Jasurbek Kadirov

Increasing investment capacity based on public-private partnership

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> *"Everything natural is measured, but not everything measured is natural".*
> *Abu Ali ibn Sina*

INTRODUCTION

Infrastructure is a viable sector of any economy and serves as an important locative for economic growth, trade and poverty alleviation, especially in low-income countries (PDMS) where access to basic infrastructure is not available, "in 2015, the Organization for Economic Co-operation and development (IHT) announced that the need for global infrastructure investments for airports, ports, railways and oil and gas (transport and distribution) in 2009-2030 may be US $ 11 trillion. According to separate World Economic Forum (JIF) accounts, the global demand for infrastructure investments is US $ 3.7 trillion per year. Multilateral Development Banks (MD Banks) and national governments alone do not have sufficient resources to finance global infrastructure gaps. Thus, governments around the world are looking to the private sector as a source of additional financing.

In the world, PPP is a cooperation in the context of public infrastructure, which focuses on scientific research aimed at increasing the contribution of the private sector in infrastructure investments, easing the burden of public finances, and increasing the efficiency of public facilities and public services. In this regard, increasing the investment potential of economic sectors on the basis of public private partnership, introducing effective management mechanisms in the field, improving the quality of communal services and

ensuring their competitiveness based on the introduction of innovative technologies are the priority directions of scientific research.

In the Republic of Uzbekistan, "Taking into account the profitability of projects implemented on the basis of public-private partnership and the burden on the State budget, introducing a management system for their classification and project directions, assimilation of 250 billion dollars of investments in our country, including 110 billion foreign dollars the task of attracting investments and 30 billion dollars of investments within the framework of public-private partnership. In this regard, it is appropriate to deepen scientific research in areas such as improving methodological approaches to increase the investment potential of economic sectors based on public-private partnership using modern modeling methods and ways, statistical analysis of the sector and the basis of multi-factor empirical models for forecasting the trend of increasing investment potential.

This dissertation research is based on the Law of the Republic of Uzbekistan "On Public-Private Partnership" (2019), President of the Republic of Uzbekistan No. PF-60 dated January 28, 2022 "New O for 2022-2026 Decree "On the Development Strategy of Uzbekistan", No. PF-158 of September 11, 2023 Decree "On the Strategy of Uzbekistan-2030", No. PF-6042 of August 18, 2020 "Export in the Republic and on additional measures related to the further development of investment potential" dated February 23, 2018 PQ-3563 " President of the Republic of Uzbekistan "Uzbekkomir" and "Shargunkomir" "On organizational measures regarding the transfer of JSC to JSC "Uzbekistan Railways" and the financial recovery of coal industry enterprises" dated November 8, 2017 No. PQ-3380 It serves to a certain extent in the implementation of the tasks

specified in the decisions "on introducing changes " and other regulatory documents related to this field.

Research republican science and technology evolve depending on priorities. This study was carried out in accordance with the priority direction of the republican science and technology development I. "Spiritual-ethical and cultural development of a democratic and legal society, formation of an innovative economy".

The level of study of the problem. Issues of economic research of theoretical and practical aspects of public-private partnership, formation of organizational economic mechanism, development of social infrastructure and improvement of mechanisms I.M.Borodachev, A.I.Petrov, O.V.Laktyushina, A.S.Kolosov, A.S.Korchagina, L.S.Dzhagaryan, K.I.Derevyanko, E.K.Barablina, Ye.S. Mitrofanova, R.Norment, P.Rosenau, N.D.Xolodnaya , etc., were deeply studied in the scientific works of foreign economists.

Improvement of public-private partnership procurement practice, risk management analysis in public-private partnership in social infrastructure, financing of investment projects of municipalities and development of investment activities, financial support system of projects, risk management of investment and classification of implementation of construction projects J. G. Barry, CH. J. Marcus, Y. Paudel, A. Reynaers, M. K. Adam, Z. B. Katarzyna, A. P. Cherkasov, N. Ye. Kalashnik, Yu. A. Muradova, J. Delmon, S. N. Popelnyukhov, S. A. Kurbanov have taken a wide place in the scientific researches.

As in other countries, the issues of increasing the effectiveness of corporate management mechanisms and housing fund management in the field of housing construction based on public-private partnership, as well as

increasing the investment potential are the subject of scientific interest of the economists of our republic in this regard. In particular, the advantages and disadvantages of the public private partnership mechanism, the opportunities and threats in its introduction, the practice of implementing projects, and the practice of public and private partnership were analyzed by the well-known economists of our country, U. I. Djumaniyazov, A. S. Sultanov, K. B. Tursunov, Q. J. Utegenov, N. T. Tilabov, N. Shavkatov and others analysis of financial relations and their effectiveness, theoretical and practical aspects of the prospects of effective organization of financial relations in the practice of public and private partnership are deeply and widely researched.

However, in the above scientific studies, the issue of prospects for increasing the investment potential of economic sectors based on public-private partnership was not studied as a separate object of scientific research. The current development features and processes of increasing the investment potential of economic sectors on the basis of public- private partnership were taken into account in the research work, which creates ample opportunities to determine the relevance and purpose of the selected research topic and the range of issues to be solved in it.

Dissertation topic with scientific research work of the higher education institution where the dissertation is being carried out dependence. The topic of the dissertation was carried out in accordance with the scientific research plan of the International Nordic University within the framework of the scientific project (2024-2026) on the topic "Scientific foundations of coordination of the financial, monetary and credit system in the context of the modernization of the national economy".

The purpose of the research is to develop proposals and recommendations for the sustainable development of the industry based on increasing the investment potential of economic sectors on the basis of public-private partnership.

Tasks of research consists of:

➢ identification of risks and factors of their reduction in the formation of investment funds of public-private partnership in the development of the national economy;

➢ elucidate the investment means of public-private partnership development in economic sectors and their importance in innovative development;

➢ to express advanced foreign experiences aimed at expanding the investment opportunities of industries operating on the basis of public-private partnership and the directions of their implementation;

➢ interrelationship between public-private partnership and the development of economic sectors: identifying the problems of creating an economic-statistical model;

➢ development of a system of scientific proposals on the medium-term prospects of increasing the investment potential of economic sectors on the basis of public private partnership and the problems of its implementation in Uzbekistan.

The object of the research is the joint-stock company "Uzbekistan Railways" of the Republic of Uzbekistan.

The subject of the research is economic relations that arise in the process of increasing the investment potential of economic sectors based on public-private partnership.

Research methods. Statistical analysis, empirical evaluation, economic mathematical, structural equations model, factor analysis, selective observation, econometric methods were used in the research.

The scientific novelty of the research is as follows:

❖ the values of "own funds 80<mk<84" "state budget 16<mk<20" of the limit of effective distribution of the investment load for the structure of different funding sources in the transport sector are theoretically justified;

❖ the mechanism for assessing social, business and budget efficiency has been improved by using "off-budget insurance contributions" in the financing of investment projects;

❖ the mechanism of encouraging private entrepreneurship to participate in transport construction projects on the basis of public-private partnership in the electronic system of public procurement (e-auction) through the principle of "state - project - entrepreneur" has been improved;

❖ based on public-private partnership, forecast indicators of increasing the investment potential of economic sectors until 2027 have been developed.

The practical result of the research is as follows:

✛ Methodological recommendations on the evaluation and selection of investment projects for the development of transport infrastructure under the terms of public-private partnership of the Ministry of Transport of the Republic of Uzbekistan are proposed;

✛ Methodological recommendations of "Uzbekistan Railways" JSC on impact assessment (tax and insurance payments to different levels of budgets and extra-budgetary funds) were developed;

✛ in the future, the problems of increasing the investment potential of economic sectors on the basis of public-private partnership were identified and a system of equations representing its development trends was developed;

⬥ The development levels of the investment potential of JSC "Uzbekistan Railways" have been assessed, and scientific proposals and practical recommendations have been developed to increase the investment potential of economic sectors based on public-private partnership.

Reliability of the obtained results. The reliability of the information base used in the dissertation is obtained from official sources, the reliability of the results obtained with the help of modeling and forecasting is evaluated using various statistical criteria, and the reliability of the developed proposals and recommendations is the priority adopted to increase the investment potential of economic sectors based on public-private partnership in the republic. It is explained by the level of compliance with the training and programs and the acceptance of the relevant conclusions for implementation by the official organizations.

The scientific significance of the research results is that the quantitative methods covered in the dissertation can be used to analyze the development trend of the investment potential of the Republic of Uzbekistan Railways and forecast its changes, to determine the prospects for the long-term development of the shareholder society and make important decisions in this regard.

The practical significance of the results of the study is explained by the fact that the analytical information and models obtained in the dissertation were used in the practical activities of the OJSC "Uzbekistan Railways", in particular, as a result of the introduction of changing factors into the main dynamic models presented in practice, the formation of future variant accounts of the development of the Republican.

Implementation of research results. Based on the scientific results obtained on the prospects of increasing the investment potential of economic sectors on the basis of

public-private partnership (in the case of Uzbekistan Railways JSC):

The theoretically justified limits of the effective distribution of the investment burden for the composition of various sources of financing in the transport sector "own funds 80<MK<84" "state budget 16<MK<20" have been put into practice by the Ministry of Transport of the Republic of Uzbekistan (Reference No. 01/1235-24 dated April 1, 2024 of "Uzbekistan Railways" JSC). As a result, on the basis of JSC "Uzbekistan Railways " and the enterprises within it, several joint stock companies were formed in different directions;

His proposal on improving the mechanism for assessing social, business and budget efficiency by using "off-budget insurance contributions" in financing investment projects was put into practice by the Ministry of Transport of the Republic of Uzbekistan ("Railways of Uzbekistan" Reference No. 01/1235-24 dated April 1, 2024. As a result of the application of this proposal, the participants of transport infrastructure development projects - suppliers of necessary services and resources for the purpose of design, construction and reconstruction of transport infrastructure objects - have increased tax and insurance payments allocated to different levels of budgets and extra-budgetary funds;

H is proposal on improving the mechanism of encouraging private4 entrepreneurship to participate in transport construction projects on the basis of public-private partnership in the electronic system of public procurement (E-AUCTION) through the principle of "state - project - entrepreneur" Republic of Uzbekistan adopted by the Ministry of Transport for implementation ("Uzbekistan Railways" JSC reference No. 01/1235-24 dated April 1, 2024). As a result, it served to improve the process of monitoring investments in

the sector by increasing the total volume of private entrepreneurship in the transport sector of the republic;

the investment potential of economic sectors on the basis of public-private partnership up to 2027 were used by the Ministry of Transport of the Republic of Uzbekistan in the development of a draft report on the works carried out in 2023 and plans for 2024 ("O Reference No. 01/1235-24 dated April 1, 2024 of "Uzbekistan Railways" JSC). As a result of the use of these models, it served to increase the level of accuracy in the growth rate forecast of the investment potential of the Ministry of Transport of the Republic of Uzbekistan.

We apologize in advance to you, the scientists, if any shortcomings or technical errors arise related to the text of the monograph, general presentation and its publication. Commenting on the achievements and shortcomings of the work, turning to the opinion of readers to assess its level and level, commenting on identified errors and omissions. Please send it to the email address jasurbekq875@gmail.com

We hope that your suggestions and recommendations will serve to further enrich the monograph in the future.

CHAPTER I. THEORETICAL AND METHODOLOGICAL BASIS OF THE INFLUENCE OF PUBLIC-PRIVATE PARTNERSHIP ON INCREASING INVESTMENT CAPACITY

1.1. Public-private partnership (PPP): scientific and theoretical aspects of increasing investment potential based on mutual financing

The concept and implementation of public-private partnership (hereinafter referred to as PPP) has passed through different periods of development and has been implemented with the help of different levers in different fields in accordance with the socio-economic policy of countries.

In the 50s and 60s of the last century, in the post-crisis period in Europe and the USA, there was a high level of state intervention in the projects implemented in this direction. During this period, the number of projects in the fields characterized by PPP was small, most of them were financed by the state.

In the 1970s and 1980s, however, the situation changed dramatically after the onset of recession and severe budget restrictions. State intervention and opportunities to provide regular services to the population have been significantly reduced.

Why such cooperation is gaining ground in sectors of global social importance and the identified shortcomings of the structural change programs of the World Bank and the International Monetary Fund since 1980. Along with the economic problems of the developing countries, the planned economy of the socialist bloc needs to be fundamentally reformed in order to increase the efficiency and high productivity of economic systems and prevent deep crises.

It is based on the fact that PPP should promote neoliberal ideas of economic development: reducing state intervention in the economy, promoting the development of competitive markets, etc. are factors of economic development.

PPP is relevant not only for developing countries, but also for industrialized countries, because, as a rule, PPP invites state businessmen to participate in the implementation of socially important projects, rather than state business projects. In Europe, PPP was used for the first time in Great Britain in 1992, projects implemented in the Portuguese public-private partnership accounted for 20% of all public investments in1999-2003.

PPP is a series of forms of medium and long-term interaction between the state and business to solve socially important tasks on the basis of mutually beneficial conditions.

According to the result so four research on the improvement of corporate management based on PPP, today there is no consensus on a single definition of PPP in world practice.

Broadly speaking, the PPP is usually a medium and long-term agreement of the public and private sector, according to which certain services belonging to the social sector, which are the responsibility of the public sector, are provided by the private sector precisely with its specific infrastructure or services. As a rule, PPP does not include service contracts or construction contracts with state orders, as well as privatization processes in which the role of the social sector is limited[1]. Also, "the term PPP is not defined with in the community. Generally speaking, this term refers to mutual cooperation between the government and business to provide

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[1] http ://world bank .org ./public – private partnership /overview / what are public – private - partnerships .

financing, build, modernize, manage or maintain infrastructure or provide services[2].

In addition, the Commission on Regional Policy of the EU defines "FDI as the transfer of investment projects traditionally carried out and financed by the public sector to the private sector[3]."

And by the UN, "the PPP aims to fund, plan, implement and operate facilities for the services produced and provided by the public sector, and its main characteristics are defined as ensuring long-term provision of services to the private sector (sometimes up to 30 years), transfer of risks to private investor, implementation of multifaceted long-term contract forms of legal entities with state and local structures[4]".

According to the definition of the World Bank Institute, "a PPP is a long-term contract between a private party and a public body for the creation of public assets or the provision of services, in which the private party assumes significant risks and responsibility for management[5]. "According to the definition given by the Asian Development Bank, "The term PPP represents the range of possible relationships between public and private organizations in the field of infrastructure or other services[6]".

In addition, the US Federal Department of Transportation's report to Congress on PPP states that "PPP is a contractual agreement that allows a private partner to be more involved in relations with the state in relation to their traditional participation, and this agreement usually provides for modernization, construction, operation, maintenance or

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[2] Green Paper on Public-Private Partnerships and Community Law Public Contracts and Concessions. Brussels. 30.04.2004.P.3.
[3] http://ec.europa.eu/regional_policy/sources/docgener/guides/en.pdf .Date of application .04.04.2019 .
[4] Prakticheskoe rukovodstvo po voprosam effektivnogo upravleniya v sfere GChP/Organization Ob'edinennyx Natsiy-New-York and Geneva, 2008.ISBN:978-92-1-4160403 .
[5] World Bank Institute/PPIAF, Public-Private Partnerships Reference .Guide, WashingtonDC,2012 .
[6] Handbook of Public-PrivatePartnerships.AsianDevelopmentBank.2006.

management of a particular facility, system between the authority and a private company[7]".

The Government of India defines PPP as "a contractual or concessional agreement between the government or the public sector and private companies to provide infrastructure services in exchange for user fees[8]".

Within the framework of the British Columbia-Canada partnership, it is interpreted as "a PPP is a legally binding contract between government and business parties for the creation of assets and the provision of services, which does not represent the sharing of risks and obligations between the parties[9]".

The Australian government, on the other hand, is "a public and private sector mandate to provide infrastructure and other services to the private sector with a payable mandate, which typically imposes duties such as operating, maintaining infrastructure throughout the private cycle[10]".

The Irish government defines PPP as "a partnership between the public and private sectors to deliver services and other projects traditionally carried out by the government[11]".

In Hong Kong, PPP is interpreted as a contractual agreement aimed at involving a private party in the provision of public services by making a mutual contribution to the enterprise[12].

PPP is defined as "..long-term contracts involving the creation or reconstruction of an existing facility or asset and the provision of services[13].

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[7]Report to Congress on Public Private Partnerships. US Department of. Transportation, Federal Highway Administration, December 2004.p.10 .
[8]Guidelines for Financial Support to Public Private Partnerships in Infrastructure, Government of India,2006.
[9]An Introduction to Public Private Partnerships, Partnerships British. Columbia, Canada, 2003. http://www.partnershipsbc.ca/pdf/An%20.
[10]National Public Private Partnership Guidelines Overview, Australian. Government, Dec. 2008. http://infrastructureaustralia.go.au/public_private/files/.
[11]Introduction to Public Private Partnerships-Public Private Partnership .Guidance Note 1,14April2000, Department of the Environment and Local. Government, Ireland.
[12] Efficiency Unit, An Introductory Guide to Public Private Partnerships.
[13]Treasury National Infrastructure Unit, Guidance for Public Private Partnerships (PPPs) in New Zealand (Wellington, 2009)

In France, however, the "partnership agreement is an administrative contract, according to which a state or state organization is a contract that imposes obligations related to construction, reconstruction, storage, use, management of tangible and intangible assets, based on full or partial financing, which are necessary for the provision of public services under agreed-upon conditions, with the exception of participation by adding only a share to a third party".

Most of the researchers who work on the study of PPP issues put forward different theories on the development of the concept of public-private sector cooperation, including its practical component. Modern western economists are much ahead in this area than the CIS countries conducted scientific and practical research. Due to the fact that PPP entered the practice of developed countries much earlier, the existence of problems in this regard made it possible to study and describe the main features and principles of PPP in detail.

According to R. Norment, the executive director of the US National Council on Public-Private Partnerships, PPP is a contract between a government structure at any level and a private sector organization. Through this agreement, the resources, assets and services of each sector complement each other to create public utility facilities. In addition to sharing resources, each party shares potential (potential) risks and benefits[14].

In the publications of the authoritative rating agency Standard & Poor's, PPP is defined as any medium or long-term transaction between the private and public sector based on the sharing of risks and revenues, as well as pooling of resources and powers.

According to the research of the American scientist P. Rosenau (P. Rosenau), PPP was founded as a legal form of

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[14] Norment, R. Fundamentals of Public-Private Partnerships (PPPs) / R. Norment // The National Council for Public-Private Partnerships, - 2007.

cooperation in which the private and public sectors can avoid failures, get a synergistic positive effect and combine the best qualities of both sides[15].

In the field of Public Administration, Dutch scientists Erik Hans Klijn and Joop Koppenjan define PPP as a long-term collaboration between private and public sector participants that allows the joint development of products and services, as well as the risks associated with the provision of these products and services, costs and distributes resources.

Foreign researchers S. Linder (S. Linder) and E. Savas (ES Savas) adhere to a different point of view on determining the purpose of public-private sector cooperation. Thus, according to them, the term PPP is a recognized language to hide the real goals of privatization and the desire to involve private enterprises in the process of providing public goods at the expense of public enterprises. In addition, cooperation can be characterized as a political symbol and as a political tool: it is a management reform, that is, an innovative tool that changes the way the state functions[16].

As we can see, there are different definitions of PPP, but in our opinion, the most common is the one made by the World Bank: "PPP – contracts concluded between public and private parties for the development and supply of Infrastructure Services concluded with the aim of attracting additional investments, and more importantly, as a means of increasing the efficiency of budget financing[17]".

Among Russian researchers there is the concept of" public-private sector cooperation". In our opinion, the content of this concept is revealed in detail by A. Beliska. In his

[15]Rosenau, P. Public –Private policy partnerships/ P. Rosenau //Cambridge, MA: MIT press,2000.
[16] Kholodnaya, N.D. Gosudarstvenno-chastnoe partnership-a new type of relationship in Russian economy // Voprosy gosudarstvennogo I municipalnogo upravleniya. – 2009.–No.2.–S.45–51.
[17] Delmon, J. Private Sector Investment in Infrastructure: Project Finance, PPP Projects and Risk / J. Delmon // The World Bank and Kluwer Law International.2009. P.7.

opinion, public-private sector cooperation– the mutually beneficial cooperation of public authorities, organizations and private business entities in relation to objects in the field of direct public interest and control, provides for the distribution of risks between partners, which are carried out in order to effectively implement projects of significant public and public importance[18].

