Method of choosing vectors for investment strategies implementation

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Abstract. Statement of the problem. In market conditions, the investment activity of enterprises requires diversification of objects and methods of investment. This helps to minimize investment risks, stabilize cash flows in space and time, as well as to increase the guarantee of successful implementation of investment to the entities, which take indirect participation in investment processes. The problem consists in the absence of scientifically grounded methodological regulations regarding the selection of methods of the investment strategies implementation. Consequently, most of the investment decisions are based on an intuitive approach which reduces the possibility of opportuneness and completion in the implementation of purposes established by investors'.

Key words: strategies, investment strategies.

SOURCE MATERIALS AND METHODS

Implementation of a specific investment strategy by an industrial enterprise requires a critical analysis of alternative investment projects as for their compliance with the chosen strategy. In scientific literature there are quite a few works devoted to project analysis [1, 2, 4, 6, 7, 8]. Almost in all of them, however, methods of identifying comparative advantages of some projects are described in comparison to others. The existing methodological recommendations are not sufficiently informative for a scientifically-grounded choice of implementing investment strategies selected by a particular enterprise. Formation of the list of investment projects which a company may implement, is the result of accumulating the information about the possibility of obtaining economic benefits, certain competitive advantages in comparison with other enterprises, as a result of investing. In transfer networks the information about numerous investment projects is public. All these projects are supplied with technical-economic substantiation of their implementation effectiveness; still, many projects do not find their investors. The reason is that the goals of these projects are not always compatible with the characteristics of the investing strategies selected by industrial enterprises. In this case, by characteristics of investment strategies we mean long-term investment goals and criteria of their realization. Hence, analysing alternative investment projects while choosing implementation vectors of selected investment strategy requires ivestigation of compatibility of investment projects purposes with the characteristics of the investment strategy chosen by an enterprise. Fig. 1 shows the stages of analysing alternative investment projects in the process of choosing implementation vectors of a selected investment strategy. \

Studies have shown that this task can be carried out through analysis of the period of investment projects implementation, the sphere of their performance, the economy sector, the number of subjects involved in the implementation of projects, etc. When a set of projects matching the characteristics of the selected investment strategy is formed the next step of analysis (see Fig. 1) comes – verification of investment projects for their profitability and risk. Verification of the investment projects optimality in the context of these indicators can be performed according to the criterion of Wald (the best of alternatives is the one with the highest pessimistic evaluation), the maximum optimistic criterion (the best alternative is the one with the highest optimistic evaluation), the Hurwitz criterion (the best alternative is the one in the middle between the optimistic and pessimistic estimates), the criterion of Laplace (the best alternative is the one characterized by the highest arithmetic mean evaluation), the Baiyes-Laplace criterion (the best alternative is the alternative with the highest averagely evaluated arithmetic evaluation), the criterion of the Hodges-Lehmann (optimal alternative is the one that satisfies the maximum optimistic criterion, as well as the Baiyes-Laplace criterion).
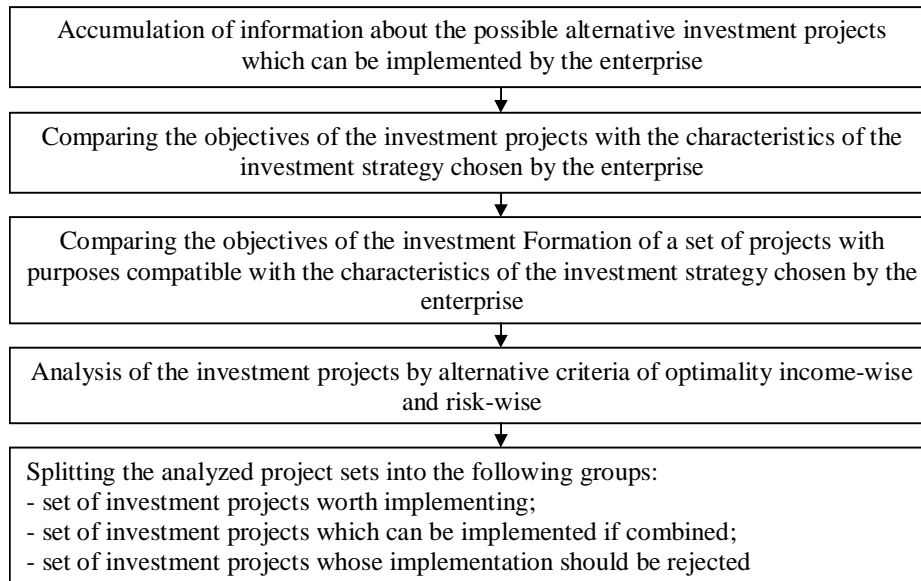
Accumulation of information about the possible alternative investment projects which can be implemented by the enterprise

