

P. Kulikov,
orcid.org/0000-0003-2801-4810,
P. Zakharchenko,
orcid.org/0000-0001-9172-0940,
V. Lych,
orcid.org/0000-0001-9024-1593,
R. Dymenko,
orcid.org/0000-0002-6980-8038

Kyiv National University of Construction and Architecture,
Kyiv, Ukraine, e-mail: drainc@ukr.net

STRATEGIES FOR FINANCING INFRASTRUCTURE PROJECTS IN THE SPHERE OF PUBLIC-PRIVATE PARTNERSHIP

Purpose. Coverage and systematization of the main approaches to the development of strategies for financing infrastructure projects in the field of public-private partnership, in particular, in the construction sector of Ukraine's economy.

Methodology. The methodological basis of the article are scientific publications, regulations of Ukraine, analytical reports of world financial institutions, Internet resources. The research used a systematic approach, methods of analysis and synthesis, comparison and logical generalization.

Findings. The most acceptable models of financing infrastructure projects and creating conditions for attracting private capital on the basis of public-private partnership in Ukraine are identified.

Originality. The work analyzes the classification of projects according to the type of source of cost financing, summarizes the experience in building contract models for their financing, explores the most common tools for financing infrastructure projects, identifies the provisions on which project financing is based, and finds out what underlies it.

Practical value. The results of the study can be useful for public authorities, which should encourage private partners to participate in long-term projects. The research may be of interest to businesses that are potential investors in public-private partnership projects.

Keywords: *public-private partnership, project funding, commercial lending, subordinated debt, hedging*

Introduction. The desire to change the model of economic development, to make it intensive, innovative, resource-saving and socially oriented, consistent with the concept of sustainable development, requires governments to focus on the implementation of programs of human and environmental balance, economy and social sphere, transformation of different territories, urban and rural development, internal development and external openness. In this context, the algorithm of the relationship between the state, science, education, entrepreneurship and society as a whole ensures the achievement of the highest cumulative effect in the interests of sustainable economic growth.

Literature review. It is worth noting a number of foreign and domestic scholars who deal with the issues of financial analysis and the development of public-private partnerships, in particular, in the construction sector of Ukraine's economy.

In recent years, it has been reflected in the works by foreign and domestic scientists, such as: G. Hodge, I. A. Brailovsky, E. Ya. Weissman, T. I. Yefimenko, F. V. Uzunov, S. M. Frolov, A. O. Sosnowski, and others.

However, in the scientific works of these authors there is no comprehensive study on public-private partnership, especially in a dynamic environment, which is typical of modern Ukraine.

Analysis of foreign experience in financing infrastructure projects, which is currently almost non-existent in Ukraine,

can be useful for both state (public) institutions and private investors.

Results. Today, in order to form a cohesive country in social, economic, environmental and spatial dimensions, to increase the competitiveness of regions, it is necessary to carefully approach not only to developing a national strategy for regional development, but also to identifying the most effective strategies for financing infrastructure projects.

The implementation of infrastructure projects can revive, and in some cases restore production of the enterprise or industry. Financing of infrastructure projects is possible for the purpose of modernization, expansion of existing capacities or for the purpose of construction of new property complexes.

Increasing investment in infrastructure projects increases production in the short term, stimulates demand, and in the long run increases the production potential of the enterprise.

