The Efficiency of the Venture Investment Process

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ABSTRACT

Since the venture business is of particular importance in the processes of creating an efficient and competitive economy, the article is devoted to the assessment of the effectiveness of the venture investment process. The authors studied the theoretical prerequisites for assessing the effectiveness of the venture investment process; namely, they identified the features of venture investment, the state of venture investment in Ukraine, considered the leading performance indicators and analyzed the characteristics of evaluating the effectiveness of venture capital enterprises. This made it possible to propose an algorithm for assessing the effectiveness of the venture investment process, consisting of 4 stages.

Keywords: investments, efficiency criteria, startup, venture capital.

JEL Classification: D25, E22, G11, O16, M13

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1. Introduction.

One of the critical elements of the country's transition to an innovative path of development should be the formation of a system for attracting and including significant private investments in the economy. One of the most promising ways to implement science-intensive innovative projects is venture financing, the high profitability of which has been confirmed by world practice (Dzwigol et al., 2020). The venture business is of particular importance in creating an efficient and competitive economy (Trusova et al., 2019; Zakharkin et al., 2019) as well as its security (Kwilinski et al., 2019). In the conditions of inaccessibility and inadequacy of funding sources, the venture business is actively involved in the development of innovative activities in companies.

As world practice shows, from all the variety of funding sources, innovative projects are attractive, first of all, for a particular type of investors who are ready to accept increased risks and finance projects on a long-term basis - management companies of venture investment funds. Often, the unfounded decision to finance a venture project leads to an increase in the level of risks and losses, thereby reducing the investment attractiveness of the project for the investor. That is why the specificity of venture financing requires unique approaches to organizing adequate funding for both individual projects and a portfolio of projects. It is advisable to finance venture projects not at a time, but sequentially in the form of tranches according to the stages of project development. Thus, funding is fractional, intermittent, intermittent and has the property of discreteness. Despite a significant amount of research on venture investment in various aspects (Jeong and Kwak, 2018; König, 2018; Lytvynenko, 2019; Veselovsky, 2019; Berdar et al. 2020), the issues of calculating the effectiveness of the venture investment process can be improved.

2. Theoretical prerequisites for assessing the effectiveness of the venture investment process.

2.1 Definition and features of venture investment.

Venture investment is a type of business focused on the practical use of technical and technological innovations, the results of scientific achievements that have not yet been tested in practice.

Venture capital is long-term capital (often referred to as patient capital, i.e. patient capital), since the investor seeks not to receive regular payments of principal and interest as soon as possible, but to long-term capital gains. Venture capitalists make investments when they sell their stakes in a company through an IPO or liquidity event, usually no earlier than 3-5 years after the acquisition (Vladimirova and Pugacheva, 2013). Venture investors pay special attention in the process of their activities to the analysis and assessment of the risks of innovative projects, since the search and implementation of new ideas are, on the one hand, always risks, and on the other, with effective management and analysis, this is a high profit for the organization and the investor. Every investor also needs to be prepared for the additional costs associated with large long-term investments. The validity of the investment decision taken directly depends on how objectively and comprehensively not only the assessment of the effectiveness of venture investment is carried out, but also the analysis of risks.

The venture capital financing scheme differs from the traditional company financing cycle (Fig. 1).

Ukrainian investors in 2019 worked much more restrained: they made less than ten public investments in total (Riepina et al., 2019; Biriuk, 2020). This is less than last and the year before last: in 2018 and 2017 there were more than ten public transactions.