Comparing the objectives of the investment projects with the characteristics of the investment strategy chosen by the enterprise

Comparing the objectives of the investment Formation of a set of projects with purposes compatible with the characteristics of the investment strategy chosen by the enterprise

Analysis of the investment projects by alternative criteria of optimality income-wise and risk-wise

Splitting the analyzed project sets into the following groups: - set of investment projects worth implementing; - set of investment projects which can be implemented if combined; - set of investment projects whose implementation should be rejected

Fig. 1. Stages of analyzing alternative investment projects during the selection of vectors for implementation of a selected investment strategy
Notes: elaborated by the authors

As a result of investment projects analysis by alternative criteria of their income and risk optimality, they can be split into three groups – with low, average and high risk levels, as well as into three other groups –with low, average and high levels of profitability. Since the general number of criteria is 6 the high level of optimality takes place when a project meets from 4 to 6 criteria. If an investment project meets from 0 to 2 criteria, this indicates the low level of optimality. In other cases the investment project is characterized by the average level of optimality. Fig. 2 and 3 show the chart of possible investment projects allocation into these groups.

As can be seen from Fig. 2 and 3, the project I1 is acceptable for implementation since $I_a \in f(R_1; P_2)$. The Project $I_d \in f(R_3; P_1)$ is expedient for rejection. The decision on the implementation of other investment projects $I_b \in f(R_2; P_2)$ and $I_c \in f(R_2; P_3)$ can be made only if we merge these projects into one and thus provide the required level of profitability and risk.

Notation conventions: Ii - investment projects; Ri - level of risk of i-investment project; R1 - low level of risk of the investment project; R2 – average level of risk of i-investment project; R3 - high level of risk of i-investment project.

As a result of comparing investment projects by their levels of income and risk, three groups of sets have been formed. The first of them is the consequence of applying a selection scheme:

$$\forall \mathbf{U} I_n \exists \mathbf{U} I_i \forall I_d \left(I_d \in \mathbf{U} I_i \Leftrightarrow I_d \in \mathbf{U} I_n \wedge F(I_d) \right),$$

$$\mathbf{U} I_n = I_a \cup I_b \cup I_c,$$

where: $\mathbf{U} I_n$ is the merging of the sets of investment projects which are acceptable for implementation, under certain conditions; $F(I_d)$ set-singleton which represents

an investment project which, due to the criteria of risk and profitability, should be rejected.

Merging of the sets of investment projects:

$$\mathbf{U} I_n \supset \begin{cases} I_a \in f(R_1; P_2), \\ I_b \in f(R_2; P_2), \\ I_c \in f(R_2; P_3). \end{cases}$$

Includes the project I_a, which, under the minimum level risk, can provide an average level of profitability of investments; and the projects $I_b \wedge I_c$, which are acceptable only by one of the two criteria.

The studies suggest that in case if an enterprise implements its investment strategy only in the financial sector, i.e. investment projects mean investing only into corporate, debt and derivative securities, and into currency and banking metals, the most widely spread solution is to form investment portfolios of the balanced type. Such portfolios embrace investing into investment objects that have different, often opposite assessments of profitability and risk. The purpose of their formation is levelling the influence of subjective, economically unsound investment decisions on the state of the investment portfolio of an enterprise in general.

