

Evaluation of enterprise investment attractiveness under circumstances of economic development

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How to cite:

Ilyash O. et al. (2020). Evaluation of enterprise investment attractiveness under circumstances of economic development. *Bulletin of Geography. Socio-economic Series*, 47(47): 95-113. DOI: <http://doi.org/10.2478/bog-2020-0006>

Abstract. This article introduces a step-by-step methodology for evaluating an enterprise’s investment attractiveness in the context of economic development, using appropriate valuation parameters at macro, meso and micro levels. A system of indicators of macro-level investment attractiveness has been formed based on the criteria of socio-economic and legal attractiveness and investment risks. The indicators for assessing investment attractiveness of the industry have been grouped by the criteria of: prospects of the industry, positioning of the enterprise in the industry market, and sectoral investment risks. The indicators of investment attractiveness have been systematised with the use of three-dimensional current and operational analysis, as well as the method of risk assessment, which helped to determine the area of reaction to risk zones of the enterprise’s investment potential. The research allowed us to assess the position of a company in the market and to predict the risks of investing in the chemical industry.

Article details:

Received: 27 November 2019
 Revised: 13 January 2020
 Accepted: 21 January 2020

Key words:

Investment attractiveness,
 Investment potential,
 Investment evaluation,
 Economic development,
 Investment risks

Contents:

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1. Introduction

The development of economic processes is cyclical: each growth is accompanied by a recession, which then gives way to recovery and new growth. Financial crises in the economy are inevitable, as well as further economic growth. However, crises in the global economy, coupled with a rapid decline in the world's largest indices, have caused investors to minimise their risk and reduce the volume of investment in developing countries, and they have emphasised the need to develop a system of effective management of investment attractiveness.

With the completion of the fifth technological wave, the world is waiting for the “thaw” – the next phase of growth. Moreover, with the acceleration of scientific and technological progress and the emergence of more and more new economic activities, the pace of evolution in the business world is becoming faster and faster (Paul Weaver et al., 2017; Evolutionary Theories of Economic and Technological Change, 2018). This means that today the average time within which a company is able to retain a competitive advantage – that is, get an economic return in addition to the cost of capital – has shortened significantly. This trend is potentially important for investors in terms of valuation, portfolio turnover and diversification. In view of this, the selection of adequate methods, criteria and indicators for assessing the investment attractiveness of an enterprise and developing an effective model of managing the investment attractiveness of an enterprise in the market in conditions of economic instability becomes more and more relevant (Zhukovskaya et al., 2016).

2. Material and research methods

A significant contribution to the development of the theory and methodology of evaluating the investment activity of enterprises was made by foreign scientists (Keynes, 2013; Davidson, 1968; Harrod, 1952; Domar, 1952; Solow, 1956; Graham, 1962; Gitman and Joehnk, 2011). It is worth considering the opinion of Schumpeter (1954), who believed that economic development is a cyclical process,

driven by the abrupt nature of innovation, which means that innovation is part of economic development and one of the components of investment attractiveness. If we summarise the interpretations of investment attractiveness of the above authors, it can be argued that this is a set of quantitative and qualitative indicators-assessments of the investment object, which together determine the potential solvent demand for business investment.

Today, modern scientists are continuing research on this topic. Thus, Goncharuk and Karavan (2013) propose using a comprehensive approach, which requires detailed research employing analytical and expert methods to evaluate investment attractiveness. If there is no opportunity for such analysis, market information can help in the assessment. Akhmetshin et al. (2017) suppose that there are at least three approaches to evaluating investment attractiveness. Each approach uses either indicators of financial and economic activities of an enterprise or investment potential, investment risk, the methods of evaluation of investment projects or valuation of an enterprise.

Strokov (2014: 2) supposes that it is advisable to use “an algorithmic process projection as a series of steps that allow determining the quality of retrospective development of these business entities” as a methodology for researching investment attractiveness. Yakupova et al. (2017) propose using the Kendall rank correlation coefficient to evaluate the investment attractiveness of an enterprise, which allows a large number of different indicators to be systematised and the economic indicator to be represented visually.

In turn, the investment attractiveness of an enterprise largely determines the investment attractiveness of the industry in which it operates and, therefore, it has an impact on the investment attractiveness of the region and the national economy as a whole. Scientists, in particular Stroeva et al. (2015), draw attention to the methods for evaluating investment activity at the meso level; Mustafakulov (2017) focuses on the investment attractiveness of regions in terms of the definition and classification of impacting factors; Dorożyński and Kuna-Marszałek (2016) explore the investment attractiveness of the Visegrad Group countries; Jantóń-Drozdowska and Majewska (2016) evaluate the investment attractiveness of countries through the prism of their

locational characteristics and the development of industries in the country. According to the scientists Majewska-Bator and Jantoń-Drozdowska (2007) and Ushakov (2011), in order to enhance investment attractiveness, sustainable development must be prioritised.

As we can see, determining the effectiveness of an enterprise, which is an integral part of its investment attractiveness, is a complex and multifaceted problem that needs new solutions and sparks debate and disagreement when being solved. Therefore, the question of assessing investment attractiveness and determining how to improve it is currently crucial for investors, whose aim is to make a profit and at the same time define the degree of risk and diversify or minimise it; the same is true for companies interested in strategic business development. This raises the question of identifying the key criteria that determine investment attractiveness at: the organisational level – the micro level, i.e. the company or the project; the (inter) sectoral level – the meso-level, i.e. the industry, the region, the competitive environment; and the territorial level – the macro level, i.e. the state.

The choice of methods for assessing investment attractiveness is conditioned by the ambiguity of the notion of “investment attractiveness” in the economic literature. We have concluded that it is expedient to adhere to the position of O. Koyuda (2008), who defines investment attractiveness from the point of view of assessing the management and financial and economic activity of an enterprise. Despite the fact that, in the existing scientific literature, the assessment of investment attractiveness is certainly true, it neglects the events and factors that affect the investment attractiveness of specific industries. In this context, we support H. Strokovych (2011) concerning the need to evaluate the investment attractiveness of an enterprise from the standpoint of systematic analysis (a set of factors that affect the financial and economic condition of an enterprise) and economic and mathematical methods (a set of indicators that express the effectiveness of the financial and economic activity of an enterprise).

Based on the theory and methodology of evaluating the investment attractiveness of a business, we ask two research questions: (1) How does the combination of economic and mathematical meth-

ods of assessing the country and industry’s investment attractiveness and systematic analysis (using the methods of current, operational and prospective analysis) of the investment attractiveness of an enterprise influence the prospects of the investment attractiveness of business in the conditions of economic development? (2) Does the chosen algorithm for using the methods of estimating the investment attractiveness of an enterprise provide the choice of a model of investment attractiveness management? To answer these questions, we have consistently examined the investment attractiveness of a company using the example of “Avgust-Ukraine” LLC, and carried out an assessment of the company’s positioning in the market and made a prediction of the risks of investing in the chemical industry.

Of course, in the process of compiling an algorithm for the investment attractiveness estimation, we have used three main approaches, based on the recommendations of the International Valuation Standards (2017) developed by The International Valuation Standards Council such as: a cost (income) approach that includes the single-period capitalisation method, discounted cash-flows, weighted average cost of capital; an expense approach that includes the net asset method and the liquidation value method; and a comparative approach that includes the capital market method, the transaction method (sales method), the industry coefficient method and the statistical value modelling method.