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Figure 1. Venture Capital Funding Scheme

Source: Venture capital. Wikipedia

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In 2019, the following venture investments should be highlighted:

- SMRK Foundation invested in a seafood delivery service from LeBoutique co-founder Andrey Drohobysky. Besides, made additional investments in the Ukrainian fashion group Love & Live (the deal was not advertised), in which it had previously invested \$ 400,000.
- Ukrainian startup RetargetApp closed the \$ 1.5 ml seed-round. TA Ventures participated in the round.
- Ukrainian fintech startup MyCredit raised \$ 3 million from TAS groups.
- Ukrainian drug discovery and delivery service Liki24.com raised \$ 1 million from TA Ventures and Genesis Investments, and Mikhail Puzrakov's Mission Tech and several business angels took part in the round.
- Ukrainian IT-company Viseven has attracted investments from AVentures Capital.
- Ukrainian educational online platform IT Mate academy attracted \$ 580,000 in investments. Genesis Investments was the lead investor, AVentures and the founder of Intellias Mikhail Puzrakov also took part in the round.
- Ciklum attracted investments from Dragon Capital and AVentures Capital.

This list does not take into account the volume of angel investments (while there are angel investors in the market and invest), since the sector traditionally remains non-public. Horizon Capital's investments are also not counted, as the fund positions itself as "American."

"The volume of investments in the seed rounds and round A has probably really dropped: less both in amount and in quantity. There may be several reasons:

- Several funds on the market have already inspected previous funds, and new ones have not yet collected or lack of liquidity due to delays in exits.
- This year only one new seed fund launched – Genesis.

– Launching a new startup is becoming more competitive, more capital-intensive and more demanding in terms of expertise. The industries are consolidating, and it is more interesting for many funds to bet on "winning horses".

"Many big funds like Horizon invest more in Series B, and even A Ventures invested part of the funds during the growth stage".

Venture capital investments are the highest yielding and highest risk investments in the world. Besides, the results of venture capital investments are polarized: successful capitalists take the central money from the market, while the rest are content with little.

However, broad venture capital is still outperforming stock indices. According to Cambridge Associates, early-stage venture capital returned 58,64% (Table 1); over twenty-five years, venture capital posted a 13,02% annual return versus 8,85% return on the S&P 500 (Fig. 2).

Table 1. Fund Index Summary: Horizon Pooled Return

Index	1-quarter	1-year	3-year	5-year	10-year	15-year	20-year	25-year
Cambridge Associates LLC US Venture Capital Index®	-3,08	8,67	13,96	10,52	14,34	10,93	4,95	36,41
US Venture Capital – Early Stage Index	-1,44	9,40	15,25	11,46	15,53	11,06	4,49	58,64
US Venture Capital – Late & Expansion Stage Index	-1,85	14,37	15,65	11,07	13,92	12,73	6,62	11,01
US Venture Capital – Multi-Stage Index	-6,49	4,92	11,03	8,68	12,58	10,09	5,36	13,02
Bloomberg Barclays Capital Government/Credit Bond Index	3,37	9,82	5,17	3,54	4,15	4,49	5,18	5,57
Dow Jones Industrial Average Index	-22,73	-13,38	4,42	6,86	10,00	7,73	6,07	9,37
Dow Jones US Small Cap Index	-30,42	-23,95	-4,09	-0,68	7,05	6,41	6,08	8,80
Dow Jones US TopCap Index	-19,36	-6,74	5,27	6,67	10,59	7,81	4,87	8,91
Nasdaq Composite Index	-14,18	-0,38	9,21	9,46	12,37	9,41	2,64	9,39
Russell 1000® Index	-20,22	-8,03	4,64	6,22	10,39	7,63	4,88	8,94
Russell 2000® Index	-30,61	-23,99	-4,64	-0,25	6,90	5,71	5,28	7,57
S&P 500 Index	-19,60	-6,98	5,10	6,73	10,53	7,58	4,79	8,85
Wilshire 5000 Total Market Index	-20,70	-8,95	4,09	5,99	10,19	7,59	4,94	8,82

Source: Research findings via (US Venture Capital Statistics Report).

In twenty-five years, early-stage venture capital investments have nearly five times the return on late-stage investments. And this data is not for an individual company, but for a complete sample of funds.

Figure 2. Venture Return versus Return Index

Source: built on (US Venture Capital Statistics Report).