The empirical data indicate that in case of the formation of investment portfolio of the projects for investing into objects of the real sector of economy, the decision to merge two or more projects into one are less common. Such decisions require flexibility of investors, recipients and participants of investment activity. First of all, we are talking about the complexity of distributing property rights for the object of investment. Study of the materials of industrial enterprises which have experience in realization of joint investment projects indicates that the subjects of investment often have different visions on the content and the amount of work to be done to ensure
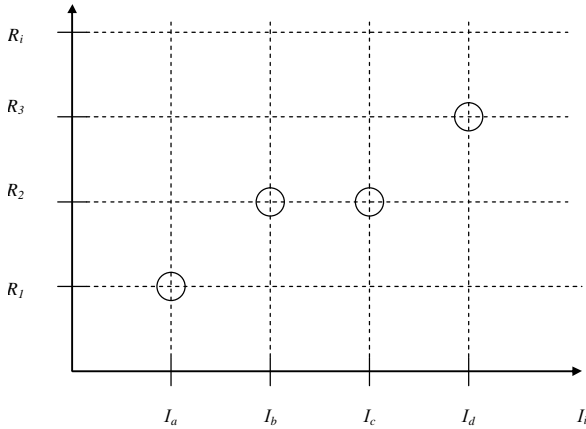
Fig. 2. Chart of the investment project risk
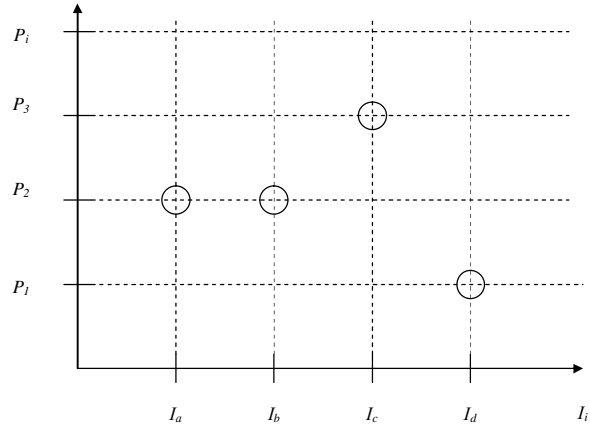*Notes: elaborated by the authors*

Fig. 3. Chart of the profitability of investment projects
Notes: elaborated by the authors
Notation conventions: Ii - investment projects; Pi – the level of profitability of the i - investment project; P1 - low level of profitability of the investment project; P2 – average level of profitability of the investment project; P3 - high level of profitability of the investment project.
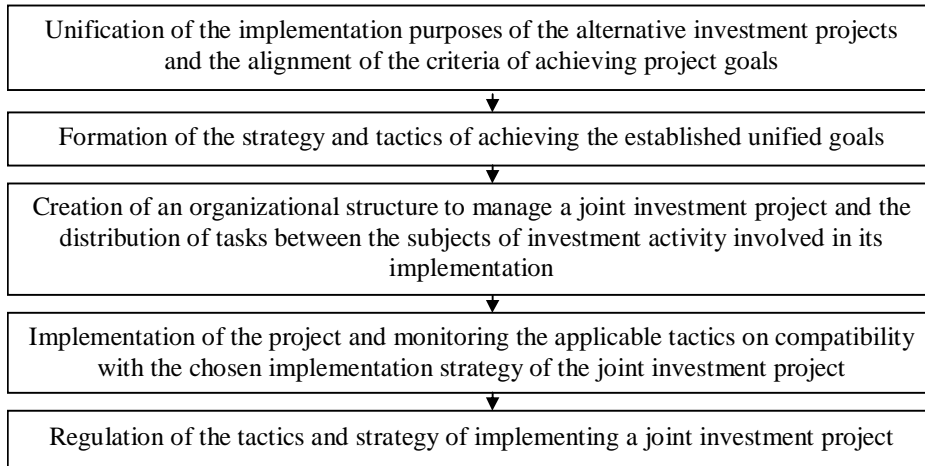

Unification of the implementation purposes of the alternative investment projects and the alignment of the criteria of achieving project goals
Formation of the strategy and tactics of achieving the established unified goals
Creation of an organizational structure to manage a joint investment project and the distribution of tasks between the subjects of investment activity involved in its implementation
Implementation of the project and monitoring the applicable tactics on compatibility with the chosen implementation strategy of the joint investment project
Regulation of the tactics and strategy of implementing a joint investment project

Fig. 4. The sequence of stages of merging two or more investment projects into one
Notes: elaborated by the authors

success of an investment project. They assess the scope of required investments and their payback periods differently. One of the technologies of merging two or more investment projects into one is via gaining membership in a social association of mutual investment and joint implementation of investment projects – GIG MS Corporation. Due to the construction of the «Bank of ideas», the participants of the association get an opportunity to accelerate the process of investment project improvement and to facilitate the search of business partners.

