

IMPROVEMENT OF THE METHODOLOGICAL APPROACH TO INVESTMENT PROJECTS' EVALUATION AMID DEVELOPMENT OF MARKET RELATIONS

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Abstract: The factors effecting evaluation of industrial enterprises' business plan risks have been defined. Types of risks, their characteristics and insurance forms have been studied amid current business environment. It has been pointed out that the criteria themselves are not enough to accept a project by an industrial enterprise. It has been proved that project's decision making has to meet all the criteria and stakeholders' interests of an investment project. The criteria based on value changes over time, which can be taken into account when evaluating comparable amounts of money separated by time, have been suggested.

KEYWORDS. RISKS, VALUE, EFFICIENCY, INVESTMENT PROJECT, CRITERIA, INDEXES, RESULTS, INVESTOR, FACTORS, PRINCIPLES, EXPEDIENCY.

Definition of the problem. In the project management process a significant role is played by methods, since they are applied to assess risks and threats of the environment, determine the project duration, main purpose, goals and objectives, create a project team, estimate funds, determine the volume of financial resources needed, estimate costs, generate the project budget, monitor and evaluate the effectiveness of the implemented project, make management decisions, sign contracts with suppliers. Thus, the process of organization of the project management system depends on the rational use of management methods.

Each management system should be based on the following principles: reduction of risks; increase in revenues; creation of conditions for achieving the desired result; costs evaluation and reduction; project adjustment and modification; balanced management decision-making; consideration of corporate strategy; adaptation to the environment variability; compliance of the project objectives with the enterprise's objectives; assessment of efficiency of investment project management; monitoring results.

Presentation of key topics. An enterprise in any form is related to risk. A risk is a danger of potential loss of resources or

receiving lower profits comparatively with the forecast variant. In investment activity a risk question is crucial. It is caused, at first, by considerable duration of an investment cycle from the moment of money investing the moment of their returning. On a long run it is difficult to forecast results, because different external factors can influence them: economic, political, social, ecological and other. Investing is related to allocating large amounts of money, material resources the ineffective use of which can negatively affect the financial state of an investor. Investing is carried out through the third persons (financial mediators), that is why an investor, as a rule, does not have the real opportunity to control the use of the invested means, to promptly interfere in a productive process and so on.

Taking into account all the above stated it is very important to correctly estimate and analyze possible risks, educe directions of their avoidance and insurance in the process of development of investment business plan.

Estimating risks in a business plan is possible by means of determination of factors, presented in Table 1.

Table 1: Types of risks and form of their insurance

Type of risk	Risk level	Form of insurance of risk
Delay of the beginning of realization of an investment project (absence of license, project estimation documentation, lot land and so on)	Risk free investments	Development of effective prophylactic measures with the purpose of risks warning
Ill-timed completion of building (to determine reasons)	Possible	Creation of insurance (reserve) funds for losses coverage
The considerable exceeding of cost comparatively with project estimation documentation	Critical	Clear determination of duties and responsibilities of all participants of investment project, distribution of losses between them
A risk of not gaining project power in set terms	Catastrophic	Obtaining of certain guarantees from authorities
Risk of loss of sales market (decrease in demand, high level of competition)		External insurance against certain risks in insurance companies
Decline of the planned level of net income (increase of level of expenses, decline of standard of prices, change of tax law)		

Determining the type of risk it is necessary to estimate its level and influence on general results. It is difficult to find risk free investments in our country because not only economic but also political, social, ecological and other factors influence the risk level.

Investments with accepted risk level are those investments, which create the possibility to lose all net income on this investment project.

The criterion of critical level of risk is the possibility of losing of not only profit but of the whole yield. It means that it is impossible to take an investment project to implementation, if there can be the loss of profit in one of 10 cases, the loss of gross income in one of 100, and the loss of all invested property in one of 1000 cases.

Depending on the level of risk it is necessary to foresee measures of insurance against it (see table 1). Developing an investment business plan, the so-called bonus for a risk is to be set.

It is an original additional profit which is required by an investor for the risk. This profit margin is to increase proportionally to the increase of risks on a certain investment project.

General income (profit) on an investment project taking into account the level of its systematic risk is possible to be calculated according to the formula

$$P_g = P_{rf} + (P_a - P_{rf}) \beta \quad (1)$$

where P_{rf} is a level of profit from risk free investments;

P_a is an average level of profit at the investment market;

β is a beta-coefficient which characterizes the level of systematic risk from this investment project [1, c.101; 2, c. 105; 3, c. 136].

The economic analysis of efficiency of an investment project presupposes studying indexes which represent the correlation of expenses and profits in accordance with interests of

its participants. The following indexes of efficiency of an investment project are differentiated:

- indexes of financial efficiency, which take into account the financial consequences of a project for its direct participants;
- indexes of budgetary efficiency, which depict the financial consequences of a project for the state, regional or local budget;
- indexes of economic efficiency, which take into account expenses and results of a project that are of indirect financial interests for participants [4, c. 178].

