

Risk Management at Implementation of Social Projects of Public-Private Partnership

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Abstract. In twenty years of establishing the foundations of the market economy in Russia, the main problem of innovative development has not been solved - attracting investments for the purpose of sustainable modernization and innovative acceleration. In order to attract investments and services of private business, a mechanism of public-private partnership has been developed to solve state tasks. Development and formation of various forms of public-private partnership is aimed at socialization of social relations, formation of public systems of mixed type. However, the lack of functioning of the risk management process and tools in the implementation of social projects of public-private partnership remains a key problem.

1. Introduction

Public-private partnership (hereinafter also - PPP) becomes one of the promising tools for the development of the Russian economy, allowing to make effective structural decisions. Research and development on decentralization of powers relating to inter-budget relations and relations between business and the State are extremely relevant.

In times of financial and economic crisis, when private investment is reduced, the public sector can be a stabilizing factor. The state will then become a partner with significant resources, both organizer, regulator and customer.

The situation may be different when public spending is declining in the face of a crisis in the State. Budget expenditures in the context of savings are reallocated and planned only to priority objects of expenditure. Consequently, a new social facility to meet the needs of the population can only be built and launched with available funds or through earmarked funding through national projects. But the demand for such social facilities is not decreasing during the crisis, but on the contrary, is increasing, as the population is also looking for a way to meet the needs within the framework of the shrinking budget.

When using the PPP instrument, the state planned to build a certain number of social facilities in the present time, will be able to pay for their construction postponed (on the fact of construction and commissioning). In such a case, the facilities will be built or reconstructed and will begin to be operated at the expense of private investors, with which the state will settle within several years.

Therefore, PPPs can become effective economic instruments for the economy of the country and the region, allowing to attract financing from the profits of private investors to solve problems of life support of the population.

2. Relevance, scientific significance

The relevance of the study is due to the need of the country 's entities and potential private investor partners to create a methodology for risk management in the implementation of PPP social projects, which allows to ensure maximum efficiency of the project implementation, by ensuring guarantees of the parties. To the generally accepted risks is added another - the risk of opportunism, which is hidden in the initial stages of the preparation of the agreement. Given the asymmetric nature of the information, one party may behave opportunistically, that is reduce the utility of the transaction to the other party, wishing to increase its utility unilaterally.

The consequences of the opportunism of the parties at the risk-sharing stage in the conclusion of the agreement become clear only during the implementation of the project.

Interest in the study of PPP institute is reflected in numerous studies of Russian and foreign scientists. The authors of the study used and developed the ideas of D. Grimsey and M.K. Lewis [1], D. Delmon [10], E. Oliver [2], E.R. Yescombe [3] in highlighting the characteristics of PPP, as well as the work of G.L. Zavyalova and M.V. Tkachenko [12], projects dedicated to the implementation of various industries of Russia.

The study of the role of PPPs in the innovative development of the economy is devoted to the works of A.G. Zeldner, I.I. Smotritka [8]. Problems of PPP essence and PPP risk typology are based on analysis of research by E.S. Averkieva [4], V.G. Varnavsky [7], M.A. Deryabina [11], W.D. Condratieva [4], T.M. Matayeva [17], S.E. Litovchenko [16].

The analysis of effective interaction of interested parties ("stakeholders") of PPP projects and project management is devoted to the works of V.M. Berestovskaya [6], O.J. Sinyayeva [13], I.N.Tkchenko [20]. Issues of contract opportunism were considered in the studies of E.G. Martiyukova [18].

Numerous publications by researchers have a wide range of opinions in covering certain aspects of PPPs. Most researchers focus on the analysis of risks of social PPP projects, but the aspect of risk management of opportunism in the implementation of social PPP projects has not received detailed coverage in Russian or foreign works until now.

3. Setting a task

Need of development of methodical approaches to process of management of risks at implementation of social projects of PPP, including with the description of mechanisms of decrease in incentives to opportunistic behavior from participants of the agreement, caused an object, a subject, the purpose and research problems.

