KEY FACTORS OF PROJECT IMPLEMENTATION AND LOAN FINANCING

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ABSTRACT

In the context of rather compound conditions of implementation of a company's transport projects abroad due to objective reasons (problems with financing) and subjective reasons (isolationism, protectionism), particular attention should be paid to the analysis and structuring of those primary indicators on which it is necessary to rely during development of an investment model of a future transport construction project. The ratio of existing indicators, the influence of key factors on the investment process and its attractiveness for investors are shown. The author distinguishes positive and negative aspects of practices of funding large-scale and less significant transport projects, highlighting the possibilities of attracting funds from international financial organizations.

Keywords: transport construction, investment approaches, project implementation, financing, foreign investors, international financial organizations, risks, incentives, duration.

Background. *Making an investment decision on implementation of a transport project implies a complex process of exploring, analyzing, selecting and preliminary studying of the parameters of a potential project pool in order to get an idea of appropriateness and form of their implementation.*

Objective. *The objective of the author is to consider key factors affecting foreign project implementation and loan financing in the transport sphere of economics.*

Methods. *The author uses general economic and financial analytic methods, comparative analysis, graph construction, mathematical methods, tools of utility and game theory.*

Results.

1.

In his classic scientific work [1, 2], Albert O. Hirshman aggregates the entire array of transport infrastructure systems within the category of «social overhead capital» to compare it with the capital that is directly involved in industry during production of goods and services. The scientist determines it as «directly productive assets» [1] and indicates four differences that distinguish the first and the second:

- *social overhead capital is basic for a variety of economic activities;*
- *it is most often provided by the public sector or by publicly regulated private agencies;*
- *it cannot be imported;*
- *it concerns technically indivisible objects.*

A. Hirschman believes that the main task of investing in social overhead capital is to «ignite» «directly productive assets». Approval of projects of investment in transport infrastructure should be based not on immediate effects and results, but because they contribute to development of other types of investment [1].

Nevertheless, taking into account the significant indirect effects of such investments, they still have a significant payback period, even in the context of calculating the cumulative effect, which most often squares the overall economic effect of the project, making it possible to estimate its potential payback. Private business, without which transport construction is impossible in most countries with developed economies, has a need for optimization of all components of the project, minimization of potential risks, as well as for distribution of responsibilities with regard to obligations. Many authors paid attention to different aspects of that phenomenon [e.g. 3–4]. In this regard, considering the factors that will determine the behavior of a private investor or of most of the state-owned companies operating in foreign markets, it is necessary to begin with an analysis of risk factors.

Obviously, each business project, including those in the transport industry, contains a whole array of various risks that it is necessary to face: to accept and to bear, either to eliminate or minimize them. In this regard, the category «risk analysis» is an integral part of a business plan, of a primary exploration report, of an expert opinion on the project. The core meaning of the risks is associated with an instability factor, which might emerge at any stage of the project. Instability:

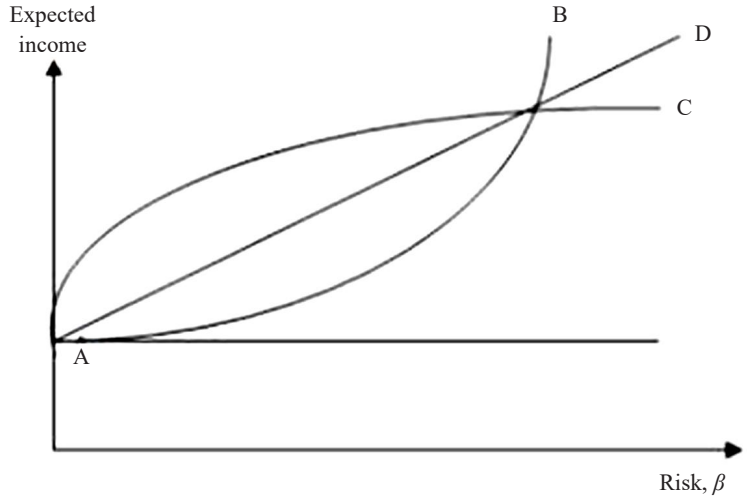
- *might lead to a loss of stability of investment activity of the entity, worsening the quantitative indicators that characterize it;*
- *modifies the structure and qualitative indicators of the subject of the investment activity;*
- *negatively affects the indicators of controllability of the subject of investment activity;*
- *«transforms the subjects of entrepreneurial activity into a new business structure (divides or liquidates it) according to the principles of self-organization» [5].*