I.A. Gubanov defines PPP in a broad sense as a system of norms of state and Public Law, which is an independent inter-sectoral institute that regulates social relations related to the interaction of state legal entities (including individual entrepreneurs) in order to achieve socially important and useful goals and support the implementation of state functions of individuals and is registered in the manner established[19].

According to N.E.Kholodnaya, the most common is the essence of PPP, a contract between a public agent and the private sector, which allows participation in the provision of public goods. Thus, PPP is a form of interaction that involves the use of technical, financial and management resources of the private sector to achieve the tasks set by the state and business[20].

According to LS Demidova, cooperation is[21] "a formalized cooperation system of a number of structures created to achieve a specific goal and based on the legal basis or informal agreements on cooperation or joint activities".

CSI, the organizational and legal forms and methods of implementing the specified goals are limited by the choice of the scope of their activity and the field of practical programs.

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[18] Belitskaya, A.V. Pravovye formy gosudarstvenno-chastnogo partnership v Rossii i zarubejnyx stranax / A.V. Belitskaya // Predprinimatelskoe pravo. – 2009. N 2.– S. 21–27.

[19] Gubanov, I.A. Gosudarstvenno-chastnoe partnership v Rossii: predmet, metody, principy pravovogo regulirovaniya / I.A. Gubanov // Yuridicheskaya mysl.– 2009.– No. 2.– S. 27–28

[20] Kholodnaya, N.D. Gosudarstvenno-chastnoe partnership- a new type of relationship and Russian economy / N.D. Kholodnaya // Voprosy gosudarstvennogo i municipalnogo upravleniya.– 2009.– No. 2.– S. 45–5

[21] Demidova, L. S. System of partner relations: new trends and effectiveness / L.S. Demidova // Gosudarstvo i biznes: institutionalnye aspekty.- 2006.- S. 40–48.

Most researchers believe that PPP is aimed at solving socially important tasks in mutually beneficial conditions for the state and business. In this regard, the specific features of PPP are as follows:

time limit (projects are usually created for a specific object or set of objects, which must be completed within a certain time);

scope restrictions (projects are attached to a very specific object or complex of objects- large housing construction, airports, seaports, hydroelectric power plants, etc.)

implementation in a competitive environment (there is competition for every contract or concession).

Thus, PPP is a legally and organizationally formalized system of relations between the state and business for the purpose of implementing joint projects under mutually beneficial conditions.

The emergence of this new institution is due to a number of socially important reasons.

Firstly, this is due to the lack of budgetary funds, and secondly, the lack of the possibility of full-scale development of socially significant sectors of the economy due to the low quality of public services provided to the population.

PPP, when public and private partners unite, each party realizes its own interests, has its own goals, and solves specific tasks. There are financial, economic, social and political advantages in the implementation of PPP.

The public sector is interested in improving the volume and quality of infrastructure and socially oriented network services to the population. The main task of the private sector is the desire to receive maximum dividends from participation in a particular joint project. The private sector sets its priorities not only for profit, but also for sustainable cooperation and perspective. At the same time, both parties

are interested in the successful implementation of projects. In any case, the state retains the main levers of regulation and control. Tariff policy, safety control, environmental and technical safety control, service quality control are among the main control levers. Participants of the private sector of the economy can be citizens and legal entities represented by commercial and non-profit organizations that are not founded by the state.

PPPs in the field of economy and public administration include expert state contracts, leases, agreements on the distribution of products and services of PPP enterprises, concession contracts. One of the forms of PPP is various contracts that the state provides to private companies.

Contracts are administrative agreements concluded between the state (local self-governing body) and a private firm for the implementation of certain socially necessary and useful activities. In the practice of PPP, the most common contracts are contracts for performance of work, provision of public services, management, service for public needs, product delivery, and technical assistance. In administrative contractual relations, the right to dispose of property is not transferred to a private partner. Costs and risks are fully covered by the state. The interest of a private business is that, under the contract, it receives the right to an agreed share of income, profits or accumulated fees. Usually, the contracts concluded with the state or municipal body are very attractive business for a private entrepreneur, because in addition to reputation, he is guaranteed a stable market and income, as well as possible benefits and advantages.

PPP is another state's property lease (leasing) relationship. A traditional rental agreement and a leasing agreement have the feature of granting temporary use of state or communal property to a private partner for a certain fee.

The most common form of PPP in the implementation of large investment projects abroad is concessions. Privileges (concessions)- on the one hand, the state (grantor) and, on the other hand, a private legal entity or individual (beneficiary), on the basis of a contract, the absolute monopoly of the state to grant the right to use state property to the beneficiary on the basis of payment and return a system of relations arising from the rights to perform the types of activities that it organizes.

Concessions are the most developed, promising cooperation and is a complex form. First, unlike contractual relationships, they have a long-term nature, which allows both parties to strategically plan their activities.

Second, in concessions, the private sector has the most complete freedom in making administrative-economic and management decisions, which distinguishes them from joint ventures and contracts for the performance of works.

Thirdly, the state has sufficient power to influence the concession in the event of a violation of the terms of the concession to the concessionaire within the framework of the Concession Agreement and legislative norms, as well as when it is necessary to protect the public interest.

Fourthly, the state grants the concessionaire only the rights to own and use the property, but reserves the right to dispose of it.

Key Benefits of Public Private Partnnerships

- Consume Less Time and Improve Monitoring
- Promotes Infrastucture Development and Local Development
- Increase Technical and Technological Cooperation
- Provide Elastic Services Reducing Service Costs
- Buiild Coperative Growth through Private Sector Integration
- Risk Sharing with Private Partners
- Help to Lessen Public Sector Budget Constraints
- Promote Innovation and Creativity

1.2. Risks in the formation of public-private partnership investment funds and their reduction factors

Currently, the PPP system is actively used in international practice in the implementation of social and infrastructural projects and is increasingly expanding as a special direction of investment processes with its many advantages. While PPP represents a mutually beneficial activity of cooperation between the public and private sectors, this area, like other areas of market relations, is not free from various risks and unexpected losses.

In general, PPP has initiated a qualitatively new phase of public-private sector cooperation in the implementation of infrastructural projects. Both the public and the private sector are tasked with effectively managing and allocating risks while providing social or economic benefit to PPPs. In the effective management of risks in the PPP system, the public partner and the private partner can either serve to prevent risks for each other or, on the contrary, can create risks. These circumstances are closely related to their goals, qualifications and business ethics. In this regard, we found it permissible to quote the opinion of Yu. A. Khalimovsky, a mature Russian economist, that is, "The main essence of PPP is not only the mutual cooperation of the state and the private sector, but also the effective distribution of risks and the private sector's participation in certain countries. It consists of indirect participation in the implementation of its functions and solving social tasks that are not so relevant for private business[22].

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[22]Khalimovsky Yu.A. "Contsessionnoe soglashenie: risk, svyazannye s sostavom obekta, i ravnoe positionozhenie storon"// Elektronnyy resurs // https://zakon.ru/halimovskiy. 22.11.2017.

General description of the project: features of the facility, deadlines and values for the implementation of the project

⬇

Risk identification: sources of risk, potential risks

⬇

Risk assessment: defining a specific process to take action

⬇

Development of risk prevention measures (risk management plan), formation of reserves, introduction of appropriate conditions for the DPRK agreement.
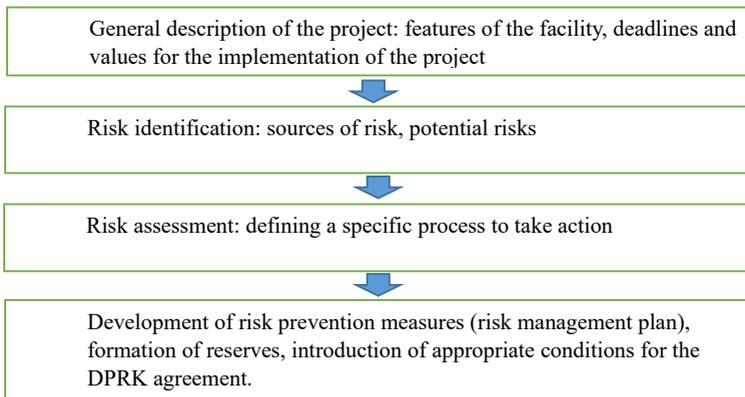
In order to understand the risks in the implementation of PPP projects more fully and to analyze their characteristics, it is appropriate to consider the types of risks separately by grouping them. Most scientists and practitioners distinguish the following types of risks: "political and legal risks", "technical risks", "commercial risks". Also, economic and financial risks form a separate group. Economic risks include cyclical risks that are not directly related to the implementation of the PPP project. These are the risks of slowdown in economic growth, inflation, interest and exchange rates. We will consider these risks in more detail in a separate section of this chapter. Financial risks are an integral part of PPP projects and are formed under the influence of a number of political, social, environmental and other factors[24].

Project risk planning is critical to successful PPP project implementation and risk mitigation. The more precisely the risks are planned, the more losses will be prevented.

Classification and assessment of risks in PPP projects not only reveals the essence of PPP, but also creates abasis

[23]Kondrateva .U.D. Planirovanie riskov realizatsii proektov" gosudarstvenno-chastnogopartnership». Upravlencheskoe konsultirovanie.No.6.2015 str.205-215.
[24] T. Yu. Rudenko, I. I. Pustomolotov. "O sobennosti riskov, ix raspredeleniya I upravleniya." vspheregosudarstvenno-chastnogo partnership»tatiyana_ru@mail.ru, Russia,Tula,Tulskygosudarstvennyyuniversity.

for increasing its efficiency, successful management and implementation of projects. Generally, the following positional steps are widely used in risk identification and management[25]:

❖ **Risk planning and identification.** In this case, the general and individual risks of a separate project are determined and formed.

❖ **Risk assessment.** It specifies the possible causes of the risk, the amount of possible losses in a certain risk situation, and the level of impact of the risk on the implementation of the project.

❖ **Risk distribution.** Depending on the characteristics and capabilities of the state and private partner implementing the PPP project, different types of risk are distributed between them. Also, the risk can be transferred to a third party not participating in the partnership-an insurance company or an outsourcing organization.

❖ **Mitigating risks.** In this case, measures are developed to prevent unexpected situations and minimize the amount of losses.

❖ **Risk monitoring.** In this case, the identified risks are constantly monitored and the origin of new risks is analyzed[26].

Comprehensive implementation of these positional stages of risk reduction creates an opportunity to systematically prevent risks of PPP projects and ensures effective operation of their mitigation factors. First of all, PPP risk mitigation factors must ensure that the private partner is interested in implementing the project. In this case, the state can assume some of the risks of the private partner using its financial and administrative resources. In

[25]Popelnyukhov S.N. "Upravlenie riskami gosudarstvenno-chastnogo partnership prirealizatsiiinvestitsionno-stroitelnykhproektov //Nedvijimost: ekonomika, upravlenie. 2012. #2. P.72–78.

[26]RodionovA.S."Upravlenie riskami I risk upravleniya v turbulent business environment»//Actualscience 2016. T.2.No.4.S.99. 101.

particular, in the event of a risk, the state takes measures to reduce risks by repurchasing assets from a private partner, issuing subordinated loans, targeted bonds, and issuing state guarantees. Also, allocation of direct subsidies by the state to the private partner for the provision of certain goods and services is considered a special direction of risk reduction and support[27].

In international practice, the mechanism of PPP began to form since the 80s of the last century. Uzbekistan is among the countries that are taking initial steps in the development of PPP, but it is worth noting that Uzbekistan has successfully implemented unprecedented reforms in this field in recent years. In particular, the Law of the Republic of Uzbekistan "On Public-Private Partnership", adopted on May 10,2019, creates the legal basis of the industry, and in turn, the legal strengthening of industry relations creates a more favorable environment for investors and reduces various risks. laid the groundwork for prevention. Article 27 of this law stipulates that the information on the distribution of risks between the state partner and the private partner shall be specified separately in the public-private partnership agreement[28].

Today, the system of financial support of investment processes is one of the important directions of the state economic policy aimed at sustainable economic growth. In the conditions of international globalization and deepening of economic competition, it is impossible to achieve an investment environment without creating an effective financing system. In turn, the processes of financing investment projects do not exclude various losses and risks. In this regard, the PPP system plays a special role in preventing investment risks and minimizing their impact,

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[27]KurbanovS.A, MagomadovSh.A., SaidullaevD.D.Riski ix vliyaniena razvitie gosudarstvenno-chastnogo partnership v Rossii//Problemy i perspektivy ekonomicheskogo razvitiya regionov: Sb.state .All-Russian scientific and practical conference, posvyashchennoy 45-letiyu Education Institute of Economics and Finance.2017.S. 82 .86. .

[28] https://lex.uz/docs/4329270 - National database of legal documents of the Republic of Uzbekistan.

that is, in international practice, the public-private partnership system has become a priority and effective mechanism for financing and implementing investment projects. PPP is a complex process that combines the activities of several participants. On the part of the private partner- investors, creditors, state agencies that determine and organize PPP procedures, as well as the organization engaged in public procurement. In assessing and preventing certain risks, it is important to define policies and procedures aimed at specific goals for the participants of the DSC, as well as to ensure their transparency. In addition, the factors related to the minimization of risks through the establishment of a banking consortium and a hedging system are also distinguished.

The material well-being of society largely depends on the efficiency of the economy of this society. For this purpose, real assets used for the production of goods and services (land, buildings, equipment, knowledge) and financial assets that do not directly affect the production process (stocks, bonds) are used. To ensure the successful circulation of financial assets, increasing the efficiency of the use of real assets is crucial. Therefore, it is appropriate to consider the importance of the investment process in the economy, which reflects three groups of factors: investment potential, investment risks, investment environment. Investment potential includes production, innovation, finance, infrastructure, export,[29] etc.

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[29]Ermoshina .T.V. "Vozmojnostiminimizatsiiinvestitsionnykhriskovgosudarstvennochastnogopartnership"- . Internetmagazine "Naukovedenie",vol.9,No.5(September-October2017) . https://naukovedenie.ru

	The likelihood of a risk occurring					
reliable						acute risks that reliable affect the project
likely						
unlikely		low probability and unnecessary risks				
		Consequences of risk occurrence				
		It's useless	minimum	significant	important	sharp

Figure2. Matrix of risks in PPP projects[30]

It should be noted that the investment process consists not only of capital growth, but also of possible financial losses. The possibility of financial losses and loss of capital is a very dangerous investment risk for an investor. The investment process is a process inextricably linked with risks, and only in this case it is important to minimize the impact of these risks.

The investment environment is considered as a part of the economic environment in the country, and the set of macroeconomic indicators reflects the overall attractiveness of the investment environment. Investment environment and investment risk are closely related processes, and the most

[30]Kondrateva .U.D.Planirovanie riskov realizatsii proektov"gosudarstvenno-chastnogopartnership» Upravlencheskoe konsultirovanie.No . 6.2015 .str.205-215.

important criterion of investment risk is the investment environment. The more attractive and stable the investment environment, the lower the level of investment risk. The investment environment is the opportunities created for business in the country, in particular, a strong legal framework, a state support system, tax and other benefits for investors, financial support, investment risk insurance, labor potential, land and other assessed by the availability of natural resources.

The investiture of the investment process based on the PPP is the result of the systematic rules of the investment process, which determine the basis of the relationship of the various investment institutions that make up the investment process and bring action. In this case[31], it is worth noting that today the PPP has managed to become an effective investment institution.

Currently, in most developed countries, the decisive tool of the state investment policy is PPP. Great Britain, France, Germany and Austria standout among the leading countries in the sphere of implementation of PPP projects[32]. In these countries, the PPP mechanism is widely used not only at the local level, but also at the international level.

A thorough analysis of the risks is also required during the review of the PPP mechanism. For this purpose, it is possible to consider the grouping of risks within PPP in Table1. As can be seen from the table, the nature of risk transfer on the basis of PPP is distinguished, for example, if the public sector takes 0% risk, then the private sector takes100% risk. It can be seen that usually the risk can be

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[31]MakarovI.N. Neobkhodimost sovershenstvovaniya institutionalnoy sredy gosudarstvenno-chastnogopartnershipvusloviyax Rossii .//Rossiyskoe predprinimatelstvo.– 2011.–No.7-1(187).-p.74-79.–URL:http://bgscience.ru/lib/6927/.

[32]Ermoshina .T.V."Vozmojnosti minimizatsii investitsionnykh riskov gosudarstvenno chastnogo partnership"- Internetmagazine"Naukovedenie", vol.9, No.5(September-October2017) .https://naukovedenie.ru .

borne by one participant of PPP. Therefore, the risks in PPP are divided into two groups: political and economic.

Public-private partnership risk grouping[33]

Risk group	Risk	Responsible party	
		Private partner	State partner
Political	Political view of the project	+	
	Change in legislation		+
	Budget cycle		+
Economical	Bank interest rate changes		+
	Inflation		+
	Changes in exchange rates		+

Unlike other types of activity of economic entities, PPP is characterized by a relatively high level of risk[34]. Based on the specific characteristics of PPP projects, it is appropriate to take measures of political support by the state for the active development of this mechanism. In the implementation of long-term large-scale investment projects in the field of PPP, especially political risks become somewhat more active.

In the long term, political reforms in the country or changes in legislation are unlikely to affect the fate of a large project. Such risks can exist in any country, but in this case, a compromise solution between the state and a private partner will serve to mitigate the impact of political risk.

[33] Ermoshina .T.V."Vozmojnosti minimizatsii investitsionnykh riskov gosudarstvenno-chastnogo partnership"- Internetmagazine "Naukovedenie", vol.9, No.5(September-October2017) .https://naukovedenie.ru .

[34] YescombeE. R. Government-privatepartnership:basicfinancialfinancing .M.:AlpinaPublisher,2015.–457p

Economic risks include changes in bank interest rates, inflation and exchange rates. Changes in bank interest rates occur directly in case of attracting bank loans for the implementation of PPP projects. Commercial banks rarely provide long-term loans at fixed rates. Because it is relatively difficult for a commercial bank to attract long-term resource funds, and secondly, long-term loans may be more risky for a commercial bank. In this case, commercial banks try to allocate loans to long-term PPP projects with "floating" rates, that is, the loan rates are adjusted annually based on the current situation.

This will not affect the forecasts, financial flows and expenditure plan of PPP projects. This situation is first of all noticeable in changes in cash flows. Especially in investment projects with a high weight of borrowed funds, there isa risk of insufficient funds to cover the loan principal. Financial hedging helps prevent this risk. The simple stand most common way of insuring losses related to changes in interest rates is to revise the prices of the services provided by the private partner depending on the changes in interest rates, of course, in agreement with the public partner. However, this method of reducing risks in PPP is an inappropriate method for public authorities, because with the change of interest rates in the hedging method, as a result of revision of the price of the services of the private partner, it may cause additional cost burden to the state budget.

The interest rate swap method, which is another form of hedging method, is of particular importance in reducing risks in PPPs. The interest rate swap method has a history of almost half a century in the financial markets and is widely used as one of the effective methods for reducing risks. Banks participating in derivative financial instrument markets also widely use the swap method. The swap method is particularly

relevant for PPP projects compared to other long-term derivative interest instruments. However, it should be taken into account that there may be some problems in covering the risk of interest rate increase through swaps: usually, due to the fact that PPP projects are considered large projects, the loan continues even after the financial aspects of the project have been formalized, and the swap is at that time. should be organized; some commercial banks may offer swap deals on unfavorable terms for a private partner, etc. These problems can be solved through a consortium.

For example, if more than one bank participates in the lending of the PPP project, the terms of swap agreements will be eased in return for competition between them. Local banks actively participate in the financing of PPP projects in developed countries. According to "Project Finance International" agency, Royal Bank of Scotland, HSBC Bank, Barclays Bank, Standard Chartered (UK) BNP Paribas, Calyon (France), Bank of Tokyo-Mitsubishi, Mizuho Financial, Sumitomo Mitsui Banking Gorp (Japan), Hupovereinsbank, Westdeutsche, Landesbank (Germany), ABN Amro, ING (Netherlands) and other banks can be distinguished.

If we consider the risks associated with inflation in the implementation of PPP projects, we can see that these risks are more complicated than the risk of interest rate changes. Price increases due to inflation will not remain unaffected by the financial aspects of PPP deals. This primarily affects the public sector, meaning that private partner service price increases due to inflation will result in additional fees.

Exchange rate changes also belong to the category of macroeconomic risks and occur when an investment project is financed with funds in different currencies. Usually, this form of financing is rarely found in relation to PPP projects.

Because PPP projects are mainly implemented in domestic infrastructural construction, local currency is used in these projects. At the same time, there are exceptional cases, such as the construction of international airports, ports, etc. Therefore, it can be said that the risks associated with exchange rates have a relatively passive effect on the implementation of PPP projects.

