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Economic Sciences**T. V. Клименко**, к. е. н.**VENTURE CAPITAL FINANCING OF
INNOVATION ACTIVITIES****ВЕНЧУРНЕ ФІНАНСУВАННЯ ІННОВАЦІЙНОЇ
ДІЯЛЬНОСТІ**

Urgency of the research. High risk level at capital investments in innovative projects considerably limits access to traditional sources of financing therefore the preference is given to such form of investment as venture capital financing.

Target setting. Underdevelopment of the domestic market of venture investment causes need of direction finding of its activation for ensuring economic growth and competitiveness of national economy.

Actual scientific researches and issues analysis. Scientific works of such Ukrainian scientists as V. Hlushchenko, L. Dmytrychenko, P. Kovalyshyn, O. Kolesnyk, N. Kraus, O. Kuzmin, S. Onyshko, D. Ryzhakov, V. Savchenko, O. Shevchenko, etc. are devoted to a research of theoretical and practical aspects of venture capital financing of innovation activities.

Uninvestigated parts of general matters defining. The need of improvement of venture capital financing system as instrument of state regulation of innovation activities is urgent today.

The research objective. Recommendations for government support of venture capital financing of innovation activities are elaborated in the article taking into account current trends of the Ukrainian and world venture market development.

The statement of basic materials. The essence of venture capital financing of innovation activities is defined in the article and the characteristic of development stages of the innovative companies which attract venture capital financing is provided. The current state of the domestic market of venture investment is investigated and proposals for its activation are formulated, in particular by increasing the role of the government support of venture capital financing.

Conclusions. Complex realization of actions for improvement of venture capital financing system as part of government innovation policy will allow solving problems of venture business financing and providing development of national economy.

Keywords: innovation; innovation activity; venture capital financing of innovation activities; venture capital; venture company; venture fund.

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Urgency of the research. Ensuring sustainable economic growth causes the need of investment support of innovation activity and stimulation of technological innovations of the national economy. High risk level at capital investments in innovative projects considerably limits access to traditional sources of financing therefore the preference is given to the venture capital financing. It is explained by high degree of uncertainty in achieving the planned effect of innovative projects implementation,

Актуальність теми дослідження. Високий рівень ризику при вкладанні капіталу в інноваційні проекти значно обмежує доступ до традиційних джерел фінансування, тому надається перевага такій формі інвестування, як венчурне фінансування.

Постановка проблеми. Низький рівень розвитку вітчизняного ринку венчурного інвестування обумовлює необхідність визначення напрямів його активізації для забезпечення економічного зростання та конкурентоспроможності національної економіки.

Аналіз останніх досліджень і публікацій. Дослідженню теоретичних та практичних аспектів венчурного фінансування інноваційної діяльності присвячені наукові праці таких українських учених, як: В. Глущенко, Л. Дмитриченко, П. Ковалишин, О. Колесник, Н. Краус, О. Кузьмін, С. Онишко, Д. Рижаків, В. Савченко, О. Шевченко та ін.

Виділення недосліджених частин загальної проблеми. На сьогодні актуальною залишається необхідність розробки напрямів удосконалення системи венчурного фінансування як інструменту державного регулювання інноваційної діяльності.

Постановка завдання. У статті розроблені рекомендації щодо державної підтримки венчурного фінансування інноваційної діяльності з урахуванням сучасних тенденцій розвитку українського та світового венчурного ринку.

Виклад основного матеріалу. У статті визначена сутність венчурного фінансування інноваційної діяльності, наведена характеристика стадій розвитку інноваційних компаній, які залучають венчурне фінансування. Досліджений сучасний стан розвитку вітчизняного ринку венчурного інвестування та сформульовані пропозиції щодо його активізації, зокрема за рахунок підвищення ролі державної підтримки венчурного фінансування.

Висновки. Комплексна реалізація заходів удосконалення системи венчурного фінансування як складової державної інноваційної політики дозволить вирішити проблеми фінансування венчурного підприємництва та забезпечити розвиток національної економіки.

Ключові слова: інновація; інноваційна діяльність; венчурне фінансування інноваційної діяльності; венчурний капітал; венчурна компанія; венчурний фонд.

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because performers of innovation activities are generally newly established small innovation enterprises which are not able to provide pledge that induces uses of non-traditional methods of financing of such projects.

Target setting. Underdevelopment of the domestic market of venture investment causes need of direction finding of its activation that will promote innovative processes in national economy, improve its competitiveness and development of innovative potential.