The expenses of participants of an investment project are subdivided into primary (capital forming investments), current and liquidation, which are carried out accordingly on the stages of building, functioning and liquidation.

The estimation of future expenses and results when determining the efficiency of an investment project is carried out within the limits of calculation of the period the duration of which considers:

- the duration of creation, exploitation and (if necessary) liquidation of an object;
- average weighted normative period of employment of basic technological equipment;
- achievement of the set income (masses and / or norms of income, et cetera);
- requirements of an investor [5, c. 195; 6, c. 52; 7, c. 101].

The horizon of calculation is measured by the amount of steps of calculation. The step of calculation when determining the indexes of efficiency within the limits of calculation period are the following: month, quarter or year.

Comparison of different investment projects (or alternative designs) and the choice of the best are recommended to do with the use of different indexes, some of them being the following: net market value; term of recoupment; profit margin of a project; internal norm of profitability; return on funds of a project.

The use of indexes for comparison of different investment projects (alternate designs) is possible if they are brought to the comparable kind.

Besides the criteria listed above in a number of cases it is possible to use some other: integral efficiency of expenses, threshold of break-even, simple norm of income.

None of the transferred criteria is insufficient for the acceptance of a project. The decision about the acceptance of a project must be made taking into account the values of all transferred criteria and interests of all participants of an investment project.

The necessary criterion of acceptance of an investment project is positive balance of the accumulated real money at any period, where a participant of an investment process carries out expenses or gets profits. The negative balance of the accumulated real money testifies the necessity of attracting of additional own or loan funds and reflection of these means for efficiency calculations.

The most difficult stage of an investment analysis is calculation of the flow and balance of the real money. They must be formed in the way that the balance of the accumulated real money is positive.

An important role in estimation of efficiency of an investment project is played by the change of money value in time and other factors. Some of these factors are subject only to content (but not formal) analysis.

Planning of investments, determination of their expediency, profitability is always forecasting of future profits and expenses that is money streams. When estimating the compared in time volumes of money, it is necessary to take into account the change of their value.

In general the changed in time money value is determined according to the formula:

$$F_t = P(1 + r)^t \quad (2)$$

where F_t , P is money value accordingly in the future and today;

$(1 + r)^t$ is a coefficient of compounding;

r is an annual bank rate;

t is a number of year (beginning from the next), which corresponds to value P [8, c. 164; 9, c. 253; 10, c. 297].

Such transition from the evaluation of current money value to their future value is called compounding.

The reverse process of getting the market value of the future money is referred to as discounting.

The general formula of bringing the money of future period (F_t) to the equivalent amount of current year (P) is the following:

$$P = F_t / (1 + r)^t \quad (3)$$

where r is a rate of discount;

$1/(1+r)^t$ is a discount factor [11, c. 77; 12, c. 765; 13, c. 94].

If the level r is forecast variously for different years, the formula of bringing the money of future period to the equivalent amount of current year is the following:

$$P = F_t / \{(1 + r_1)(1 + r_2) \dots (1 + r_t)\} \quad (4)$$

The basic principle of evaluation of efficiency of investments is comparison of profits and expenses. When reasoning the economic efficiency of investment projects, the complex of indexes representing different aspects of the already noted principle and enable to estimate expediency of investments is applied.

From positions of expert estimation the realization of an investment project can be presented by two interdependent processes: money investing in a project; getting profits from the invested means.

Thus the direct object of the financial analysis and determination of economic efficiency of an investment project are direct financial flows (so-called cash flow). When calculating direct financial flows it is worth considering the fundamental difference of concepts of inflows and outflows of the real money from the concepts of profits and expenses. There are certain nominal money expenses, such as depreciation of assets, amortization of fixed assets, which diminish net profit, but does not influence the flows of real money, because nominal money expenses does not require money calculation.

All expenses are subtracted from profits and influence the amount of net income, but not at all expenses require real money calculation. Such expenses do not influence the flow of real money.

On the other hand, not all cash disbursements (which influence the flow of real money) are fixed as expenses. For example, the purchase of inventory is considered the outflow of real money, but not an expense.

To set the order of calculation of financial flows and their indexes we will enter conditional denotations:

P is a volume of cash from economic activity of an object of investments after its introduction to exploitation;

B_i is a volume of investments which are needed for introduction of an object to exploitation (investment expenses);

B_e is a volume of current expenses of an operating object, necessary for production of commodities or services, produced by the created object (operating expenses);

A_t is depreciation of capital assets, created due to investments accrued for a year;

T is years of life of a project (exploitation of an object and profits from investments);

t is an index (number) of every year of exploitation of an object

$t = 1, 2, \dots, T$.