To date, the development of the system of financial support of investment processes in the PPP is gaining socio-economic importance in the development of any country. This, in turn, requires further deepening of theoretical knowledge, development of methodological and practical recommendations. The analysis shows that in the effective financing of the investment process through PPP, it is necessary to correctly assess and place the risks. Generally, considering that most of the risks in PPP projects are borne by the private partner, it is desirable to establish mechanisms to support the financing of the private partner and to mitigate the impact of macroeconomic risks on it.

Public-Private Partnership

[ˈpə-blik ˈprī-vət ˈpärt-nər-ˌship]

A collaboration between a government and private enterprise, often on large infrastructure projects that the private partner may finance, plan, or execute.

1.3. Investment tools for the development of public-private partnerships in economic sectors and their importance in innovative development

PPP is an effective mechanism for pooling resources and sharing risks between the public and private sectors for the implementation of a specific infrastructural project. Attracting private investments to economic sectors, increasing efficiency by ensuring synergy of resources, as well as expanding the scope of production of goods and services constitute the basis and purpose of the PPP system. PPP projects are implemented through various investment levers in economic sectors. In particular, the most common classic type is that on the basis of concluding an investment agreement between the state and a private partner, the state partner hands over the property object, property right, intellectual property object to the private partner for the implementation, operation and maintenance of the project provided for in the agreement. in turn, the private partner implements the investment project agreed upon in the PPP agreement at the expense of its own funds or borrowed funds, as well as at its own risk.

Another means of implementing the PPP investment project is the lease contract of investment obligations. In this case, the lessor state partner gives the property to the private partner for a certain period of time to invest in it and use it for a specific purpose. In accordance with the state procurement legislation, procurement of goods, services and works at the expense of budget funds for state needs in the entire life cycle of the procurement object is considered a special investment tool of the PPP. Also, the investment activity of infrastructural projects increases through the

conclusion of PPP agreements by state companies within the framework of the corporate form of the procurement system.
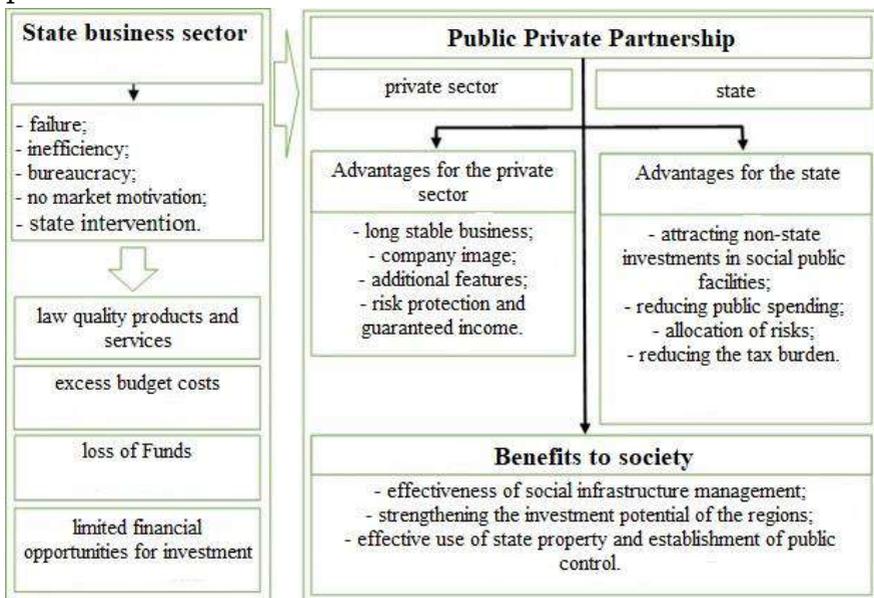
Projects implemented on the basis of concession contracts are considered an important investment tool of PPP, and these projects are often used in the implementation of investment projects with a social aspect, including construction of public transport, railway, education, and sports facilities. In this case, on the basis of the concession contract, one party- the concessionaire, builds a social object at its own expense, the ownership of which belongs to the second party- the concessionaire, and the concessionaire gives the right of ownership and use to the concessionaire in accordance with the agreement. The advantage of this is that the concessionaire and the concessionaire coming in the role of a public and private partner will establish mutually beneficial social and economic activities, while ensuring economic activity[35].

In fact, both parties, as well as society, will have a number of advantages when making investments in PPPs (Figure 3). In particular, the state partner through PPP attracts opportunities of private business to produce products or provide services with a social aspect, transfers some risks to the private sector, reduces the participation of the state in the economy. The private sector, in exchange for state property, reduces part of the costs, transfers macroeconomic and political risks to the state partner, and expands the scale of its market at the expense of the market segments that the state previously engaged in. Experiences of developed countries show that the development of PPP, the successful operation of investment tools and tools in the field is closely related to the stable political and macroeconomic situation in the country, the sense of responsibility of public

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[35] http://pppcenter.ru:provided by the author based on the materials of the official website of the National Center for Public-Private Partnership of the Russian Federation.

authorities and the private sector, and the development of private business.

State business sector		
↓		
- failure; - inefficiency; - bureaucracy; - no market motivation; - state intervention.		

Figure 3. Advantages of PPP[36]

The full operation of the investment tools for the development of PPP is also determined by the results of positive solutions to some systemic problems in the field in the country. In particular:

- Establishment of a unified system in the field of PPP. Despite the fact 1 that PPP is a relatively new field in the Republic of Uzbekistan, a unique national system and a unified policy have been established in a short period of time. The adoption of the Law of the Republic of Uzbekistan "On Public-Private Partnership" and the establishment of the Public-Private Partnership Development Agency are a clear expression of this.

- Long-term strategic planning and forecasting of state budget expenditures 10 in economic development. The

[36] Emelyanov Yu.S., Khachaturyan A.A. Natsionalnaya practice administration 2009. No. 8.

adoption of the Strategy of Actions on the five priority directions of the development of the Republic of Uzbekistan and the systematic implementation of reforms on the basis of it, as well as the adoption of the State budget in the Republic of Uzbekistan starting from 2019 with goals (orientation)forthenext3yearsDXShismakingitpossibleforthep articipantsto plan the project costs correctly.

Transparency and truthfulness of information. It can be said that this factor is a decisive factor in the implementation of PPP projects, as it is an important factor in other types of investment activities. Because the completeness, transparency and truthfulness of information for investors serves to study the market in depth and prevent various losses.
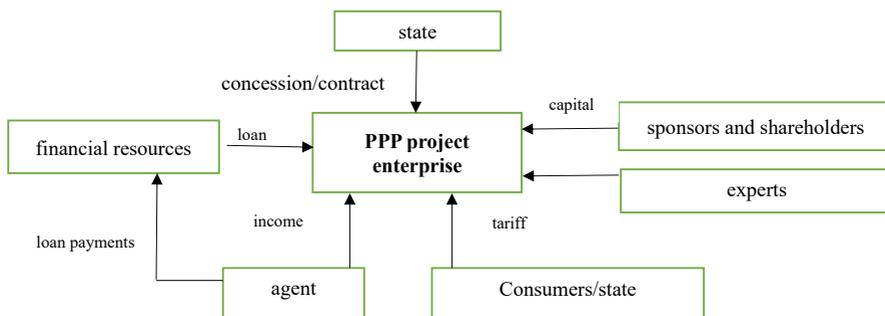
Figure4. PPP project structure[37]

The increasingly developing economic relations, including the improvement of PPP mechanisms, are becoming more active, along with traditional directions related to the implementation of social or infrastructural projects. In particular, the development of innovative infrastructure, establishment of business incubators, technology parks and technopolises through the PPP system is being used as a new direction[38].

[37]www.review.uz.Compiled based on the information of the analytical-informational electronic portal
[38]Alexandrin .Yu.N.Novye institutiy razvitiya malogo predprinimatelstva v innovationno-orientirovannoy economie"//Ekonomicheskieihumanatirnyenauki.2011.No.3 .(230).S.14-21.

In today's modern economic development period, it is wrong to connect the financing of innovative projects directly with budget funds, to look only at budget funds as the source of these projects. The new stage of technological and economic development requires greater involvement of business in innovative projects and developments. A truly competitive environment has formed in the innovation market, and it can be said that innovation is becoming the main means of competition, that is, it is increasingly clear that it is impossible to stay "alive" in the competitive field without innovation. At the same time, regardless of how active the competition is, the market of innovations has its own characteristics, which require the direct or indirect participation of the state in the implementation of such innovative projects. In particular, taking into account that some innovative projects require a large amount of capital and pay off over a long period of time, business will be less interested in participating in them. In such cases, innovative projects PPP can be implemented through joint activities of government and business. In time, the state will take measures to stimulate innovation for private business[39].

In the development of PPP in economic sectors based on innovations, both the state and private business will have a number of opportunities. In particular, as a result of cooperation between the state and the private sector, the state's commercial activity will improve, the quality of state purchases will increase and their value will decrease, additional investments will be attracted to the development of science, technology and technology that serve to create an innovative model of the economy, and the activities of subjects in the field of innovative entrepreneurship will increase. is supported. And for business, opportunities to

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[39]Vorotnikov A.M., KorolevV.A. "Orazvitiigo udarstvenno-chastnogopartnershipvrossiiskikhregionax"//Nedvizhimost i investitsii Legal regulation.2010. #2.

enter and benefit from new markets, to receive additional benefits and preferences from the state, as well as to commercialize the results of innovative developments, will be opened in the conditions of risk distribution and cost savings for fixed assets. In a word, in an innovative environment, the state becomes not only a partner of private business, but also a guarantor through the PPP mechanism.

With the wide use of investment tools of the PPP, the following main directions of accelerating innovation processes in economic sectors can be mentioned:

✓ development of new organizational mechanisms of the PPP system;

✓ creation of a state support system for innovative activity results;

✓ increasing the motivation to engage in innovative activities in business entities;

✓ creation of a favorable economic and legal environment that implies effective cooperation of the state, business, science and society[40];

✓ development of effective and stimulating means of regulation of the innovative sector;

✓ consideration of the possibilities of providing state guarantees to foreign investments attracted by businesses for the introduction of new technologies;

✓ ensuring the balance of interests and risks between the public and private partners in PPP;

✓ wider involvement of small business entities in state targeted programs and innovation projects.

One of the most important tasks performed by the state to activate PPP in innovative development is the creation of joint financing and indirect financing mechanisms, as well as effective regulation of investment in innovative infrastructure.

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[40]Veselovsky .M.Yes ."Public-private partnership in the innovation sphere: current situation and perspective"-MIR (Modernization. Innovation. Development).2015.T.6.No.3.S.8-17.

In this case, increasing the motivation of business for innovative activities by creating a system of commercialization of the results of research and innovation projects is considered one of the important directions[41]. It is also possible to highlight other areas that support innovative activities, including the creation of preferential tax and loan systems, the simplification of enforcement documents, the allocation of targeted subsidies, the participation of businesses in risk management and the provision of guarantees.

Financial incentive of innovative projects in PPP as a new mechanism, it is possible to propose the issuance of targeted bonds. That is, through the issuance of these bonds, the state or local authority, participating in financial market operations, attracts temporarily free funds in the economy and purposefully directs them to finance some innovative PPP project. In order to use this mechanism in the conditions of the Republic of Uzbekistan, first of all, it will be necessary to make changes and additions to the relevant normative legal documents, as well as to form the necessary infrastructure for the implementation of operations with the circulation of targeted bonds.

In general, the success of the entire PPP system and related areas of investment project management, risk management and innovation directly depend on the level of qualification and professionalism of personnel participating in these processes. General economic knowledge is not enough or the responsible specialists working in these areas related to the PPP system, they should have deep specialized knowledge, the formation of analysis and forecasting skills, and the ability to correctly assess factors and risks. required. Also, it is desirable to establish permanent cooperation and

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[41]AgarkovS.A."Innovative management and state innovative policy"/M.: Academy of Aesthetics,2011.

exchange of experience between experts participating in innovative projects and research organizations.

Regarding the systematic application of the innovative approach in the PPP system, it is worth mentioning four innovative areas of PPP implementation approved by the European Council[42]:

1) organization of continuous production using the latest advances in ICT in the creation of new generations of robotics, automated lines.

2) organization of production based on digital technologies, which reduces the need for physical proto typing.

3) establishment of production enterprises based on new methods and "green technologies" aimed at providing human needs.

4) production of new composite materials.

The agricultural sector and the health sector are also recommended for conducting research and innovation through PPPs.

Currently, in the Republic of Uzbekistan, as part of the effective use of the country's innovative potential, special attention is being paid to directing public and private investments to innovation, research and development, experimental design and technological development. Emphasis is placed on innovative approaches in the organization of relations between the state and private business, including PPP relations. As in the whole world, PPP has been accepted as a means of increasing the efficiency of innovation processes.

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[42]www.review.uz. Compiled based on the information of the analytical-informational electronic portal

Planning
Financing
Designing
Building
Operating
Maintaining

Public-Private Partnership in Infrastructure
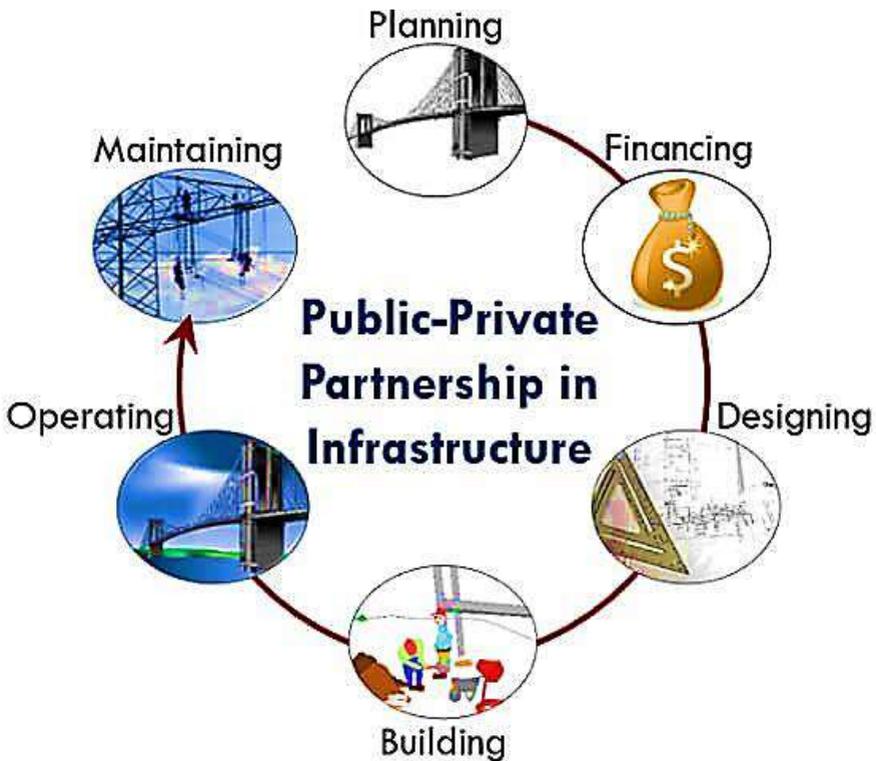
1.4. Advanced foreign experiences aimed at expanding the investment opportunities of industries operating on the basis of public-private partnership and directions of their implementation

In world experience, PPP mechanisms are widely used to attract private companies for the purpose of long-term financing and organization of public infrastructure. The PPP project is primarily implemented based on the country's socio-economic situation and priorities. Most economists and practitioners propose to study the development of the PPP systemin the world by dividing it into 3 stages. Since this system is a relatively new field inworld economic relations, the experience of most countries still corresponds to the signs of the first stage of PPP development, that is, the foundations

of the PPP system are being created, standards are being developed, and institutional reforms are being implemented, including O In the Republic of Uzbekistan, this system is also at the stage of formation.

Italy, as well as the USA, Canada, New Zealand, Japan and Russia-can be included among the countries operating in the second stage of the development of PPP.

The countries of the third stage are Great Britain, Australia, South Korea and Ireland. The experience of the developed countries of the PPP system shows that until now, PPP projects are allowed to be implemented only in the areas under the authority of the state.

In studying the world experience of the PPP system, it is impossible not to stop at Great Britain. Because Great Britain can be considered the birth place of the PPP system and the most developed point today. The concept of "public-private partnership" was first put into practice in Great Britain[43].

Table2

Stages of development of the PPP[44] system in world experience

PPP development stages	Characteristics
The first stage	- Forming the foundations of the PPP policy; - Development of basic concepts; - Creation of the PPP services market; - Identification of priority projects.
The second stage	- Organization of the structures of the DSC;

[43] Marty F., Voisin A., Trosa S.Les partenariats public-privé. Paris: Éditions La Découverte, .2006. URL: http://www.oecd.org/dataoecd/32/9/41768196.pdf.

[44]Agazaryan N.V. «Analyz mirovogo opyta primeneniya mechanism gosudarstvenno-chastnogo partnership»//Gosudarstvenno chastnoe partnership.2016. T.3.No.2.S.151-172.

	- Formation of the regulatory legal framework; - Expansion of PPP projects at the expense of new sectors; - Preparation and publication of practical manuals.
The third stage	- Formation of PPP models; - Elimination of legal and organizational barriers; - Creation of a flow of PPP projects; - Expansion of the range of investors, including insurance and pension funds, private funds and entities.

The idea of attracting private funds to projects of public and social importance in the UK originated in the 1980s, while the introduction of the private financial initiative (Private Finance Initiative) in 1992 was instrumental in the beginning of the active development of the PPP system. On the basis of this program, the British government actively supports the practice of close cooperation of public and private business in the form of PPP for the development of infrastructure sectors in the economy in order to reduce the excess burden on the budget.

When we compare the level of development of the PPP system in Great Britain with the "big seven" countries, we can see that there are significant differences. In particular, 72.7 percent of the investment projects implemented in the field of PPP in the "big seven" countries correspond to Great Britain (Figure6).
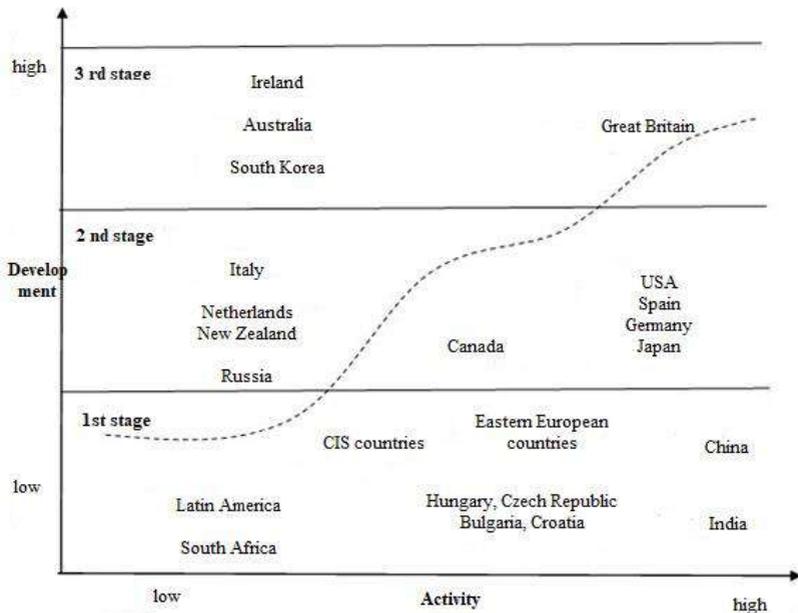
Figure 5. Development curve of PPP[45]h in world countries

The "Private Finance Initiative" program states that the advantage of the PPP mechanism is that the private sector performs some tasks better than the state, and efficiency is achieved through:

- rational distribution of risks and tasks;
- application of the whole life cycle principle of the project;
- incentive optimization and balanced interest.