Projects implemented in different countries through public-private partnership mechanisms can be classified according to the criterion of the type of source of funding for private partner costs by the following types:

- projects with internal independent ability to generate revenue by receiving payments from users. Commercial revenues of such projects are aimed at compensating for investments during the concession period. Public sector participation is limited to defining the conditions necessary for the project, taking responsibility for the initial stages of planning, approving and providing procedural assistance through the issuance of permits. In the implementation of the public sector management principles adopted in the private sector, concessions have be-

come the most used form of this type of financing, as it is a contract organization in which the public sector transfers an object (real estate) or the right to provide services to a private enterprise during a certain period of time. Often, the contract provides for the design and construction of a facility for the production of services. These types of contracts are usually financed by the consumer, and the public sector retains the prerogative to exercise constant control over the quality of services;

- projects where a private partner directly provides public administration services in the field of public works, manages these services, receiving remuneration mainly from payments provided by the government on a commercial basis. This model is based mainly on private financial initiative and was developed in the 90s of the 21st century in the UK. Unlike the classic concession model, the financing scheme is different – the so-called “shadow concession”, when contracts for public services and works financed by the private sector cover the same elements but are paid by consumers, and the fee depends on the amount of transportation and is carried out by the state at fixed rates. The main element of funding that allows local governments to pay the private sector for such projects is loans issued by the central government. Currently, this method of financing is not always considered as borrowing from the state budget, although the method of its production at public expense may be different;

- projects that need funding from public authorities, as revenues from payments from users are not sufficient to obtain adequate financial returns, but the implementation of these projects creates significant positive externalities in the form of social benefits provided by infrastructure, which justifies the provision of state or municipal funding.

Today, there are a number of potential sources of funding for a specially created enterprise (SCE), which may appear at different stages of project implementation.

Among the sources of funding are the following:

- share capital/equity;
- mixed funding;
- commercial lending;
- financing by issuing bonds;
- leasing;
- financial development organizations;
- export credits or finance and insurance against political risks provided by export credit organizations;
- derivative financial instruments.

Each institution that provides finance to a specially created company assumes different risks depending on the level of expected remuneration. Some of them, after making an appropriate analysis, may refuse to assume too great or any risk of non-implementation of the project: for example, the financial organization European Investment Bank always insists on state guarantee, or, in the absence of the latter, on guarantees from commercial banks for the entire period of construction. In this case, banks are more responsible for the risk of non-repayment of the loan than the SCE. Some of the institutions financing the project assume risks that commercial banks cannot take, for example, political risks. That is why export credit agencies are involved in most large-scale projects, especially in countries with economies in transition, such as Ukraine, because taking such risks (within certain limits) is the function of such organizations, one of whose goals is to increase exports.

Typically, a public-private partnership involves the creation of a tender of a company by a winner to implement a project (i.e. construction, financing and operation of an asset). The SCE signs the contract, so all rights and obligations are assumed by the SCE. Therefore, all cash flows inherent in the project are channeled through the SCE, and the assets and liabilities associated with the project are reflected in its balance sheet. This is usually called “cash flow”.

As with any private company, the funds that will be used to develop the investment (i.e. to finance the project) will usually be a combination of debt and equity, which ensures tax effi-

ciency and overall efficiency, as it reduces the total cost of all financial resources.

An effective method of financing can be considered the use of “project financing technique”, which provides a number of benefits, including better control over project management and its effectiveness by creditors, as well as the ability of sponsors to raise third party funds without direct responsibility to creditors. But the project must meet certain conditions to gain access to this type of funding.

For projects such as construction-management-transfer (CMT), it is natural that the main source of funding, at least in part, should be equity, which is an important prerequisite for providing a state guarantee of SCE and the possibility of attracting commercial credit. Investments at the expense of share capital, in the full sense of the word, mean a subscription to shares of the company. But in a broader sense, this action means forms of investment associated with share capital and the acquisition of shareholder rights. Depending on the circumstances and, in part, the jurisdiction, different forms of investment may be applied

The main shareholders of SCE are the investors of the project, although other parties may have their share. This can be the state, investment funds and, in some cases, the public (as in the financing of Eurotunnel projects) [1].