We reckon that in current scientific research it is worth paying attention to the firm belief of Elvir M. Akhmetshin (2017) and Williamson (1998) that it is important for potential investors to assess a company’s investment attractiveness. In addition, we agree that for the most accurate assessment of the investment attractiveness of a company, investors pay attention to the macro-economic indicators of the country over the last 3–5 years and the results of financial and economic activities of the company, as part of the effectiveness of the development of a particular industry. Thus, an appropriate algorithm for estimating the investment attractiveness of a country, industry and enterprise has been drawn up; each of them contains the calculation of the integral index of the investment attractiveness.

We have divided the system of indicators of the macro-level investment attractiveness into three sig-

nificant groups: 1) socio-economic attractiveness (the main indicators are based on 12 components, which comprise three groups: basic requirements, efficiency, innovation and development (World Economic Forum, 2018); 2) legal attractiveness – the ease of doing business index (Doing Business Report, 2018); and 3) investment risks, by which indicators are ranked in a specific order and divided into five main groups, namely: cohesion, economic, political, social and cross-sectoral (The Fund for Peace, Fragile States Index, 2018). It is clear that we have analysed the performance of each of the three groups over a five-year period. In addition, we have used such a methodology for calculating the integral index as Investment Attractiveness of the Country (IAC) based on the summation of the Index of Socio-Economic Attractiveness (ISEA), the Legal Attractiveness Index (IA) and the country's Investment Risk Index (IR).

Since it is difficult to gather reliable information to calculate the components of the Investment Attractiveness Index of the chemical industry, because the market (in our case, oligopolistic) is sufficiently closed, each of the companies in the market has its own tools to make such an assessment. Therefore, we calculated the Investment Attractiveness of the Industry Index (IAI) by summing up the Industry Perspectives Index (IP), the Company Position Index (ICP) and the Investment Risks to Industry Index (IRI).

Continuing the study, we decided to group the system of indicators of the company's investment attractiveness into a step-by-step evaluation method. At the first stage of the assessment, using the methods of current analysis, in particular the analysis of the property condition, we identified the sources of property formation and evaluated how it is used. An assessment of the financial condition (indicators of liquidity, solvency, business activity, financial stability [debt]) made it possible to discover the ability of the enterprise to make timely and full payments on its obligations. With the help of indicators of financial stability, we determined the financial strength margin of the firm, that is, the stability of its activity in the long-term. The calculation of profitability indicators allowed us to evaluate the economic efficiency of financial and economic activity of the enterprise, and, in fact, the use of indicators of business activity revealed the ability of the investigated

enterprise to develop dynamically, achieve the chosen goals and increase its market share.

At the second stage of assessing the investment attractiveness of the enterprise, we identified the areas of response to "problem spots" using operational analysis tools and risk assessment methods, in particular, the VaR method (the VaR methodology was developed by "J.P. Morgan Chase" in the late 1980s and subsequently disclosed in a publication about the systems of risk management "Risk Metrics") to determine currency risk. In recent years, this method has become one of the most popular methods of risk management and control not only in banking institutions but also in the world's leading companies.

At the third stage of assessing the investment attractiveness of the enterprise, we employed prospective analysis methods, evaluating the probable bankruptcy of the enterprise using statistical methods (models by Ye. Altman, [2019] I. Balabanov, U. Beaver, V. Kovalov, R. Lees, R. Saifullin, G. Sprin-gate, J. Tuffler, D. Fulmer, O. Tereshchenko), and assessing the investment attractiveness of the enterprise with the determination of the taxonomic indicator of the development of the enterprise's investment attractiveness. We also managed to generate a strategic map of the company's development in the field of finance with the construction of a matrix of financial strategies (J. Franchon and I. Romane, Dorofeev, 2011). As a result, building a three-dimensional graphical model of the integral evaluation of the enterprise's investment attractiveness provided an opportunity to combine a comprehensive assessment of the investment attractiveness of the enterprise and the external environment (market) in which it operates.

3. Results

The signs that show that enterprises are competitive and function effectively are systematic modernisation of business processes, capitalisation of financial and investment potential, expansion of participation in the implementation of investment programmes of socio-economic development of territories, and business projects of inter-sectoral and inter-regional cooperation. These trends will intensify in the short

and medium term and their importance will grow accordingly.

In order to make quality management decisions regarding the investment support of enterprises, it is vital to develop a comprehensive system for evaluating their investment attractiveness, which consists of analysing the relevant parameters at the macro, meso and micro levels. The results of a comprehensive assessment serve as an important criterion for making management decisions regarding the choice of an investment entity.

When assessing the investment attractiveness at the first, macro-economic level, we employed indicators by the following groups:

- socio-economic attractiveness
- legal attractiveness;
- investment risks.

The socio-economic attractiveness of the country is analysed using the Global Competitiveness Index, which is divided into three main groups and 12 components (Table 1).

Thus, the indicators of socio-economic growth of Ukraine after a two-year slowdown in 2014–16 (about 3.0%), started growing, which is 0.6% more than in 2013, and 1.7% more compared to 2016.

The following formulas are used to calculate the country's socio-economic attractiveness index (I_{SEA}):

$$I_{SEA} = 1 - \frac{1}{\frac{\sum_{i=1}^t N_i^t}{5}} \quad (1)$$

where: N_i^t – the average value of the i -th component indices for the t -period.

$$N_i^t = p_1 + p_2 + \dots + p_t \quad (2)$$

where: p_i – the absolute values of the i -th indices of the components for the t -period.

Table 1. Indices of Ukraine in the Global Competitiveness Rating of the World Economic Forum in 2013–18

Groups of components	Components	Years				
		2013–14	2014–15	2015–16	2016–17	2017–18
Enabling Environment	Instructions	2.99	2.98	3.07	3.05	3.20
	Infrastructure	4.07	4.16	4.07	3.93	3.90
	Macro-economic environment	4.20	4.14	3.12	3.17	3.50
	Health and primary education	5.84	6.14	6.06	5.95	6.00
	Higher education and training	4.75	4.93	5.03	5.08	5.10
Efficiency	Good market efficiency	3.81	3.99	4.02	3.98	4.00
	Labour market	4.18	4.12	4.33	4.23	4.00
	Financial market	3.46	3.54	3.18	2.95	3.10
	Technological readiness	3.28	3.50	3.45	3.58	3.80
Innovation Ecosystem	Market size	4.60	4.58	4.54	4.40	4.50
	Business sophistication	3.68	3.66	3.70	3.62	3.70
	Innovation	3.03	3.16	3.41	3.44	3.40

Source: Developed by the authors according to the source (International Institute for Management Development, 2019)

Accordingly, the value of the index of socio-economic attractiveness of Ukraine is as follows:

$$N_{2013_2014} = 2,99 + 4,07 + 4,20 + 5,84 + 4,75 + 3,81 + 4,18 + 3,46 + 3,28 + 4,60 + 3,68 + 3,03 = 47,89$$

$$N_{2014_2015} = 2,98 + 4,16 + 4,14 + 6,14 + 4,93 + 3,99 + 4,12 + 3,54 + 3,50 + 4,58 + 3,66 + 3,16 = 49,90$$

$$N_{2015_2016} = 3,07 + 4,07 + 3,12 + 6,06 + 5,03 + 4,02 + 4,33 + 3,18 + 3,45 + 4,54 + 3,70 + 3,41 = 47,98$$

$$N_{2016_2017} = 3,05 + 3,93 + 3,17 + 5,95 + 5,08 + 3,98 + 4,23 + 2,95 + 3,58 + 4,40 + 3,62 + 3,44 = 47,38$$

$$N_{2017_2018} = 3,20 + 3,90 + 3,50 + 6,00 + 5,10 + 4,00 + 4,00 + 3,10 + 3,80 + 4,50 + 3,70 + 3,40 = 42,20$$

$$N_{2013_2018} = 47,89 + 49,90 + 47,98 + 47,38 + 42,20 = 240,35$$

$$I_{SEA}^{UA} = 1 - \frac{1}{\frac{240,35}{5}} = 0,979$$

The analysis of the country’s legal attractiveness was done according to the ease of doing business index (Table 2). At the same time, the lower the value of the indicator is, the more attractive for business activities the country is.