In the UK, the PPP mechanism is almost always a private financial initiative. It is the result of long-term research by the British government, economists and experts. The special features of the "Private Financial Initiative" program are as follows:

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[45]Compiled by the author based on materials from Internet sources.

projects do not aim to create new assets for the state, but aim to increase the standard of living of the population through their implementation;

the private sector undertakes certain long-term obligations to create and maintain assets, while the government assumes obligations to meet the demand for these services in the long-term.
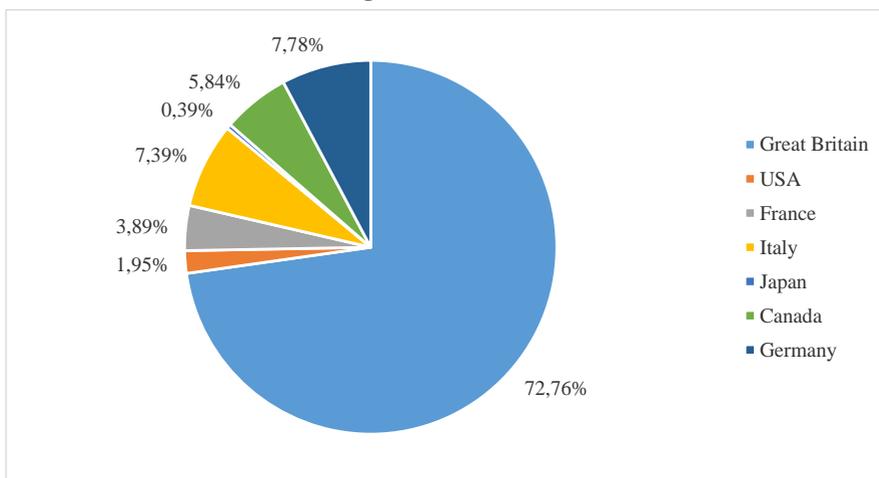
Figure 6. It was implemented in the "Big Seven" countries PPP projects[46]

Also, a significant part of the risks in this program will be borne by the private sector. Value for money is recognized as the most important criterion when making decisions on PPP project implementation.

Great Britain is a leading country not only in terms of the scale of PPP projects, but also in the diversification of these investment schemes in economic sectors. In today's environment, British business has extensive and extensive experience in the implementation of PPP projects, including financial, legal and project management aspects.

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[46]Agazaryan N.V. «Analyz mirovogo opyta primeneniya mechanism gosudarstvenno-chastnogo partnership»//Gosudarstvenno chastnoe partnership. 2016. T. 3. No. 2. S. 151-172.

On the other hand, together with the UK, it is appropriate to review the specific experience of the United States in the PPP system and evaluate the possibilities of implementation. The peculiarity of the US experience is that the country does not have a federal law setting uniform standards for PPPs. Perhaps in each state, based on the capabilities and goals of the state, separate bases of normative legal documents have been adopted.

In the United States, the main institution regulating and coordinating relations within the PPP system is the National Council for public-private partnerships (NCPPP), established in 2005. The National Council is a non-profit organization, whose main mission is to promote and promote the PPP system in all sectors and aspects of the economy, as well as to create a basis for beneficial cooperation between the public and private sectors of the economy based on the effective management of socially significant expenses[47].

Also, the National Council for Public-Private Partnership performs the following main tasks:

🞣 ensures exchange of information between state and private businesses on the implementation of PPP projects;

🞣 organizes training and seminars on PPP;

🞣 prepares and analyzes general information to popularize the use of PPP instruments;

🞣 Methodologically supports the process of preparation and implementation of PPP projects, including international projects.

The results of the analysis of the experience of developed countries indicate that in countries with strongly developed market relations, high levels of GDP and labor productivity per capita, long-life expectancy, high quality of education and medical services, in these countries, the PPP mechanism is

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[47] http://ncppp.org 22 Based on information from the website of the US National Council on Public-Private Partnerships.

widely used mainly in projects in the fields of education and health. In developing countries, the mechanism of PPP together with these social projects is in the leading position in infrastructure projects - road, transport.

It can be noted that in countries with developing or transition economies, more attention is paid to infrastructural projects, in particular, to the development of transport infrastructure, which are considered areas that stimulate economic growth, compared to social sector objects. If we look at the investment projects implemented in the field of PPP in the case of Russia, priority is given to projects in the field of construction and modernization of transport infrastructure in the country. Because there are imbalances in the development of the transport system in most regions of the Russian Federation, there is still a high demand for quality transport infrastructure services.

First-stage CIS, Latin American, and Eastern European countries like Uzbekistan should study the shortcomings of other countries in the field of PPP, take measures not to repeat them in the national experience, and use the opportunities to apply the experiences developed in advanced must countries. In particular, examples of experience formed in the field of road construction in Australia and Ireland, construction of hospitals, educational facilities, military infrastructure facilities in the United Kingdom, municipal housing construction in the Netherlands stand out.

As a result of deepening globalization processes, PPP is developing in different countries of the world with similar features and levels. For the stable and rapid development of this system, it is important how much the market economy is improved in the country, and the balance of interest and trust between the public and private sectors is formed. At the same time, despite the fact that the characteristics of the

development of PPPs are similar between countries, different aspects are distinguished in different countries. In particular, in Anglo-Saxon countries, when choosing a private partner, three different tenders are held: construction, design and management. In countries like France, on the contrary, a single competition is held for all types of services. In general, the experience of a number of developed European countries shows that the PPP mechanism is successfully implemented when there is a complementary interest between the public and private sectors.
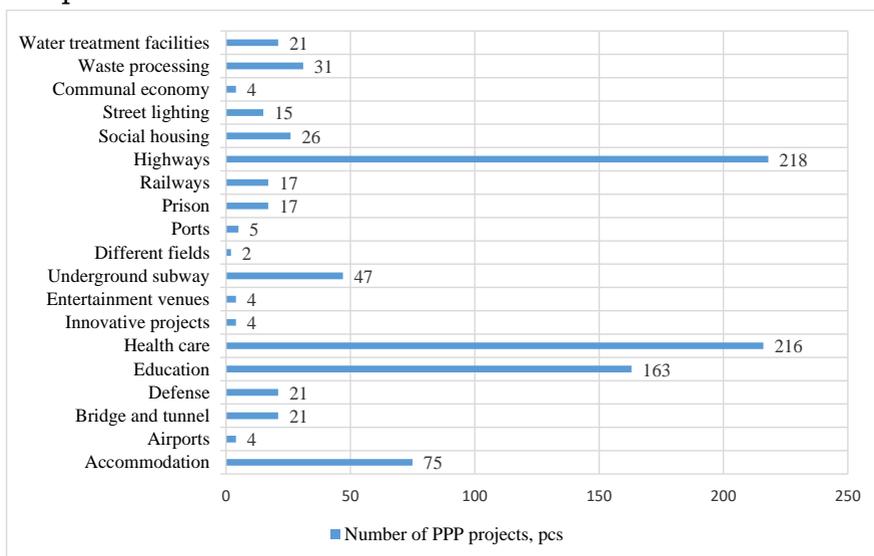
Figure7. Economic sectors in which[48] PPP projects are implemented in the world

Russian economist S.A.Balashov, analyzing PPP projects in foreign countries, came to the conclusion that there are sectors of PPP projects implementation in different countries with specific priorities: for example, in the USA-highways (89% of total projects), in Great Britain-healthcare

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[48]Agazaryan. N. V. «Analyz mirovogo opyta primeneniya mechanism gosudarstvenno-chastnogopartnership»//Gosudarstvenno chastnoepartnership.2016. T. 3. No .2. S. 151-172.

maintenance (35 percent) and education (32percent), in Germany-education (43percent), and in countries such as Italy, France and Canada-healthcare sectors are the priority[49].

According to the UN classification, the analysis of the implementation of PPP projects in different countries shows that, based on the socio-economic development of the country, the general situation regarding PPP also changes. In Figure7, we can see the analysis of the PPP projects in the world by economic sectors.

In recent years, such PPP projects have been implemented in certain countries, which until today were only under the jurisdiction of the state. In particular, modern PPP schemes are emerging in the USA, Great Britain and Germany. In this, the strategic plans of the state envisage the participation and interest of private business in the implementation of general national projects, including military and space projects. In the period of modern development of the world economy, it is appropriate to determine the relatively effective branches of PPP application for each country. It is practically impossible to attract investments to all sectors of the economy at once, therefore, first of all, it is necessary to determine the sectors to which investments will be directed.

Also, in countries with different levels of economic development, the possibilities and characteristics of attracting investments at the expense of private sector funds are also different. In developing countries, the sectors where investment projects are implemented through the PPP mechanism are mainly the transport network (highway, railways, airport), social sector (education, health, entertainment and tourism facilities), housing space is

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[49]Balashov S.Opyt funktsionirovaniya GChP v razvityx stranax//Gosudarstvenno-chastnoe partnership vusloviyax krizisa": Sbornik materialov konferentsii.-Moscow,2009.-S.281.

contributed by utilities (electricity, water, gas supply, water treatment), as well as in some cases other sectors (defense infrastructure, prisons). In this, infrastructural projects in transport and social networks take the leading place.

PUBLIC PRIVATE PARTNERSHIP

7 Essential Conditions that Define Public Private Partnership

Arrangement
Between the Public and Private Actors or Parties

01

02

Risk Sharing
Optimally Between Contracting Parties

Supply & Provision
Of Services for Public Benefit by Private Partner

03

04

Standards
Focus on Quality of Service/Performance

Investment
In and/or Management of Public Assets by Private Partners

05

06

Payments
Linked to Performance

Time Period
For a Specified Duration

07

CHAPTER II. INVESTMENT PROJECTS IMPLEMENTED ON THE BASIS OF PUBLIC PRIVATE PARTNERSHIP AT "UZBEKISTAN RAILWAYS" JSC AND THEIR EFFICIENCY

2.1. Economic and financial status of investment projects implemented on the basis of public-private partnership in "Uzbekistan Railways" JSC

It is known that the need to continuously attract investments from any country that is on the way to develop the economy and ensure a decent standard of living for its population and implement investment projects with high liquidity is an urgent issue. According to world experience, the effectiveness of implementing large scale economic reforms is closely related to the effective implementation of investments, in particular, investment projects in various fields. Investment depending on the size and amount of projects, conclusions can be drawn about the changes taking place in the economy.

It should be noted that today there are many debates about investment projects. The increasingly widespread use of concepts related to investment projects, first of all, creates the need to understand their economic essence. Usually, any investment business is based on investment ideas that are focused on a certain goal and perfectly created. This leads to the decision of a competitive investment project.

The concept of "investment project" is interpreted[50] in two ways:

❖ it is understood as a work, activity, event that implies the implementation of a set of activities that ensures the achievement of certain goals (the creation of intended results). In such cases, the terms "economic activity", "work

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[50] https://topuch.com/mavzu-investitsiya-loyihararinin-moliyaviy-va-iktisodi-samar/index.html

(summary of work)", "project" are close in meaning to these concepts.

❖ is considered as a system of legal-administrative and financial-accounting documents necessary for the implementation of certain activities or a set of documents describing the system of such activities. In economic literature, textbooks and training manuals, "investment project" is used as a second meaning concept. The concept of "project" is understood according to the first content.

An investment project is a system that combines technological processes, technical and organizational documentation, the process of building and launching facilities, as well as the movement of material, financial, labor resources, as well as relevant management decisions and activities in order to realize its intended purpose. So, based on the generalization of the above considerations, an investment project can be considered a kind of activity. It has several distinctive signs that separate the project from the height, characteristics of other types of activities and activities. They are as follows:

I. Project goals should be clearly defined. A clear definition of the project goal will help the effective implementation of this project. If the initial goals of the project are abandoned, it will cause the project to fail at all, the project will be "ended", "unfinished", "extinguished". In order to prevent such situations, a number of methods of project goal formation and achievement have been developed in recent years, which are very useful in strategic planning of project financing.

II. The project should be implemented within a specific (usually predetermined) period. As you know, the start and end of the project is valid. A project is considered complete when the main objectives of the project are achieved. It is the

guarantee of effective implementation of the project and the optimal distribution of necessary resources and actions during the specified period.

III. It is necessary to coordinate the implementation of interrelated actions in the project. A project is inherently complex, and events and activities are interdependent. While some activities are performed in parallel, some must be performed strictly sequentially, otherwise, it will cause economic risk within the project.

IV. The project must be unique. Each project has unique features. Although the same activities are performed to implement similar projects, exactly the same projects rarely occur in practice.

The following 3 limits apply to any investment projects:

- time limitation;

- limitation of monetary resources;

- limited to technical tasks (requirement for the types and quality of works and operations, technical economic indicators of the object of investment activity).

Determining the effectiveness of the budget at the stages of operation of the life cycle of any PPP projects is considered an important task, which also includes the process of development of transport infrastructure. Depending on the indicators of budget efficiency, the State partner (public) in the implementation of PPP-based projects forms its own strategy in relations with a private partner (private business). The state will also be able to increase the investment burden on projects in the process, thereby stabilizing the attractiveness of projects while reducing the burden of private business.

However, at present, not enough attention has been paid to the assessment of the budget efficiency of public investment in PPP projects for the development of transport

infrastructure. Improving the budget efficiency evaluation mechanism of PPP projects for the development of transport infrastructure optimizes the costs of both public and private business, reduces risks and increases the attractiveness of projects for private business[51]. At the same time, it takes into account the activities of design-research and construction-assembly organizations, as well as external enterprises that support their activities.

Methodical approaches to calculation of tax payments and insurance contributions paid by suppliers of necessary services and resources for the purpose of design, construction and reconstruction of transport infrastructure objects in the implementation of PPP projects, as well as analysis of the economic and financial status of implemented investment projects (Figure 8).
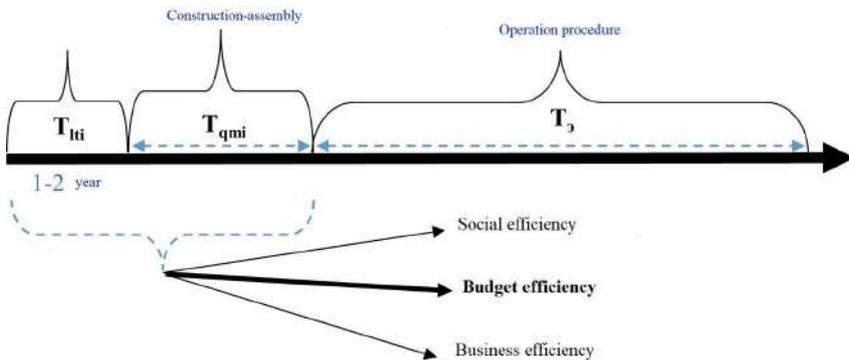
Figure 8. An extended model of the transportation construction project life cycle[52]

Based on the above, the investment project can be defined as follows: a set of complex interrelated activities

[51] Volkov B.7 A. Evaluation of the economic efficiency of investment and innovation in transport: Uchebnoe posobie [Text] / B. A. Volkov, A. A. Gavrilenkov, A. S. Kaverin, A. V. Martsinkovskaya, V. Ya. Shulga // Pod ed. B. A. Volkova.- Moscow.- UMTs JDT.- 2009.- 152 p.
[52] Dobrin A. Yu. Ekonomicheskoe obsnovanie mechanizov gosudarstvenno-chastnogo partnership v transportnom stroitelstve. DISSERTATION/ Moscow- 2016. 157 c

aimed at obtaining profit (income) or social impact within a limited period of time. a set of legal-administrative, technical and financial accounting documents is called an investment project.

Also, a number of systematic steps apply to the creation and implementation of investment projects:

- formation of an investment idea;
- researching investment opportunities;
- feasibility study of the investment project;
- preparation of contract documents;
- preparation of project (working) documents;
- construction and assembly works;
- commissioning of the facility and monitoring of the investment project (economic indicators);

The main difference of the investment project from other documents and "projects" is that all its aspects are evaluated with extensive and precise calculations using special methods, so that it can be decided as a real document. At the same time, its implementation is based on the mobilization of a certain amount of funds.

Evaluation of the effectiveness of investment projects is carried out on the basis of uniform principles, regardless of technical, technological, financial, sector or territorial characteristics. They consist of:

- review of the project during its entire life cycle;
- modeling of cash flows, in which all cash receipts related to the implementation of the project and costs are included, taking into account the probability of using different currencies in the reporting period;
- reliability and maximum efficiency.

The evaluation of the efficiency of the investment project is based on[53] the following:

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[53] https .://to puch .com ./ .topic-investment. projects .financial and economic efficiency/index.html

- financial assessment;
- economic assessment;
- report on financial results (form2);
- coefficients of financial evaluation;
- determining the normal accounting norm of profit;
- cash flow report (Form4);
- balance sheet (form1);
- simple (statistical) methods;
- methods based on discounting;
- determining the repayment period;
- net discounted income (net present value);
- internal rate of profit;

Although the investment project has many advantages, its implementation is not appropriate if the following are not provided:

- ✓ if the income received from the sale of the project product does not cover the invested funds;
- ✓ if the profit that ensures the profitability of investments is lower than the level of the firm's desire;
- ✓ the payback period of the investment does not correspond to the period suitable for the firm.

Determining the validity of achieving such results in investment processes is the main task of determining the financial and economic indicators of any project with funds invested in real assets. Conducting such an assessment is a difficult task, as it requires taking into account the influence of a number of important factors:

- ❖ costs can be made only once or several times over a long period of time;
- ❖ secondly, the period of obtaining results from the implementation of the investment project is long and long;

❖ thirdly, the implementation of long-term operations can lead to the emergence of uncertainty and risks in the assessment of all aspects of investments.

The importance of an investment project and its objective necessity is that in order to achieve the goal set by the project, it is usually necessary to be able to embody the interests of investors in conditions limited by resources and a certain amount of time. Based on the methods of assessing the effectiveness of investment projects, it is possible to determine the feasibility of long-term capital investments in various objects, and to determine whether the investments made will make a profit in the future and fully compensate for itself.

In this case, the tasks of the financial and economic evaluation of the investment project are as follows:

➕ analysis and evaluation of the financial situation of the initiators of the investment project;

➕ analysis and evaluation of cash flows in an investment project;

➕ determination of project effectiveness based on simple and discounting methods;

➕ analysis of project risks, assessment of internal and external factors;

➕ making investment decisions.

Here, the sum of the initial investment and the annual income from the implementation of the investment project is taken into account.

The analysis of tax payments and insurance contributions in the implementation of transport infrastructure development projects is carried out through the methodology mentioned above. Mathematical and statistical research methods are used in this.

One of the main issues of this research method is the creation and analysis of time series in researching the process of change and development of the studied phenomena in space. The observation of a sequence of numbers representing changes in economic events in space is called a time series.

Time series indicators are stable and have idiosyncratic random variation. In this case, it is compared with one or another method in order to avoid private random changes and to identify stable changes. Through the compared lines, it is possible to determine some important features of the development of certain enterprises, the industry and the national economy.

Many economic studies of time series analysis show that data are processed within a sample. Also, any attempt to describe a group of experiences is necessarily formal and subjective. Therefore, in most cases, it is difficult to determine the possible description of some aspect of the phenomenon.

The specific characteristics of time series can be expressed as follows:

a) it is impossible to re-observe the observed process under the given conditions;

b) usually the observed series are very limited in the sample size observed.

Also, the indicators calculated in time series analysis are:

1. Incremental growth on an absolute basis:
$$\Delta Y_i^b = Y_i - Y_1$$

2. Absolute chain increments:
$$\Delta Y_i^{zan} = Y_i - Y_{i-1}$$

3. Basic coefficient of growth:
$$K^b = Y_i / Y_1$$

4. Chain coefficient of growth:
$$K^{zan} = Y_i / Y_{i-1}$$

5. Growth rate:
$$T_{growth} = K^b * 100\%$$
6. Additional growth rate:
$$T_{add} = T_{growth} - 100\%$$
7. Additional average absolute growth:
$$\Delta Y_{average} = (Y_{max} - Y_{min})/(n - 1)$$
8. Average growth rate:
$$T_{growth}^{average} = (Y_{max}/Y_{min})^{\frac{1}{n-1}} * 100\%$$
9. Average incremental growth rate:
$$T_{add}^{average} = T_{o`sish}^{o`rtacha} - 100\%$$

Absolute incremental increase or decrease is determined by subtracting the level of the initial or previous period from the level of each subsequent period.

The coefficient or rate of growth or decrease-shows how many times the level of each subsequent period is greater or smaller than the level of the initial or previous period, or what percentage it is. The rate of additional growth (decrease) can also be determined in two ways. In the first method, the level of the initial period is subtracted from the level of each subsequent period, multiplied by 100 and divided by the level of the initial period.

On the basis of the above formulas, the analysis of indicators representing the economic and financial status of the investment projects implemented in "Uzbekistan Railways" JSC is carried out. It is based on the data from 2012 to 2022 provided by Uzbekistan Railways JSC. According to the results of the analysis, the value of the investment projects implemented in "Uzbekistan Railways" JSC had the highest additional growth trend (181.89 million dollars) in 2014 compared to 2013.