A net present value (NPV) is an amount of annual profits without expenses. The net present value NPV is calculated at the set norm of discounting (coercion) according to the formula:

$$NPV = \sum_{t=1}^T \{(P_t - B_{it} - B_{et}) / (1 + r)^t\} \quad (5)$$

An economic content of the rate of discounting is as following: its value is the minimum acceptable to the investor standard of yield on a capital (as a rule, it is a rate of attraction of deposits in commercial banks) [13, c. 96].

NPV is to exceed 0 for a project to be accepted. If NPV of an investment project is positive, a project is effective (at this norm of discount) and can be accepted. The higher NPV is the more effective the project is. If an investment project is carried out at negative NPV, an investor will sustain loss, that is a project is ineffective.

The term of recoupment of a project (T_k) determines the number of years for which the general income will equal the investments. Its equals the following value of t ($T_k=1$):

$$B_i = \sum_{t=1}^{T_k} \left\{ (P_t - B_{et}) / (1+r)^t \right\}. \quad (6)$$

A term of recoupment must be less than the general term of life of a project: $T_k < T$. T_k - a number of years, necessary for the income from investments to be equal to the volume of B_i ; r is an annual rate of discount, which is to be applied for yields of future periods to the conditions of current year; K is a coefficient of coercion [12, c. 767]:

$$K = 1 / (1+r)^t. \quad (7)$$

Results and expenses, related to a project are to be calculated with or without discounting. Accordingly, there are two different terms of recoupment. The term of recoupment is recommended to be determined with the use of discounting.

The margin of profit of a project (g) is calculated as correlation of net present value of profits for period of life of a project to the volume of capital investments. The projects which margin of profit exceeds 1 are recommended for realization. The profit margin of settles accounts after a is calculated according to the formula:

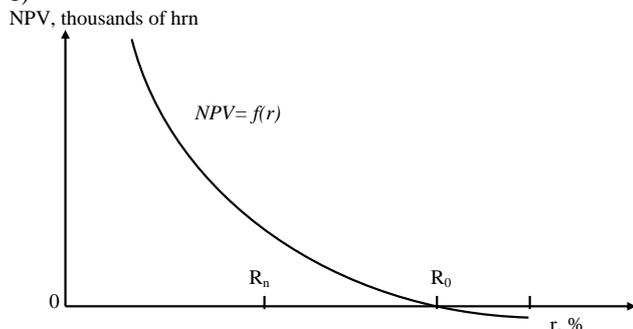
$$g = \frac{\sum_{t=1}^T \left\{ (P_t - B_{et}) / (1+r)^t \right\}}{\sum_{t=1}^T \left\{ B_{it} / (1+r)^t \right\}}. \quad (8)$$

The internal norm of profitability of a project (R) is determined as a level of a rate of discounting (r) at which the net present value of a project (for the whole life cycle) equals zero, that is

$$NPV = \sum_{t=1}^T \left\{ (P_t - B_{it} - B_{et}) / (1+R)^t \right\} = 0 \quad (9)$$

An internal norm of profitability is a limit, below which a project gives negative general profitability. The value of R calculated for a project must be compared to its normative level for similar projects. If $R > R_n$, a project can be accepted, if $R < R_n$, a project is rejected.

The value of R is calculated by the method of selection and verification of successive values of expression of r ($r > R_n$) with the use of the computer programs or graphic method of construction of function of dependence between NPV and r (Picture 1)



Picture 1 Dependence between NPV and r .

For every project depending on the criteria used by experts, the level of R_n can be different depending on a macroeconomic situation in a country, level of risks in a region,

industry, project, average profitability of an enterprise-investor, cost of its capital, correlation of the borrowed and own capital and other reasons.

If the calculation of NPV of an investment project gives an answer to the question about project effectiveness at a set norm of discount, R of a project is determined in the process of calculation and then compared to the norm of yield on the invested capital.

In the case when NPV is equal or more than the necessary for an investor norm of yield on a capital, investments in this investment project are justified. In the other case investment in this project is inadvisable. If comparisons of alternative (mutually exclusive) investment projects (alternate designs) for NPV and R result in opposite results, the value of R is of higher priority [13, c. 113].

The value of return on funds of a project (f) is calculated as a relation of average annual income for the life of a project to the average annual remaining cost of investments for the same period taking into account their annual wear:

$$f = \frac{\sum_{t=1}^T \left\{ (P_t - B_{et}) / T \right\}}{\sum_{t=1}^T \left\{ (B_{it} - A_t) / T \right\}}. \quad (10)$$

This index determines the level of average return (income) from every cash unit of the used investment money.