The ratio of estimated financing needs, which will include contributions to share capital, will change for each individual project under the influence of the following factors:

- project economics. This is the only factor that is the projected source of income from the project. If an enterprise is exposed to market risks, such as the possibility of selling its products at a price influenced by the market, project creditors will require investors to set a higher percentage of project costs at the expense of share capital than when the company enters into a “take-and-pay” agreement (payment of penalties), where a creditworthy third party undertook to buy or pay for all products of the enterprise;

- market analysis. Risks associated with market demand require a larger share of the company’s equity needed to cover them. An enterprise that supplies energy or basic services is considered less risky than a leisure project;

- cost of fixed capital. As shareholders seek greater payback of their contributions than commercial creditors, increasing the share of share capital will increase the cost of the project for the state. The government will certainly monitor the efficiency of resource use;

- country risk. When implementing a project, the risk may increase depending on the jurisdiction, especially in countries with economies in transition, which require greater investment in equity;

- SCE jurisdiction requirements. The amount and nature of investments from investors or other sources will depend in part on financial reporting standards and the law of the country in which the business is established. For example, some jurisdictions do not recognize a company’s right to issue more than one class of shares. In others, it is necessary to have a special permit to receive shares by foreigners. An important factor in structuring the investment of the project is the tax regime in the payment of dividends to investors and in the sale of funds from the sale of shares, as well as the existence of an agreement to avoid double taxation. Also, for some jurisdictions, the risk may be that third-party creditors will demand repayment of their loans, or shareholders will be liable for environmental damage or pay taxes if the company’s actions do not comply with local laws;

- state requirements. The state usually requires minimal investment from equity investors to stimulate their activities for the successful implementation of the project. The state is also interested in investing from other parties, including local investors;

- creditors’ claims. Commercial creditors of the project are also interested in minimal investment by investors, which will increase their interest in the success of the project.

One of the main requirements of investors in most infrastructure projects is to establish from the beginning a limit in the form of a predetermined amount for the estimated financial obligations in the event of adverse project development. The main reasons for these requirements are:

1. Financial resources required for the construction of the facility almost always exceed the capacity of one investor. An increase in additional financing may result in investors failing to meet their financial obligations to banks, and loan collateral requirements will not guarantee a level playing field for creditors and investors. An increase in loans will have adverse effects on a number of financial indicators, such as the debt-to-equity ratio, and, as a result, will adversely affect its attractiveness.

2. There is a clear reluctance to take full responsibility for possible mistakes of those involved in the development or operation of the facility. Investors should be able to forecast their profits from project activities in different scenarios and determine whether the estimated return on capital is commensurate with the risks taken.

Being the main investors, in theory, they are endowed with the most significant risks, and therefore can rightly expect a higher rate of return.

3. To obtain finance for other projects that, for one reason or another, are less suitable for non-recourse credit financing.

The lack of a “common balance” to support a weak project forces creditors to take some of the risks involved. Once the project is identified as an operating facility, it begins to make a profit, and the amount of profit can be calculated with greater accuracy. At this time, the company together with investors is reviewing the sources of fixed assets, and future investors and creditors are evaluating the project from a new perspective.

Mixed financing has both debt and equity features; and the risks arising from investments of this type are between core debt and equity financing. Examples of mixed financing include subordinated debt and preferred stock. It should be noted that the type of subordinated loan provided by SCE investors is a form of mixed financing. In Ukraine, due to the lack of practice and experience in implementing public-private partnership projects (including SMT), this mechanism has advantages over a more rational mechanism of commercial lending.

As with lending, under normal circumstances, regular payments to creditors of mixed loans in the form of interest and/or payments to repay the principal will be made. These payments, however, will be subordinated to the principal loan and can only be made under certain conditions. Such conditions, first of all, concern the success of the project and the availability of funds for payments.

In the absence of such opportunities, mixed financing acquires more characteristics of capital than debt. Yet, as soon as these opportunities arise, the loans of these creditors are repaid before the profits are distributed among the shareholders.