Mainly the scheme of merging two or more investment projects into one covers the stages presented in Fig. 4.

From the position of sets' theory the components $\mathbf{U}I_n$ relate to each other in the following way:

$$\mathbf{U}I_n = I_a \cup I_b \cup I_c,$$
$$a \in \mathbf{U}I_n \Leftrightarrow \exists I_a \in \mathbf{U}I_n, a \in I_a,$$
$$b \in \mathbf{U}I_n \Leftrightarrow \exists I_b \in \mathbf{U}I_n, b \in I_b,$$
$$c \in \mathbf{U}I_n \Leftrightarrow \exists I_c \in \mathbf{U}I_n, c \in I_c,$$

where: a – the element of set-singleton I_a; b – the element of set-singleton I_b; c – the element of set-singleton I_c.

Taking into account the fact that the investment project I_a, being characterized by the acceptable values of profitability and risk; might be implemented by a company at once, while investment projects $I_b \wedge I_c$ require further improvement, it is reasonable to distinguish two subsets in the $\mathbf{U}I_n$ structure:

$$\mathbf{U}I_n \supset I_a \cup \mathbf{I}I_k,$$
$$\mathbf{I}I_k = I_b \cap I_c,$$
$$I_b \in \mathbf{U}I_n \Leftrightarrow \exists \mathbf{I}I_k \in \mathbf{U}I_n, I_b \in \mathbf{I}I_k,$$
$$I_c \in \mathbf{U}I_n \Leftrightarrow \exists \mathbf{I}I_k \in \mathbf{U}I_n, I_c \in \mathbf{I}I_k.$$

Intersection of sets indicates that these sets have common elements. That is,

$$I_b \cap I_c = \{x \mid x \in I_b \wedge x \in I_c\},$$

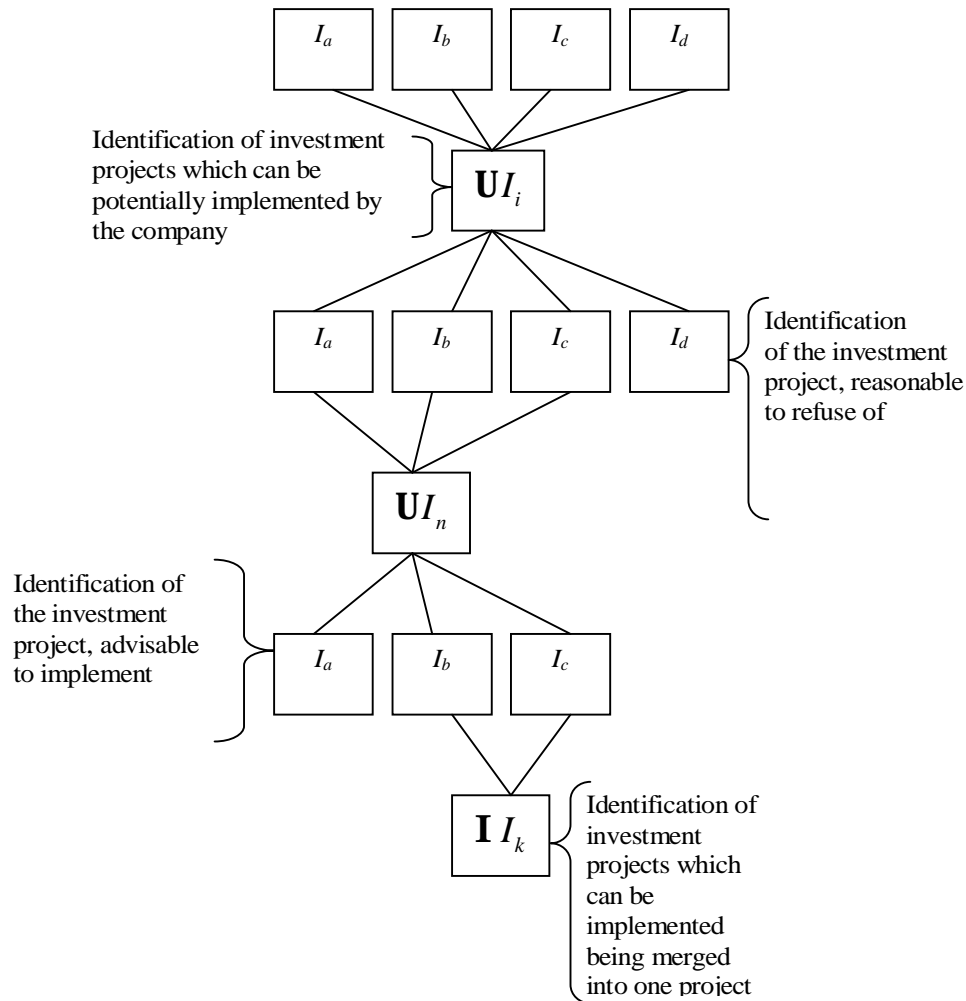where: x – the common element of sets $I_b \wedge I_c$.