In recent years, the level of ease of doing business in Ukraine has increased, as evidenced by the positive dynamics of the indicator in international ratings. In particular, in 2018, Ukraine improved its position by 76 points and was ranked 76th out of 191 countries.

At the same time, the following formula should be used to calculate the country’s Political Attractiveness Index (I_{LA}):

$$I_{LA} = \frac{1}{\frac{\sum_{t=1}^k r_t}{k_t}} \quad (3)$$

where: r_t – the country’s ranking by the ease of doing business index in the t -period; k_t – the number of t -periods.

Accordingly, the value of Ukraine’s Political Attractiveness Index is as follows:

$$r_{2013_2018} = \frac{137 + 112 + 96 + 83 + 80 + 76}{6} = 97,33$$

$$I_{LA}^{UA} = \frac{1}{97,33} = 0,010$$

The basic indicator for assessing investment risks is the disability index of a country, which is divided into five groups and 12 components belonging to these groups (Table 3). At the same time, the higher the value of the indicator is, the higher the investment risk in the country is, and an increase in the rating characterises its decrease.

The calculation of the level of investment risks in the country (I_r) is made according to formula 4, which takes into account the value of all components of assessing its inability.

Table 2. Ukraine’s rank in the Ease of Doing Business Index by the World Bank in 2013–18

Year	Rank	Total number of countries	Index value
2013	137	186	–
2014	112	190	–
2015	96	190	62.52
2016	83	190	64.04
2017	80	191	64.90
2018	76	191	66.75

Source: Developed by the authors according to the source (Doing Business. Measuring Business Regulations, 2019)

Table 3. Ukraine's place in the disability rating of a country by the International Fund For Peace in 2013–18

Year	Ranking	Cohesion Indicators			Economic Indicators			Political Indicators			Social Indicators		Cross-cutting Indicators	Result
		C ₁	C ₂	C ₃	E ₁	E ₂	E ₃	P ₁	P ₂	P ₃	S ₁	S ₂	X ₁	
		Security apparatus	Factorialised Elites	Group Grievance	Economic Decline	Uneven Development	Human Flight and Brain Drain	State Legitimacy	Public Services	Human Right and Rule of Law	Demographic Pressures	Refugees and IDPS	External Intervention	
2013	117	4.4	8.0	5.9	5.4	5.3	5.7	7.8	3.6	5.7	4.7	3.2	6.2	65.9
2014	113	4.7	8.0	6.4	5.5	5.0	6.4	8.0	3.9	6.1	4.5	3.4	6.3	67.2
2015	84	4.5	4.4	7.0	5.5	4.7	6.5	8.5	3.8	6.4	7.9	8.0	9.1	76.3
2016	85	4.4	4.3	6.9	5.4	4.4	7.0	8.4	3.9	6.2	7.8	8.0	8.8	75.5
2017	90	7.6	8.0	6.7	6.8	4.2	5.2	8.2	3.7	6.2	4.2	4.6	8.6	74.0
2018	86	7.4	8.0	6.4	6.6	3.9	4.9	7.9	3.9	6.5	3.9	4.9	8.3	72.6
		5.50	6.78	6.55	5.87	4.58	5.78	8.13	3.80	6.18	5.50	5.35	7.88	71.92

Source: Developed by the authors according to the source (Fragile States Index, 2019)

$$I_R = \frac{1}{C_1 + C_2 + C_3 + E_1 + E_2 + E_3 + P_1 + P_2 + P_3 + S_1 + S_2 + X_1} \quad (4)$$

where: $C_{1,2,3}$, $E_{1,2,3}$, $P_{1,2,3}$, $S_{1,2}$, X_1 – the value of the country's inability components.

As for Ukraine, the value of the indicator is as follows:

$$I_R^{UA} = \frac{1}{5,50 + 6,78 + 6,55 + 5,87 + 4,58 + 5,78 + 8,13 + 3,80 + 6,18 + 5,50 + 5,35 + 7,88} = 0,014$$

The data obtained allow us to calculate a generalised index of a country's investment attractiveness (IIAS) (Formula 5); the greater its value is, the higher its attractiveness for investment activities becomes.

$$I_{LAC} = \frac{I_{SEA} + I_{LA} - I_R}{3} \quad (5)$$

According to the data of recent years, the index of investment attractiveness of Ukraine was 0.017, which we can see from the corresponding calculation:

$$I_{LAC}^{UA} = \frac{0,979 + 0,010 - 0,014}{3} = 0,325$$

We want to note that the main factors that hinder the growth of investment attractiveness of Ukraine are:

- insufficiency and complexity of access to resources for the implementation of investment projects in the field of innovation, intellectual property, creation and implementation of advanced technologies, digitisation of the economy;
- lack of institutional elements of the infrastructure of inter-sectoral and cross-functional cooperation focused on the formation and realisation of the investment potential of the economy;
- critically low volumes of scientific and technical research, and impossibility to practically apply their results, including a small number of innovative enterprises;

- low activity of enterprises in creating and using advanced technologies and intellectual property objects, including a significant lack of budgetary state support in this area;
- small volumes and low efficiency of selling innovative products in the real sector of the economy.

In addition to macro-economic preconditions, the investment attractiveness of enterprises is largely determined by the sectoral growth rate of investment activity. Thus, the high investment potential in Ukraine is inherent in the chemical industry, whose share in the country's GDP exceeds 5.0%. Given its high integration, it is worth focusing on specific areas of development, in particular on the field of plant protection agents. The relevance of such a line of research is confirmed both by natural aspects (the share of agricultural land in the total land fund of Ukraine is more than 70.0%), and market-political aspects (in Ukraine, political processes of the land market formation are actively ongoing, and hence the development of farms is predicted, but their functioning is impossible without plant protection agents) (Panukhnyk et al., 2019; Vasylytsiv et al., 2017).

To evaluate the investment attractiveness of the industry, the indicators are divided into three main groups that define the levels of:

- prospects of the industry;
- positioning of the enterprise in the sectoral market;
- sectoral investment risks.

The market for plant protection products in Ukraine is dynamic and promising, as evidenced

by the volume of sales of such products in recent years (Table 4).

During 2012–18, the volume of sales of plant protection products in Ukraine increased by USD 170.1 million, or 26.72%, and in 2018 it amounted to USD 806.8 million. Annual sales of plant protection products in the domestic market of Ukraine rose by USD 28.4 million, or 4.6%, which confirms the previous conclusions about its high investment attractiveness and prospects for progress.