Risks of creditors from the project with mixed financing outweigh the risks of major creditors, and therefore, the requirements for profit are higher. Profits can take the form of an increase in the interest rate on loans and/or a share of project income, although lenders with mixed financing should expect a lower share of profits compared to shareholders who are at a greater risk. A mechanism that allows a lender to receive a share of the profits from mixed financing involves purchasing stock options or subscribing to the concessionaire’s shares, usually at a lower or nominal price, which will bring them additional benefits in increasing the market value of shares and distributing dividends.

In addition, some projects are financed through “corporate loans” or “corporate finance”; this means that funding raised by the SCE in the form of debt is fully guaranteed by the sponsor (equity investor), or the funds are raised at the corporate level and fully transferred to the project in the form of equity.

A loan to finance SMT projects is necessarily a credit term commitment with a developed repayment scheme.

Investors will not want to take risks by agreeing to such a lending mechanism, where problems may arise under adverse circumstances. The solution to many problems can be the placement of the bulk of the loan in several commercial banks (syndicate), and each of these banks will be willing to provide credit on the same terms and for the same period.

During the project implementation, funds are needed to cover costs, but there is no profit at this stage, and if there is any, it is meager. The relationship between the permitted use of a commercial loan and the disbursement of equity or shareholder contributions is an important issue during the negotiations at the stage of drafting an agreement on the basic terms of a commercial loan (commercial loans). Such negotiations consider the possibility of using the loan in various aspects: the ratio of equity to total assets and the desire of creditors to reduce their risk, trying to make financing in the early stages of the project through equity [2].

The largest costs are accounted for by payments at each stage of the project (fixed terms) of construction in accordance with the construction contract, taking into account the growing cost of interest. In addition, additional costs should be taken into account for the management and remuneration of architects and engineers who carry out qualified control of the facility during construction.

With “pure” project financing, only sufficient profits from the operation of the facility can guarantee the payment of interest and principal on the debt and the fulfillment of numerous obligations. At the time the project object is transferred to the SCE, the debt reaches its highest point and includes interest accrued during the construction of the project, which will be capitalized. Debt service and loan repayment directly depend on the profit of the existing facility, which encourages investors to make forecasts of dividends in the first years of operation of the facility [3].

Unlike commercial borrowers, projects have a very limited ability to repay additional amounts of principal if unforeseen fluctuations in exchange rates have increased the principal amount of credit. Therefore, the use of multi-currency funds will not give the desired result. Adequate hedging by lenders will enable them to secure financing at fixed rates. However, the possibility of hedging in the markets decreases with increasing maturity, and the project economy must ensure the absorption of funds.

Banks expect certain commissions from loan agreements after signing a loan agreement, even if many preconditions remain unfulfilled at this stage. The theoretical justification is that the SCE is the real owner of the funds from the very beginning of the receipt of funds. In practice, most of these conditions are controlled by a third party, especially when required by central and local authorities, which often causes significant delays.

Since in its pure form the financing of a project is a development loan with limited recourse, while such development is carried out, the cost of the infrastructure on a given date, often cannot be compared with the amount spent on its development. It is quite difficult to make the right decision with such uncertainty about the further development of the facility, but still, in the interests of creditors, project support continues even in the event of unexpected complications that may arise during the project implementation phase [4].

Full control over the activities is what lending banks want, but what is less desirable for the concessionaire. During the negotiations on the possibility of raising loans, the organizers of the loan financing of the project will be most concerned about the risks for lenders and the fact that the new SCE is just beginning to create management and executive structures. The organizers will insist on full control over all aspects of the project related to funding. The leaders of the company consider it inappropriate to approve the budget and other control actions by bankers. A compromise in this case may be the condition of

the possibility of revising the agreement in the event that the project becomes a successful operating company.

Lack of understanding and a number of other reasons, many of which are beyond the influence of the SCE or the project's investors, lead to non-compliance. The recognition of such a case is intended to mobilize the shareholders of the SCE and enable creditors to demand immediate repayment of the debt. After all, when financing a project, the decision of creditors to provide a loan is based on the expectation of future revenues from its implementation. The occurrence of this case of default allows creditors to review their options. The most likely result of such a revision is ignoring this case for purely practical purposes or, when the project economy is in a very critical state, appealing to investors to demand additional investment [5].

