nalierobehmed/2013/12/16/what-is-a-startup/#4e662dd64044>. Accessed 30 January 2019.
- RVCA. *Analytical Digest. Overview of direct and venture investments market in Russia (1994-2004)*. [online]. 2004, 48 p. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. ISBN 5-98240-015-7. Accessed 25 January 2019.
- RVCA. *Analytical Digest. Overview of direct and venture investments market in Russia for 2006*. [online]. Saint-Petersburg: RVCA, 2007, 128 p. <http://www.rvca.ru/rus/resource/library/rvca-yearbook/>. Accessed 27 January 2019.
- RYBKOVÁ, Lucie. *Trh venture kapitálu*. [Bachelor's Thesis]. Brno: Mendelova univerzita v Brně, Provozně ekonomická fakulta, 2012. 67 s. Vedoucí práce TOMAN, Petr.
- SCHEIN, Edgar H. et al. *DEC is Dead, LLong Live DEC*. San Francisco: Berrett-Koehler Publisher, Inc., 2003. 319 p. ISBN 1-57675-225-9.
- SIDOROVA, Evgenia, IHODL. The Silicon Valley History. *IHODL Journal*. [online]. 27.8.2017. <https://ru.ihodl.com/analytics/2017-08-27/istoriya-kremnievoj-doliny-tranzistory-stanford-i-venchurnyj-kapital/>. Accessed 21 October 2018.
- SYNEK, Miloslav et al. *Manažerská ekonomika*. 4th ed. Praha: Grada Publishing a.s., 2007. 452 p. ISBN 80-247-1992-4.
- SYNEK, Miloslav et al. *Podniková ekonomika*. 3rd ed. Praha: C. H. Beck, 2000. 456 p. ISBN 80-7179-388-4.
- TALMOR, Eli, VYSVARI, Florin. *International Private Equity*. Chichester: Wiley, 2011. 747 p. ISBN 978-0-470-97170-3.

- VAROLI, J. Technology, Russia tries to catch up. *New York Times*. [online]. 16.7.2001. https://www.ifc.org/wps/wcm/connect/CORP_EXT_Content/IFC_External_Corporate_Site/About+IFC_New/IFC+History/. Accessed 25 January 2019.
- Vzniká fond pro menší firmy s velkým potenciálem růstu. *Economics Magazine*. [online]. 2018. <https://www.ekonomickymagazin.cz/2018/05/vznika-fond-pro-mensi-firmy-s-potencialem-rustu/>. Accessed 14 February 2019