Investment activity is directly influenced by uncertainty, instability and risks, which together form a broader category of entrepreneurial risks. Risk is understood as a degree of probability of losing part of the invested funds or of possible income. Entrepreneurial risk is of an objective nature due to volatility of environmental factors. From an economic point of view, entrepreneurial risk is an event that «can happen with some probability, resulting in three economic outcomes (estimated in economic, most often financial terms):

- *negative, i.e. damage, loss;*
- *positive, i.e. profit, win;*
- *zero (no damage, no gain)» [5].*

The fundamental risk for a foreign investor is investment risk. Scientific sources contain several approaches to its definition:

1. Simulation model of risk accounting (comprising models built with special software tools, e.g. [6]) is an adjustment of cash flow with further calculation of NPV to take into account all options (sensitivity detection). The methodology used in this case is as follows: each project assumes three-dimensional modeling – a pessimistic, probable, optimistic scenarios. For each option NPV is calculated. For each project, the NPV variation is calculated by the formula:



Pic. 1. Attitude towards the risk – curves of indifference.

$R(NPV) = NPV_0 - NPV_p$. A project with a large scale of variation is considered more risky.

2. The methodology for constructing a risk-free equivalent cash flow, which is based on ideas that have been developed in the framework of utility theory and game theory. «Considering cash flow of a risky project by elements, the investor is trying to estimate which guaranteed, i.e. risk-free amount he will need to be indifferent in future to the choice between this amount and expected, risky rate of a k-th element of the flow» [5]. Graphically, the attitude towards risk is expressed with the help of curves of indifference (Pic. 1).

3. The methodology of adjusting for the discount rate risk, that implies application of correction to the discount rate:

• the initial cost of capital CC (or WACC) is identified,

• a risk premium is determined for each of the projects ($r_{a, b}$),

• NPV (Net present value) is calculated using a discount rate: $r = CC + r_{a, b}$,

• the project with the largest NPV is determined as the most preferable.

The relationship between the discount rate and the risk is shown in Pic. 2.

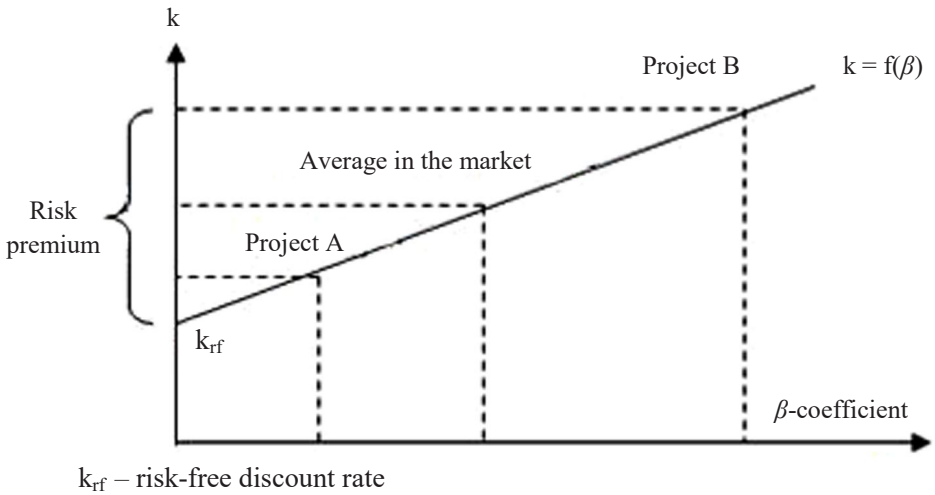
2.