However, compared to 2017, the lowest figure (206.85 million dollars) was recorded in 2018. (Figure 9)
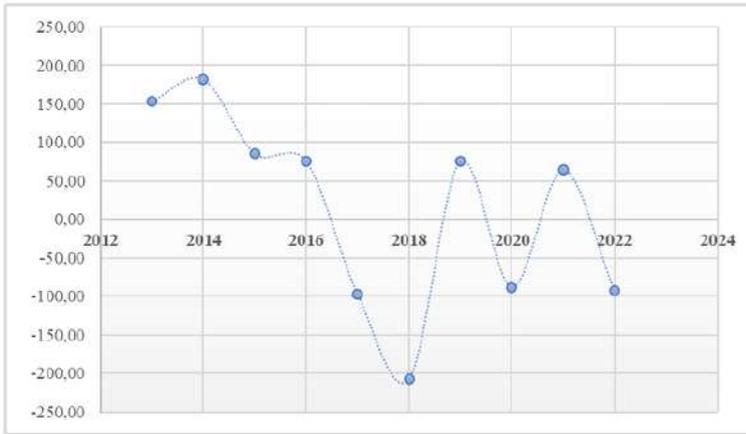
Figure 9. Absolute chain incremental growth[54]

This indicates that the efficiency index of the investment projects implemented every year has increased. According to the analysis of the additional increase and decrease trend of indicators on an absolute basis, 2012 was taken as the base period, and all time series analysis was performed against this year. As a result, compared to the amount of investment projects implemented in 2012, the highest figure was observed in 2016 ($496.77 million) (Figure 10).

Figure 10. Absolute base incremental growth[55]

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[54] Author development
[55] Author development

The year in 2012 decreased from the amount of investment projects implemented. This in turn represents the growth of investment projects implemented in Uzbekistan Railways AK from year to year.
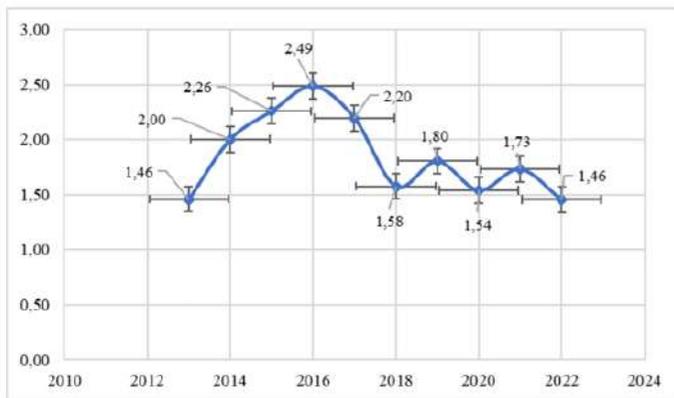
Figure 11. Basic coefficient of [56] growth

The results show that the implemented investment projects increased by 2.49 times in 2016 compared to 2012. In 2013 and 2022, this indicator had a growth coefficient of 1.46 times. A comparative analysis of these values compared to previous years can be seen in this graph.

Investment projects implemented at OJSC Uzbekistan railways have seen a downward trend from 2012 to 2018, with a steady oscillation occurring from 2019 to 2022.
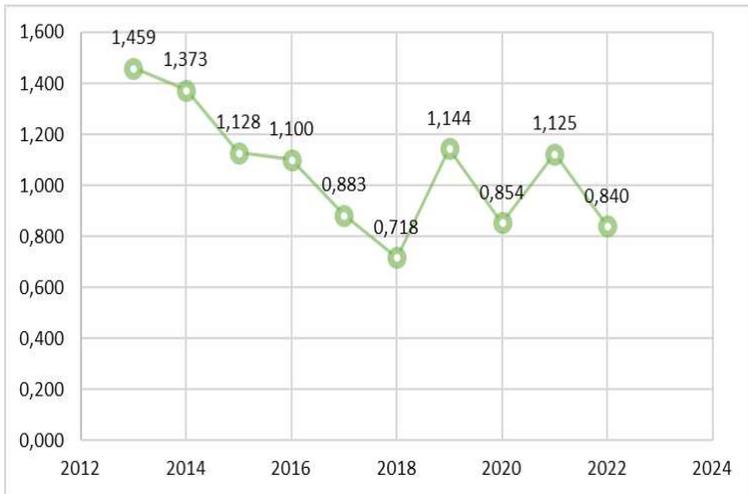
Figure 12. Growth chain coefficient [57]

The results have decreased directly by 2022, which indicates that it is necessary to develop additional strategic measures for the introduction of investment projects.
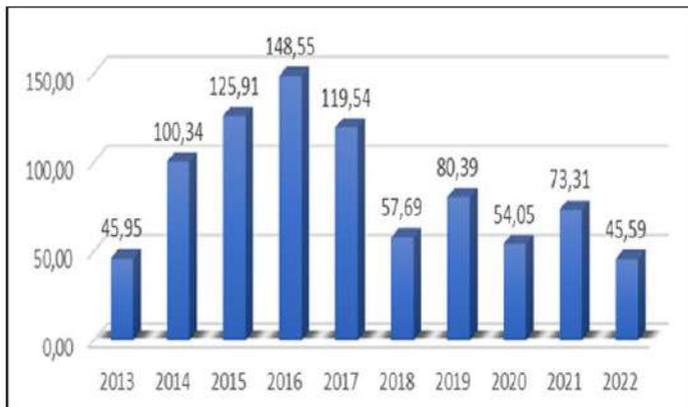
Figure 13. Investment projects carried out in "Uzbekistan Railways" JSC additional growth rate[58]

[57] Theauthor development
[58] The author development

According to the results of the analysis, it can be seen that the additional growth trend has a positive swing. The highest additional growth rate of investment projects implemented in Uzbekistan Railways JSC was observed in 2016, which represents an additional growth of 148.55 percent compared to 2012 (13- picture). Also, the average additional growth rate between 2012 and 2022 was 36.2 percent. This, in turn, shows that the value of the investment projects implemented in "Uzbekistan Railways" JSC, as observed in all the above trends, has a positive and stable growth rate.

Public-Private Partnership

Public   **Came into a collaboration**   **Private**

2.2. Analysis of tax and insurance levers in increasing investment efficiency of projects carried out on the basis of Public-Private Partnership

Investment activities are usually carried out in conditions of uncertainty, therefore, taking into account the risk factor in such a situation is an important issue. When acquiring and acquiring new equipment, it is usually a difficult process to determine the future economic benefit from them. Therefore, in the process of analyzing certain investment projects, many alternative investment projects are considered and a single investment decision is made.

In this, a number of criteria and parameters are used in the review of projects (investment volume, payback period, source of funds to be attracted), and then the most effective one is accepted, therefore, the permissible risk is high. Making investment decisions, like making other management decisions, requires special responsibility from the investor, requires special experience, knowledge and risk.

It is known that one of the most difficult tasks for investors is making investment decisions. In this case, the main criterion is the increase of the company's values, and the main factors for it are the growth of the company's income, the reduction of financial risk or production costs, and the improvement of the level of efficiency of the company's work.

To achieve such results on real investment projects, it is necessary to evaluate the effectiveness of any project. Thus, the determination of the efficiency of investment projects acquires important scientific and practical importance, and it allows to solve the return period of the invested capital, the rate of development of the enterprise, and other social and economic problems from the level of evaluation of the efficiency of the project.

It is known that the project-research works, which provide for the commissioning of a newly built or reconstructed object, are carried out within the framework of the construction-assembly works and the service cost estimate provided to the client.

In this case, tax payments and insurance contributions (S_{tsm}) imply the filling of budgets at different levels, namely:

$$S_{tsm} = S_{lti} + S_{qmi} + S_m + S_q$$

S_{lti} - tax payments and insurance contributions in the implementation of project-research works;

S_{qmi} - tax payments and insurance contributions during construction and installation works;

S_m - tax payments and insurance contributions made by the client in the performance of his functions;

S_q - organizations that provide materials, spare parts, structures, as well as machines, mechanisms and transport for the object under construction (reconstruction)[59].

Also, the problem of risks and their insurance in the implementation of large long-term investment projects in the field of infrastructure largely arose as a result of the financial crisis in the leading countries of the world and the decline in the stability of national economies at the end of the 21st century in the late 1990s. If we take into account the world practice, insurance is a prerequisite for concluding a PPP contract, which is an effective way to reduce their risks. Many developing countries have faced the problem of "crises of confidence" that lead to capital outflows and a general deterioration of the investment climate[60].

Taking this into account, the role of international development institutions and financial organizations in the segment of investment and insurance of infrastructure projects has increased significantly, they have proposed various models and methods of creating a system of additional guarantees against crises and risk insurance. In 2010, an influx of foreign insurance companies entered the Russian market, as a result of which the quality of protection of the interests of the insured increased[61].

In the implementation of infrastructure projects, the state plays an important role by setting certain requirements for insurance and determining the minimum package of risks.

[59]Dobrin A. Yu. Ekonomicheskoe obsnovanie mechanizov gosudarstvenno-chastnogo partnership v transportnom stroitelstve. DISSERTATION/ Moscow- 2016. 157

[60]Razvitie gosudarstvenno-chastnogo partnership v Rossii [Electronic resource].–The regime is accessible: http://ruskline.ru/analitika/2009/02/17/razvitie_gosudarstvenno-chastnogo_partnerstva_v_rossii/(dataobrashcheniya: 17.12.16).

[61]Ilinykh Yu.M. Perspektive razvitiya strascovogo biznesa v Rossii // Vestnik Altayskoy akademii ekonomiki i prava.- 2010.- No. 1.- S. 66-69.

The beneficiary of the contract may be the government itself in some cases, or a private partner in some cases. In a study conducted by the Expert RA rating agency, according to the experts of insurance companies, the first three in terms of effectiveness of insurance use are catastrophic risks (natural disasters, terrorism, etc.), construction-installation risks, fire and other risks (fire, explosion, water movement) occupy. It follows that all three "record holders" fall under the most common risk category in PPP projects, which is why the private partner tends to redistribute risks to contractors.

Currently, the task of insurers is not only to insure risks and guarantee insurance payments, but also to find the optimal scheme of project risks and the probability of negative events (possible losses) so that insurance costs do not burden investment costs. If we look at the practice of insuring PPP facilities in Russia, it can be seen that the level of insurance is minimal compared to foreign insurance, which creates high risks for project investors.

Project risk assessment is the first step towards developing its structure and financial and legal scheme. A balanced distribution of risks increases the probability of early completion of the project and actually defines the procedure and obligations of the parties in the event of such risks. In particular, it is appropriate to assign the risks directly related to the activities of the private investor (for example, non-compliance with the deadlines and exceeding the estimate at the stage of construction/reconstruction, etc.) to the private investor.

The amount of tax payments and insurance premiums in the implementation of project-research works (S_{lti}) is determined by the following relationship:

$$S_{lti} = S_{ls} + S_{lj} + S_{lt} + S_{lm} + S_{ld} + S_{lq}$$

S_{ls} – insurance premiums for non-budget funds of the state in the course of project-research works;

S_{lj} - taxes on the income of individuals (researchers and designers);

S_{lt} – transport tax of project-research organizations;

S_{lm} – property tax of project-research organizations;

S_{ld} – income tax from development of project documents;

S_{lq} – value added tax (VAT) for design and research works. Insurance premiums include:

$$S_{ls}=K_s*F_{lti}$$

K_s – rate of insurance premiums for state non-budgetary funds;

F_{lti} - labor fund (LTI) at the cost of design and research work[62].

During the design process, the scientific and methodological bases for analyzing the cost structure of the services provided by its participants are developed (design and research works; construction and assembly works; equipment, machines and mechanisms, materials and resources etc.). The above-mentioned works are carried out using the actual materials of the analysis of the projects implemented or considered for the development of public rail way transport infrastructure.

Taking into account the above, we will analyze the tax payments and insurance contributions paid from the projects implemented on the basis of public-private partnership of JSC "Uzbekistan Railways". In this process, we use the method of statistical analysis of dynamic series. The most common and used indicator in the study of dynamics is the rate of change. The rate of change is the ratio of the two terms of the series. This indicator is expressed as a coefficient and

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[62]Dobrin.A.Yu. Ekonomicheskoe obsnovanie mechanizov gosudarstvenno-chastnogo partnership v transportnom stroitelstve. DISSERTATION/Moscow-2016.157 .

a percentage (%) and is determined by the following formulas[63]:

$$R_b = \frac{Y_i}{Y_{i-1}} \cdot 100$$

Also, the task of statistics is not to calculate the rate of change by years, but to evaluate the intensity of development of the phenomenon for a long period of time. This task is solved by calculating the average annual rate of change. If the rate of change in the chain method is known, we determine the average annual rate of change using the following average geometric formula[64]:

$$\bar{R} = \sqrt[n]{R_1 \cdot R_2 \cdot R_3 \cdot \ldots \cdot R_n}$$
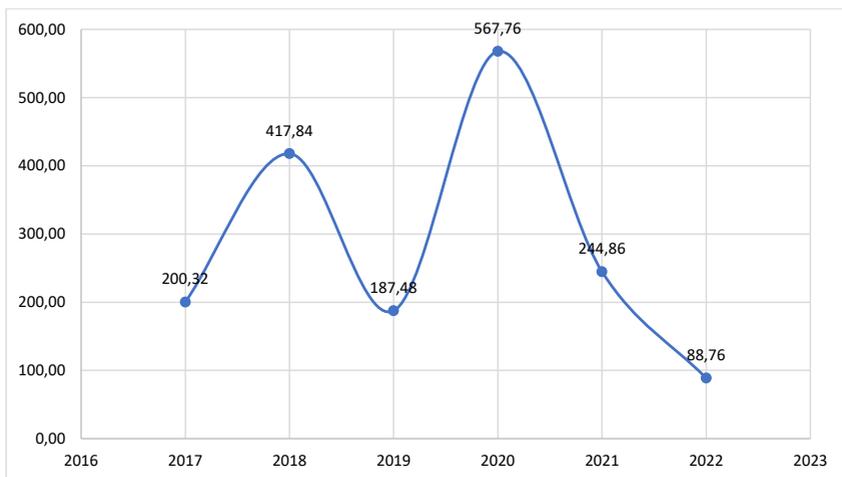
Figure 14. Rate of change of tax payments[65]

Tax payments from implemented projects recorded the highest rate from 2019 to 2020. Since 2021, the ratio indicator values have decreased, which in turn indicates the

[63]https:// .staff.tiiame .en /storage/users/55/presentations/tmmQ.7.tLYRCcOHOKA .3 .Ykkm .2 .C .9 .H .8 .0 .cFwIf.oSYnzP .pdf .,
[64] https://staff.tiiame.uz/storage/users/55/presentations/tmmQ7tLYRCcOHOKA3Ykkm2C9H8l0cFwIf9oSYnzP.pdf
[65] Author's development based on information provided by Uzbekistan Railways JSC

reduction of tax payment rates from investment projects introduced into the sector and the attention paid to the sector. In addition, the implementation of investment projects in the field and their direct insurance to increase its life span will give positive results. Depending on the changes in the amount of insurance contributions, it affects the increase or decrease in the volume of foreign and domestic investment projects introduced into the country. The annual percentage values of insurance premiums collected from projects implemented on the basis of public-private partnership of JSC "Uzbekistan Railways" can be seen in the graph below.
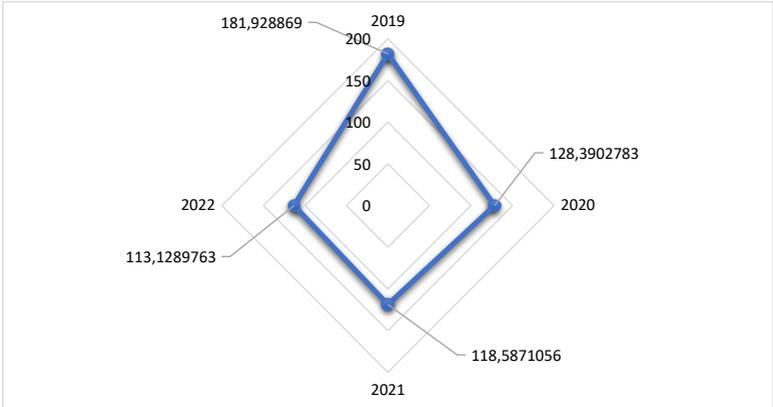
Figure 15. Percentage values of[66] project-research insurance contributions in the ratio of years

Based on the results of the analysis, the insurance premiums collected from the projects implemented on the basis of public-private partnership of JSC "Uzbekistan Railways" had the highest rate in 2019 compared to 2018, which in turn in 2019 increased by an additional 81%. And by2022, the ratio of insurance premiums was113%, which

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indicates a decrease in insurance premiums in the project-research works.

We will also study the interaction of tax payments and insurance premiums in increasing the effectiveness of investment projects. In this case, we will use the method of correlation analysis, which is used in the process of econometric modeling.

Correlation analysis consists in quantitatively determining the density of the relationship between two factors (in pair wise correlation) and between the resulting factors and many other factors (in multifactorial correlation)[67].

Correlation coefficient[68]:

$$r_{x/y} = \frac{\overline{x \cdot y} - \bar{x} \cdot \bar{y}}{\sigma_x \cdot \sigma_y}$$

$$\sigma_x = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n}} \quad \sigma_y = \sqrt{\frac{\sum_{i=1}^{n}(y_i - \bar{y})^2}{n}}$$

The correlation coefficient(r) is -1 consists of values in the range from+1. If r=0, then there is a relationship between the factors, and if it is in the range $0 \leq r \leq 1$, then there is a true relationship. In the range $-1 \leq r \leq 0$, there will be a reverse connection, and r=1means that there is a functional connection.

In the course of the research, an analysis of the relationship between project research works and tax payments and insurance premiums was carried out using the Stata14 application package.

[67] Sh. Mustafakulov., H. Sabirov."EconometricsI "Study guide.-T.:"Science and innovation"2022,232b

[68] Sabirov,HN, Abduvaliyeva,Z., &Kh,T. (2022). ECONOMETRIC MODELING OF BUSINESS PROCESSES BASED ON TIME SERIES DATA.Economics i .Socium .(7(98)),102-110.

	Y	X1	X2
Y	1.0000		
X1	-0.2466	1.0000	
X2	-0.2280	0.9019	1.0000

Figure 16. Correlation analysis result[69]

As a result of the calculations, it can be seen that tax payments and insurance contributions are inversely and weakly related to the implemented project-research works. It also shows that the influencing factors are closely related. As mentioned above, this is due to the reduction of tax rates and insurance premiums for investment projects in the sector. The close connection of the correlation coefficients of influencing factors creates the concept of multicollinearity, and the VIF criterion is used to determine it. The VIF (variance inflation factor) coefficient shows how strongly the variables of the model are related to each other. To determine the VIF coefficient corresponding to the influencing factor, it was calculated using the following formula[70]:

$$VIF = \frac{1}{1 - R^2}$$

Here: R^2 –is the square value of the correlation coefficient of influencing factors.

If the VIF coefficients for all variables are less than10, it means that there is no significant multicollinearity in the model. Otherwise, it should be concluded that the model has multicollinearity. The following results were obtained during our research:

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[69]The author's calculation result obtained using the Stata15 application package
[70]https://books.econ.msu.ru/Introduction-to-Econometrics/chap04/4.1/

```
Variable  |      VIF       1/VIF
----------+---------------------------
      X1  |     5.36    0.186492
      X2  |     5.36    0.186492
----------+---------------------------
Mean VIF  |     5.36
```

Figure17. VIF coefficient results[71]

As a result of the correlation analysis, there is no multicollinearity among the influencing factors involved, despite the strong association between them. The VIF coefficient of tax (X1) and insurance premiums (X2) is 5.36, which is less than 10. Since there is no multicollinearity among the influencing factors, the next stage, i.e. regression analysis, is performed. In regression analysis, a linear multifactor regression model is created.

Based on the result of the regression analysis, the model was as follows:

$$Y = 571{,}722 - 0{,}004 * X1 - 0.0001 * X2$$

or

$$Inv.\,pro = 571{,}722 - 0{,}004 * S_{lti} - 0.0001 * S_{ls}$$

Based on the results of the model, tax payments and insurance premiums have a negative impact on investment projects. This, in turn, their increase leads to a decrease in investment projects.

Source	SS	df	MS		Number of obs	=	5
					F(2, 2)	=	0.06
Model	557.09336	2	278.54668		Prob > F	=	0.9390
Residual	8579.49612	2	4289.74806		R-squared	=	0.0610
					Adj R-squared	=	-0.8781
Total	9136.58948	4	2284.14737		Root MSE	=	65.496

Y	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
X1	-.0040213	.0290455	-0.14	0.903	-.1289939	.1209513
X2	-.0001062	.0056451	-0.02	0.987	-.0243952	.0241829
_cons	571.722	135.033	4.23	0.052	-9.278201	1152.722

Figure 18. Regression analysis result[72]

Based on the results obtained through the Stata15 application package, the coefficient of determination of the model was equal to 0.061. This, in turn, means that the values of the constructed model are far from their real values. The value of the F-criterion is insignificant compared to the value of the r - value, which means that the selected model form is not adequate. Also, since the Student's value of the found model parameters was insignificant compared to the r - value, they were unreliable. The results show that the constructed model was completely negative. Taking this into account, it is necessary to increase the number of factors and observations involved in the model.

