

РОЗДІЛ V

ФІНАНСИ, ГРОШІ ТА КРЕДИТ

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THE ECONOMIC NATURE OF VENTURE CAPITAL AS A SOURCE TO FINANCE INVESTMENT RISK PROJECTS

The problem of the operation of venture capital in Ukraine as an alternative source of financing investment projects has been considered in the article. Venture investment is a specific kind of investments in high-tech manufacturing, the prospect of significant revenue which has a high degree of risk. To avoid completely the threat of loss of capital invested in venture funding is almost impossible because innovation and risk are the two interrelated categories: it is very difficult to predict what kind of innovation will be successful in the market and which will not be in demand. It should also be noted that the present legal framework that regulates the formation of venture capital and venture capital funds in Ukraine needs to be improved by making appropriate changes and additions to tax, customs and banking law, the establishment of appropriate legal mechanisms for the development of the secondary securities market, including securities exchange of venture enterprises, electronic trading systems etc. The aim of the article is to clarify the nature of venture capital, to determine its role in the economy and to assess the predictability of time series of venture investment in Ukraine. Scientific novelty is the use of Hurst parameter for assessing the predictability of time series, the number of venture CII, value of the assets of venture CII, net asset value (NAV) of venture CII, NAV share in venture CII in NAV of all CII and measures that will affect the effective organization of the markets of venture capital in Ukraine have been suggested. The results are of practical importance for the venture business with tactical and strategic planning of behavior in the market to finance investment projects. This theme has the prospect of further research, which will be based on the study of three global models such as American, European and mixed, which in turn will make it possible to develop criteria for the efficient functioning of markets and venture capital investments in Ukraine.

Key words: *venture capital, venture capital funds, innovation activity, Hurst exponent.*

INTRODUCTION

Problem. Integration course for the European Union that Ukraine has chosen for itself requires the formation of a highly modern economy based on the latest achievements in science, technology, economics and other fields. Realization of this goal requires attracting significant investment resources and search for sources of investment. This source of investment can be a venture capital, which under certain circumstances can be an effective source of financial support for scientific developments and transform them into competitive product.

Analysis of recent research and publications. Issues of venture capital investments in Ukraine have

studied scientists O. Lapko [1], who focuses on the study of venture capital to finance innovation development of economy, M. Dolishnya [2] researches the problems and prospects of business investment in Ukraine, E. Zrazhevets' [3] proposes improving the financial mechanism of venture investments for social and economic development, M. Mykhaylovs'ka [4] applied fractal analysis to assess self-organization of investment process in the context of globalization.

The aim of the article (problem). The aim of the article is to explain the nature of venture capital, to determine its role in the economy and to assess the predictability of time series of venture investment in Ukraine.

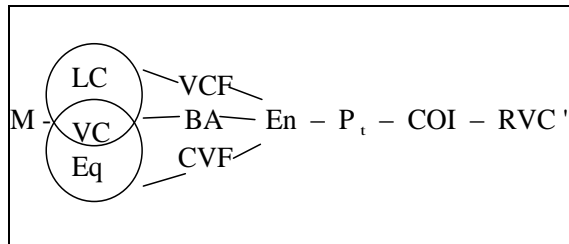
RESULTS

The economic nature of venture capital is based on close interaction and interpenetration of different mechanisms and instruments for share, equity and debt capital forms, depending on the national characteristics of the financial system of the country. Latter greatly expands the range of sources of venture financing, which may be the own resources of the enterprise (profit, amortization fund, and other resources equivalent to own); capital raised through the issue and placement of shares on the stock market; investments of pension and venture funds, corporations and foreign investors, savings of individuals or loan (government agencies, commercial banks and

others).

Venture capital is a product of the evolution of financial capital. Venture capital and the financial capital are combined by general formula of movement $\Gamma - \Gamma'$, as well as general sources of their formation - loan and equity.

Analysis of the available scientific literature revealed that venture capital is seen not only as a financial instrument, but also as a means of creating added value. Considering the functioning of venture capital in a market economy, it is important to outline the features of its cycle, because, determining the cycle, one can better understand its economic nature (Fig. 1) [3]:



where *M* – money capital; *LC* – loan capital; *VC* – Venture Capital; *Eq* – equity; *VCF* – venture capital funds; *BA* – Business Angels; *CVF* – corporate venture funds; *En* – enterprise; *P_t* – the company through a period of time *t*; *COI* – coming out of investments; *RVC'* – return on venture capital

Fig. 1. The scheme of circulation of venture capital in a market economy

Venture financing is a particular form of manifestation of venture capital. Venture capital is realized in motion through all aspects of production, providing value and surplus value, which are embodied in the intellectual product of the conversion value in founding income or profit.