The aim of the study: based on the achievements of the institutional economy, to develop a methodology for managing the risks of opportunism in the implementation of social PPP projects.

4. Theoretical part

The basic premise of PPP creation is the belief that private companies (potential investors) function more efficiently than bureaucratic state structures and have greater financial resources than the state. Consequently, the State needs to attract private investors in the various areas for which it is responsible, but for which there is insufficient budget and competence. The main sector for PPP development is urban and regional infrastructure, primarily communal, social and transport infrastructure.

It is important to note that the formation of the PPP mechanism began in the late 1980s, when numerous attempts began to find ways to stimulate private investment in infrastructure in the governments of developed countries. At the time, there was no clear division of government spending into current and capital expenditure and there was a standard public procurement model. Examples of

public-private partnerships were isolated and projects were implemented at higher prices than if they had been established under the standard public procurement model. The problem was that private investors demanded returns substantially higher than the interest rate on government bonds, even if all risks of the project were borne by the state.

When introducing PPP mechanisms for a project, the State takes two views:

- financial approach: using private capital to meet infrastructure needs;
- operational approach: optimization of time and efficient allocation of costs during operation of the facility.

How the economic phenomenon of PPPs was developed in the early 1990s when D. Major 's government announced the "Private Finance Initiative," which was a modernized concept of public property management

According to the concept, the private partner was able to finance, build, reconstruct, operate and manage publicly owned social and infrastructure facilities. Thus, a new public institution has emerged, defining the rules of interaction between business and the state in the construction and reconstruction of socially important facilities.

The concept of "public-private partnership" as an economic category does not have a single interpretation, so it seems appropriate to reflect its most specific features, by the presence of which different forms of interaction between business structures and public authorities can be qualified as PPPs. Based on an analysis of the definitions of PPPs found in the literature, PPP is characteristic of:

- a set of forms of long-term interaction between the State and business to solve socially significant problems on mutually beneficial terms, i.e. the system of relations between the State and business in a contractual form, which is used as an instrument of economic and social development and planning;
 - the existence of a long-term contractual agreement between the public authority and the economic entity for the implementation of a separate project;
 - transfer of performance of part of tasks and functions related to the activities of state or municipal administration bodies to private business;
 - attracting private capital financing for the project;
 - risk sharing between public and private partners in the project.

At present, more than 120 countries around the world have developed legislation that provides for public authorities to interact with private investors through PPP. In the process of PPP development and risk management research, the authors classified the countries of the world according to the combined characteristics of the stages of development: high degree - Great Britain, Australia; Secondary degree - Russia, USA, Canada, Japan, EU countries; Low degree - China, Brazil, India, Argentina, Mexico, Colombia, Chile, Malaysia, Thailand, Philippines, Indonesia, Turkey, Slovakia, Latvia, Czech Republic, Poland, Belgium, Finland and others.

An important component of project management is the risk management of a social project. Risk management is a set of actions of various kinds aimed at reducing the risk of erroneous decision-making at the time of its adoption and reducing the possible negative consequences of this decision.

According to J. McNeill 's classification (which distinguishes between classical, neoclassical, and relational contracts), a PPP agreement refers to a neoclassical contract, as the agreement is long-term in nature and consists in conditions of uncertainty where it is impossible to anticipate in advance all the consequences of the transaction. The neoclassical contract, unlike the classical contract, is considered incomplete, oral arrangements being recognised alongside written arrangements. The characteristics of the PPP agreement as a neoclassical contract confirm the need for risk management in the implementation of the PPP agreement.

The time factor is one of the fundamental in the theory of uncertainty in the management of social PPP projects. Under the influence of this factor in dynamics it is possible to trace the change of political situation in the state, change in strategies of competitors, change of natural and climatic conditions. The probability of events that have a positive or negative impact on the implementation of the project in the long term is much more difficult to calculate than in the short term.