Another rather important factor that influences the process of making an investment decision is the result of initial preliminary assessment of the project's prospects. Such an assessment is carried out in several stages:

• defining the objectives of the project and its mission;

• carrying out cost analysis;

• evaluation of investment effectiveness;



Pic. 2. The relationship between the discount rate and the risk.

• selection and adaptation of the funding strategy.

Assessment of investment performance indicators is based on a selected list of indicators, which include indicators of financial and economic assessment of investment performance, indicators of their social effectiveness, investment potential of the company and a risk assessment system [7].

The results of a dynamic and statistical assessment are of primary importance for foreign investors as they give most probable estimation of the prospects for return of invested capital.

In the context of statistical methods for assessing the effectiveness of investments in the project, the payback period is first of all allocated that is an indicator that allows calculating how long after the transfer of capital from the investor to the operator of the project the declared indicators and the transition to the phase of receiving profit will be reached most likely. The key drawback of this indicator is its abstraction from the time factor, which does not allow to distinguish between projects with the same income stream balance, but with its different distribution by years.

In this same row, an index of account rate of return, reflecting the profitability of the project, is singled out. This indicator is calculated by one of two methods:

• on the basis of the ratio of the average annual amount of profit (after deductions into the budget) to the average volume of investment ($ARR = P_r /(1/2) I_{av.0}$);

• through the ratio of the average annual profit to the average value of initial investment $ARR = P_r /I_0$.

Among dynamic estimation methods, the Net present value method is at the forefront. Its value is the difference between the discounted cash flows and the costs generated by the sample of investments planned for expenditure in the forecast period. The value of the method consists in presenting the relationship between the present value of future income and the necessary investment costs. The investment decision made on the basis of this approach presupposes its conditions:

• if $NPV > 0$, then the project has a potential and can be implemented;

• if $NPV < 0$, then it is worthwhile to refrain from implementing the project;

• if $NPV = 0$, then the project does not have an economic potential.

It should be noted that this approach has a number of shortcomings, primarily related to the complexity of forecasting the potential cash flow from invested capital. In addition, the problem of choosing a discount rate can lead to underestimation of the risk of the project.

Developing the topic of dynamic evaluation methodology, it should be noted that with its help, the investor gets an opportunity to assess not only the issue of return on investment, but also the economic effects from the project that can indirectly contribute to the profit with a deferred effect. In its essence, discounting is reduced to «bringing the different effects from the project to a certain point in time» [8]. In addition to the positive values of the discounted effect over the accounting period, the efficiency index also plays a significant role, that index being the ratio of the total discounted effect to the volume of invested funds. «To make a decision on project implementation, it is necessary that this indicator is less than one. The more it exceeds the level of one; the more effective is the project» [8].

The period of time for which the net cumulative discounted effect will have reached a positive value, forms another important element of the system that is payback period of the project. In general, time is a determinative factor both for the basis of the process and for the principle of discounting. This is explained by the fact that «as the absence of a temporary preference is impossible, and its infinite level is neither possible, then it is not possible that a person would prefer the most insignificant benefit at the present time to an arbitrarily valuable good in the future» [8]. Thus, the phenomenon of time is directly influenced by the effect of foresight. Under the influence of the time factor, a socially acceptable rate of temporary preference is also emerging, which directly affects the net interest rate. To sum up, the listed phenomena, as noted, lay the foundations for functioning of the very principle of discounting.

Along with the method of net discounted income, it is worthwhile to mention the investment profitability index. With its help, the level of income per unit of spent capital is determined. It is of particular importance during development of an investment portfolio in order to maximize the final indicator of the net present value. The decision on feasibility of investing in the project is made on the basis of the following assumptions:

• if $PI > 1$, the project can be accepted;

• if $PI < 1$, it is advisable to abandon the project;

• if $PI = 1$, the project has no economic potential, but it does not bear any losses.

3.