To determine the Industry Prospect Index (IIP), we must use the following formula:

$$I_{IP} = 1 - \frac{1}{\frac{\sum_{t=1}^k G_t}{k_t - 1}} \quad (6)$$

where: G_t – the growth rate of sold products in the industry for the t -period; k_t – the number of t -periods.

For Ukraine, the value of the indicator is as follows:

$$G_{2012_2018} = 8,37 + (-9,76) + (-6,69) + 12,82 + 20,04 + 2,55 = 27,33$$

$$I_{IP}^{UA} = 1 - \frac{1}{\frac{27,33}{7-1}} = 0,780$$

The next stage of evaluating the investment attractiveness of the industry is to determine the level of positioning of enterprises participating in the industry market. In particular, almost 100 enterprises operate in the Ukrainian market for plant protection products, with 10 of them occupying more than 80.0% of the market (Table 5).

Table 4. Sales volume of plant protection products in Ukraine in 2012–18 (at prices of import into the territory of the country)

Years	Sales volumes, (USD millions)	Absolute growth (USD millions) compared to		Growth rate, % compared to	
		Previous year	Base year (2012)	Previous year	Base year (2012)
2012	636.7	–	–	–	–
2013	690.0	53.3	53.3	8.37	8.37
2014	622.6	-67.4	-14.1	-9.76	-2.21
2015	580.9	-41.7	-55.8	-6.69	-8.76
2016	655.4	74.5	18.7	12.82	2.94
2017	786.7	131.3	150.1	20.04	23.57
2018	806.8	20.1	170.1	2.55	26.72

Source: Developed by the authors according to the source (SuperAgronom.com. Plants protecting agents, 2019)

Table 5. TOP-10 enterprises in the market for plant protection products in Ukraine in 2014–18

Place in TOP-10	Enterprises	Years / USD millions				Average value of sales, (USD millions)	Share of enterprises in the market, %	Market re-distribution	Place in TOP-10	Enterprises	2018 (USD millions)	Share of enterprises in the market, %
		2014	2015	2016	2017							
1	Syngenta	104.8	122.3	121.1	146.2	123.6	18.7		3	Syngenta	133.6	16.6
2	BASF	97.2	95.5	127.8	127.8	112.1	16.9	Merger DuPont Pioneer and Dow Agro-Sciences (June, 2018)	1	BASF	143.7	17.8
3	Bayer	109.3	68.5	80.9	110.0	92.2	13.9		2	Bayer+ Monsanto	136.6	16.9
4	DuPont Pioneer	48.9	52.4	56.4	68.6	56.5	8.5		4	Pioneer+ Dow AgroSciences	89.9	11.1
5	ADAMA	31.3	39.1	55.1	68.6	48.5	7.3		5	ADAMA	75.8	9.4
6	Dow Agro-Sciences	41.9	26.8	25.3	29.0	30.8	4.7		6	Avgust-Ukraine	20.3	2.5
7	Avgust-Ukraine	36.1	19.0	22.4	19.1	24.2	3.7		7	Shtefes	20.3	2.5
8	Shtefes	15.9	13.8	14.2	16.2	15.0	2.3	Merger Bayer and Monsanto (August, 2017)	9	Arysta	15.7	1.9
9	Arysta	14.7	13.0	17.0	14.3	14.8	2.2		8	Green Express	16.6	2.1
10	Green Express	7.2	10.4	13.6	16.4	11.9	1.8		10	FMC	8.6	1.1
	Total market volume	622,6	580,9	655,4	786,7	661,4	80,1				806,8	82,0

Source: Developed by the authors according to the source (SuperAgronom.com. Plants protecting agents, 2019)

The following formula is employed to calculate the Company Positioning Index (I_{CP})

$$I_{CP} = 1 - \frac{1}{\frac{\sum_{t=1}^k F_t}{k_t}} \quad (7)$$

where: F_t – the company's share in the market in the t -period; k_t – the number of t -periods.

Among the market leaders, we have chosen “Avgust-Ukraine” LLC as the target of this research. In 2018, this company sold USD 24.2 million worth of products and occupied 2.5% of the market. The positioning index of “Avgust-Ukraine” LLC in the industry is 0.286; it was calculated on the basis of the data in Table 5 and formula 7:

$$F_{2014_2018} = \left(\frac{36,1}{622,6} + \frac{19,0}{580,9} + \frac{22,4}{655,4} + \frac{19,1}{786,7} + \frac{24,2}{661,4} + \frac{20,3}{806,8} \right) \times 100 = 17,4(\%)$$

$$I_{CP}^{UA} = 1 - \frac{1}{\frac{17,4}{5}} = 0,714$$

The assessment of investment sectoral risks involves conducting an expert survey, where risks are divided into three groups (natural, financial, political), each of which is placed in the areas of high, medium and low impact (Table 6). At the same time, each zone of influence is defined by the following ranking scores: high impact – 3; medium – 2, low – 1.

The following formula should be used to determine the Investment Sectoral Risks Index (I_R):

$$I_R = \frac{1}{\sum_{i=1}^n R_i^n} \tag{8}$$

where: R_i^n – ranking scores by i -th risk n -th impact group.

As for the Ukrainian market for plant protection products, the investment risk index was 0.091, which was calculated in this way:

$$I_{LAI} = \frac{I_{IP} + I_{CP} - I_R}{3}$$

$$I_{LAI}^{UA} = \frac{0,780 + 0,714 - 0,091}{3} = 0,468$$

The results of calculations of the respective indices allow us to calculate the overall level of investment attractiveness of the industry using the following formula:

$$I_{LAI} = \frac{I_{IP} + I_{CP} - I_R}{3} \tag{9}$$

$$I_{LAI}^{UA} = \frac{0,780 + 0,714 - 0,091}{3} = 0,468$$

For the Ukrainian market of plant protection products, the investment attractiveness was 0.412 and, given the active development of farms in the country and the opening of the domestic land market, it can be predicted that the investment attractiveness of such a market will be significantly increased.

To determine the investment attractiveness of the company we employed the method of calculating the integral indicator, because such an assessment enables us to combine many different characteristics in a single indicator. All this simplifies the procedure for evaluating a specific investment proposal for an enterprise.

At the same time, in order to carry out an integral evaluation of the investment attractiveness of an enterprise, one should stick to the following sequence: 1) formulate a set of indicators; 2) determine actual values of indicators; 3) normalise indicators; 4) determine weight coefficients; 5) calculate the integral index of the investment attractiveness of an enterprise.

In order to evaluate the investment attractiveness of the enterprise, the indicators are divided into several groups (property condition, liquidity, financial stability, profitability), which are shown in Table 7.