Fig. 5. The results of the analysis of investment projects according to their profitability and risk
Notes: elaborated by the authors

Since we are talking about merging of two investment projects into one, the common elements of these projects may be the objects of investment, subjects of investment activity, expected effects of the implementation of the project, etc.

Fig. 5 shows a graphical representation of the investment project analysis results according to the criteria of profitability and risk. The presented decomposition of investment projects indicates that the unacceptable for implementation investment projects may be immediately rejected if they are not connected with the other alternative projects. The investment projects, whose purpose is compatible with the characteristics of investment strategy chosen by the enterprise, require further investigation on the possibility of obtaining the expected economic effects by various criteria of optimality in the context of identifying their profitability and risk. The process of merging two or more projects into one largely depends on the aptitude of investment activity subjects to risk, their mobility, that is, flexibility in decision making, as well as on objective factors, i.e. technological complexity of the projects' merging, geographical remoteness of investment objects (enterprises-recipients), and the compatibility of the project ideas, etc.

The method of choosing vectors of the investment strategies implementation is designed for industrial enterprises which act as investors. The projects they have started are the expression of the selected investment strategy implementation. Application of the proposed method by the heads of industrial enterprises-investors will help to avoid contradictions between strategic goals of an enterprise and objectives for the implementation of individual investment projects; raise awareness of project analysis; advance arguments for the election of the best investment projects of a number of alternative projects; deepen analysis of the factors influencing the efficiency of realization of the investment strategy; optimize the conditions for implementing those investment projects, which, according to certain criteria, are unacceptable for implementation.

RESULTS AND DISCUSSION

Investment activity, like any other economic activity, is carried out under the influence of individual,

collective or public initiatives. The basis for these initiatives are individual, collective or public needs, namely the achievement of a certain level of material prosperity, security, comfort, etc. Despite the idea that encourages investment activity subjects to invest and the kind of effects expected from the creation or acquisition of certain assets, management investment decisions are deeply subjective. The subjectivism of investment activity is that at each stage of the investment process particular people or groups of people are taking appropriate decisions based on their awareness about the investment conditions, their own experience, level of professional training, interest in the outcome of investment, relations with the recipients etc. Despite a considerable interest of scientists in the problems of investment activity, as for today, there are no software products and automated systems of making management investment decisions based on economic-mathematical apparatus which would not necessitate human participation. It is a natural phenomenon because the factors that determine the feasibility and effectiveness of an investment are largely beyond the objective laws and are based on the emotional and psychological effects. It is well known that the nature of the formation and development of these impacts practically cannot be formalized and explained by the rules of logic.