Therefore, PPP project management must take into account all possible risks in order to avoid cash and time losses and be able to adapt to rapidly changing conditions.

The first major step in risk management is risk assessment, to further manage them. Generally, public and private partners use different methods of risk assessment. For a public partner, important criteria are the social significance of the project and the characteristics of the project unrelated to the occurrence of a risk event. The private partner focuses on a variety of risks and their valuation. Thus, the opposite of partner risk assessment approaches leads to uncertainty during the PPP project phase.

The risks of opportunism in the implementation of a PPP social project are the likelihood that one of the partners will suffer losses in the form of additional expenses or receive revenues below those expected under the PPP agreement due to the other partner's avoidance of the terms of compliance for maximum profit. A feature of hidden risks is also that they determine the party's propensity for opportunism. Based on the classification of endogenous risks, as well as taking into account the prerequisites of opportunistic behavior of partners, the classification of risks of opportunism in the implementation of social PPP projects by types of opportunism has been drawn up. A classification of risks of opportunism is proposed, combining three characteristics: stages of PPP project implementation; the type of opportunism of the parties; the prerequisites (reasons) for opportunism.

Consider in more detail the risks that arise at the stages of the social PPP project. In the first stage, pre-contract opportunism may consist in the inaccuracy of the information provided by the developer in the proposal for the implementation of the project. Differences in the objectives of the parties are prerequisites for opportunistic behaviour of potential partners during the design phase of the PPP project proposal.

The main risk in the second stage is opportunistic behavior of the parties, which consists in concealment of information, or submission of unreliable information by potential partners. The prerequisites of opportunism are asymmetry of information, as well as high transaction costs for finding information and measuring the characteristics of a potential private partner.

Another type of risk during the conclusion of the agreement is the risks of specification and protection of ownership of the land and the object of the agreement. Property rights specification means the definition of the subject of ownership (who owns?), the object of ownership (what is the subject of ownership?) and the manner in which the property is endowed.

Initially, the owner of the land plot on which the construction of the facility is planned is the State. During the construction phase, the facility belongs to a private partner. Problems related to ownership of the object of the agreement may arise if the construction of the object is "frozen" due to the bankruptcy of the investor. In this case, the public partner is in a "legal trap": either destroy the facility and hold a new competition, or find an investor who will continue construction. Both options require additional investment, so such facilities are more likely to remain "frozen".

The manifestation of opportunism of public orchestra seats in the third stage may consist in unjustified delay of acceptance of certain stages of construction, as well as in termination of additional support to the private partner, if such support was provided initially. A prerequisite for the partner's opportunistic behavior is the asymmetry of the negotiating power of the parties, which manifests itself in the public partner's imposition of its will on the private partner.

The fourth stage also has risks of opportunistic behavior of the parties. The parties show opportunism by not fully observing or violating the terms of the contract already concluded. The agent's limited liability for its actions is high costs and complexity in monitoring performance of contractual obligations, as well as the specificity of investments, encourage partners to be opportunistic.

Risk assessment can be carried out in qualitative and quantitative ways. A qualitative risk assessment identifies and identifies project-specific risks and identifies and describes the causes and factors that influence the level of risk assessed. In addition, the possible consequences of risks are valued and measures are formed to minimize or compensate for their consequences.

A qualitative risk assessment is carried out at the initial stage of the PPP project (when developing the project implementation plan). Qualitative risk analysis is carried out by means of expert

assessments. Among the methods of expert assessments can be used surveys, SWOT-analysis, Delphi method.

Quantitative risk assessment to be made by means of any mathematical models determining the probability of approach of a risk event and potential effects from its emergence. Cost data of the project and results of qualitative risk analysis of the project are necessary for quantitative risk assessment. Quantitative analysis is carried out by method of correction of norm of discount; sensitivity analysis of indicators of efficiency (the net discounted income, internal rate of return, the index of profitability, etc.); by method of scenarios; by method of creation of a decision tree; Monte-Carlo method, by method of mathematical modeling.

