



Arrangement of financing for highway infrastructure projects under the conditions of Public–Private Partnership



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ABSTRACT

This study focused on the mechanism of attracting funds to finance projects in the field of highway infrastructure construction through Public–Private Partnership (PPP). The basis and principles for development of the financial strategy of a project company were defined in this paper. The proposed financial strategy was developed on the basis of diversification of sources of funds and financing instruments with regard to the stages of the project life cycle. The parameters for development of the financial strategy were defined to improve the mechanisms of attraction of the capital for the project and increase the capacity of the project company to pay debts. The proposed financial strategy can be taken as a basis for development of the financial strategy for any project implemented through PPP. The capital market is not stable; therefore, in addition, an algorithm was proposed for more precise selection of sources of financial resources.

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1. Introduction

Available funding for infrastructure from traditional sources falls far short of the investment needs [1]. However, the state shall not be solely responsible for resolution of problems connected with the development of highway infrastructure. Implementation of projects under the conditions of Public–Private Partnership (PPP) is a promising mechanism for attracting private funds. PPP is a legally executed mutually beneficial cooperation of public bodies and authorities with business entities in respect to projects that are in the field of direct state interest and control for a certain period of time. Around the world, PPPs have become an increasingly popular means for procuring public services and infrastructure [2]. It is mainly due to the fact that PPPs allow governments to secure a much-needed infrastructure without immediately raising taxes or borrowing [3]. Under such conditions, the study of the structure and mechanisms of financing of PPP projects is particularly important.

As the gap between the growing demands for public services and infrastructure, on the one hand, and financial and budgetary constraints, on the other hand, is constantly widening, the government is interested in implementing PPP projects if a private partner is liable for financial obligations. The Public Authority also needs to understand the implications of the financing structure for PPP contract as a whole, both as to the payment structure and long-term flexibility and the cost of early termination of the PPP contract, taking any financial hedging into account

[4]. The task of financing requires the sponsors to decide the capital structure of the project: how much should be provided by the sponsors in the form of equity financing and how much should be borrowed from lenders in the form of debt financing, especially on a non- or limited recourse basis [5].

The financial strategy for the project company to raise capital plays a crucial role, as it directly affects the amount of capital expenditures that take the biggest part in the cost structure of the project. The process of creating a financial strategy for the project company from design to approval is time-consuming and costly. Therefore researchers offered some suggestions on this problem. However, they did not suggest any completed design or strategy for attracting funds for the project.

The accumulation of capital for a project requires a developed funding approach. It includes the following components: the identification of the capital sources, sources of repayment of capital costs, and the legal person responsible for project financing. Scientists and researchers use other terms instead of the ‘funding approach’. Yescombe [4] used the terms ‘PPP models’ and studied purely private financing for the project (project or corporate financing) or alternative PPP models with private and public funding. Delmon [6], Daderkina [7] and some other scholars used the term ‘sources of financing’ and highlighted three of the most common sources of financing for infrastructure projects, such as Government financing, Corporate financing, and Project financing. Researchers from Public–Private Infrastructure Advisory Facility¹ (PPIAF) analyzed methods to finance public service

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¹ PPIAF is a multi-donor trust fund that also supports governments to develop specific infrastructure projects with private sector participation <http://www.ppiaf.org/>.

infrastructure. These are public budget finance and investment prefinancing by the project sponsors, and an alternative to these methods, Project Finance [8]. Karpov [9] and Varnavsky [10] noted that, at the present time in the world practice there are known tools that allow companies created on the Public–Private Partnership basis, to raise funds from various financial institutions for implementation of large investment programs by means of complex financing schemes, insurance, cross-guarantees and redistribution of risks. Summarizing the research in the field of funding approach to raising capital for PPP projects, we should point out the researchers' consensus and admit that we share their point of view as well: the Project Financing takes the most significant position and is the most flexible, rational and promising long-term type of financing of large PPP projects.

There are three categories of funds used for financing a project: equity, subordinated debt and senior debt. Many authors define these concepts as sources of funding or source of capital, and at the same time, they use the same term for legal entities, organizations, and institutions, which contribute to project capital. We use the definition of Ye [5] and define, in this case, the capital categories. The analysis of such categories as equity and senior debt in the financing of PPP projects shows that the authors have the same opinion in understanding and characterizing these two categories. Describing them from the perspective of the risk degree and level of the expected income, we see that these are two diametrically opposite extreme categories of capital. Financial instruments being under the notion of subordinated debt are debt fund obligations that are paid after the senior debt and before the payment of dividends on common shares of the company. Financial instruments which are used for the accumulation of funds within the scope of each category are presented in Fig. 1.