With this taken into account, the subjectivity of investment activity, in particular formation of investment strategy of the enterprises is one of the most essential features, which, on the one hand, determines their economic efficiency and, on the other hand, appears to be a problem. The subjectivity of forming investment activity strategies is the main source of risks connected with obtaining the expected economic effects by investors. Regarding other problems of investment activity, in particular the problems of ensuring the economic efficiency of any vector of implementing the existing strategies of investment, there are the following ones: adverse investment climate; low level of development of market infrastructure; uncertain priorities of the state in the investment activity; high levels of corruption and weak public control over the official public structures etc. Economic efficiency of the strategies of investing into enterprises, as a criterion for selecting a possible investment strategy, also depends on the low level of market infrastructure development, i.e. communications, systems and organizations that create opportunities for legitimate and safe interaction of investors and recipients. In the market conditions the important infrastructure elements for investors are the presence and the development of financial organizations and organized financial markets; communication sys-tems; transport communications.

In Ukraine the equity of financial institutions, if compared to other countries of Eastern Europe, is very low. This fact to some extent hinders the promotion of entrepreneurial and investment activities and does not allow businesses to rely on the market of credit resources in case of critical phenomena. In addition, the level of competition among the local financial institutions is too low to intensify the efforts of participants of financial markets to introduce some innovations for improving the quality and reducing the cost of customer service.

The undeveloped national stock and currency markets act as ballast for the national economy in the period of global economic-financial crises. Locality of our financial markets, passiveness of the integration of the stock exchange development into the world market, together with the currency restrictions introduced by the NBU, protect the national currency and assets of local enterprises from the world speculative capital. On the other hand, however, national enterprises as subjects of investment activity, compared with foreign companies, have far more limited opportunities for the implementation of investment activity strategies. They are not able to accumulate investment resources on financial markets regularly in large amounts and get capital gains from the growth of their market value.

Concerning the activities of venture investment funds, according to the experts of the Ukrainian Association of investment business, they are relatively new for the Ukrainian investment business and became possible after the adoption of the Law of Ukraine "About the Joint Investment Institutions" [10]. Prior the appearance of the mentioned law there were investment and mutual funds in the country since mid 1990's. They were being created in order to ensure the processes of mass privatization. Among them one can mention Western NIS Enterprise Fund, Sigma Blazer, direct investment Fund «Ukraine». In addition, there functioned such funds and venture investment companies as Black Sea Fund, "Euro ventures Ukraine" company, "Ineko" company, Fund "Dnipro". By 2003 the number of such funds decreased three times from 329 to 129, and those remaining had to be liquidated or reorganised in accordance with the Law. In December 2005, the company Draper Fisher Jurvetson (DFJ), composed of 20 funds with a combined investment capital of over $ 3 billion, opened a technological venture Fund DFJ Nexus in Ukraine. In the next 10 years the Fund plans to raise from 50 up to 100 million dollars for the development of high-tech companies in the former USSR countries. A large number of participants of venture investment companies market in 2005 made market concentration among companies impossible: none of the companies owns more than 10% of the market of venture joint investment institutions [3].

In Ukraine the venture capital market is about $ 400 million (its potential by the data of some companies reaches 800 billion dollars.) and consists of no more than ten working companies. Among them one should mention Western NIS Enterprise Fund (capital of $ 150 million, given by the U.S. government for the development of

food industry, agriculture, production of construction materials, and financial sector of Ukraine), Sigma Blazer (capital of $ 100 million). For comparison, in Russia the scope of venture capital reaches more than $ 5 billion, and in the United States, just several decades ago, venture capital market was more than 70 billion USD. To promote the development of venture capital organizations in Ukraine and empower enterprises for investment strategies implementation on the basis of attracting venture capital, it is necessary, first of all, to develop national legislation, namely, to adopt the Law of Ukraine «About venture capital activity in the innovation sphere». This would be the basis for formation of a number of special legal acts which would describe the procedure of venture capital organizations functioning.