2.2 Performance indicators.

At the moment, when calculating the efficiency of venture capital enterprises, the following series of indicators are mainly used (Derykolenko, 2013; Vladimirova and Pugacheva, 2013):

1. *Internal Rate of Return (IRR)*. Such a positive number E_e is called such that at the discount rate $E = E_e$, the net discounted income of the venture project turns to 0, for all large values of E it is negative, for all smaller costs of E it is positive:

$$NPV(IRR) = \sum_{t=0}^n \frac{CF_t}{(1 + IRR)^t} - \sum_{t=0}^n \frac{I_t}{(1 + IRR)^t} = 0 \quad (1)$$

where CF_t is the cash flow of the venture investor in period t ;

I_t is the amount of venture capital investments (costs) in the t -th period;

n is the total number of periods (intervals, steps) $t = 0, 1, 2, \dots, n$.

2. *Modified Internal Rate of Return (MIRR)*. This is the internal rate of return adjusted for the reinvestment rate:

$$MIRR = \sqrt[N]{\frac{\sum_{i=1}^N \frac{CF^+i}{(1 + WACC)^{N-i}}}{\sum_{i=1}^N \frac{CF^-i}{(1 + r)^i}}} - 1 \quad (2)$$

where CF^+i is the income of the i -th period of the venture investor;

WACC is the weighted average cost of capital;

CF^-i – costs (investments) of the i -th period of the venture investor;

r is the discount rate;

N is the duration of the venture project.

3. *Net Present Value (NPV)*. It is a value equal to the difference between the results and costs of venture investment in an innovative project for the settlement period in the reduced to one, usually the initial, year, i.e., taking into account the discounting of the results and costs:

$$NPV = \sum_m \varphi_m * \alpha_m \quad (3)$$

where φ_m is the venture investor's cash flow;

φ_m is the discount factor.

4. *Discounted Payback Period (DPP)*. This is the duration of the smallest period after which the current net present value becomes and further remains non-negative:

$$DPP = n = \sum_t \frac{CF_t}{(1 + E)^t} > I_0 \quad (4)$$

where n is the number of periods;

E – discount factor;

I_0 is the amount of initial venture capital investments in the zero periods.

5. *Return on sales (ROS)*, Operating margin. This is the profitability ratio, which shows the share of the venture investor's profit in each UAH earned:

$$ROS = \sum_t \frac{\text{Net profit after taxes}}{\text{Revenue}} * 100\% \quad (5)$$

6. *Average rate of return (ARR)*. This is the ratio between average annual earnings and the value of initial venture capital investments:

$$ARR = \frac{\sum_{i=1}^N CF_t}{N * I} \quad (6)$$

where N is the duration of the innovation project.

7. *Index of Discounted Profitability (DPI)*. This is the ratio of the sum of discounted cash flow elements from operating activities to the absolute value of the discounted sum of cash flow elements from venture investment activities in innovative construction projects: where I_t is the sum of venture capital investments (costs) in the t -th period.

$$DPI = \frac{\sum_{t=0}^N \frac{CF_t}{(1 + r)^t}}{\sum_{t=0}^N \frac{I_t}{(1 + r)^t}} \quad (7)$$

Based on the calculation of the considered indicators, a conclusion is made about the effectiveness of venture investment (Table 2). At the same time, it is necessary to use these indicators together, since they allow one to evaluate the economic efficiency of a given project from different sides.

However, these indicators are relative values, and the investor is primarily interested in the final results of the implementation of an innovative project, namely, the amount of profit that he can receive during the project, or the amount for which he can sell his share in this project (or business) at one of the final stages of its implementation. Quantifying such an amount is a complex and multivariate process.