The experience of developed countries that have used venture capital industry to create a competitive economy, convincingly evidences a significant increase in production of competitive products, accelerated use of the latest technologies in all industries, increase of employment etc.

Venture investment funds that operate in many countries are investing the accumulated funds in risky projects. They typically invest in companies that are engaged in the implementation of the latest scientific developments and operate in the field of innovation. In Ukraine, venture capital funds have specifics on procedures for their establishment, operation and activities.

Asset Management Company (AMC) is a legal entity that performs asset management on the basis of the relevant license for such activity. One of the main functions of the AMC is search of investors through the announcement of the placement of investment certificates of funds, the formation of funds of venture capital, investment strategy development of venture funds, consulting of potential investors, help to choose the funds that best meet customer expectations etc. AMC has the possibility to simultaneously manage assets of several investment funds, but is also fully liable for damages of the fund [8].

According to the legislation venture funds are recognized as non-diversified collective investment institutions (CII) (funds without rigid requirements for

dispersal of its assets among different objects of investment activity), and this allows them to keep in its portfolio controlling stakes of other companies, and to have a large amount of securities not admitted to trading on a stock exchange or trade – information network as a part of its assets.

Venture capital funds compared to the other forms of collective investment institutions are the most risky for investors, because of the lack of strict legal requirements regarding the composition and structure of assets of these funds and operations with them that are characteristic for other CII. The smallest regulatory requirements are imposed on venture fund by the legislation this is what makes it a flexible instrument for investment programs.

However, the increased riskiness of venture funds does not deter investors, because it is compensated by broad investment opportunities of such funds, the effective use of which can bring more profits to investors and other benefits than investing in other CII. That's why venture funds are popular in Ukraine. In total assets of Ukrainian CII venture funds share exceeds 90%. Over the past year their assets have grown by 20% and are now about 105 bln UAH [8].

A positive step towards the development of joint investment was the adoption of amendments to the Law of Ukraine «On Joint Investment Institutions», which allowed individuals to participate in venture CII [5].

Venture funds, like any other collective investment institute under Ukrainian legislation are exempt from income tax and VAT until the completion of the work and payment of dividends. This allows for loss-free reinvestment of the money from the project. Accumulating income within the venture capital fund, the investor can reinvest it in other projects without paying taxes [6].

National venture capital funds are used extremely actively to finance various building projects. The essence of such funding is as follows: project developer creates and forms venture fund by selling investment certificates to a certain circle of investors. Then venture fund sends money received from the sale of certificates to the developer. After completion of construction the developer transfers the construction to investors as income. In their turn, they sell the property and get the money, and the fund continues to operate without paying taxes, because taxes and fees it has to pay only in case of closure. In addition, venture capital funds provide an opportunity to invest abroad, to implement bill schemes, to receive loans secured by assets.

Thus, in contrast to other structures, funds have an advantage: if they have earned income this year, it does not mean that they have to pay tax the same year - this can be done with the liquidation of the fund. There are funds established for 20 and 25 years. One can establish a fund for 50 years or even 150 years. [9] There is no restriction in the law in this respect. This allows investors to freely dispose of their investments and assets.

One reason for the increased interest in the venture funds is that they allow to safely «mask» the real owner of the business.

The need for registration of personal assets to the fund may be caused by the fact that a person, for example, a civil servant, is not allowed for various reasons to directly own a business or wants to optimize the mechanism of participation in the management of the property. For such purposes, assets are transferred to private venture funds.

Taking into account the above-mentioned advantages of venture capital funds, it becomes clear why businessmen and officials began to transfer their property, particularly real estate, in such institutions lately. The possibility of introducing luxury tax in Ukraine has also played its role in this issue. Rich property owners began to fear the introduction of this tax. Therefore, they actively transfer their real estate to venture CII hoping they will not have to pay luxury tax.