2.3. Investment projects implemented by JSC "Uzbekistan railways" on the basis of public-private partnership evaluation indicators

The assessment of investment projects for the development of transport infrastructure in the conditions of public-private partnerships should be carried out on the basis of a comprehensive analysis of socio-economic and

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[72] The author's calculation result obtained using the Stata 15 application package

environmental indicators. The main economic indicators of such projects are indicators of the economic efficiency of investment projects, which combine capital and operating costs for the entire life cycle of projects.

Financial and economic assessment of an investment project occupies a central place in the process of selecting and substantiating possible options for positioning funds with real assets in various objects. The result from the financial analysis project will reveal the possibilities of achieving the results that must be achieved in the implementation of the project, based on the goal of the participants. And economic analysis is valid from the point of view of the effectiveness of the project on the national economy.

G. Birman, S. Schmidt believe that the following are important in the economic evaluation of investment projects[73]:

the impact of the project on the development of the national economy is evaluated;

inputs and outputs real value for the national economy is valued at an uncertain value that reflects what has;

aspects that directly affect the economy are included in the analysis (import, export, population employment, foreign currency, supply and demand, environmental conditions, etc.), as well as indirect effects (impact on other areas, etc.) is included;

social conditions are taken into account, etc.

In their works, I.Mazur, V.Shapiro, and N.Olderogge defined the effectiveness of investment projects as follows: "The effectiveness of investment projects is a project is a category that shows the compatibility of the goals and interests of its participants[74]. Accordingly, it is necessary to

[73]Birman G., Schmidt S. Ekonomichesky analiz investitsionnyx proektov M.:- Banki i birji Unit, 1997.– S . 613.7

[74] Mazur I.I., Shapiro V.D., Olderogge N.G. M12 Upravlenie proektami: Uchebnoe posobie / Pod obshch. ed. I.I. Mazura. — 2nd izd. — M.: Omega-L, 2004 — p. 664

evaluate the effectiveness of the project as a whole, as well as to determine the effectiveness of each project participant in the project. According to V.Behrens, P.Khavraneks, in countries with a developed market economy, methods based on evaluating the effectiveness of investment projects and comparing them are widely used[75].

One of the important tasks of the state, enterprises and organizations is to increase the economic efficiency of investments. The essence of the problem of increasing the economic efficiency of investments is that it is necessary to achieve an increase in the volume of production, services and profits, as well as the national income, for each cost unit (labor, material, financial). It is known that the concepts of "effectiveness" and "efficiency" apply in the spheres and sectors of the micro and macro economy. These concepts differ from each other depending on their economic nature and content. The concept of "effectiveness" reflects the result (achieving a positive result) of the measures used in some part (link) of the economic process. The concept of efficiency is an absolute indicator that shows the economic results of production. In every other convenient description of a project, a project will never be implemented unless it provides:

- reimbursement of the funds deposited with the income obtained from the sale of project goods and services;
- the profit that ensures the profitability of investments is higher than the level of the firm's desire;
- that the payback period of the investment corresponds to the period suitable for the company.

Determining the validity of achieving such results in investment processes is the main task of determining the financial and economic indicators of any project with funds invested in real assets. Conducting such an assessment is

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[75]Berents V., Havraneks P. Rukovodstvo po otsenke effektivnosti investitsii, per.s engl. A.P. Belykh, M.:- Infra-M, 1995.- S. 60 80. Bogatin Yu.V., Shvandar V.A. "Investition analysis": Uchebnoe posobie dlya vuzov.-M.: YuNITI-DANA, 2000.- S. 142-162.

always considered a somewhat difficult task, which requires taking into account the influence of a number of important factors[76]:

+ first, investment costs can be made only once or several times over a long period of time;

+ secondly, the duration and length of the period of obtaining results from the implementation of the investment project;

+ thirdly, the implementation of long-term operations can lead to an increase in uncertainty and the emergence of risk in the assessment of all aspects of investments.

The main criterion for the selection of investment projects at the World Bank is the discounted modern value of benefits after excluding costs. Both revenues and costs will increase during the implementation of the project. In order for the project to pass the economic competition, it must meet the following two conditions:

✓ the net modern value of the profit expected from the implementation of the project should not be negative;

✓ the expected net present value of the project is equal to or higher than the expected net present value of alternative conflicting projects.

Financial evaluation is used in the analysis of liquidity during the implementation of the investment project. In other words, the task of financial assessment is to determine whether the enterprise will have sufficient financial resources to fulfill its total financial obligations in order to implement the project within the specified period. Economic evaluation is used to determine the potential ability of an investment project, to maintain the value of the funds invested in this project and to create a sufficient level of their growth rate.

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[76] Bozorov RX-Improving the assessment of the economic efficiency of investment projects in Uzbekistan Scientific electronic journal "Economics and innovative technologies". No. 2, March-April, 2018 2/2018 (No. 00034) www.iqtisodiyot.uz

The entire set of indicators for evaluating the efficiency of the investment project can be divided into 2 groups[77].

1. Static indicators that ignore the theory of the time value of money:

❖ net income (NV);
❖ ordinary payment period (PP);
❖ profitability index (PI);
❖ accounting rate of return on investments (ARR).

2. Dynamic- based on the theory of the time value of money and the mechanism of discounting cash flows:

❖ net present value (NPV);
❖ discounted payment term (PB (DPP));
❖ discounted profitability index (DPI);
❖ internal rate of return (IRR).

Now it will be appropriate to consider the listed statistical methods in detail:

1. Net income-reflecting the effectiveness of the project implementation in an absolute (value) view for the participants:

$$NV = \sum_{t=1}^{T} CF_t - \sum_{t=1}^{T} I_t$$

here

CF_t - the amount of net cash flows generated by the project at the t calculation stage;

I_t - the amount of investment costs for the calculation stage t;

T - is the total duration of the project implementation project (number of years).

A value of NV > 0 implies the project's efficiency and payback over the project's life cycle time frame. Obviously, the higher the value of NV, the higher the efficiency of the project. And accordingly, when evaluating the effectiveness of

[77]Borisova O.V. Investitsii v 2 t. T. 2. Investment management: tutorial and practicum for bachelor's and master's degree. Moscow: Izdatelstvo Yurayt, 2019.- S. 134

several alternative projects, the project characterized by a high level of net income will be more attractive to the investor.

2. A normal payment term (PP) is an indicator that describes the minimum period of time during which funds entered into the project return.

If the investments in the project are of a one-time nature, the payback period can be determined by the ratio of investment costs (I_0) and average annual net cash flows:

$$PP = \frac{I_0}{\sum_{t=1}^{T} CF_t / T}$$

If capital investments are distributed over time, then it can be determined by connecting the total amount of expenses and the total amount of net cash flows generated by the project and multiplying this ratio by the number of years in the accounting period:

$$PP = \frac{\sum_{t=1}^{T} I_t}{\sum_{t=1}^{T} CF_t} \times T$$

The most accurate calculation of the recovery period is given by the method of directly calculating the number of years in which investments are covered by the income generated by the project. This method consists of three stages[78]:

- determine the total number of years in which the amount of cash receipts will be as close as possible to the amount of the investment;
- determining the outstanding balance as the difference between the volume of investments and the volume of net cash receipts;
- the unpaid balance is divided into such as to determine the net cash contributions of the next period.

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[78]TukhtamurodovI.B. Osobennosti imetodyotsenki investitsionnyx proektov//Problemy vnedreniya izvetstvo innovatsionnyx razrabotok. Proceedings of the international scientific and practical conference: v3chastyakh,2017.–P.6

Despite the relatively high labor intensity, this method allows to take into account the most accurate result, i.e. possible uneven investment costs and cash receipts over the years.

Regardless of which method is used, the following should be taken into account[79] when calculating the payment period:

➢ if PP <T, then the project should be accepted;

➢ if PP >T, then it is necessary to reject the project or revise the initial parameters of the project (investments, revenues, costs, implementation periods);

➢ if PP = T, then the project is neither profitable nor unprofitable.

3. Investment profitability index-an indicator describing the level of profitability of a unit of funds invested in a project in the form of net income:

$$PI = \frac{\sum_{t=1}^{T} CF_t}{\sum_{t=1}^{T} I_t} \text{ x } T$$

If PI >1, then the project should be accepted;

If PI <1, then it is necessary to reject the project or revise the initial parameters of the project (investments, income, costs, implementation period);

If PI=1, then the project has zero efficiency.

4. The accounting norm of investment profitability is the ratio of the average annual value of net cash flows from operating activities to the average value of investments.

If the project provides for the write-off of all investment costs at the end of its implementation period, the average annual volume of investments is calculated as the coefficient of the sum of investment costs and a coefficient equal to 2:

$$ARR = \frac{\sum_{t=1}^{T} CF_t/T}{\sum_{t=1}^{T} I_t/2} \text{ x } T$$

[79] ShalnevaV.V., BlajevicO.G. Business plan realization of an investment project // Scientific journal: finance, banking, investment.No.3(48),2019.-S.84.

If the project provides for a residual or rescue value, its estimated size should be excluded from the volume of investment investments:

$$ARR = \frac{\sum_{t=1}^{T} CF_t / T}{(\sum_{t=1}^{T} I_t - LC)/2} \text{ x } T$$

Where LC is the residual (liquidation) value of investments, soums.

The value of the resulting ARR is estimated by comparison with the target indicator or the minimum acceptable indicator. Projects with an ARR value above the target or acceptable level are accepted for implementation.

The statistical methods we have considered, as mentioned above, ignore changes in the value of money over time and do not take into account the cost of capital.

In order to ensure a comparison of the costs incurred in different periods, as well as the incoming cash flows of different years, it is necessary to discount them or, in other words, to carry out the procedure for bringing them to a certain time. For a certain period of time, as a rule, the current (or zero) period is taken - the period when the implementation of the project begins (t_0).

The discounting process is carried out on the basis of an operation to determine the current value of cash by its future value:

$$PV = \frac{FV}{(1 + E)^t}$$

where FV - is the future cash flow;
PV-current (current) value of cash flow;
Ye-discount rate (rate of return), shares of units;
t-the duration of the billing period, years.

The future value of an investment is the amount at which the investments made at the moment rotate at a certain interest (discount) rate after a certain period of time[80]:

The current value of the cash flow is the product of the future value and discount factor, with the general formula:

$$a = \frac{1}{(1+E)^t}$$

where a is the discount coefficient, the fractions of a unit;

Ye-discount rate (rate of return), shares of units;

t-the duration of the billing period, years

Based on the formula above, the discount coefficient for the step of calculating" m " is determined by the following formula:

$$a_m = \frac{1}{(1+E)^{t_m - t_0}}$$

where a_m is the discount factor for the m calculation step, the unit's share;

Ye-discount rate (rate of return), shares of units;

t_m is the end of step m;

t_0 is the shortening moment.

The discount rate is an economic indicator defined exogenously. Discount rate may refer to:

✚ commercial - defined taking into account the alternative effectiveness of the use of invested capital;

✚ describing the minimum social requirements for a social project;

✚ budget-determined by the executive authorities, which represent the effectiveness of the project for budgets of different levels;

The value of the discount factor should always be less than one, otherwise the money will be less than in the future today.

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[80] Yuzvovich L. I. Investment. Textbook. M.: Williams, 2016.p.147

It is important to remember the features of the discounting process[81]:

➕ the moment of reduction may not coincide with the moment for the project;

➕ cash flows must be represented at current or deflated prices, as well as in a single currency.

The discounting procedure is the main basis for calculating dynamic efficiency indicators as a mechanism for adjusting the future value of cash flows to the current moment[82]:

1. Net current value (net current value) - like net income, it is an indicator that characterizes the value of Project income in terms of value, but takes into account the process of depreciation of money over time:

$$NPV = \sum\nolimits_{t=1}^{T} \frac{CF_t}{(1+E)^t} - \sum\nolimits_{t=1}^{T} \frac{I_t}{(1+E)^t}$$

Projects with a calculated value are projects that are not suitable for NPV≤ 0 participants, potentially effective projects have an NPV>0 value.

2. The discounted return period of investments allows you to determine the period of reimbursement of investment costs, but taking into account different monetary costs at different times:

$$DPB = \frac{\sum_{t=1}^{T} \frac{I_t}{(1+E)^t}}{\sum_{t=1}^{T} \frac{CF_t}{(1+E)^t}} \; x \; T$$

3. Discounted investment profitability index-the indicator in its meaning resembles a simple compensation index and describes the degree to which each unit of funds

[81]Financial management: teacher for academic bachelor's degree/G.B. Polish[idr.]; responsible editor G.B. Polish.-4-eizd., pererab.idop.Moscow:IzdatelstvoYurayt,2019.-S.163

[82] A.S. Klevkova / Basic indicators of the effectiveness of investment projects, the basis of investment decision making. International scientific magazine "Symbol Science", No.1-2/2022 .,

included in the project is covered by the income generated by it:

$$DPI = \frac{\sum_{t=1}^{T} \dfrac{CF_t}{(1+E)^t}}{\sum_{t=1}^{T} \dfrac{I_t}{(1+E)^t}}$$

If the DPI ≤ 1, 0, is the value, then the project will not bring its participants the necessary income within the specified period, which will determine whether it is not advisable to implement it or the need to revise the initial parameters of the project (investments, income, expenses). Projects with DPI>1,0 are accepted for implementation.

4. The internal rate of Return is an indicator that reflects the value of the discount rate, in which the value of positive net current cash flows will be the discounted value of investment investments, that is, the NPV value of the project will be equal to 0. The indicator is used to determine the critical value of capital for the project.

The following standard formula is used to define IRR:

$$IRR = E_1 + \frac{NPV_{E_1}}{NPV_{E_1} - NPV_{E_2}} \times (E_2 - E_1)$$

where E_1 is the discount rate value of $NPV_{E_1} > 0$;
E_2 is the discount rate value, where $NPV_{E_2} > 0$;
NPV_{E_1} - NPV value at discount rate Ye1
NPV_{E_1} is an NPV value at the Ye2 discount rate.

In conclusion, it can be noted that by assessing the indicators of the considered effectiveness, the investor draws conclusions about the feasibility of implementing a particular project, as well as giving preference to a separate project when there are alternatives.

PUBLIC PRIVATE PARTNERSHIP

Public Private Partnership Model

CHAPTER III. PROSPECTS FOR INCREASING THE INVESTMENT CAPACITY OF ECONOMIC SECTORS ON THE BASIS OF PUBLIC-PRIVATE PARTNERSHIP

3.1. The relationship between public-private partnership and the development of economic sectors: problems of creating an economic-statistical model

Currently, the world changes is rapidly developing and modern market economy system based on significant are taking place in the economic relations between the public and private sectors in the countries. This, in turn, causes the formation of a new institutional structure in the country's economy.

The main essence of these processes is expressed in two directions[83]:

1. Growth of the share of business profits in the national income and changes

in the distribution ratio of added value;

2. Successful implementation of economic reforms, as well as observation of reduction of existing barriers to economic growth.

The above-mentioned changes cover almost all spheres of activity, in particular, state administration and business entities. It should be noted that these changes have an impact on the formation of new economic relations in modern society as a result of the globalization of the production network, internationalization in the capital sector, increased competition between regions and countries, and the improvement of cooperation relations. As a result, in the conditions of the innovative development of the economy, the governments of many countries of the world are putting

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[83]Utemuratova.G.X, The state in the service sector forms, models and mechanisms of private partnership/ Economics and finance /Ekonomika i finansy 2021, 10(146)

special emphasis on the expansion of public-private partnership (PPP), in particular, this process is being observed in practice in our Republic. The rapid development of various forms of public-private partnership, their widespread use in economic sectors and sectors, and allows to recognize the PPP form of mutual cooperation as an important feature of the market economy.

If in other forms of interaction between business and the state, private entrepreneurship participates only in the process of financing the project or only in the process of construction and operation of the object, in PPP it participates in all stages of project implementation. Therefore, PPP has its own characteristics, which allows to distinguish partnerships as an independent economic category. The main features of PPP are as follows[84]:

- adaptation of projects, in particular, to local conditions, temporary, regional conditions, etc. They are created for a specific object (roads, housing and communal economy, etc.) and are to be completed within a specified period;

- the cooperation model indicates the main goals and tasks to be solved by the partner projects;

- unique forms of project financing: joint investments of several participants through private investments complemented by public financial resources implied;

- mandatory existence of a competitive environment when there is a fight between several potential participants for each contract or concession;

- specific forms of distribution of responsibility between partners: the state determines project goals from the point of view of public interest, price and quality parameters, controls the implementation of projects, and undertakes operational activities at various stages of private partner projects;

[84]https://dislib.ru/ekonomika/22833-2-razvitie-gosudarstvenno-chastnogo-partnerstva-sovremennoy-ekonomike.php

- development, financing, construction and operation, management and practical implementation of the customer service system;

- distribution of risks between the parties to the transaction based on the respective agreements of the parties.

Also, public-private partnership is important in areas where privatization is not possible, but where private investment is needed. Important conditions for the effectiveness of PPPs are the level of business participation in the project being implemented and the significant preservation of economic activity and some ownership by the state. Otherwise, the implementation of PPP mechanisms may lead to partial or complete privatization of partnership objects by business entities.

If we look at the experience of economically developed countries, private companies implementing joint projects with the state are given wide powers, namely: ownership, operation, construction, financing, etc. In this, the State focuses on the gradual transition from economic tasks to administrative and control functions on the construction and use of infrastructure facilities. Also, the economic distribution of the investment volume between the state and the private partner is a very important task.

Implementation of transport infrastructure development projects requires large investments. This can be seen in the example of Russian data. The estimated cost of the "Moscow-Kazan high-speed highway" VSM-2 project is 1.2 trillion. rubles (according to the price level at the beginning of 2014), the cost of building the Kerch ferry was estimated at 226 billion rubles[85] .

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[85] Dobrin A. Yu-Ekonomicheskoe obsnovanie mechanizov gosudarstvenno-chastnogo partnership v transportnom stroitelstve Dissertation of candidate for university degree in economic science.Moscow - 2016
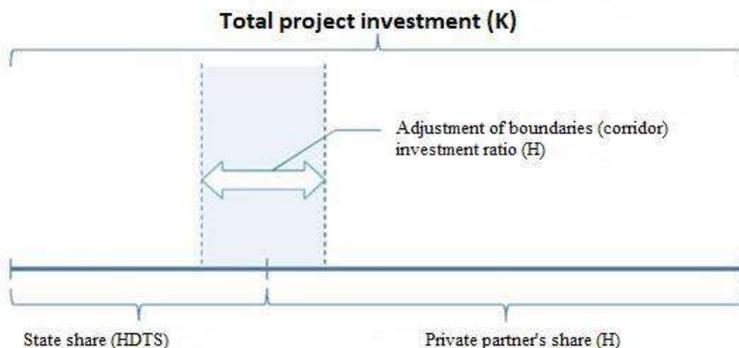
Figure 19 – ratio of shares of public and private partners in transport construction projects[86]

Despite such large costs, large projects for the development of transport infrastructure are also considered to have a large social return. To date, the average cost of one project on the development of transport infrastructure based on PPP in our country is 593.21 million dollars.

It is known that the private partner will not be interested in the project if the commercial performance is unsatisfactory. If the project is of great importance for the state, then it can increase its share in the volume of investment and reduce the volume of private business. This increases the commercial efficiency of the project and increases the attractiveness of its business for a private partner[87]. This process is shown schematically in Figure 19. For a private partner, projects with a payback period of 5-7 years, and in some cases 10 years, are attractive. At the same time, the repayment period of projects of high social importance for the state may be more than 30 years.

As mentioned above, the ratio of public and private partner funds will be between 45% / 55% - 20% / 80%. At

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[86] The author drawing

[87] Dobrin, A. Yu. Privlechenie vneshnikh investitsiy v stroitelstvo infrastruktury zhelenodorozhnogo transporta/ A. Yu. Dobrin,A.V.Martsinkovskaya // Transportnoe stroitelstvo. 2012. No. 3. – S. 26-29.

the same time, the projects differ in the amount of investments, indicators of economic efficiency, implementation periods and others. The number of project investments implemented in the PPP for the development of JSC "Uzbekistan Railways" is presented in Figure 20, and based on this, the analysis was carried out.