The key to any economic analysis of the potential investment attractiveness of the transport construction project is the internal rate of return. The internal rate of return reflects the maximum allowable relative level of costs that can be incurred in the project. It represents the interest rate at which the value of the total volume of the project's investment cash flows (net present value) is zero. The investor in this case has the opportunity to compensate for his initial investment costs.

Foreign investors often use this indicator as the first step in the process of quantitative analysis of their investments. Primary selection is carried out in respect to those investment projects in which the internal rate of return (IRR) is above the range of 10–20 %. A potential investor gets an understanding of advisability of investing funds, since otherwise deposit of capital in the bank with an interest rate will have greater economic viability.

In practice, the IRR value is compared with the set discount rate (r). If $IRR > r$, the project guarantees that NPV, as well as revenue, will be within the positive range. It is possible to calculate the internal rate of return as follows:

$$NPV = \sum_{i=0}^{n} \frac{CF_i}{(1+IRR)^i} - \sum_{i=0}^{n} \frac{CI_i}{(1+IRR)^i},$$

where CFi (Cash Flow) is cash flow in the time period i;

CI (Invest Capital) – investment costs of the project in the initial period (also a cash flow $CF_0 = IC$).

Another way to get IRR value is to calculate NPV at various levels r until NPV value becomes 0. Further, IRR value can be obtained from the formula:

$$IRR = r_a + (r_b - r_a)\frac{NPV_a}{NPV_a - NPV_b}.$$

In this case, it is necessary to comply with the inequality NPV_a>0>NPV_b and r_b>IRR>r_aNPV_a>0>NPV_b and r_b>IRR>r_a.

The advantages of this indicator include the ability to conduct a comparative analysis between projects of different scale and different implementation times. In addition, IRR varies, depending on factors such as the industry in which the project is implemented, the presence/absence of investment from the state.

Nevertheless, the author considers it expedient to highlight the shortcomings of this model of assessment of investment attractiveness of the project. It is necessary to indicate primarily that:

• positive cash flows are subject to reinvestment at the same rate as the internal rate of return. For example, when IRR of the investment project is at the level of 70 %, it is assumed that the entire amount of money will be reinvested at a rate of 70 %. Nevertheless, likelihood of an enterprise being able to ensure profitability at this level is extremely low. That is, IRR overstates the effect of investment. The problem can be leveled only if IRR value is close to the actual level of reinvestment of the enterprise;

• there is no real possibility to calculate the profitability of investments in absolute values;

• «with an arbitrary alternation of inflows and outflows of funds in case of one project, several IRR values may exist. Therefore, it is impossible to make an unambiguous decision based on IRR index» [9].

Noting the relationship between IRR and NPV, it should be emphasized that if there are several projects with equivalent indicators, the third criterion – duration of investments is taken into account. Duration is «the weighted average life cycle of an investment project or its effective time of action» [10]. Using this indicator allows to make a prediction about how long the payback period of investments will be by the incomes brought to the current moment in time. The duration can be calculated using the formula:

$$D = \frac{\sum_{i=1}^{n} i * PV_i}{\sum_{i=1}^{n} PV_i},$$

where PVi = CFi/(1+r)^i – current value of income for i periods before the project expires; n – periods of income receipt.

Thus, a set of dynamic and statistical methods for evaluating investment projects, permits to foreign investor to make own choice of methods to decide about an appropriateness of investment, and allows to consider different scenarios and take into account the investor's priority forecast indicators when calculating own risks and the period of investment return.

4.

The judgment about multiplicity of factors influencing the behavior of a foreign investor leads to the conclusion that only the key ones need to be singled out because of their variety and situational influence of some of them in certain cases. Already identified indicators of determining profitability of the project, as well as labeling of key risks, in the opinion of the author, should be supplemented by another significant factor – availability of affordable financing. Even with available funds that can be invested in prospective projects, foreign investors are inclined to participate in such kind of entrepreneurial initiatives mainly only on co-financing terms – acting as anchor investor or attracting an anchor investor, and also «filling» the investment fund with the funds of reliable partners to share with them the burden of responsibility and risks.