At risk analysis of opportunism of projects of PPP application of the following valuation methods of risks is possible: a probabilistic method (probability of losses is calculated on the basis of statistical data); the expert analysis (risk assessment is carried out by experts); the analog method (results of already implemented similar projects are extrapolated to the developed project); the analysis of indicators of limit (degree of resistance of the project to possible changes of conditions of its implementation is defined); sensitivity analysis of the project (impact assessment of values of different initial variables on change of resultant indicators of the project is carried out); scenario analysis of development of the project (several scenarios of implementation of the project of PPP (optimistic, pessimistic and the most probable are developed) and to be carried out their comparative assessment, possible options of change of indicators of the project are calculated); a method of creation of a decision tree (creation of the step-by-step scheme of implementation of the project with sequential estimation of risk of its implementation on each of stages).

The second main step in risk management of social projects of PPP is distribution of risk as anyway within the project of PPP of loss or expenses it is necessary to pay with one of the parties of the project. Most often the risk is completely transferred to this or that participant of partnership, but does not share among partners. There are following options of distribution of risk in projects of PPP: full transfer of risk on the public partner; full transfer of risk on the private partner; transfer of risk on private orchestra seats, with the subsequent redistribution on the third parties.

The principle of risk sharing in project management is that risk should be shifted to those who are best able to manage it at the lowest cost. A person who assumes a risk must have full discretion to manage the risk.

Thus, in PPP projects, it is best for a public partner to retain those risks that the private sector cannot control with the greatest benefit or that cannot be left to the private sector. For example, if the project assumes that interrupting the delivery of services will result not only in economic but also in severe social losses. If the project relates to the provision of health services or the provision of housing and communal services, the State will suffer losses that are not comparable to the price of risk if adverse consequences occur.

The public sector cannot take all the risks, and excess risks seek to pass on to a private partner. Therefore, one of the main tasks in PPP project management is to find equilibrium in risk transfer.

Methods of risk management in PPP social projects include risk conservation and compensation, creation of reserve funds, involvement of external sources; Reduction and exclusion of risk, reduction of probability of adverse events; Transfer of liability for risk through insurance, financial guarantees and guarantees, introduction of provisions on risk in contracts and contracts. When managing the risks of opportunism of PPP social projects, private investment return mechanisms in PPP projects should be taken into account, as the choice of mechanism depends on the degree of risk of the private and public partner and deviating behavior from existing agreements.

5. Practical significance

During the study, the practice of the constituent entities of the Russian Federation on risk management in the implementation of social PPP projects was studied. The risk of opportunism was identified as hidden, but participants in various studies focused on it as a priority, without which it is impossible to partner business and state [5, 21].

Thus, the risk management process for PPP social projects should include the following steps:

- forecasting the possibility of implementing a social PPP project and motivating potential participants;
- risk planning (risk identification, risk assessment and ranking, development of response methods, risk allocation);
- monitoring of risks in the process of social project implementation and corrective effects in case of non-executable risks and deviations from available values;
- final assessment of social project risk management.

Based on the analysis of methods of risk management of social projects, the author 's methodology of risk management of opportunism in the implementation of social PPP projects was compiled, including structured tools for creating a risk management system in the implementation of the project ("check-list," risk matrix, "risk management model," road map for the implementation of risk management measures ").

The process of risk management in the implementation of PPP social projects under development and the methodology of risk management in the manifestation of opportunism have aroused interest from regions actively developing PPP practices, such as Khanty-Mansi Autonomous District - Ugre. Research work in this direction cannot be considered completed, as based on the results of testing in KhMAO - Ugra, changes will be made to the methodology of risk management of social PPP projects and methodological recommendations for other regions to reduce risks of social projects implementation will be prepared.