Аналіз останніх досліджень і публікацій. Scientific works of such Ukrainian scientists as V. Hlushchenko, L. Dmytrychenko, P. Kovalyshyn, O. Kolesnyk, O. Krasovska, N. Kraus, O. Kuzmin, S. Onyshko, D. Ryzhakov, V. Savchenko, O. Shevchenko, etc. are devoted to a research of theoretical and practical aspects of venture capital financing of innovation activities. The principles of venture business organization, the essence of the venture capital, workings of venture capital financing of innovation activities are investigated by scientists.

Uninvestigated parts of general matters defining. Despite the nod toward the above mentioned scientists in problem solutions of the venture investment market functioning, the need of improvement of venture capital financing system as instrument of state regulation of innovation activities is urgent today.

The research objective. The purpose of the article is development of recommendations for government support of venture capital financing of innovation activities taking into account current trends of the Ukrainian and world venture market development.

The statement of basic materials. Economic growth in modern economy is reached due to development and implementation of new ways of impact strengthening from the factors used in production, on the basis of improvement of the existing technologies.

Innovation activity is defined in national legislation as the activity directed to use and commercialization of results of scientific researches and developments and predetermines launching of new competitive goods and services [3]. So it is a set of works and services in creation, production and realization of new or advanced productions or the technological process which is carried out on the basis of scientific researches and developments.

The use of traditional methods of financing is not able to satisfy requirements of the innovative companies, because the activities of the last are connected with the high level of expenses and risk. In this regard venture capital financing was the most effective method of financing of innovation activity.

The founder of venture financing theory is Georges F. Doriot, professor at Harvard Business School who in 1946 has created and has headed the first venture fund American Research and Development Corporation (ARD).

Venture capital financing of innovation activities is capital investments in innovative companies for implementation of high-risk projects on development, production and sale of a new or improved product with the result that capital gain of such companies are expected, in which venture capital was invested, and receiving considerably larger profit from the sale by the investor of his share in them.

Life-cycle phases of innovative companies or their products are a basis of the organization of venture capital financing which stages are presented in Tab. 1.

Efficiency of the innovative project implementation depends on a financing stage. At the initial stage when there is only an idea, there are problems with an assessment of the innovative project, which is being developed, perception by potential consumers and competitors of newly developed product with whole new characteristics. However, by financing the innovative companies at early stages, venture investors can gain the maximum income.

On the results of a venture capital financing study in the USA and the EU we will note the considerable economic value of the venture capital which consists in the following:

- most technological revolutions has been initiated by firms financed by the venture capital; lately with the support of venture investors the most successful companies, such as Apple Computer, Compaq Computer Corporation, Sun Microsystems, FedEx, Microsoft Corporation, Lotus, Intel and Netscape, have economically risen;

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- venture capital supports the most dynamically developing branches which provides to the country the international competitiveness;
- in the USA 4% of firms, which grow quicker and the most are supported by venture capital, makes 70% of all created jobs;
- expenses on carrying out research and development in the new growing firms in Europe supported by venture capital average 8,6% of sales volume and in other companies - only 1,3%;
- the number of workers in firms supported by venture capital increased in Europe about 15% annually, and economy average - less than about 1% over the last years [5].

Table 1

Stage characteristics of the innovative companies development which raise venture capital financing*

Stage	Characteristics	Financing sources	Risks
<i>Seed</i>	Company is at the stage of formation; there is a project; the business plan is drawn up; research-and-development activities and also market researchers are carried out	"Business angels"; family and friends; grants	Very high financial risk
<i>Startup</i>	Company is recently established, it has industrial prototypes (prototypes of new products), tries to organize production and bring products to market	Venture funds; "business angels"	High financial risk
<i>Early stage</i>	Company turns out and sales products, but has no sustained profit; work on research and development is finalized; staff development is in process; advertizing and sale network are created	Venture funds, banking institutions	Decrease of financial risk
<i>Expansion</i>	Company takes unwavering positions on the market and needs expansion of production and sale; updating of products; expansion of current assets	Banking institutions and corporations	Low financial risk
<i>Exit</i>	Financing of company's entry into securities market, sale of investor's share; company acquisition by the managing director	Banking institutions, large corporations, public markets	Insignificant risk mainly connected with external factors

*Source: systematized by the author

Venture capital financing began to develop in 1990s in Ukraine. The first venture fund became Private Equity Fund "Ukraine" controlled by Clafin Capital Management company (Boston, USA) that since the beginning of its activity in Ukraine (1992) invested more than 22,5 mln USD in 31 Ukrainian enterprises. This fund makes the top three of the largest venture companies of Ukraine together with Ukrainian Growth Funds (UGF), created in 1996 and invested in 75 Ukrainian companies 55 mln USD and Western NIS Enterprise Fund - investment fund with seed capital of 50 mln USD provided by the U.S. Government [5].