In order to analyze trends in venture investing in Ukraine let's use the dynamics of the main indicators of venture CII in Ukraine for the period 2009-2013 and on the basis of the Hurst exponent give characteristic of predictability of their development.

One of the indicators of predictability in the time series is Hurst exponent H :

1. The value of $H > 0,6$. The greater the value of H , the greater is the persistence of trend relating to the relevant period of time series.

2. If values of H are significantly greater than 0.5 studied time series is persistent or trend persistent i.e. the one that supports the current trend (if the number increases over a period, it is very likely that it will keep this trend sometime in the future).

3. Trend persistent behavior is reinforced when approaching H to 1,0. When H is close to 1,0, a series is less noisy and has more consecutive observations with the same sign.

4. Continuity of synergies and classical statistical methods is provided when $H > 0,9$.

5. The value of H in the range of $0,5 \pm 0,1$ (0,4 ... 0,6) corresponds to the chaotic behavior of a time series,

«maximum randomness» and, consequently, the least reliable forecast or the least predictability, a series is characterized by «complete unpredictability», characterized by cyclicity, frequent change of trends, accompanied by a loss of persistence.

6. The value of H in the range of $0,3 \pm 0,1$ (0,2 ... 0,4) indicates that this segment of time series inherent anti persistence: the one that does not support the current trend.

7. The value of H in the range 0 ... 0,1 corresponds to the maximum fractal dimension of the time series and full uncertainty as for predictability. Random process with H in the range 0 ... 0,1 corresponds to Brownian random process for which there are no memory effects or processes occur in which there is no trend.

It is advisable to use the Hurst exponent to forecast values combined with neural networks, especially in the unpredictable behavior of the series.

Algorithm for calculating Hurst exponent is presented in the form:

1. The average value of the time series:

$$\langle x \rangle_N = \frac{1}{N} \sum_{t=1}^N x_t; \quad (1)$$

2. The accumulated deviations of number of measurements x_t from the average $\langle x \rangle_N$,

$$x_n = \sum_{t=1}^n (x_t - \langle x \rangle_N); \quad (2)$$

3. The scale of the time series:

$$R = \max_{1 \leq n \leq N} x_n - \min_{1 \leq n \leq N} x_n;$$

4. The standard deviation:

$$S = \sqrt{\frac{1}{N-1} \sum_{t=1}^N (x_t - \langle x \rangle_N)^2} \quad (3)$$

5. Hurst exponent:

$$H = \frac{\log\left(\frac{R}{S}\right)}{\log\left(\frac{N}{2}\right)} \quad (4)$$

Dynamics of the main indicators of venture collective investment institutions (CII) during 2009-2013 and their predictability is provided in Table 1.

Dynamics of the main indicators of venture CII of Ukraine during the period shows that the venture CII provided the growth of assets of collective investment institutions in Ukraine, while others, reduced the amount of assets. In particular, over the last five years, both general and net asset value of venture CII has more than doubled. Finally, venture sector has increased market share of assets to 94.61%.

As can be seen from Table 1, the time series, the number of venture CII and the share of NAV in the venture CII in NAV of all CII, % are characterized by Hurst exponents 0,38 and 0,32, respectively (range from 0,2 to 0,4), it indicates that in this interval of time series they are characterized by anti persistence that is such behavior does not support the current trend, in this case tends to increase,

Figure 2, Figure 5 (the growth rate in the year 72,8 billion UAH and 0,73% respectively). So change to the opposite tendency – decrease – is possible.

Table 1

Dynamics of the main indicators of venture CII of Ukraine during 2009-2013 and their predictability based on Hurst exponent *

Indicators	Years					Deviation (2013/2009)	Hurst exponent
	2009	2010	2011	2012	2013		
Number of venture CII	740,00	827,00	867,00	973,00	1031,00	+291	0,38
Asset value of venture CII (bln. UAH)	76,00	97,00	116,90	145,90	168,20	+ 92,2	0,45
The net asset value (NAV) of venture CII (bln. UAH)	66,70	86,40	103,70	129,50	149,90	+ 83,2	0,44
Share of NAV of venture CII in NAV of all CII, %	91,85	91,24	91,98	92,99	94,61	+ 2,76	0,32

* Calculated according to the Ukrainian Association of Investment Business [8]

Venture CII asset value (bln. UAH) and the net asset value (NAV) of venture CII (bln. UAH) have Hurst exponents 0,45 and 0,44 (range from 0,4 to 0,6). The growth rate in a year is, Figure 3, Figure 4, 23,33 billion UAH and 20,95 billion UAH respectively. This time series is characterized by maximum randomness of behavior and

therefore these figures are less predictable, numerical series is characterized by «complete unpredictability», inherent cyclicity and frequent change of trends, accompanied by loss of persistency.