As far as a foreign investor the calculations of flow of real money are conducted only in currency of the corresponding country, with transferring in the dollars of the USA or Euros. For additional confirmation of economic efficiency of a project with foreign participation it is recommended to compare it to the similar project which presupposes the Ukrainian participants only. The comparison of different investment options, reasoning of sizes and forms of foreign participation in a project is performed by the criterion of maximal economic effect for the economy of Ukraine.

An internal norm of profitability is a new and most difficult in calculations index. It characterizes the level of profitability of a certain investment project (in percents) in the form of a discount rate in amount at which a future volume of money flow is brought to the present value of the investments. In other words, the internal norm of profitability can be described as a discount rate at which the net brought profit over in the process of discounting will equal zero.

The index of the internal norm of profitability is used mainly for the comparative estimation of efficiency of investments. By comparison of two and more projects additional variant which provides the greatest level of profitability can be developed.

The indicative planning of building production is important for timely providing an investment process with necessary capacities of producers of material and technical resources and construction firms. That means that they forecast the development with the purpose of providing of implementation of the expected investments. The indicative plan of construction can presuppose the following indexes:

- volumes of construction and installation works at the estimate cost of state objects, including those, that are to be started in a planned period;

- an estimate cost of works which can be executed by contractors, economic or mixed methods;

- volumes of works which are financed by private investors, including possible introduction of these objects in a planned period;

- introduction in an action of capacities, including due to new construction, reconstruction, technical reequipment and expansion of production;

- introduction in an action of objects of social sphere including those which are financed by private investors.

Timely worked out and proclaimed by the Ministry of Economy plan of investing of the state will allow potential investors, state and private enterprises producing and supplying with material and technical resources for construction, project and

construction firms to study these indicators, determine their intentions of participating in competitions and tender auctions, and to form the portfolios of orders and conclude contractor treaties.

The title of a structure (object) determines main technical and economic indexes: capital investments and tasks of introduction of capacities and capital assets for the period of building with distribution for periods. Indexes of titles of structures are planned both for a customer and for a contractor, obligatory for ministries and other central and local authorities, enterprises, establishments, banks, which carry out support, financing and realization of construction project.

Titles are drawn up only for those structures, which have the ratified project estimation documentation by September, 1 of year which is preceded to the planned. Titles of starting structures, titles of transitional structure and internal titles are distinguished.

The order of production titles ratification is the following:

- the calculated estimate cost of 15 mln. hrn is ratified by the central organs authorities and regional state administrations and is agreed with the Department of economics of Ukraine;

- the calculated estimate cost up to 5 mln. hrn. is ratified by the top management of state enterprises agreed with the authorities of higher level.

Conclusions. In recent years there has been a rapid deterioration of enterprises' economic development, which affected crisis phenomena development in the country. It was caused by reduction in investment, increase in threats from external environment, lack of an effective mechanism and techniques of investment project management. Therefore, in order to improve the development of enterprises, organizations and banking institutions, the availability of an investment project management system, which will create opportunities for successful implementation of investment projects, is of crucial importance. There are different approaches to research of management systems, which have both advantages and disadvantages, but many problems remain unsolved, namely the issue of improving profitability, efficiency and timely consideration of market environment threats. Therefore, the problem of investment project management system at industrial enterprises is of relevance.

As well, the relevance of the given issue lies in the fact that not only do investment projects improve the country's economic and social development, they also increase export potential of enterprises and enable investors to identify investment areas with the view of attaining the objectives.

At the present stage of its development Ukraine's economy is experiencing essential changes: there is a decrease in net profits due to reduction in production volumes and sales, which ultimately affects enterprises' activities as well as circulating assets backing and results in employee layoff with the view of saving own funds. However, on the other hand, there are favourable conditions for development and implementation of investment projects aimed at enhancing financial activity of enterprises. In our opinion, the basic premise for regulating enterprises' development is implementation of investment projects, which enable efficient use of investments, growth of production and generation of competition. In addition, in recent years there has been a decrease in attracted investments due to aggravation of social, economic and political problems, shortcomings of the tax reform, increase in the tax burden and reduction of long-term loans. Therefore, there is a need to use investment projects not only for increasing revenues but also for introducing the latest equipment and modern technologies, promoting activities and development of industrial enterprises through making rational management and organizational decisions. Accordingly, the sustainability of the country's development in general as well as of regions and enterprises' development in particular depends on investment that is on investing processes. This is investment that allows us to introduce the latest technology and equipment, which increases productivity and provides a rise in production volumes and, as a result, more efficient development of enterprises. At the same time, the main purpose of investment is making profits and achieving the goal, therefore investors only allocate funds to promising companies, which possess a growth

potential. The relevance of this issue lies in the fact that not only do investment projects improve the country's economic and social development but also increase export potential of enterprises and enable investors to identify investment areas to achieve their goals.

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