As for the communication and information systems, the level of their development in Ukraine is also one of the barriers to the economically effective imple-mentation of investment strategies since, in comparison with foreign markets, in Ukraine these systems are on the primary stage of development. Under such systems are meant primarily Ukrainian technology transfer network (UTTN); national technology transfer network (NTTN); Alt business education, etc. Their purpose is to provide communication between investors, recipients and other subjects of investment activity in supply and demand for investment resources, final products, raw materials and stuff; possible effects of the implementation of specific investment projects and resources needed for their implementation; level of reliability of investment into specific assets and guarantees of return of the invested money within a particular period of time. Foreign analogues of these systems which have acquired a great applied importance in the market of investment resources accumulation are EBN, IRC, IRE, TII, ASTP, etc.

These and other systems are easily accessible by users and highly integrated into international payment and trading systems, such as Cyber Plat, Cyber Check, Cyber POS, ASSIST, Instant, Pay Cash, Web Money Transfer, EACCESS, e-gold, PayPal, stock exchange model of B2B company, advertising model of B2B company, business models B2C, C2C, C2B, B2A, C2A, B2G, G2G, G2C, etc. The weak side of the national communication and information systems is that they cover the national market fragmentarily, do not ensure integrity of the internal Ukrainian information space. Business companies, educational and scientific institutions are poorly informed about their functions and features of functioning. The level of transport communication development is also important for a good choice and successful investment strategies implementation. It is important for the direct invest-ments realization by foreign investors who make their investments by importing production equipment. Transport communications mean transport routes of appropriate quality, service infrastructure of roads, the

equipment of the roads by telephone communications, as well as the availability of appropriate conditions for safe cargo transportation. Unfortunately, today even the international transit highways of Ukraine do not satisfy average European requirements. Representatives of foreign companies, who import the basic means as their share in the statutory funds of enterprises of Ukraine, argue that no matter which way the equipment is imported from the border to the enterprise-recipient, the transportation risk is very high because the conditions of highway transportation from railway stations, airports or sea ports are equally unsatisfactory, no matter how close or far the enterprise-recipient is from regional centres and even the capital of the country. Taking this into account, it is necessary to form a national program for constructing and reconstructing the highways to improve transport communications. Local and foreign companies should be engaged in the development, implementation and financing of this program on tender conditions. Obviously, that this task can be fully performed, with the involvement of foreign investors, only when the foreigners are able to become land owners in Ukraine.

The achievement of economic efficiency in the investment strategies implementation is additionally complicated by a high level of corruption among state officials and weakness of public control over their actions. A group of countries-members of the Council of Europe anti-Corruption Group (GRECO) stated that the level of corruption in Ukraine may become a threat to the principles of democracy in the country. According to GRECO, Ukraine is heavily affected by corruption, and this problem is systematic and widespread. The entire Ukrainian society is disposed to corruption. GRECO recommends Ukraine to establish a special body that would be responsible for implementing anti-corruption strategy in the country. Also GRECO advises to create an action plan consisting of almost thirty points, to take a number of other important measures [11]. According to the human rights organization Transparency International, Ukraine is heading the list of the most corrupt countries in the world [10]. Concerning public control, its level in Ukraine is really low. Its objects, as stated by the public organization «OPORA», should be: «...the activity of state and local self-government institutions and their employees of different positions. Government authorities, as a rule, have a wide interpretation: they are not only those state institutions that have the authority but also any organization, institution or enterprise financed from the state budget, » i.e. under public control one should understand «... public inspection of the state activities from the side of society regarding their compliance with the declared objectives; correction of this activity and its very objectives; relevance of state policy, activities of state bodies and their officials to the interests of society, as well as public monitoring of the activities of state and local self-government bodies, aimed at protecting and

ensuring rights and legitimate interests of a human, his/her fundamental freedoms and respect to them...» [5].

In Ukraine there is no Law «About public control», thus the implementation of effective mechanisms of public protection of rights of investment activity subjects at all stages of formation and realization of investment strategies is made almost impossible. Having such a law adopted would significantly intensify the processes of civil society formation in Ukraine and strengthen public influence on the officials, in particular in the sphere of investment activity regulation.

In general, the problem of ensuring economic efficiency of selection and implementation of investment strategies lies in the subjectivity of investment activity subjects in their formation and management of investment decisions, as well as in the irrationality of the influence of the state, as a subject of investment activity management, on creation of favouring conditions for accumulation of investment resources and their economically effective use.

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