Fig. 2 shows graphically the number of venture CII and the trend line.

The number of venture CII
 $y = 72,8x + 669,2$

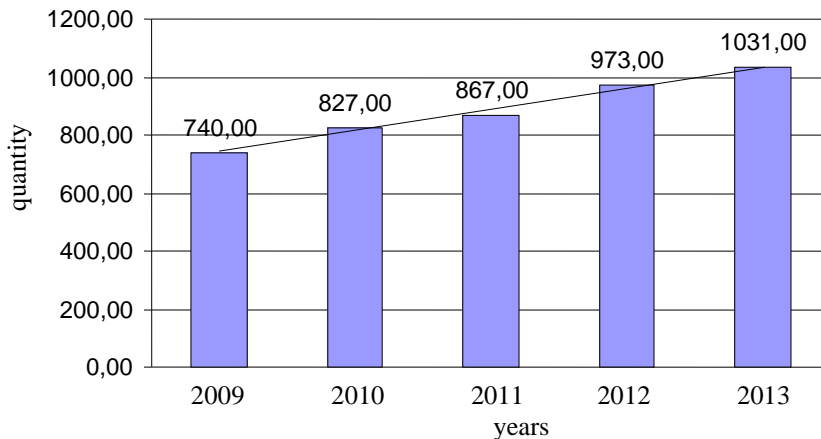


Fig. 2. The number of venture CII

Fig. 3 shows graphically venture CII asset value (bln. UAH) and trend line.

$y = 23,33x + 50,81$

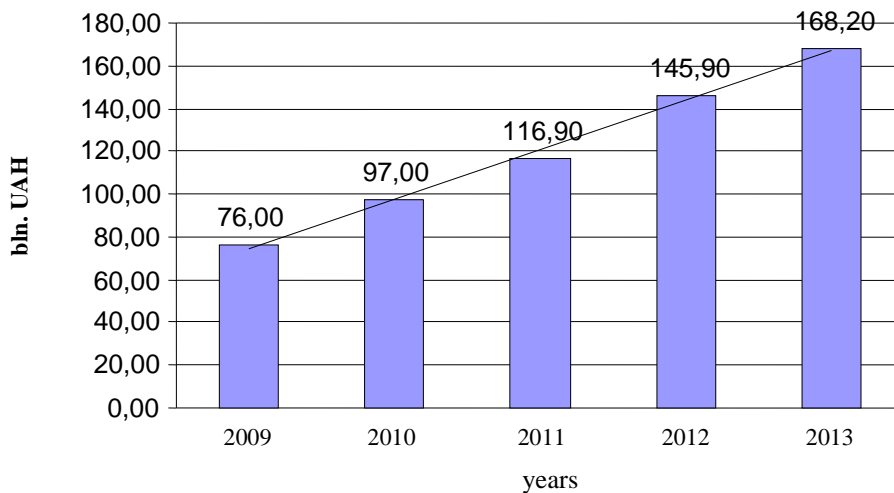


Fig. 3. Venture CII asset value (bln. UAH)

Fig. 4 shows the net asset value (NAV) of venture CII (bln. UAH) and trend line.