If we analyze based on the data of "Uzbekistan Railways" JSC, the largest amount of investments was observed in 2016. The number of projects reached its highest level in 2017 had This indicates that there is no relationship between the value of investments and the number of projects. That is, not the number of projects, but its value and it can be concluded that the implementation period is important.
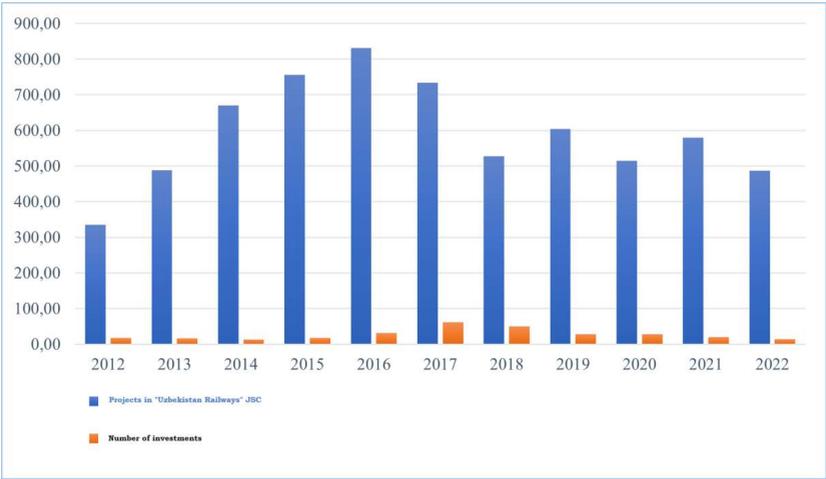
Figure 20. Number of investments and projects [88]in "Uzbekistan Railways" JSC

If we pay attention to the sources of investments, the project on the development of JSC "Uzbekistan Railways" was implemented on the basis of PPP, the projects were implemented through the company's own funds.

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[88] Author's development based on the reference of JSC "Uzbekistan Railways"
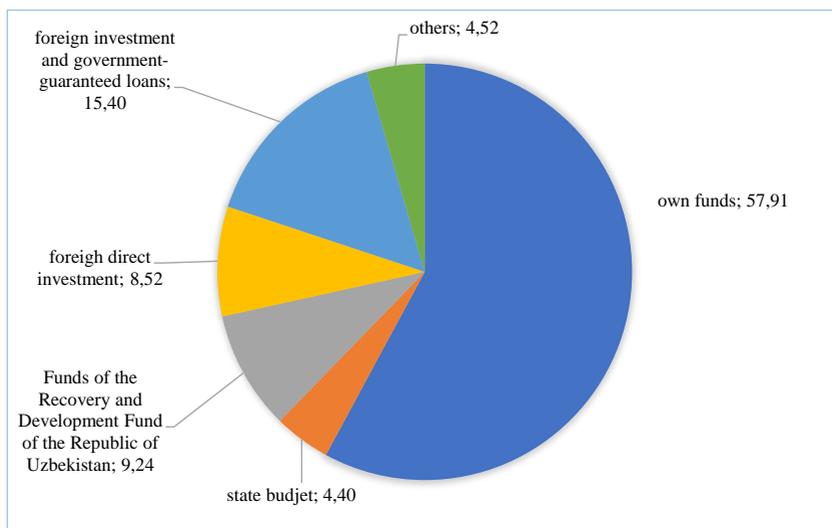
Figure 21. In 2022, by the source of financing of JSC "Uzbekistan Railways" (in %)[89]

As a logical continuation of the above scientific research, the issue of quantitative assessment of structural changes in public and private partner funds is considered below. There are different approaches to describing and evaluating structural changes in scientific and economic literature. Of these, we use the "proportionality coefficient" proposed by P. Vatnik, taking into account the nature of the research, and it is found as follows[90] .

$$Prop\ [X,Y] = \frac{(\sum_i X_i Y_i)^2}{(\sum_i x_i^2)(\sum_i Y_i^2)} \qquad (1)$$

P. Vatnik's "coefficient of proportionality" provides an opportunity to evaluate different contents or sets, and this coefficient is characterized by:

🔸 optional a, b >0, $Prop\ [aX,\ bY] = Prop\ [X,Y]$ equality is appropriate;

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[89] Author's development based on the reference of JSC "Uzbekistan Railways"

[90] Akaev A. Mikhailushkin A., Sarygulov A., Sokolov V. Analysis of the dynamics of otraslevoy and technological structure of the economic country of the OESR // Ekonomicheskaya politika. 2009. #2. S. 116-127.

⊕ all possible values of $0 \leq Prop\,[X,Y] \leq 1$ the proportionality coefficient lie in the interval.

The correlation coefficient represents a numerical measure of the closeness between the contents of the benchmark and the evaluated contents. If they are exactly the same, then so $Prop\,[X,Y] = 1$ be it. However, in the above study, insufficient theoretical explanations were given regarding the concepts of "benchmark content" or "benchmark" criteria[91].

Exactly, the above formula (1) is also found in Y.Gorlova's research, and in it, $x_i - i$- the share of the sector in the GDP of the evaluated country, y_i —and i —the share of the same sector in the benchmark GDP, is recorded. In this study, there are not enough explanations regarding the concepts of "benchmark" and "benchmark countries". However, in this research, the branch structure of the national economy formed by "IHRT (Organization for Economic Cooperation and Development) countries" was taken as a standard structure[92].

According to the above-mentioned formula (1) in the scientific researches of Y.B.Oleynik, x_i the y_i variables are suitable indicators that represent the state of the content at different moments of time, and it was determined that the proportionality coefficient has a structural character and the degree of mutual proportionality of the variables. it is emphasized that[93]

According to S.Khamidov, "standard composition" is "effectively formed composition", all evaluated compositions are compared with it, and depending on the received empirical values of the proportionality coefficient, to what

[91]Akaev A. Mikhailushkin A., Sarygulov A., Sokolov V. Analysis of the dynamics of otraslevoy and technological structure of the economic country of the OESR // Ekonomicheskaya politika. 2009. #2. S. 116-127

[92] Gorlova E. Otsenka kachestva tehnologicheskoy structure obrabatyvayushchey promyshlennosti. Nauchnye osnovy mobilizatsii rezervov rosta i modernizatsii ekonomiki: materialy III Foruma molody uchenyx – ekonomistov / pod obshchey redaktsiey d.e.n.Sadykova A.M. / Tashkent:IFMR, 2014. S. 121-122.

[93] Oleynik E.B. Formation and implementation of structural policy in the forestry complex region (na primere Dalnevostochnogo Federalnogo okruga). Dissertation na soiskanie uchenoy stepi doktor ekonomicheskikh nauk. Vladivostok - 2014. - 76 p.

extent the evaluated compositions are proportional to "effectively formed composition" concluded [94]that

Taking into account the above researches and opinions, the function of "benchmark composition" is performed by the composition consisting of the average of the shares of "Uzbekistan Railways" JSC in the volume of funding sources for individual years during the research period (2013-2022).

Figure 22. Structure of funding sources of JSC "Uzbekistan Railways" in the period from 2013 to 2022

According to research analysis, between 2013 and 2022, Uzbekistan Railways JSC's share of primary private partner funds as part of its funding sources was 74.17-92.94 percent and its share of Public partner funds had different development trends between 7.06-25.83 percent. The share of its content in public partner funds was its lowest in 2022 (7.06 percent of the share in this content), while in 2021, the highest in this content was 25.83 percent (figure 22).

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[94]Khomidov SO "Structural changes in pharmaceutical industry production and their assessment".Economy and education. 2020.No. 2 p. 105 - 112.

The results of the analysis obtained show that the largest share in the structure of funding sources for Uzbekistan Railways JSC was made up of its own funds (the average share in the structure was 82.23 percent), while the state budget (the average share in the structure was 17.77 percent) was made up of this amount. Benchmark values for the structure of funding sources for JSC "Uzbekistan Railways" were formed from the average values of the total own funds and their shares in the state budget of the annual funding sources for the period of 2013-2022 and the following expressed the indicators (Table 1).

Table 1

Benchmark values for sources of financing for "Uzbekistan Railways" JSC

Funding sources for "Uzbekistan Railways" JSC	Reference structure (average values)
own funds	82,23
state budget	17,77
Total:	100,00

Source: Author's calculations based on the information of Uzbekistan Railways JSC.

According to the results of the empirical analysis, the values of the appropriate ratio coefficients between the formed benchmark composition of financing sources for JSC "Uzbekistan Railways" and the financing sources formed during the years 2013-2022 expressed the following trend (Figure 23).
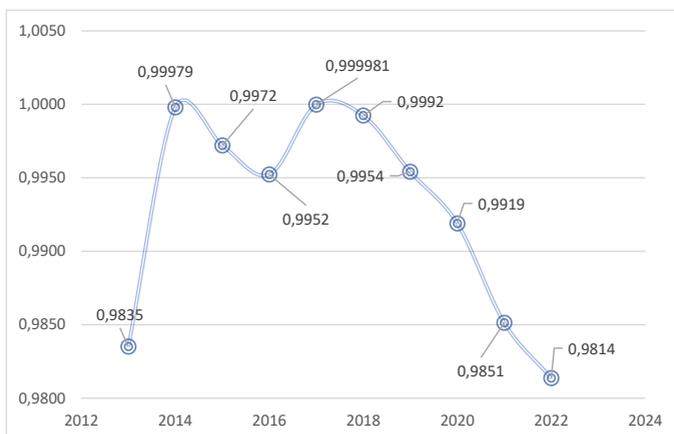
Figure 23. Proportionality of the sources of financing to the standard composition of JSC "Uzbekistan Railways" formed in 2013-2022 (in coefficients)[95]

As can be seen from the proportionality coefficients of the composition of funding sources under Uzbekistan Railways JSC, the highest value of this indicator was recorded in 2017 (the value of the proportionality coefficient in the year under consideration is 0.99998), and the lowest value was 0.9814 in 2022.

The results of the analysis of the research confirmed that the distribution of funding sources for JSC "Uzbekistan Railways" in 2017 was effective compared to the other years. Because the empirical values of the proportionality coefficient obtained in this year show that the source of funding is very close to the reference composition.

The financial and economic and social activities of organizations with systematic consumer cooperation are multifaceted. In increasing the level of management efficiency of such organizations, it is necessary to take into account factors that provide an assessment of the effectiveness of the

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[95] Source: (1) author's calculations based on the formula

financial, economic and social activities of organizations. This issue can be addressed through the use of scientific methods of Management, in particular economic and statistical models of analysis, planning and management.

In addition, it is used to assess the level of economic feasibility of the decision to achieve the expected level of the values of the indicators included in the model. Also, often the indicators only indirectly reflect the most important ones. At the same time, it is not suitable for direct observation and measurement of the characteristics of the studied economic system. In order to mathematically characterize the activities of the economic system in enterprises, it is necessary to find ways to summarize information about its multifaceted activities, and its essence should be to express a large number of initial indicators through a smaller, but more capacious number. Such a means of concentration of information is economic and statistical methods, in particular, methods of factor analysis.

As mentioned above, in the implementation of investment projects, its size is important, and its correlation with the country's economic sectors is analyzed through correlation-regression analysis. At the first stage, the relationship between the factors is checked using the correlation coefficient formula.

Correlation coefficient formula[96]:

$$r_{x/y} = \frac{\overline{x \cdot y} - \bar{x} \cdot \bar{y}}{\sigma_x \cdot \sigma_y} \qquad (2)$$

In this case, r, that is, the correlation coefficient, is between -1 and 1. If it is observed that $0 \le r \le 1$, then there is a positive association and if $-1 \le r \le 0$, there is an inverse

[96] Sabirov, HN, Abduvaliyeva, Z., & Kh, T. (2022). Econometric modeling of business processes based on time series data.Economics I Socium, (7 (98)), 102-110.

association. If r=0, there is no relationship between the factors, while if r=1, there is a functional relationship.

The formula for the correlation coefficient in plural:

$$R_{y/x_j} = \sqrt{1 - \frac{\sum_{i=1}^{n}(y_i-\hat{y})^2}{\sum_{i=1}^{n}(y_i-\bar{y})^2}} \qquad (3)$$

In the research process, the plural correlation coefficient is used to express the

probability of accuracy and closeness of the model to reality. The amount of project investments carried out on the basis of public-private partnership in JSC "Uzbekistan Railways" and the interdependence between sectors of the economy is estimated by the correlation coefficient. In this case, using the data of the Statistical Agency under the President of the Republic of Uzbekistan (appendix 1), formula 2 can be analyzed through the Stata14 practical package.

	y	x3	x6
y	1.0000		
x3	0.8111 0.0044	1.0000	
x6	0.7158 0.0199	0.7402 0.0144	1.0000

Figure 24. Pearson correlation coefficients[97]

According to the results of the analysis, the amount of project investments implemented in JSC "Uzbekistan Railways" on the basis of public-private partnership (y) agriculture, forestry and fisheries (x3) and trade, living and food A strong correlation can be seen between services (x6). As a result of the correlation analysis, a total of 8 influencing

factors (i.e. sectors of the economy) were carried out, and among them the main variables highlighted above remained. Regression analysis was performed with factors (x3 and x6) affecting the main factor (y).

Source	SS	df	MS			
				Number of obs	=	10
				F(2, 7)	=	7.69
Model	3531.00276	2	1765.50138	Prob > F	=	0.0171
Residual	1606.16652	7	229.452359	R-squared	=	0.6873
				Adj R-squared	=	0.5980
Total	5137.16928	9	570.796586	Root MSE	=	15.148

y	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
x3	6.791625	3.431653	1.98	0.088	-1.322944	14.90619
x6	1.399366	1.722991	0.81	0.443	-2.67486	5.473592
_cons	-751.2998	252.0231	-2.98	0.020	-1347.24	-155.3597

Figure 25. Regression analysis result[98]

Based on the results of the analysis, a LEMR (linear equation multiple regression) model was created and the value of the model was equal to 0.68 based on formula 3. This means that the model is 68% close to reality, and other tests representing the significance of the model are also low, indicating that the model has negative results. For this reason it is appropriate to use non-linear models in regression analysis. In this case, with the help of a level function, when converting it into a linear form, based on the Log-log model, it has the following form:

$$Lny = Ln\alpha + \beta_1 Ln(x3) + \beta_2 Ln(x6) \qquad (4)$$

Using the Stata14 application package, we created several non-linear models, among which the optimal one-factor linear (OLS model) regression model was calculated. This model is basically expressed in the following form:

$$y = -814,1217 + 8.854769 * x3 + \varepsilon \qquad (3.4)$$

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[98]Calculations by the author using the Stata14 utility package

Source	SS	df	MS		Number of obs =	10
					F(1, 8) =	15.38
Model	3379.65046	1	3379.65046		Prob > F =	0.0044
Residual	1757.51882	8	219.689853		R-squared =	0.6579
					Adj R-squared =	0.6151
Total	5137.16928	9	570.796586		Root MSE =	14.822

y	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
x3	8.854769	2.257597	3.92	0.004	3.648742	14.0608
_cons	-814.1217	234.7014	-3.47	0.008	-1355.344	-272.8993

Figure 26. OLS model output[99]

The results of the analysis of the resulting OLS model show that the variable participating in the model and the invariant were reliable based on the t-student value. The value of F-fisher = 15.38, representing the significance of the model, also reached a positive value (p-value = 0.0044). The model points represent an overall closeness of 66% to the real values.

3.2. Medium-term prospects of increasing the investment potential of economic sectors in the Republic of Uzbekistan on the basis of public-private partnership

Since 2017, important market reforms have been implemented in Uzbekistan in order to accelerate economic growth, attract foreign direct investment (FDI) and expand the country's participation in world trade.

In order to achieve these goals, it is necessary to expand the production capacity of the national economy and increase the competitiveness of its products in international markets, as well as to modernize and update its structure in order to serve the growing domestic demand for personal and industrial consumption. Achieving these ambitious goals depends on the efficiency of the transport sector. The share of railway transport in the cargo transportation market of Uzbekistan is 32 percent, which is more than the share of road transport. This shows that railway transport plays an important role in supporting the broad goals of economic development by the government of Uzbekistan.

"The volume of freight transportation by railway in Uzbekistan increased by 3% in 2020, freight traffic increased by 11% compared to 2016. Over the same period, road transport grew even faster, increasing by 22% in 2020 compared to 2016. The losses are mainly in the domestic market, while UTY's international traffic volume has increased. Short transportation distances and last mile problems in the domestic market are aspects that require additional solutions to maintain the position of railways in the market[100].

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[100] World Bank Proposed Strategy for the Reform off the Railway Sector in Uzbekistan. © World Bank August .2022 g.

In the scientific literature, the main issues and topics related to the management of investments and project risks in PPP were analyzed and foundations were developed.

Based on this, it is appropriate to distinguish two levels of discount rates (Ye)

in the analysis of the economic efficiency of investments of railways in Uzbekistan for the public and private partners: national economic (Ye_n) and commercial (Ye_k). The desirability of such a division is due to the fact that the repayment rates for the public and private partners are different due to the different acceptable repayment periods for the projects.

For a private partner, it is advisable to set an acceptable payment period of 3-7 years, for large projects up to 10 years. 25-30 years for the state and 50 years for socially important projects can be accepted. In some cases, the state may not aim to return the invested funds at all.

According to Alexey Dobrin, if we consider net present value as a function of capital investment and discount rate, we get:

$$\begin{cases} DSD_d = f(K_b' + \Delta K; E_n) \\ XShSD_d = f(K_k - \Delta K; E_k) \end{cases} \quad (3.1)$$

here, DSD_d - is the net discounted income of the state;

$XShSD_d$ - net discounted income of the private partner;

K_b – state investments in E_k;

K_k – investments of the private partner in K_k;

ΔK - the difference of investments in the project, determined as follows:

$$\begin{cases} \Delta K = K_b - K_b' \\ K_b' = f(DSD_d; E_k) \\ K_b = f(DSD_d; E_n) \\ DSD_d = const \end{cases} \quad (3.2)$$

Where, K_b – public investment in E_n.

Thus, for the state, you can use a discount rate of 5-10%, and for a private partner, you can use a discount rate of 12-18 %[101]. This allows the state to adjust its share in investment projects, to increase its investment burden and to be more flexible in forming corridors to reduce the burden of the private partner. The choice of the numerical value of the discount rate (Ye) depends on the following factors[102]:

- investment goals and project implementation conditions;

- inflation rate in a certain national economy;

- the value of investment risk;

- alternative investment opportunities;

- financial and other considerations and views of the investor.

To encourage private entrepreneurship to participate in PPP projects, a special bonus system can be used, in which it would be advisable to charge the state if the private partner put the object into use on time. If the coefficient determining the impact of the time of construction of the facility on the distribution of the investment burden is equal to $o_{курилиш} = 0,0103$. Accordingly, if the private partner submits the object on time (for example, one month before the deadline), then he will be entitled to the reward, and this is based on the following methodology:

$$\text{M}_{building} = 1/12 \cdot o_{building} \cdot \text{К} \cdot N_{share} \quad (3.3)$$

where, Q is the cost of building the object;

N_{share} - investment share of the private partner;

[101]Dobrin A. Yu "Economicheskoe obsnovanie mechanizmov gosudarstvenno-chastnogo partnership v transportnom stroitelstve" Dissertation/ Moscow - 2016.
[102] Volkov, B. A. Evaluation of the economic efficiency of investment and innovation in transport: Uchebnoe posobie [Text] / B.A. Volkov, A. A. Gavrilenkov, A. S. Kaverin, A. V. Martsinkovskaya, V. Yes. Shulga // Pod ed. B. A. Volkova. - Moscow. UMTs JDT. - 2009. - 152 p.

If, in agreement with the state, it is possible to put the object into operation ahead of schedule without damaging its technical and economic indicators, the bonus amount is proportional to the number of days of accelerated commissioning and is calculated as follows:

$$M_{building} = \frac{К \cdot o_{building} \cdot К \cdot N_{share}}{365}$$

where, K is the number of accelerated start-up days. Of course, this mechanism requires further improvement, but it can be implemented, and the most important PPP projects in the field of transport will have the opportunity to receive

additional funds. By applying this methodology, it is possible to increase the investment potential of economic sectors.

It is possible to encourage the private entrepreneur by implementing this formula mechanism in the electronic system. In this mechanism, projects are placed by the state in the electronic system of public procurement (E-AUCTION), and private entrepreneurs are given priority based on the results of previous projects to win the project. In order to receive projects, entrepreneurs should submit the projects they have completed earlier in quality and ahead of time in order to have a high construction coefficient based on the above formulas (Fig. 27).