Sponsors of the project, banks, pools of banks, international financial institutions, any counterparty of the project company, and the budgets of different levels can be sources of funds. They can provide for the project capital from different categories and use one or several financial instruments. For example, sponsors provide capital and subordinated loan for the project. A number of authors have noted this possibility, describing the advantages and disadvantages of financial instruments. However, they did not recommend any financial strategy for the project company to raise capital, only giving limited recommendations for the selection of a particular tool.

A PPP project differs from an investment project in the following way: governments carry out different functions under the partnership that largely determines the success of the project. They partially fund infrastructure projects, provide the institutional environment for the project implementation and organizational structure, and reduce risks by guaranteeing repayment of the loan both directly and indirectly. However, some authors have noted there is a danger that the state guarantees conceal the financing costs [11]. In practice, the state depending on the socio-economic significance of the project uses financial instruments in various combinations. As a result, it manages to soften and neutralize many risks, including commercial risks [12].

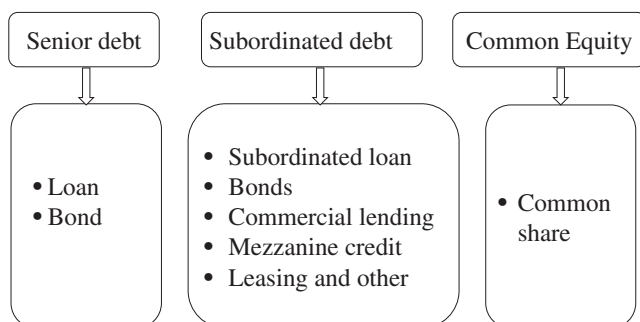


Fig. 1. Financial instruments for project financing.

The authors give some suggestions on how to attract capital for projects. Their opinions about the criteria for choice of source are different and do not contain any complete plan or general financial strategy for the project company to attract funds for the project. The absence of developed options for financial strategies for raising funds for PPP projects in the scientific literature can be justified by the uniqueness of PPP projects. Indeed, as a rule, PPP projects are unique but they have similar industry-wide features. Moreover, their implementation takes place according to the standard scenario. Therefore, the purpose of this paper is to develop and substantiate a typical financial strategy for raising capital for projects of highway infrastructure implemented through Public–Private Partnership. For this purpose, we must substantiate the assumed capital structure of the project. Then we must determine the influence of typical projects, highway infrastructure characteristics and conditions of the PPP on the possibility of accumulation of capital in accordance with the target structure. The next step is the detection of the approach to funding the project, which, in such case, allows accumulating funds following the target capital structure. Then we define the basis and principles for determination of the sequence and scope of funds to be raised from various sources, and the financial instruments to be applied. Based on the abovementioned, we propose a financial strategy for the project company for PPP projects in the sector of highway infrastructure.

2. Capital structure and approach to the financing of the highway infrastructure PPP project

Conventionally, the finances of the PPP project in highway infrastructure can be divided into two very interrelated aspects. The first is the capital for a project development. Capital structure and the mechanism of funds attraction are the main research problems of this aspect. The second is the income derived from the operation of the project, which is used to repay the capital and operating costs, and it is revenue of the project. Sources of revenue, the mechanism and the conditions of revenue acquisition are the main research problems of this aspect.

As a rule, the capital structure is presented by a combination of equity and debt. Debt capital has advantages (tax shield and fixed claim of debt holders) and disadvantages (financial distress caused by debt obligations). Due to the attractiveness of the borrowed funds, managers tend to include debt funds into the PPP projects in highway infrastructure as much as possible. According to the trade-off theory of leverage “...firms trade off the benefits of debt financing against higher interest rate and bankruptcy costs” [13].

Defining debt as the dominant type of capital in the PPP structure of the highway project, we will focus our attention on the process of raising capital for the project. The key factor of the project attractiveness for investors and lenders is specific risk return profiles that largely depend on economic and financial characteristics of the projects, which depend on infrastructure sector and the physical infrastructure assets features. Highway infrastructure projects have the following features, which make investments in highway facilities less attractive:

- A high level of ecological and sometimes technical risks during the building time. The environmental and technical review processes can raise project costs and cause significant project delays;
- a high level of capital expenditure. Usually highway infrastructure projects require a high initial investment. Full return of the investments is expected only after a long period of time;
- a long technical life time of the facility which needs major maintenance. It needs great costs and these costs are difficult to estimate because they are expected far ahead;
- an optimal social rate rarely provides the maximum level of income taking into account necessary costs [14];
- the difficulty of cost recovery from the number of users;
- the object cannot be passed on the security for crediting;

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