An empirical evaluation of the investment attractiveness of the enterprise was conducted based on the methodological tools of the principal component method, which eliminates subjectivism in determining the weighted coefficients of indicators and components of investment attractiveness and involves the use of a wide mathematical and statistical apparatus. At the same time, the weighted coefficients were calculated in three stages: 1) con-

Table 6. Major risks in the market for plant protection products in Ukraine in 2014–18

Groups of risks	Risks	Risk zones		
		high	medium	low
Natural risks	Decrease in yield	2		
	Spread of natural disasters	2		
Financial risks	Increase in accounts receivable		1	
	Increased foreign exchange risks	2		
	Destabilisation of internal market	2		
Political risks	Bureaucratisation of registration procedures		1	
	Unpredictable changes in legislation			0.5
	Increased market monopolisation			0.5

Source: Designed by the authors

Table 7. Indicators for evaluating the investment attractiveness of an enterprise

Groups of indicators	Indicators	Statutory values of indicators
Property condition	Share of fixed assets in active assets (x_1)	Decrease
	Coefficient of fixed assets renewal (x_2)	Increase
	Assets mobility coefficient (x_3)	Increase
	Wear coefficient of fixed assets (x_4)	Decrease
Liquidity	Manoeuvrability of own working capital (x_5)	Increase
	Current liquidity ratio (x_6)	Increase (1.0–3.0)
	Quick liquidity ratio (x_7)	Increase (>1.0)
	Absolute liquidity ratio (x_8)	0.1–0.2
	Share of current assets in total assets (x_9)	Increase
	Share of inventories in current assets (x_{10})	Increase (>0.5)
Financial stability	Financial autonomy ratio (x_{11})	0.4–0.6
	Financial dependency ratio (x_{12})	1.6–2.5
	Coefficient of manoeuvrability of equity capital (x_{13})	Increase (>0.1)
	Coefficient of attracted capital (x_{14})	0.4–0.6
Business activity	Balance sheet profit (x_{15})	Increase
	Returns on assets (x_{16})	Increase
	Turnover ratio of accounts receivable (x_{17})	4.8–12.0
	Duration of accounts receivable turnover (x_{18})	Decrease
	Turnover ratio of accounts payable (x_{19})	Increase
	Duration of accounts payable turnover (x_{20})	Decrease
	Inventory turnover ratio (x_{21})	Increase (3.0–6.0)
	Duration of inventory turnover (x_{22})	20.0–60.0
	Assets turnover (x_{23})	Increase
	Duration of the financial cycle (x_{24})	Decrease (but >0)
	Duration of the operating cycle (x_{25})	Decrease
	Coverage ratio of accounts receivable (x_{26})	Increase
	Turnover ratio of equity capital (x_{27})	Increase
	Turnover ratio of fixed capital (x_{28})	Increase
	Coefficient of stability of economic growth (x_{29})	Increase (>0)
Profitability	Amount of net profit (x_{30})	Increase
	Profitability of products by net income (x_{31})	Increase
	Return on assets (x_{32})	Increase
	Return on equity (x_{33})	Increase
	Return on fixed capital (x_{34})	Increase
	Operating profit margin (x_{35})	Increase (>5)
	Net profit margin (x_{36})	Increase (>1)
	Gross profit margin (x_{37})	Increase

Source: Designed by the authors

struction of the correlation matrix; 2) singling out the main components and the calculation of factor loadings; 3) identification of principal components.

The general calculation of the investment attractiveness index of the enterprise (I_{IAE}) is made according to the following formula:

$$I_{IAE} = \sum_{j=1}^n \prod_{i=1}^n d_i \frac{|x_{ij} - x_{i \max(\min)}|}{x_{i \max} - x_{i \min}} \quad (10)$$

where: x_{ij} – the value of the i -th indicator of the j -th group of indicators; d_i – the level of significance of the i -th indicator; n – the number of indicators; x_{ij} – the value of the i -th indicator of the j -th group of indicators; $x_{i \min}$ – the minimum value of the i -th indicator (when minimising); $x_{i \max}$ – the maximum value of the i -th indicator (when maximising).

According to previous arguments for determining the significance levels of indicators, their values are calculated using the following formula:

$$d_i = \frac{R_i}{n} \quad (11)$$

where: R_i – the rank of the i -th indicator according to the final ranking by the method of principal components.

The obtained results of calculations of the indicators of “Avgust-Ukraine” LLC make it possible to conclude that the company urgently needs investment capital to ensure its proper functioning and development (Table 8). In particular, it does not sufficiently update the material and technical base, constantly requires funds for the timely settlement of current financial liabilities, is unable to generate sufficient working capital to ensure proper business activity, and does not reach an acceptable level of efficiency of trade and production operations. Nevertheless, the investment attractiveness of the company is optimally acceptable (at the level of 0.493), as evidenced by the sufficient level of suitability of fixed assets, a high share of working capital, considerable volumes of production stocks, optimum volumes of accounts receivable, an increase in the level of profitability of business operations, etc.

According to the data obtained, a graphical model of the investment attractiveness of the enterprise (Fig. 1) was built. This model is formed on the basis of three axes – one vertical and two horizontal. The vertical axis shows the investment attractiveness of “Avgust-Ukraine” LLC (0.493), while the horizontal axes define the indices of the investment attractiveness of the industry (0.468) and the country (0.325) in which the enterprise operates.

The range of possible integral values of the enterprise’s investment attractiveness is conditionally divided into two zones, ranging from 0.5 to 1.0 (zone of high investment attractiveness) and less than 0.5 (zone of low investment attractiveness). Then there are two possible cases on each axis – for example, “ HIA_E ” in case of high investment attractiveness of the enterprise, when it, as an investment object, is more likely to meet the interests of the investor, and “ LIA_E ” in case of low investment attractiveness of the enterprise and, as an investment object, it does not meet the interests of the investor.

Accordingly, “ HIA_C ” and “ LIA_C ” characterise the high and low attractiveness of the country, whereas “ HIA_I ” and “ LIA_I ” indicate the high and low attractiveness of the industry. As a result, eight pairs of possible combinations of the results of the estimation of three values are formed – the investment attractiveness of the enterprise, industry, country; seven combinations of the eight possible combinations are indicated in the figure as segment captions. The eighth segment is not shown in the figure; it is located in the lower bottom corner and corresponds to the combination “ LIA_C, LIA_I, LIA_E ” – “low investment attractiveness of the country, low investment attractiveness of the industry, low investment attractiveness of the enterprise”.

It is difficult to estimate the entry of an enterprise into the remaining six segments – for example, into the sector “ HIA_C, HIA_I, LIA_E ” – “high investment attractiveness of the country, high investment attractiveness of the industry, low investment attractiveness of the enterprise”. Since changes in the country’s investment attractiveness are slow enough, a positive assessment of the enterprise’s investment attractiveness from the standpoint of this model will be characterised by a tendency towards an increase in the dynamics of its investment attractiveness and, accordingly, towards moving down the vertical axis in order to reach “ LIA_C, HIA_I, HIA_E ” – “low investment attractiveness of the country, high investment attractiveness of the industry, low investment attractiveness of the enterprise”. The location of the obtained point X (0.017; 0.412; 0.493) allows the level of the enterprise’s investment attractiveness at the beginning of 2019 to be viewed as optimally acceptable, since point X is located in the sector “ LIA_C, HIA_I, LIA_E ” – “low investment attractiveness of the country, high investment attractiveness of the in-

Table 8. Results of the investment attractiveness evaluation of “Avgust-Ukraine” LLC in 2014–18