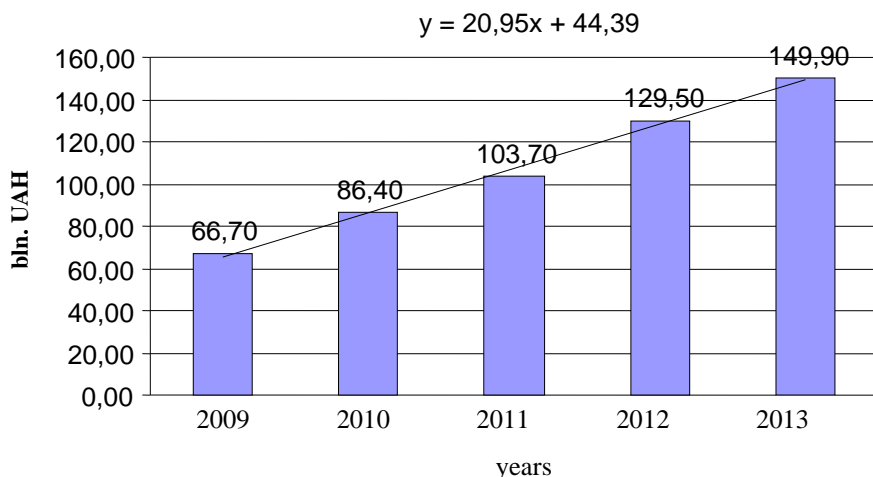


Fig. 4. The net asset value (NAV) of venture CII (bln. UAH)

Fig. 5 shows the share of NAV of venture CII in NAV of all CII (%) and trend line.

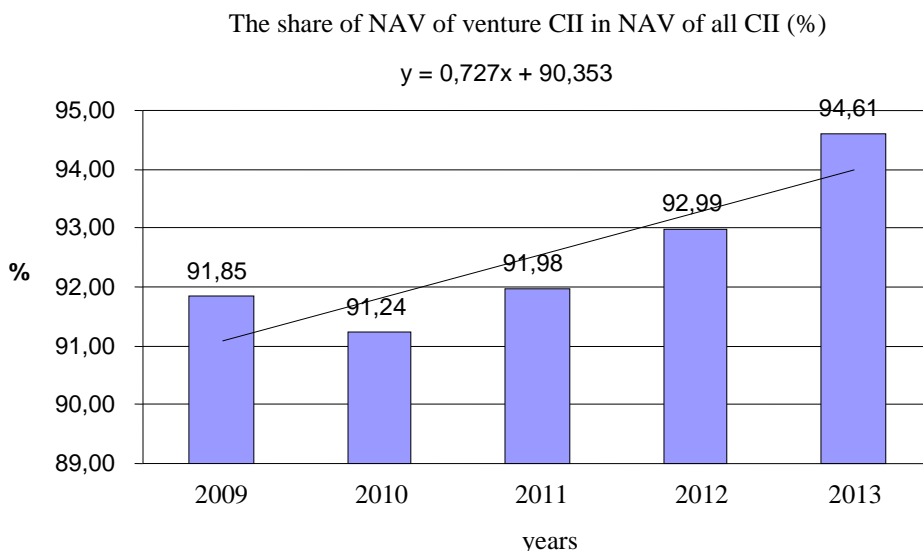


Figure 5. Share of NAV of venture CII in NAV of all CII, %

The structure of investment in venture CII of Ukraine according to categories of investors in 2009 and 2013 is shown in Figure 6.

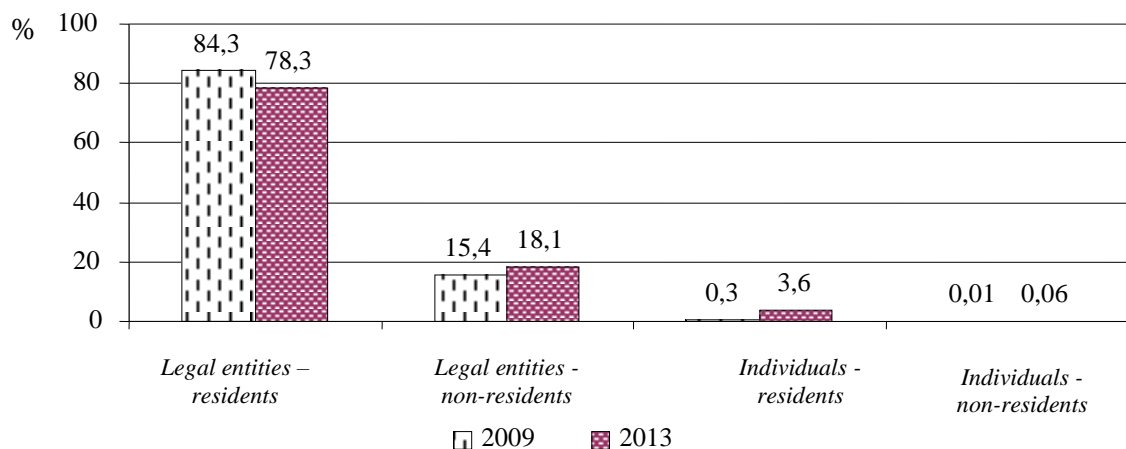


Fig. 6. The structure of investment in venture CII of Ukraine according to categories of investors

According to categories of investors investing in venture CII of Ukraine individuals are less active, both residents and non-residents, but their share in investments in venture CII during 2009-2013 increased by 3,35%.