Table 2. Efficiency criteria

No	Indicator	Effective project
1	NPV, UAH.	> 0
2	IRR, %	> E
3	MIRR, %	> E
4	DPP	→ min
5	ROS, %	Greater value
6	ARR	> 0, Greater value
7	DPI	> 1

Its definition is based on three main approaches:

1. Profitable – based on the determination of expected income (it is assumed that the value of the business is equal to the present value of future revenue from owning it, adjusted for indicators of future inflation and others).
2. Cost – determining the costs required to create, restore or replace any type of product during the implementation of this project.
3. Comparative – based on a comparison of the assessed project (business) with similar enterprises (or equivalent to them) and taking into account the funds that were paid for similar objects in the market for the sale and purchase of a similar business.

We believe that in the methodology for determining the effectiveness of the venture business, it is necessary to take into account two groups of indicators for a comprehensive assessment.

Since most of the objects for venture financing are newly created or recently operating small and medium-sized enterprises, when speaking about the business assessment of an innovative project, we can mean the total cost of such venture enterprises.

2.3 Features of the analysis of the effectiveness of venture capital enterprises

Venture enterprises are non-standard, non-nutritious forms of management (Ryabovolik and Stratan, 2018; Terletska, 2019), and accordingly, the analysis of their effectiveness has its characteristics (Fig. 3).

However, the decisions of venture capitalists are often biased and demonstrate, for example, the superconscious and the illusion of control, as well as business decisions in general (Zhang and Cueto, 2015), so it is necessary to develop an algorithm that takes into account various risks and eliminates subjectivity.

3. Results and discussion

For venture investment to be successful for investors and venture capitalists, it is necessary to perform several actions for both parties. Investors, as a rule, make forecasts about what development prospects a startup company has in the market, studying the company's business plan, assessing the company, and determining how promising the company's personnel are. The nature of the chosen company may depend on the specifics of the investor himself. It can be a business angel, a venture capitalist, or a simple investor.

Representatives of the company should draw up a business plan as accurately as possible to convince investors that the company has room for development, and the investment can pay off after a certain period. The peculiarity of the company and the stage of its development determine the size of assets, risk, assistance that is required for the further development of the company.

The analysis of the activities of domestic and foreign venture capital companies and literary sources, carried out by the authors, showed that it is not enough to use only known financial indicators to assess the effectiveness of the use of venture capital in the implementation of an

innovative project in construction (Prokopenko et al., 2019). In this case, an integrated approach is required. It is proposed to analyze the effectiveness of venture capital investments in four stages (Fig. 4).

To “connect” inventors and investors, information transparency is required. It depends both on the firm and on the external environment: it is much easier to declare yourself if a suitable infrastructure is created in the country: venture funds, associations of investors in high-risk enterprises.

Figure 3. Features of the analysis of the effectiveness of venture capital enterprises

Source: Research findings.

Figure 4. Algorithm for determining the effectiveness of the venture investment process

Source: Research findings.

The investment assessment of the value of a venture capital enterprise is largely determined by the publicity status and is the sum of the following indicators:

- the current market value of shares;
- long-term debt obligations;
- money and cash equivalents.

4. Conclusion

Venture capital is a financial link of the innovation infrastructure that unites capital carriers and technology carriers, and it is he who solves the problem of financial insufficiency in the sector of starting innovative projects. The development of the venture capital and private equity industry in Ukraine is currently one of the priority areas of state innovation policy and a prerequisite for enhancing innovation and increasing the competitiveness of the domestic industry. Venture capital investment is the most essential source of extra-budgetary funding for scientific research, applied research and innovation. The funds of venture investors are mainly invested in the authorized capital of newly created small and medium-sized enterprises, which, as a rule, are oriented towards the development of new technologies or the creation of new science-intensive products. In essence, the principle of venture investment is a mechanism for selecting innovative projects built into the economy. This means that a wide range of scientific ideas receives market assessments of their potential at a very early stage. This "early" selection of innovations allows concentrating limited investment resources in those areas that correspond to real economic demand. Evaluating the effectiveness of the venture investment process, especially at the preparatory stage, will call to improve the profitability and reduce the riskiness of venture investment.

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