Indicators	Years					Ranks of indicators (R_i)	Levels of significance of indicators (d_i)	$x_i - x_{max}$					$\frac{x_{max} - x_{min}}{(x_{max} - x_{min})^2} \cdot \frac{1}{p}$	
	2014	2015	2016	2017	2018			2014	2015	2016	2017	2018		
x_1	1.89	1.82	4.21	8.13	16.73	33	0.89	14.83	14.91	12.52	8.59	0.00	14.91	3.01
x_2	0.29	0.35	0.29	0.22	0.29	34	0.92	0.05	0.00	0.05	0.12	0.05	0.12	2.10
x_3	51.62	54.09	23.54	12.23	5.96	16	0.43	2.47	0.00	30.55	41.85	48.13	48.13	1.11
x_4	48.85	36.38	32.80	32.43	31.33	37	1.00	0.00	12.47	16.04	16.41	17.51	17.51	3.57
x_5	-0.20	-0.42	-0.08	-0.06	-0.03	25	0.68	0.18	0.39	0.06	0.04	0.00	0.39	1.14
x_6	0.95	0.81	0.58	0.48	0.43	14	0.38	0.00	0.14	0.37	0.47	0.52	0.52	1.10
x_7	0.64	0.46	0.26	0.25	0.20	15	0.41	0.00	0.18	0.38	0.39	0.44	0.44	1.29
x_8	0.95	0.81	0.58	0.48	0.43	14	0.38	0.00	0.14	0.37	0.47	0.52	0.52	1.10
x_9	0.98	0.98	0.96	0.92	0.86	29	0.78	0.00	0.00	0.02	0.06	0.13	0.13	1.29
x_{10}	0.33	0.43	0.56	0.48	0.53	30	0.81	0.20	0.10	0.03	0.05	0.00	0.21	1.51
x_{11}	-0.03	-0.22	-0.66	-0.95	-0.99	1	0.03	0.00	0.19	0.63	0.92	0.96	0.96	0.08
x_{12}	-33.02	-4.64	-1.52	-1.05	-1.01	5	0.14	32.01	3.63	0.50	0.04	0.00	32.01	0.15
x_{13}	-2.59	-12.88	-17.18	-13.41	-7.87	6	0.16	0.00	10.28	14.58	10.81	5.28	14.58	0.46
x_{14}	1.03	1.22	1.66	1.92	1.99	7	0.19	0.96	0.77	0.33	0.06	0.00	0.96	0.42
x_{15}	-26.39	-241.39	-802.27	-275.51	-215.55	32	0.86	0.00	215.01	775.88	249.12	189.16	775.88	1.59
x_{16}	55.53	54.55	43.80	17.73	12.13	22	0.59	0.00	0.97	11.73	37.80	43.80	43.40	1.29
x_{17}	0.57	0.48	0.75	0.67	0.84	24	0.65	0.27	0.36	0.09	0.17	0.00	0.36	1.60
x_{18}	145.61	170.46	104.27	111.57	87.38	27	0.73	24.84	0.00	66.19	58.88	83.08	83.08	2.05
x_{19}	1.22	0.60	0.72	0.48	0.60	28	0.76	0.00	0.62	0.50	0.74	0.62	0.74	2.53
x_{20}	295.83	600.70	498.82	753.53	601.19	23	0.62	457.70	152.82	254.71	0.00	152.34	457.70	1.38
x_{21}	4.31	1.77	2.16	1.75	2.61	35	0.95	0.00	2.53	2.14	2.56	1.69	2.56	3.30
x_{22}	83.60	203.16	166.30	205.69	137.85	36	0.97	122.09	2.53	39.39	0.00	67.84	122.09	1.85
x_{23}	1.52	1.00	1.26	1.06	1.41	18	0.49	0.00	0.52	0.26	0.46	0.10	0.52	1.26
x_{24}	-42.12	-184.11	-190.21	-368.17	-319.64	19	0.51	0.00	141.99	148.09	326.04	277.51	326.04	1.41
x_{25}	229.22	373.62	270.57	317.27	225.23	17	0.46	144.40	0.00	103.05	56.35	148.39	148.39	1.40
x_{26}	0.29	0.32	0.13	0.20	0.14	31	0.84	0.03	0.00	0.19	0.12	0.18	0.19	2.30
x_{27}	-31.27	-6.23	-2.95	-1.28	-1.37	20	0.54	29.99	4.95	1.67	0.00	0.08	29.99	0.66
x_{28}	13.60	13.40	10.83	4.40	3.02	21	0.57	0.00	0.20	2.78	9.20	10.58	10.58	1.22
x_{29}	-32.11	93.75	61.08	28.52	0.21	26	0.70	125.86	0.00	32.67	65.23	93.54	125.86	1.77
x_{30}	2.94	-137.48	-230.13	-148.88	202.00	13	0.35	0.00	140.42	233.07	151.83	2.74	151.83	1.22
x_{31}	1.17	1.42	1.20	1.19	1.12	9	0.24	0.25	0.00	0.22	0.23	0.30	0.25	0.97
x_{32}	1.33	-27.98	-36.77	-26.27	0.04	2	0.05	0.00	29.30	38.10	27.59	1.29	38.10	0.14
x_{33}	-27.67	176.47	87.93	32.94	-0.04	3	0.08	204.14	0.00	88.54	143.53	176.53	204.14	0.24
x_{34}	0.01	-0.20	-0.40	-0.26	0.00	11	0.30	0.00	0.21	0.41	0.27	0.01	0.41	0.65
x_{35}	2.90	-27.77	-30.04	-25.34	0.75	10	0.27	0.00	30.67	32.94	28.24	2.14	32.94	0.77
x_{36}	0.88	-28.34	-29.82	-25.70	0.03	4	0.11	0.00	29.22	30.71	26.58	0.86	30.71	0.31
x_{37}	0.15	0.30	0.17	0.16	0.11	12	0.32	0.15	0.00	0.13	0.13	0.19	0.19	1.03

Source: Developed by the authors according to the source (Financial and statistical reporting of the enterprise, 2014–18)