Unlike individuals it has been determined that the main investors of venture CII in Ukraine are legal entities - residents, despite the reduction in their share by 6.0%. Foreign investors – legal entities increased their participation in national venture CII by 3.3%, due, primarily, to increasing their volume of venture investment.

In general, research of trends of venture investment in Ukraine allowed allocating a number of problems that need solving. Thus, the main investors of venture CII are powerful financial-industrial groups (corporations) that primarily use fund for national investment projects or acquisition of businesses securities owned by members of the fund.

Ukrainian venture CII in choosing investment object, above all, give priority to projects with medium or low risk and primarily those which are in the later stages of development (current production, with great potential) that does not correspond to the contents of venture investment - long-term high-risk capital investment in promising high-tech company focused on the development and production of high-tech products.

In addition, the success of venture capital should positively affect the economic environment factors such as: reorientation of the industrial way of economy to innovative; stimulating of large industrial structures to the introduction and use of new technologies; active development of the stock market; suspension of leakage of highly skilled professionals and talented scientists abroad etc.

Therefore, taking into account the global innovative transformations in the world economy representatives of Ukrainian social and economic systems have to understand that without timely financing of innovative activity of enterprises, organizations and institutions of Ukraine, we cannot follow the innovative way, like the world's leading countries.

For the purpose of innovation activity and improving the organizational structure of venture businesses government policy of Ukraine should promote the development of venture business and be conducted comprehensively at all levels.

At the state level (first level) the concept of venture business participation in the implementation of scientific and technical program of the country should be developed, which is defined by its participation in the implementation

of those programs, forms and mechanisms of interaction with public and private institutions, funding etc.

At the regional level (second level), Regional Centers for development and operation of venture business based on the developed concept should be formed. Regional branches of the Ukrainian state investment financial institution can be the basis for them that will allow ensuring the selection of priority areas of venture business in each region with minimal public spending [3].

CONCLUSIONS AND PROSPECTS FOR FURTHER RESEARCH

According to the results of the study it can be stated that today innovation is a key determinant of improving the competitiveness of the country and its place in the global market depends on the state innovation funding. As the results of predictability, of investigated time series of key performance indicators of venture CII in Ukraine Hurst exponent is not in the area of predictability trends. Cyclical behavior is possible, growth is possible and vice versa - the fall. Therefore it is necessary to build state policy for the involvement of venture capital for trends to be positive and predictable.

That is why the following measures to develop the venture capital organization of markets and development of new ventures have been suggested. In particular: continuous state support of venture businesses; the introduction of new and more flexible schemes of tax incentives for innovation; creating the necessary conditions for the development of the informal venture capital is extremely important in the early stages of development of firms; holding of Venture Forums in Ukraine (fairs) that will enable companies of small and medium capitalization interested in attracting investment to grow their business, attract the attention of a wide range of investors; a series of economic reforms and adopting international experience that will allow Ukraine to attract the attention of global investors and bring its economy in a significant venture capital investment, to establish business relations and relations with potential international partners.

This theme has prospects for further research, which will be based on a study of three world models such as American, European and mixed, which in turn will make it possible to develop criteria for the development of venture capital markets in Ukraine.