Domestic venture companies mainly invest the capital in projects in agribusiness, food industry, production of furniture and construction materials, and also in the IT companies; annual investments average from 1 mln to 7,5 mln USD. Besides, preference is given to financing of production expansion through purchase of a number of shares of the enterprises which are issued within secondary issue. We will note that the great majority of the venture funds working in Ukraine are established directly by international organizations (in particular, the EBRD), or within intergovernmental agreements [5].

According to the Ukrainian Investment Business Association (Tab. 2) the share of venture funds as a part of the institutes of joint investment (IJI) exceeded $\frac{3}{4}$ and at the end of 2015 made 86,5%, and their number during 2009-2015 increased by one third and made 992 funds, however it is 39 funds (3,8%) less than in 2013 when there were 1031 funds during the studied period.

In 2015 the asset value of venture IJI was the highest and it has grown by 149,5 billion UAH or almost three times in comparison with 2009, at the same time the increase in value of their net assets made 123,2 billion UAH (or by 2,8 times), more than 90% of net asset value of all IJIs in Ukraine have been created by net assets of venture IJI respectively.

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Table 2

Dynamics of the main activity indicators of venture IJI of Ukraine during 2009-2015 (as of the end of the year)*

Indicators	Retrospective period, years							Deviations (2015/2009)
	2009	2010	2011	2012	2013	2014	2015	
Number of venture IJI	740	827	867	973	1031	1006	992	+252
Asset value of venture IJI (billion UAH)	76,0	97,0	116,9	145,9	168,2	195,4	225,5	+149,5
Net asset value (NAV) of venture IJI (billion UAH)	66,7	86,4	103,7	129,5	149,9	170,0	189,9	+123,2
Net worth quote of venture IJI in NAV of all IJIs, %	91,85	91,24	91,98	92,99	94,74	94,71	95,5	+3,65

* **Source:** systematized by the author according to the Ukrainian Investment Business Association [2]

According to the rating of the most attractive countries for direct and venture investment in 2015, made by the Spanish Business School IESE (Business School University of Navarra), from 120 countries being studied Ukraine was in the 78th place (near Ghana and Botswana), at the same time in 2014 it ranked 74th, and in 2013 – the 73rd [6].

We will note that feature of the last years is participation of venture investors in the smaller number of agreements; however the volume of these agreements, and also preference to investment projects at later stages of financing attraction increase. Interest of investors in domestic startups has grown, as an example is an acquisition of the company “Lookserly” (Odessa) for 150 mln USD by the company “Snapchat” (USA), attraction by the Ukrainian startup “GitLab” of 4 mln USD from Khosla Ventures fund (USA) and 1,5 mln USD from Sound Ventures fund (USA), and also investment of the EBRD (4 mln USD) and TMT Investments (1 mln USD) in Ukrainian image bank “Depositphotos” [6].

The structure of investment in venture IJIs of Ukraine on categories of investors during 2009-2015 is given in Tab. 3.

Table 3

Structure of investment in venture IJIs of Ukraine on categories of investors during 2009-2015 (%)*

Categories of investors	Retrospective period, years							Deviations (2015/2009)
	2009	2010	2011	2012	2013	2014	2015	
Resident legal entity	84,3	83,5	82,5	80,8	78,3	77,2	75,3	-9,0
Non-resident legal entity	15,4	15,4	15,2	16,8	18,1	18,2	18,8	+3,4
Resident individual	0,3	1,1	2,3	2,3	3,6	4,6	5,8	+5,5
Non-resident individual	0,01	0,01	0,05	0,03	0,06	0,02	0,02	+0,01

* **Source:** systematized by the author according to the Ukrainian Investment Business Association [2]

Resident legal entities, despite reduction of their share for 9,0%, remained the main investors of venture IJI in Ukraine. Foreign investors - legal entities increased their participation in domestic venture IJI by 3,4% that is connected, first of all, with increase in investment volumes by them. Resident and non-resident individuals were less investment active, however their share in structure of investments in venture IJI has grown by 5,51% during 2009-2015.

The structure of financial support of venture funds corresponds to the European model where the main share is occupied by banking institutions, than American when the main investors are households.

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The structure of assets of venture IJI of Ukraine during 2009-2015 is given in Table 4.

During 2010-2015 the largest proportion in assets of venture IJI had other assets (receivables, corporate rights, loans to the companies in which venture IJI own a share in the capital), which, besides, increased three times in comparison with 2009. But the share of securities in their portfolio within considered period was reduced almost by 3,5 times. Among securities the venture IJI preferred stocks, bonds of the enterprises, bills.