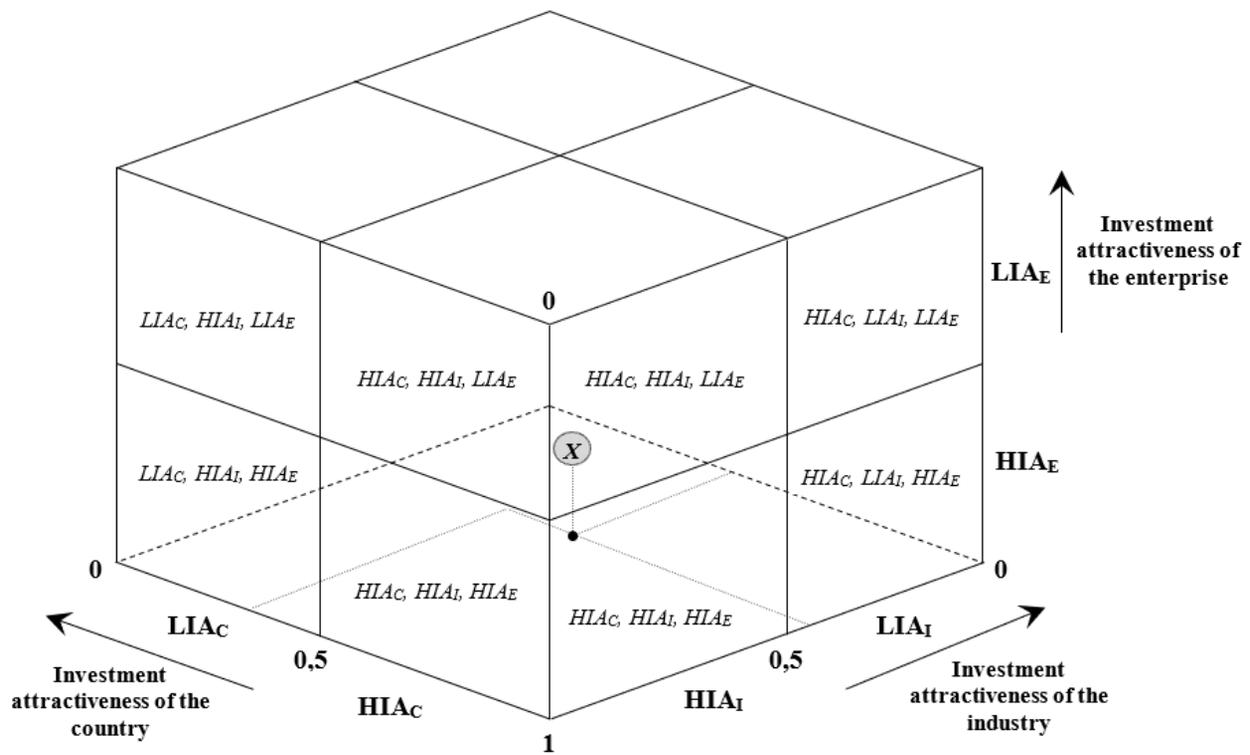


Fig. 1. Modelling the indicators of the investment attractiveness of the enterprise
Source: Designed by the authors

dustry, low investment attractiveness of the enterprise”.

Given such a level of the enterprise’s investment attractiveness, it is crucial to assess the likelihood of bankruptcy (Table 9), which will serve as the main criterion for reaching conclusions on the acceptability of investment and the fulfilment of financial and investment expectations of direct investors.

The results of the bankruptcy probability assessment of the company confirmed the previous assumptions about its insufficient investment attractiveness and increased degree of riskiness of investment. Also, the conclusion on the maximum closeness of the enterprise to potential bankruptcy is proven by the common nature of all the methods used. However, given the significant advantages of the enterprise in the formation of its material and technical base, the development of financial and credit relations, the expansion of trade and partnership relations, it is expected that its investment attractiveness will increase and at the same time the probability of bankruptcy will decrease.

4. Discussion

Due to the fact that economic growth is an integral part of economic development, and business is its driving force, the processes of monitoring and managing investment attractiveness are part of the system of assessing the ability of business entities to withstand risks and increase their own economic potential – particularly in view of the crisis in the global economy, namely, due to the rapid fall of the world’s largest indices, which has caused investors to be more risk-averse and to reduce the volume of investment in developing countries. Nowadays, the issues of evaluating investment attractiveness and determining ways to increase it are key for investors aiming to generate profit and be aware of the degree of risk, and to diversify or minimise it, as well as for companies interested in strategic business development. This raises the problem of identifying the key criteria that determine investment attractiveness at the micro level (company, project),

Table 9. Results of the bankruptcy probability assessment of “Avgust-Ukraine” LLC in 2014–2018

Model options	Years					Characteristics of results
	2014	2015	2016	2017	2018	
Five factor model. Altman Z-model ($Z=1.2X_1+1.4X_2+3.3X_3+0.6X_4+X_5$)						
Z_{Altman}	-0.16	-2.08	-3.92	-4.88	-3.90	
X_1	-1.06	-1.43	-2.32	-2.86	-2.98	$Z < 1.81$ (there is a high probability of bankruptcy)
X_2	-0.03	-0.22	-0.66	-0.94	-0.99	
X_3	0.02	-0.20	-0.40	-0.27	0.0004	
X_4	-0.03	-0.18	-0.40	-0.49	-0.50	
X_5	1.10	0.71	1.35	1.03	1.35	
Springate model ($Z=1.03X_1+3.07X_2+0.66X_3+0.4X_4$)						
$Z_{Springate}$	0.51	-0.67	-1.55	-1.49	-0.58	
X_1	-0.05	-0.23	-0.70	-1.00	-1.13	$Z < 0.862$ (the company is a potential bankrupt)
X_2	0.03	-0.20	-0.39	-0.26	0.01	
X_3	0.03	-0.16	-0.24	-0.14	0.01	
X_4	1.10	0.71	1.35	1.03	1.35	
Lees model ($Z=0.53X_1+0.13X_2+0.18X_3+0.16X_4$)						
Z_{Lees}	-0.03	-0.22	-0.61	-0.81	-0.86	
X_1	-0.05	-0.23	-0.70	-1.00	-1.13	$Z < 0.037$ (the company is a potential bankrupt)
X_2	0.03	-0.20	-0.41	-0.26	0.01	
X_3	-0.03	-0.22	-0.66	-0.94	-0.99	
X_4	-0.03	-0.18	-0.40	-0.49	-0.50	
Taffler and Tisshow model ($Z=0.53X_1+0.13X_2+0.18X_3+0.16X_4$)						
$Z_{Taffler/Tisshow}$	0.35	0.27	0.28	0.37	0.44	$Z = 0.25$ (critical value of the bankruptcy probability). $Z > 0.3$ (the company has good long-term investment prospects)
X_1	0.03	-0.16	-0.24	-0.14	0.01	
X_2	0.95	0.81	0.58	0.48	0.43	
X_3	1.03	1.22	1.66	1.95	1.99	
X_4	0.16	0.21	0.23	0.17	0.15	
Fulmer model ($H=5.528X_1+0.212X_2+0.073X_3+1.270X_4-0.120X_5+2.335X_6+0.575X_7+1.083X_8+0.894X_9-6.076$)						
H_{Fulmer}	-1.07	-2.28	-3.77	-4.61	-4.41	
X_1	-0.03	-0.22	-0.66	-0.94	-0.99	$H < 0$ (the company is insolvent and financially unstable)
X_2	1.10	0.71	1.35	1.03	1.35	
X_3	-1.05	0.92	0.62	0.28	-0.01	
X_4	0.01	-0.17	-0.24	-0.14	0.0002	
X_5	0	0	0	0	0	
X_6	1.03	1.22	1.66	1.92	1.99	
X_7	4.00	4.00	4.00	5.00	5.00	
X_8	-0.05	-0.19	-0.42	-0.52	-0.57	
X_9	1.00	0	0	0	0	
Tereshchenko model ($ZTEP=1.5X_1+0.08X_2+10X_3+5X_4+0.3X_5+0.1X_6$)						
$ZTEP_{Tereshchenko}$	-3	-3	-4	-3	0	
X_1	0.01	-0.17	-0.24	-0.14	0.0002	$0 < ZTEP < 1$ (the company is insolvent and financially unstable)
X_2	0.97	0.82	0.60	0.51	0.50	
X_3	0	-0.09	-0.17	-0.11	0.0002	
X_4	0.01	-0.28	-0.30	-0.26	0.0003	
X_5	0.0005	0.0017	0.0014	0.0028	0.0044	
X_6	-36.29	-3.31	-2.05	-1.12	-1.36	

Table 9. Results of the bankruptcy probability assessment of “Avgust-Ukraine” LLC in 2014–2018 - continuation