As a result of improving the mechanism of promotion of private entrepreneurship through the "State-Project-Entrepreneur" principle of participation in transport construction projects by prioritizing private entrepreneurship in the electronic system of Public Procurement (E-AUCTION) on the basis of public – private partnership, it serves to improve the process of monitoring investments in the industry through an increase in the total volume of private.
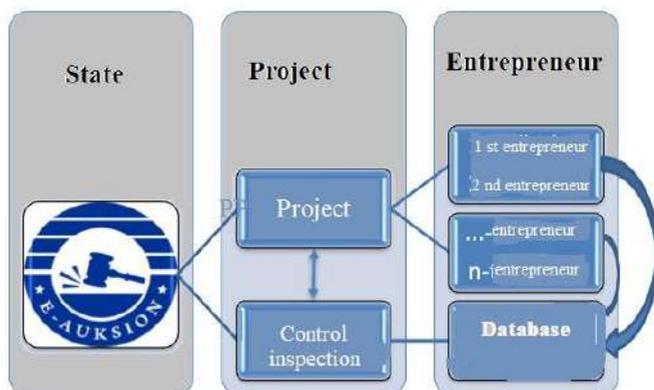
Also, we use econometric modeling to create a medium-term forecast of increasing the investment potential of economic sectors based on public-private partnership in the Republic of Uzbekistan on an empirical basis.

Time series forecasting is a technique used to predict future values based on historical trends. Sequential data is used with the assumption that the future trend will be similar to the historical trend. It is also widely used in machine learning as a supervised learning problem. To improve its accuracy, we can use different ML algorithms, such as Regression, Random Forest, XGBoost, etc.

Different time series forecasting methods are used as ML models trained on the dataset. After the models are constructed and evaluated, final predictions are made based on the results of these models. Before applying time series forecasting methods, we need to create multivariate regression models with the time series data itself. Some characteristics of time series data are[104]:

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[103] The author development
[104] https://www.codingninjas.com/ studio/library/time-series-forecasting-methods

Time Dependence: Since time series data is collected over a period of time, it is highly time dependent. The order of the data points defines the exact time interval associated with that point.

Trend: Trends are long-term changes or indicators that occur in data over time.

The trend can be increasing, decreasing or stationary.

Seasonality: This is an important characteristic of time series data. Seasonality refers to recurring fluctuations or patterns of data that occur over a period of time. This interval can be annual, monthly, quarterly, etc.

Random Error: Random error is a fluctuation in the data. This fluctuation affects the accuracy of the prediction and therefore it should be reduced as much as possible.

Autocorrelation: This is a key characteristic of time series data. In autocorrelated data, past values of the data are correlated with current values.

In the process of research, we create the most optimal model through correlation-regression analysis of data. Then, through the optimal model, we generate medium-term perspective values. There are several types of forecasting methods for forecasting. Below are the most commonly used forecasting methods.

Moving Average Model (Moving Average Model)

Exponential Smoothing Model (Exponential Smoothing Model)

Autoregressive model (Autoregressive Model)

Autoregressive moving average model (ARMA)

Autoregressive integrated moving average model (ARIMA)

Directly, we find the predictive value using the Autoregressive (AR) model in the research process. An autoregressive (AR) model is another time series forecasting technique that predicts future trends based on past trends in

the data. Time series are used when there is a correlation between previous and subsequent values of values. This method is based on the assumption that the values of the time series are linearly related to their previous values. In an autoregressive model, the forecast value at a given point in time is a linear combination of past p observations.

Here y is also called the order of p autoregressive model. The formulation of the AR model is as follows:

$$x_t = c + \sum_{i=1}^{p} a_i x_{t-1} + \epsilon_t$$

Here:

x_t: is the forecast value at time "t".

$x_{(t-1)}$: this is the observed value at time "t-1".

c: this is a constant or intercept value.

E_t: is the error term at time "t".

Also, in the process of research, using the Stata16 application package, we perform multifactor correlation-regression analysis and select the optimal model.

	y	x1	x2	x3	x4
y	1.0000				
x1	0.6064	1.0000			
	0.0480				
x2	0.8365	0.2649	1.0000		
	0.0026	0.4594			
x3	0.4146	0.2856	0.2652	1.0000	
	0.2048	0.3945	0.4590		
x4	0.5997	0.1152	0.7179	-0.2616	1.0000
	0.0668	0.7513	0.0194	0.4654	

Figure 28. Correlation matrix[105]

And we construct Autoregressive (AR) models for the influencing factors involved in it and get their forecast values. In the course of the research, we performed a correlation-regression analysis based on the information provided by he Uzbekistan Railways Joint Stock Company. In this case, the amount of investment projects of JSC (variable) is an endogenous factor, and the remaining factors are exogenous factors.

Source	SS	df	MS		Number of obs =	10
					F(2, 7) =	82.49
Model	129597.009	2	64798.5043		Prob > F =	0.0000
Residual	5499.01894	7	785.574134		R-squared =	0.9593
					Adj R-squared =	0.9477
Total	135096.027	9	15010.6697		Root MSE =	28.028

y	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
x1	.7804273	.1168177	6.68	0.000	.5041974	1.056657
x2	3.353053	.3806849	8.81	0.000	2.452876	4.25323
_cons	155.7363	39.26481	3.97	0.005	62.88977	248.5828

Figure 29. Regression analysis result[106]

These include the amount of own funds used in the implementation of investment projects (variable x1), the amount of funds financed from the state budget (variable x2), foreign investments and loans guaranteed by the government (variable x3) and Uzbekistan are federal reserve district (x4 variable) funds. Using the Stata16 application package, the result of the Pearson correlation analysis was obtained, and based on it, it was expressed that the endogenous variable x1 and x2 are correctly and tightly connected with the exogenous variables (Fig. 28).

The results of the correlation analysis were also checked for p-value and the significance of the obtained pair and individual coefficients was expressed. Then a multifactorial

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linear regression equation was created. In this case, the parameters of the MR model (multifactorial regression model) were found and the model was checked for several tests (Figure 29). As a result, the model was as follows:

$$y=155.7363+0.7804273*x_1+3.353053*x_2$$

To express how close the values of the MR model are to reality, its graph was created (Fig. 30) and the coefficient of determination was equal to ($R^2=0.9593$). This result represents a 95 percent approximation of the model's estimated values on an empirical basis.
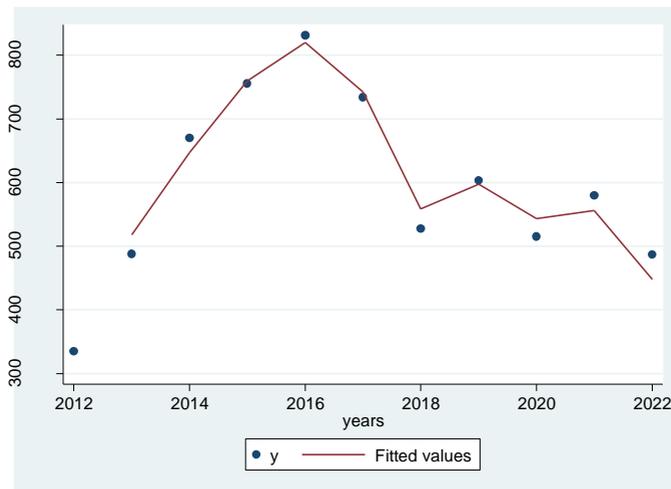
Figure 30. Calculated model values[107]

Also, the significance of the form of the model was checked by F-test (Fisher's test). The result was F=82.49 and it was expressed as significant based on p-value. The regression equation used represents the correct choice.

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[107] Author development

109

Source	SS	df	MS		Number of obs =	10
				F(1, 8) =	4.76
Model	23105.3783	1	23105.3783		Prob > F =	0.0606
Residual	38806.794	8	4850.84925		R-squared =	0.3732
				Adj R-squared =	0.2948
Total	61912.1723	9	6879.13025		Root MSE =	69.648

x1	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
x1						
L1.	.6139444	.2813076	2.18	0.061	-.034752	1.262641
_cons	119.0363	90.4565	1.32	0.225	-89.55682	327.6293

Figure 31. Regression analysis of the AR model[108]

At the same time, we checked the parameters of the model with t-statics, i.e., Student's test (Fig. 31), and all the student values of the model were significant based on the p-value. This means that the model coefficients are reliable and it is possible to proceed to the next stage of econometric modeling, i.e. to the forecasting stage. In doing so, we create Autoregressive (AR) models for each exogenous variable of the model.

The AR (1) model for the first variable x1 is expressed as:

x1=119.0363+0.6139444*L1.x1

in which a lag variable was used

We construct an AR (1) model for the second influencing factor and analyze the results to form the model.

x2=58.65794+0.1608236*L1.x2

Source	SS	df	MS		Number of obs =	9
					F(1, 7) =	0.16
Model	93.906386	1	93.906386		Prob > F =	0.7041
Residual	4196.85283	7	599.550404		R-squared =	0.0219
					Adj R-squared =	-0.1178
Total	4290.75921	8	536.344902		Root MSE =	24.486

x2	Coef.	Std. Err.	t	P>|t|	[95% Conf. Interval]	
x2						
L1.	.1608236	.4063639	0.40	0.704	-.8000742	1.121721
_cons	58.65794	29.93012	1.96	0.091	-12.11555	129.4314

Figure 32. Regression analysis of the AR model[109]

Of the AR models, the most positive was the 1st order lag model. The more lag variables are multiplied, the more the results will have negative consequences. Therefore, medium-term predictive values were obtained using the AR (1) model for both influencing factors.

years	x1	x2	yhat1
2023	292.132	62.1044	591.9632
2024	298.389	68.6458	618.7801
2025	302.23	69.6978	625.3056
2026	304.589	69.867	627.7136
2027	306.037	69.8942	628.9349

Figure 33. Average forecast values[110]

In the implementation of investment projects, the forecast values of the amount used by own funds (variable x1) and the amount of funds financed from the state budget (variable x2) are obtained and replaced by the variables in the above optimal MR model through the system of equations. year. As a result, stochastic medium-term forecast values of the amount of investment projects of JSC were created. By 2027, Uzbekistan Railways JSC will reach an empirical amount of 628.9349 billion soums. If 306.037 billion soums
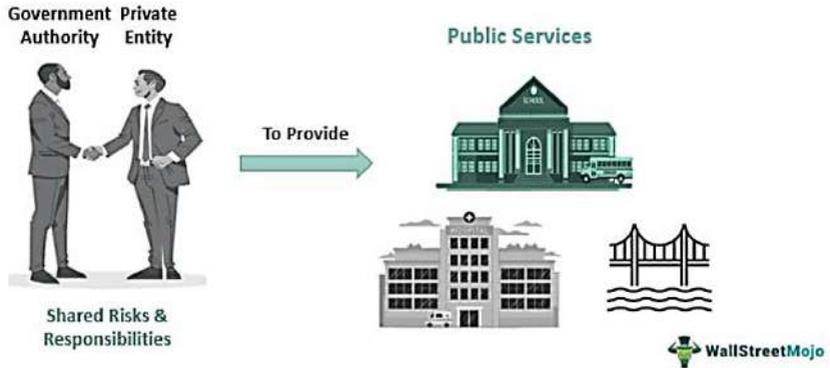
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[109] Researcher calculation values
[110] A stochastic result obtained by the researcher using the Stata16 econometric application package

are financed from own funds and 69.8942 billion soums from the state budget.

Public-private partnership

Public-private partnership is a contractual agreement between a public entity and a private sector to manage public infrastructure projects.

Government Private Authority Entity

Public Services

To Provide

Shared Risks & Responsibilities

WallStreetMojo

CONCLUSION

Conclusions on the topic of prospects for increasing the investment potential of economic sectors based on public-private partnership (in the case of Uzbekistan Railways JSC)

1. The theoretical and methodological foundations of the effect of PPP on increasing the investment potential have been carefully considered, in particular, the scientific and theoretical aspects of increasing the investment potential based on the implementation and financing of mutual investment projects between the public and private sectors, investment a number of economists in connection with the risks in the formation of funds and their reduction factors, investment tools for the development of PPPs in economic sectors and their importance in innovative development, as well as advanced foreign experiences aimed at expanding the investment opportunities of sectors operating on the basis of PPPs and directions for their implementation and practitioner opinions were explored, data were analyzed, and appropriate conclusions were drawn.

2. The PPP mechanism is considered to be one of the most effective and optimal mechanisms, especially in the context of the deepening of market economy relations. With its several advantages, PPP expands the flow of investments in the economy, activates idle resources, provides a balanced interest between the public and private sectors, and most importantly, promotes socio-economic development. will encourage the elimination of a number of social and infrastructural problems in the society. In a word, as a result of the DXS h system, both the state, business and society will benefit from it. At the same time, this system, like other economic processes, has its own characteristics, laws and

risks, and its successful implementation requires the effective use of several factors, such as deep skills, professional experience, and stable economic potential.

3. Taking into account the fact that PPP is a relatively new field for the Republic of Uzbekistan, measures to expand scientific research in this direction, in depth study of advanced foreign experiences and not to repeat the shortcomings made in international practice it is necessary to consider the issues of vision, evaluation of the possibilities of implementation of PPP investment projects in the national economy, provision of information exchange between the state and private business, training of qualified personnel for the sector.

4. In the analysis of investment projects implemented in JSC "Uzbekistan Railways", it is appropriate to take into account the activities of design-research and construction-assembly organizations, as well as external enterprises that support their activities. The analysis of the investment projects implemented in "Uzbekistan Railways" JSC shows that the average additional growth rate between 2012 and 2022 was 36.2 percent. This, in turn, as observed in all the above trends, shows that the value of the investment projects implemented in "Uzbekistan Railways" JSC has a positive and stable growth rate.

5. Based on the results obtained in the research process, it is evidence of the reduction of the rates of tax payments received from the investment projects introduced into JSC "Uzbekistan Railways" and the attention paid to the sector. In addition, the implementation of investment projects in the field and their direct insurance to increase its life span will give positive results. This, in turn, means that tax payments and insurance contributions should be reduced. Also, based on the results of the model, it was scientifically proven that

tax payments and insurance premiums have a negative effect on investment projects. The student value of the model parameters found during the research was insignificant based on the r - value and it was concluded that they are unreliable. The results mean that the constructed model was completely negative. Taking this into account, it was concluded that we should increase the number of factors and observations involved in the model.

6. In conclusion, we emphasize that all selected projects should ensure real commercial efficiency of the private partner. If the indicators meet the requirements of the concessionaires, they will start concluding contracts for the implementation of the project. Otherwise, the value of this commercial efficiency is increased until the reduction of private investments (the mechanism discussed above) or the extension of the concession period, or until the commercial efficiency acceptable to the concessionaire is obtained.

7. According to research and analysis, the project implemented in the development of JSC "Uzbekistan Railways" by the sources of investments, direct investments make up 8%, and this is very is a low indicator. In order to increase this, it is necessary to eliminate several shortcomings of "Uzbekistan Railways" JSC.

That is:

- a lot of time is spent on the multi-stage process of concluding the contract;

- the need to increase the speed of delivery of goods to the destination;

- the presence of a financial burden on import and transit cargo transportation due to cross-subsidization of passenger transportation;

- unprofitability/loss of domestic and export cargo transportation;

- obsolescence of the fleet of freight and passenger cars;

- there are several disadvantages such as customer spending a lot of time in using the services.

In the process of conducting research, there are opportunities to achieve the following results by eliminating the above-mentioned shortcomings:

- attracting more investors by increasing the volume of cargo transportation, meeting the demand for the services of providing freight wagons;

- attracting the country's entrepreneurs to enter domestic investment projects by increasing the total volume of the fleet of private freight cars from 24% to 40%;

- speeding up the implementation of projects in "Uzbekistan Railways" JSC by reducing the delivery time;

- increasing the investment attractiveness of "Uzbekistan Railways" JSC by updating the fleet of freight cars;

- increasing the ratio of public and private partner funds to 45% / 55% - 20%/ 80% by increasing independent members in the management system to 30%;

- accelerating the implementation of transformation processes and, in turn, increasing the investment potential of economic sectors based on public-private partnership.

8. It was considered that there is a strong connection with certain sectors with public-private partnerships and economic sectors. But among them There are several problems in creating an economic-statistical model. These include:

- closedness of information of joint-stock companies in public-private partnership;

- low rates of use of questionnaire development methods for statistical observations;

- existence of international standards of public-private partnership and economic sector information dissemination;

- insufficient methodological developments determining the size, composition and dynamics of the gross domestic product;

- reliable and complete information on public-private partnership and statistics of enterprises in the field of economy unavailability and others.

9. Based on the MR model, the Joint Stock Company of Railways of Uzbekistan by 2027, it can implement investment projects in the amount of 629 billion soums. In this case, 50% of its own funds, 10% of the state's funds, and the remaining 40% can be made through foreign investments.

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APPLICATIONS

Appendix 1

Years	Regarding the financing of "Uzbekistan Railways" JSC (million. dollars)	Capitalized investment	Construction works	Agriculture, forestry and fisheries	Industry	Construction	Shopping, accommodation and catering services	Transport and storage, information and communication
2013	145,9	124,6	129,5	106,4	107,5	118,4	113,8	103,4
2014	137,3	123,4	131,8	106,0	104,5	117,6	110,5	106,9
2015	112,8	119,03	126,7	106,1	105,3	118,8	111,3	106,1
2016	110,02	114,3	115,7	106,2	105,4	107,2	109,3	105,5
2017	88,3	140,8	117,9	101,2	105,2	106,0	102,1	111,3
2018	71,8	172,2	147,3	100,3	110,8	114,3	105,3	106,8
2019	114,4	157,7	139,2	103,1	105,0	122,9	107,1	106,6
2020	85,4	107,3	123,8	102,9	100,9	109,5	101,3	99,9
2021	112,5	113,9	121,9	104,0	108,8	106,8	113,6	117,8
2022	84,01	111,1	121,6	103,6	105,2	106,6	109,3	114,7

Years	In terms of JSC" Uzbekistan Railways", a total of. Including at the expense of funding sources	Own funds	State budget	Foreign investments and government-guaranteed loans	Funds of the Federal Reserve District of Uzbekistan
2012	334.408	295.608	0	38.8	0
2013	488.06	340.71	28.70	60	58.65
2014	669.95	338.09	67.91	149.84	112.58
2015	755.46	457.26	73.72	22.40	177.08
2016	831.18	379.28	109.88	79.9	212.12
2017	734.17	385.77	85.11	116.08	133.61
2018	527.3229	251.4029	61.64	40.23	126.86
2019	603.25	252.99	72.92	86.92	81.91
2020	515.16	212.05	66.28	36.62	126.55
2021	579.563	205.64	71.598	22.725	226.99
2022	486.87	281.94	21.43	45	75

INFORMATION ABOUT THE AUTHOR

Kadyrov Jasurbek Sharofitdinovich was born in 1984, has a higher education. In 2007, he received a bachelor's degree in accounting and auditing from the Tashkent Institute of Railway Engineers, and in 2009 he received a master's degree in accounting.

In 2024, he successfully defended his Doctor of Philosophy (PhD) dissertation in Economic Sciences at the academic council numbered PhD.03/29.12.2022.I.157.01 at the International Nordic University.

Jasurbek Kadirov started his career in 2006-2008 from the position of chief accountant in a notary office engaged in private practice in Yangiyol district, Tashkent region.

In 2008, chief accountant apprentice at Uztemiryolqurilishmontaj unitary enterprise "Uzbekistan Railways" JSC, in 2008-2009 chief accountant, deputy chief accountant at "Ads farm group" LLC, and in 2010 " He worked as a chief accountant in the "Fakhriy servis" subsidiary.

In 2010-2016, he continued his work in the financial department of JSC "Uztemiryo'lyo'lovchi" in the positions of 1st category accountant, chief accountant and head of the financial department.

In 2016, he was an auditor at JSC "Tashkent Passenger Car Construction and Repair Plant", in 2016-2017 he was the deputy head of the financial department of JSC "Uzbekistan Railways" for accounting, then in 2017 Worked as deputy head of capital construction directorate.

In 2017-2018, he was the deputy head of the consultative management group under "Uzbekistan Railways" JSC, in 2018-2019 he was the head of the financial department, in 2019-2020 he was the finance director of the unitary enterprise "Tashkent Regional Railway Junction". He worked as the head of the district.

In 2020, he was a financial consultant at the private enterprise "Profile Group", a consultant at "Tashkent paper" LLC and a chief accountant at "Premium Uzbekistan" LLC, in 2020-2022 he was the chief production and development director (management) at "SDQ Management advisory group" LLC the first deputy of the chairman) and in 2022 the position of the deputy manager of "Koprikkhurilish" JSC conducted

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