Table 4

Structure of assets of venture IJI of Ukraine during 2009-2015 (%)*

Categories of assets	Retrospective period, years							Deviations (2015/2009)
	2009	2010	2011	2012	2013	2014	2015	
Other assets	24,34	59,64	62,62	64,14	66,57	68,96	75,65	+51,31
Real estate	1,12	2,23	2,58	2,47	2,46	2,22	2,71	+1,59
Money and bank deposits	4,34	2,85	3,56	2,20	2,30	1,50	1,44	-2,9
Banking metal	0,0004	0,001	0,01	0,01	0,001	0,01	0,00	-0,0004
Securities, incl.:	70,20	35,28	31,23	31,17	28,67	27,31	20,20	-50,0
- bonds of domestic government loan	0,03	0,02	0,01	0,04	0,01	0,05	0,05	+0,02
- shares	20,45	10,28	10,06	11,47	11,49	15,17	10,47	-9,98
- corporate bonds	22,81	9,22	7,98	7,08	6,33	4,08	3,81	-19,0
- other	26,91	15,76	13,18	12,58	10,84	8,01	5,87	-21,04

* **Source:** systematized by the author according to the Ukrainian Investment Business Association [2]

It was found that venture companies give preference to innovative projects in Ukraine which have the average or low level of risk, and also such that are at late stages of development, contrary to the essence of venture investment (long-term capital investments in the high-risk innovative projects oriented on development and production of the knowledge-intensive products).

The study found that the disincentives of development of the venture investment market are: deficit of financial support of venture investments; underdevelopment of infrastructure, especially low level of stock market capitalization; lack of legislative and regulatory framework which would define conditions of development of the venture capital market and create favorable investment environment for participants of high-risk process of venture capital financing; low level of intellectual property protection; poor information base of innovative projects; low participation of domestic financial institutions in venture capital financing of the innovative companies; low government support of venture investments etc.

Development of venture investment in Ukraine will be promoted by the following actions: participation of the state in venture funds and its support of the hi-tech enterprises at early stages of development ("seed" and "start-up") with involvement of the state scientific organizations and institutions of higher education; the government support of development of venture capital financing due to use of financial leverages (fiscal incentives, cheap credits, grants for research and development); stimulation of participation in venture capital formation of formal (institutional investors, banking institutions, etc.) and informal (individuals, "business angels", private companies, etc.) sectors.

Considering an important role of the state in development of venture investment market it is necessary to create the National Venture Fund (NVF) that is provided by the Draft Law "On Venture Activity in the Innovative Sphere" [4]. According to provisions of the draft law the tasks of NVF consist in: assistance of realization of the state economic, structural, scientific and technical, innovative and industrial policy by support of innovative projects in the priority directions of scientific and technical and innovative activities; support of innovative activity, preparation and production of new products and technologies by financing of construction, reconstruction and modernization of objects, creation of unique research and test facilities; participations in high-risk financing of innovative knowledge-intensive projects at the expense of the means received on a returnable basis, etc.

It would be useful to pay special attention to ecologically focused venture capital which is invested in the high-risk projects connected with development of technologies, goods and services directed to

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the environmental enhancement. Such projects are directed on: development and implementation of environmentally friendly waste-free technologies; development of monitoring system of potentially dangerous objects on the basis of modern geoinformation technologies; development and implementation of system for collecting and utilization of all types of industrial and household wastes; development of methods for ecological rehabilitation of territories and so forth. Ecological projects demand special government support, including in the form of granting of a guarantees.

Conclusions. Strategic objective of development of national economy is ensuring economic growth and its competitiveness, the primary role in achieving this belongs to innovations providing development and implementation of new products, technologies in the sphere of production and management, and also technological solutions.

Financial instrument of this process is venture capital financing of innovation activities consisting in high risk capital investments in exchange for a share in the innovative company. Established dependence of development indicators of the innovative company on a stage of its life cycle is as follows: decrease in risk of investments and its profitability reduction, increase in certainty of final effect from implementation of the innovative project, decrease in a payback period, entry into the stock market and so forth take place with growth of the innovative company.

The study of development of the domestic venture market shown some deceleration of investment and innovation activities, however, according to most of experts, Ukraine has considerable innovative capacity. The factors constraining participation of investors in the venture capital are: deficit of financial resources, underdevelopment of infrastructure, lack of regulatory support of venture capital financing, low level of intellectual property protection, etc.

The state has the leading role to play in development of system of venture capital financing of innovation activities which has to create the acceptable conditions promoting formation of demand for innovations, attraction of individual investors and experts in processes of venture capital financing, to increase in their awareness. Establishment and functioning of the National Venture Fund as specialized public institution, which will carry out public financing of innovative projects, demand a legal regulation.

Only complex realization of actions for improvement of venture capital financing system as part of government innovation policy will allow solving problems of venture business financing, accumulation of innovative potential and providing development of national economy.

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