6. Conclusion

Thus, risk management in the implementation of social projects of public-private partnership in the context of the long-term nature of the relationship between the public and private partners becomes of particular importance. With the development of PPPs, internal (hidden) risks began to manifest themselves, which were not taken into account in the preparation of the agreement, such as the risk of opportunism. The process and methodology proposed by the authors of risk management in the implementation of social PPP projects allow them to be used as a tool to minimize them. Consequently, as a result of such a partnership, both partners will be motivated to continue it in the implementation of other social projects.

References

- [1] Grimsey D, Lewis M K 2005 Are Public Private Partnerships Value for Money? Evaluating Alternative Approaches and Comparing Academic and Practitioner Views
- [2] Oliver E W 1985 Behavioral Assumptions The Economic Institutions of Capitalism Firms, Markets, Relational Contracting
- [3] Yescombe E R 2013 Principles of Project Finance *Academic Press*
- [4] Averkieva E S, Nasanyan G L 2015 Public-private partnership: forms, prospects and problems *Horizons of economic science*
- [5] Analysis of problems and prospects for development of public-private partnership in Russia <http://www.pppinrussia.ru/main/publications/investigations>
- [6] Berestovskaya V M, Türenkov D Y 2015 Peculiarities of project management in modern conditions (Access regime: <http://human.snauka.ru/2015/03/9357>)
- [7] Varnavsky V G 2013 Mechanisms of Public-Private Partnership in Economic Policy (Moscow: MGIMO-University)
- [8] Zeldner A G, Smotritskoy I I 2012 Public-private partnership in conditions of innovative development of economy: monograph (Moscow: IE RAS) 212 p
- [9] 2013 Public-private partnership in Russia (Moscow, Center for Development of Public-Private Partnership)
- [10] Delmon D 2010 Public-private partnership in infrastructure. Practical guide for state authorities (Astana: IC Orange)

- [11] Deryabina M 2011 PPP in the sphere of public goods: experience of Russia *Science and innovation*
- [12] Zavyalova E B, Tkchenko M V 2018 Problems and prospects of application of mechanisms of public-private partnership in social spheres *Journal of the Russian University of Friendship of Peoples*
- [13] Kozlova A A, Sinyayeva O Y 2016 Strengths and weaknesses of project management implementation in public administration *Leadership and management*
- [14] Condratieva U D 2015 Risk Planning of Public-Private Partnership Projects *Management Consulting*
- [15] Litvyakov S S 2014 Public-private partnership in financing of transport infrastructure in the Russian Federation 2014 [http://old.fa.ru/dep/ods/autorefs/Dissertations/Litvyakov S. of Page \(17.04.2014\) of eaab71200eb86f044563135bfbec01ff.pdf](http://old.fa.ru/dep/ods/autorefs/Dissertations/Litvyakov_S._of_Page_(17.04.2014)_of_eaab71200eb86f044563135bfbec01ff.pdf)
- [16] Litovchenko S E 2007 Business Risks in Private-State Partnership *Association of Managers*
- [17] Matayev T M 2012 Risk Typology on Public-Private Partnership Projects *Russian Entrepreneurship*
- [18] Martyukova E G 2013 Opportunism and the costs of opportunistic behavior in the Russian economy Dis. edging. Economic Sciences 08.00.01 (St. Petersburg)
- [19] 2013 Assessment of PPP development in Russia. Business opinion (Moscow: Chamber of Commerce and Industry of the Russian Federation)
- [20] Tkchenko I N 2016 Achieving synergy on the basis of effective interaction of interested parties of public-private partnership projects *Works of Ural State Economic University*
- [21] Manusov V Z, Antonenkov D V, Solovev D B 2018 Estimation of Energy Consumption of DM-H Drill Rig Main Drive in Far North Conditions 2018 *International Multi-Conference on Industrial Engineering and Modern Technologies (FarEastCon), International Conference on*. [Online]. Available: <http://dx.doi.org/10.1109/FarEastCon.2018.8602484>