Matviichuk model ($Z=0.033X_1+0.268X_2+0.045X_3-0.018X_4-0.004X_5-0.015X_6+0.702X_7$)						
$Z_{Matviichuk}$	1.93	1.76	0.63	0.13	-0.06	
X_1	51.62	54.09	23.54	12.23	5.96	$Z < 1.104$ (there is a threat of financial and investment crisis and the probability of bankruptcy increases)
X_2	1.22	0.60	0.72	0.48	0.60	
X_3	-1.07	-0.46	-0.43	-0.27	-0.68	
X_4	0.67	1.01	0.81	0.98	0.76	
X_5	-0.05	-0.19	-0.42	-0.52	-0.57	
X_6	1.03	1.22	1.66	1.95	1.99	
X_7	-0.03	-0.18	-0.40	-0.49	-0.50	
Four factor model of bankruptcy risk forecasting ($R=8.380X_1+X_2+0.054X_3+0.630X_4$)						
R_{model}	-0.66	-1.21	-5.34	-8.29	-9.41	
X_1	-0.05	-0.23	-0.70	-1.00	-1.13	$R < 0$ (there is a maximum likelihood of bankruptcy)
X_2	-0.32	0.94	0.61	0.28	0	
X_3	1.10	0.71	1.35	1.03	1.35	
X_4	0.04	-0.36	-0.25	-0.40	0	
Postiushkov model ($Z=0.125X_1+2.5X_2+0.04X_3+1.25X_4$)						
$Z_{Postiushkov}$	-0.08	0.07	-1.47	-2.57	-3.24	$Z < 1$
X_1	0.95	0.81	0.58	0.48	0.43	(there is a threat of financial and investment crisis and the probability of bankruptcy increases)
X_2	-0.05	-0.24	-0.73	-1.10	-1.32	
X_3	0.37	0.25	0.31	0.26	0.33	
X_4	-0.07	0.44	0.22	0.08	-0.0001	

Source: Designed by the authors

at the meso level, (industry, region, competitive environment) and at the macro level (the state).

Summarising the scientific controversy over the interpretation of investment attractiveness, we have come to the conclusion that this is a set of quantitative and qualitative indicators-assessments of the investment object, which together determine the potential solvent demand for investment in the enterprise. At the same time, management of investment attractiveness is the process of influencing these indicators-assessments by “transforming” them further, or maintaining them at a certain level. We are convinced that the interpretation of the notion “investment attractiveness management” should be equated with the notion “investment potential”, which is characterised by a set of strategic prerequisites and factors for sustainable development of the enterprise, including by attracting external investments.

The prerequisite and key to effective management of the investment attractiveness of a business is its quality comprehensive assessment as an investment object. This approach allowed us to distinguish and apply methods of current, operational and prospective analysis and a way of responding

to “problem spots” using risk determination methods, in particular, the VaR method for determining currency risk and so on. The construction of an integral three-dimensional model of assessing investment attractiveness, taking into account the coefficients of the investment attractiveness of a business, enabled us to combine a comprehensive assessment of the enterprise and the market environment in which it operates.

The Ukrainian market for pesticides is dynamic and promising, which, according to experts’ predictions will increase by 17% and reach USD 960 million by 2020. According to the theory of industry markets, this market is oligopolistic: eight of its major players occupy 74% of the market. Understanding the fact that, in the context of oligopoly, the struggle for a market share is the core of competition, it seems obvious that in order to fully evaluate the investment potential of a business, it will be necessary to analyse the competitive environment (industry and competitors), as well as to predict the strategic behaviour of companies in this market. The main tools for analysing and forecasting should be the BCG matrix; McKinsey Multifactor Portfolio Matrix (GE/McKinsey); kinked

demand curve (Gutenberg diagram); game theory: Bertrand/Forheimer models (for pricing policy control) and Cournot/Stackelberg models (for sales volume control).

However, recent research in behavioural economics, including Richard H. Thaler (2018), as well as the work of Daniel Kahneman and Amos Tversky (1979), has shown that the market is no less dependent on the behaviour of its players, who are often irrational, than on the influence of fundamental economic factors.

As we can see, at the current stage of economic development, in order to achieve investment attractiveness and efficient management of the investment potential of the company, it is necessary to carry out a comprehensive analysis of it at micro, meso and macro levels using effective valuation tools and financing analysis. The result of such work should be a universal model for managing the investment attractiveness of the enterprise.

However, financing and investing, which are interconnected, have traditionally been implemented using two methods: the weighted average cost of marginal capital (WACC), that is, the cost of financing additionally required to implement the project, and the adjusted net present value, or APV.

A set of solved problems (systematic consideration of risk in the formation of financing structure, the possibility of balancing it, the mechanism to justify the acceptable level of risk, taking into account various factors that affect the choice of source of funding, a clear relationship between the capital structure of the project and its effectiveness, justification of the choice of discount rate, the possibility of using short- and long-term sources of funding, improving the methodology for calculating the APV performance index) altogether help to carry out the task of forming the optimal capital structure of the project, ensuring its high efficiency and security implementation on the one hand and high investment attractiveness on the other.

5. Conclusions

At the stage of determining the theoretical and methodological foundations of a company's investment attractiveness, it was found that, according to

the scientists, a company's investment attractiveness should be determined not only at the micro-level, but also at the level of the industry in which it operates. The investment attractiveness of the region and the country as a whole must also be taken into account.

In the first place, it was decided to evaluate the investment attractiveness at the macro-economic level by the indicators of socio-economic attractiveness, legal attractiveness and investment risks. Thus, it was established that in Ukraine, after a slight two-year decline of 3%, the indicators of socio-economic attractiveness began to grow. The level of ease of doing business increased. In 2018, Ukraine improved its position by 76 points and ranked 76th out of 191 countries, while the country's investment attractiveness index was 0.017. Therefore, we can conclude that the investment attractiveness of Ukraine is increasing, but there are still reasons that impede further positive dynamics.

To evaluate the investment attractiveness at the meso-level, we considered the indicators that determine the levels of prospects of the industry, the positioning of the enterprise in the industry market and investment sectoral risks. The study showed that the plant protection industry in which the company operates increased its volumes of sales by 26.72%. At the same time, the stable growth of the industry over the last years has been proven. According to the level of positioning of the enterprises participating in the sectoral market, 10 of the 100 enterprises operating in this market occupy 80% of the total market. The assessment of investment sectoral risks was conducted on the basis of an expert survey, according to which the index was 0.091. Thus, the investment attractiveness of the Ukrainian market for plant protection products was estimated at 0.412. Given the active development of farms in the country and the potential opening of the domestic land market, the investment attractiveness of the market will increase.

To assess the investment attractiveness of the enterprise at the micro level, the method of calculating the integral indicator was used. For this purpose, many indicators were formed, actual values of the indicators were determined, the indicators were normalised and weighted factors were singled out. Then the integral index of enterprise's investment attractiveness was calculated. An empirical evalu-

ation of the investment attractiveness of the enterprise was carried out based on the methodological toolkit of the principal component method. As a result, it was concluded that “Avgust-Ukraine” LLC has a significant need of investment capital to ensure its proper functioning and development. At the same time, the investment attractiveness of the company is optimally acceptable (at the level of 0.493). According to the data obtained, a graphical model of the enterprise’s investment attractiveness was devised, which was developed by the authors. This model is formed on the basis of three axes – one vertical and two horizontal. The vertical axis illustrates the investment attractiveness of “Avgust-Ukraine” LLC (0.493), while the horizontal axes define the indices of the investment attractiveness of the industry (0.468) and the country (0.325) in which the enterprise operates. According to the data obtained, at the beginning of 2019, the level of the enterprise’s investment attractiveness was considered to be optimally acceptable. The results of the use of the author model confirm all the previous calculations, which indicate a high probability of its use for evaluating the investment attractiveness of other enterprises.

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