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Ігнатишин Марія Василівна, Ігнатишин Микола Іванович
ЕКОНОМІЧНА ПРИРОДА ВЕНЧУРНОГО КАПІТАЛУ ЯК ДЖЕРЕЛА ФІНАНСУВАННЯ
ІНВЕСТИЦІЙНИХ РИЗИКОВИХ ПРОЄКТІВ

Стаття присвячена актуальній проблемі функціонування венчурного капіталу в Україні як альтернативного джерела фінансування інвестиційних проєктів. Венчурне інвестування є специфічним різновидом фінансових вкладень у високотехнологічне виробництво, перспектива отримання значних прибутків у якому межує з високим ступенем ризику. Повністю уникнути загрози втрати вкладеного капіталу у венчурному фінансуванні практично неможливо, оскільки інновація та ризик виступають двома взаємозалежними категоріями: дуже важко передбачити, яке саме нововведення буде мати успіх на ринку, а яке не буде користуватися попитом. Необхідно також констатувати, що на сьогодні нормативно-правова база, яка регулює функціонування венчурного бізнесу та утворення венчурних фондів в Україні потребує удосконалення шляхом внесення відповідних змін та доповнень до податкового, митного і банківського законодавства, створення належних правових механізмів для розвитку вторинного фондового ринку, зокрема біржової торгівлі цінними паперами венчурних підприємств, системи електронних торгів тощо. Метою статті є з'ясування природи венчурного капіталу, визначення його ролі в економіці країни та оцінити прогнозованість часових рядів венчурного інвестування в Україні. Науковою новизною є застосування показника Херста для оцінки прогнозованості часових рядів, кількості венчурних ІСИ, вартості активів венчурних ІСИ, вартості чистих активів (ВЧА) венчурних ІСИ, частки ВЧА венчурних ІСИ в ВЧА всіх ІСИ та запропоновано заходи які вплинуть на ефективну організацію ринків венчурних інвестицій в Україні. Отримані результати мають практичне значення для суб'єктів венчурного бізнесу при тактичному та стратегічному плануванні поведінки на ринку фінансування інвестиційних проєктів. Дана тематика має перспективу подальших досліджень, яка буде базуватись на вивченні трьох світових моделей таких, як американська, європейська та змішана, що в свою чергу дасть можливість розробити критерії щодо ефективного функціонування розвитку ринків венчурних інвестицій в Україні.

Ключові слова: венчурний капітал, венчурні інвестиційні фонди, інноваційна активність, показник Херста.

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ЭКОНОМИЧЕСКАЯ ПРИРОДА ВЕНЧУРНОГО КАПИТАЛА КАК ИСТОЧНИКИ
ФИНАНСИРОВАНИЯ ИНВЕСТИЦИОННЫХ РИСКОВЫХ ПРОЕКТОВ

Статья посвящена актуальной проблеме функционирования венчурного капитала в Украине как альтернативного источника финансирования инвестиционных проектов. Венчурное инвестирование является специфической разновидностью финансовых вложений в высокотехнологическое производство, перспектива получения значительных прибылей в котором граничит с высокой степенью риска. Полностью избежать угроз потери вложенного капитала в венчурном финансировании практически невозможно, поскольку инновация и риск выступают двумя взаимозависимыми категориями: очень трудно предусмотреть, какое именно нововведение будет иметь успех на рынке, а которое не будет пользоваться спросом. Необходимо также констатировать, что на сегодня нормативно правовая база, которая регулирует функционирование венчурного бизнеса и образование венчурных фондов в Украине нуждается в усовершенствовании путем внесения соответствующих изменений и дополнений в налоговое, таможенное и банковское законодательство, создание надлежащих правовых механизмов для развития вторичного фондового рынка, в частности биржевой торговли ценными бумагами венчурных предприятий, системы электронных торгов и тому подобное. Целью статьи является выяснение природы венчурного капитала, определения его роли в экономике страны та оценка прогнозируемость часовых рядов венчурного инвестирования в Украине. Научной новизной является применение показателя Херста для оценки прогнозируемости часовых рядов, количества венчурных ИСИ, стоимости активов венчурных ИСИ, стоимости чистых активов (ВЧА) венчурных ИСИ, части ВЧА венчурных ИСИ, в ВЧА всех ИСИ и предложены мероприятия которые повлияют на эффективную организацию рынков венчурных инвестиций в Украине. Полученные результаты имеют практическое значение для субъектов венчурного бизнеса при тактическом и стратегическом планировании поведения на рынке финансирования инвестиционных проектов. Данная тематика имеет перспективу последующих исследований, которая будет базироваться на изучении трех мировых моделей таких, как американская, европейская и смешанная, что в свою очередь даст возможность разработать критерии относительно эффективного функционирования развития рынков венчурных инвестиций в Украине.

Ключевые слова: венчурный капитал, венчурные инвестиционные фонды, инновационная активність, показатель Херста.

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