In the context of escalating liquidity crisis, as well as of growing venture nature of investing in transport construction projects (taking into account the transfer of the center of gravity of their implementation to countries with developing economies and unstable political regimes), international financial institutes (development institutes) become most reliable and accessible partners. Such international financial organizations, especially regional ones (e.g. [11]), aim to promote development of the transport capacity of the countries in a region, taking into account fulfillment of certain stringent requirements.

The key objectives of international financial organizations include:

• saving of financial resources – monetary funds accumulated by financial institutions are spent only in a targeted manner with respect for clear parameters of the potential investment project, which contributes to cumulation of the cash flow for its subsequent maximum effective expenditure;

• mediation – a financial institution acts as an intermediary between all founders of a financial institution and a potential borrower, ensuring maximum objectivity, fairness and validity of provision of funds;

• transfer of risk – a financial institution, accounting funds takes over a significant part of the risk associated with their use;

• contributing to liquidity – the problem of creating an insurance stock of funds «that could be used when, for example, the repayment term of accounts payable has come, but the money from the debtor, which a company expected, has not been accounted. The simplest form of insurance against such cases – which is a cash reserve – is not the most profitable, since cash excepted from flows not only does not generate revenue, but also leads to losses (for example, because of inflation). Therefore, it is most reasonable to invest money in highly liquid financial products offered by financial institutions, for example, in shares, short-term liabilities» [12].

From the point of view of implementing large infrastructure projects abroad, i.e. for Russian companies, international financial institutions such as the New Development Bank of BRICS, the European Bank for Reconstruction and Development, and the Asian Development Bank can be the most suitable counterparties. They have a precise mission, which facilitates a number of formal procedures in case when it comes to implementation of the project in the territory of the member country.

As an example, it would be possible to quote the parameters of such interaction with BRICS NBR. H. H. S. Viswanathan rightly notes that the very creation of this bank «is a direct consequence of reduction of financing of infrastructure projects

in developing countries by the World Bank and other development institutions» [13]. The key objective of the Bank's activities is «to mobilize resources for the implementation of infrastructure and sustainable development projects in the BRICS countries, as well as in other emerging and developing countries[1]». In a certain sense, given the focused activities of this international financial institution, the possibility of obtaining financing for implementation of major transport construction projects is limited by a small number of factors:

• geography of project implementation (possibility of using funds for construction on the territory of the participating countries);

• volume of financing (in general, loans were issued for more than $ 3 billion, and the key feature is that the amounts of loans are significant going from $ 400 to $ 800 million, with an average amount of the project of large-scale transport construction from $ 1 billion to $ 2 billion);

• existence of documents reasoning the strategic significance of the project and demonstrating economic feasibility of its implementation.

Obviously, implementation of projects focused on construction of transport infrastructure abroad cannot be built on the basis of using the funds of international financial organizations only (despite the fact that in the European Union construction of national road networks built into the evolving model of the Trans-European Railway Corridors is organized using transfers from EU budget). Equally, the economic model of this kind of projects cannot be balanced when railway infrastructure is built on the unique basis of intergovernmental credit agrred upon at a high political level.

Attraction of funds of large financial organizations allows creating an opportunity to enter the country's market by providing a scope of services that will enable companies to acquire the necessary competencies for the subsequent presence in the foreign transport construction market and to implement smaller projects that are quickly paid back and are attractive for a foreign investor. In addition, at the project implementation stage, an environment is created at the expense of MFI funds, favorable for development of business ties between organizations and consortia focused on smaller initiatives with participation of foreign investors involved in such programs.

Conclusion. *Let us sum up: the possibility of attracting funds from international financial organizations for implementation of projects of different scale appears to be a sufficiently important lever that can significantly address the issue of high risks, improve the operational indicators of projects and structure their financing processes in a form which is attractive for a foreign investor.*

[1] Decree of the Government of the Russian Federation No. 1238-P dated July 7, 2014. Art. 1.

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