And the greater the share of a particular lender in financing the project is, the more problems arise when it is unable to meet its obligations. For developed economies, a lender that is unable to provide credit if necessary for financial or legal reasons does not significantly affect the project. It is much more difficult to address this issue in countries with economies in transition (such as Ukraine's economy), which are sensitive to international embargoes, political changes, or where banks with insufficient experience are involved in financing. The inability of one of the creditors to provide funds creates a significant gap in project financing that needs to be filled in order to bring the facility into operation. Lenders may refuse to make joint and individual efforts to provide a loan.

Lenders usually want to be reimbursed for additional expenses (or compensation for reduced profits) caused by changes in legislation, tax regime or regulations relating to project lending, not only in the country where it is carried out, but also in the jurisdiction of the lender's country. Sometimes there may be differences in the level of priority of the lender in reimbursing such costs compared to the usual service of the loan, and whether the loan can be repaid early. Therefore, if such payments occur, they are undesirable for the SCE.

There are three aspects of a project where a creditor may have probable liabilities and they relate to: advising on project feasibility, or creditors' control of the SCE and, consequently, the need to meet obligations that the SCE is unable to meet, or using project assets to ensure the mortgage of creditors in the event of, say, damage to the environment or an industrial accident [6].

Whether contingent liabilities are realized also depends on the applicable law of the respective contracts, on where the SCE is registered as a legal entity, on the location of the project object.

Project lending is also a type of business activity. In addition to the income tax in the jurisdiction of the creditor country, taking into account some possible benefits and provisions of the double taxation agreement, the profits from the project are also subject to taxation in the country where the project is implemented [7].

In addition to control in the field of currency exchange, lending in the country of project implementation can also be regulated. A separate license may be required to lend or repay a loan, or local banks may require a higher level of priority over foreign banks, as in India, where they have an accelerated recovery procedure through arbitration courts, regardless of the usual court system.

Traditional Eurobonds are currently one of the main financial instruments for many leading corporations in treasury and financial transactions. The increase in interest in loan financing of projects was somewhat hampered by the difficulties of using traditional Eurobonds in project financing schemes. However, financial methods are becoming more sophisticated, and ways of financing by issuing bonds are diversifying, investors are willing to take more and more risks in the hope of profits – all this will contribute to the development of the bond market.

Despite the obvious advantages of bond loans, they have been implemented rather slowly in the field of project development. In Europe, bonds have only recently been used to carry

out large-scale activities. Possible disadvantages of using bonds in project financing are:

1. Pre-term subscription to bonds reduces the possibility of phased payments compared to syndicated lending, which can provide funds for the project as needed. This can have negative consequences for investors (profits are lower than expected due to the economical use of cash and liquid investments), especially during the construction phase.

2. The structure of the project crystallizes when the final issue prospectus is published in the press. Investors do not have the opportunity to seek deferrals, discuss amendments or agree on new approaches that differ from the original project scheme.

3. Bondholders are more passive when investing in a project and are generally not particularly interested in its economic activities, which limits investors' ability to make technological changes, even when it contributes to the project's success in the future.

4. An unfavorable point is the requirement to disclose information compared to the banking market. This is an additional source of political and commercial risks that will affect the behavior of the relevant stock exchanges in relation to the project, and therefore there is a need to take measures to harmonize and balance their requirements.

5. Potential instability, especially in countries with economies in transition, may lead to time constraints and the introduction of some contingency measures in special circumstances.

Although commercial issues such as low profitability and investor volatility are ultimately addressed through pricing issues, funding schemes that could combine different approaches and interests of investors and bondholders are not easy to solve.

The traditional structure of a bond loan does not provide flexibility for monitoring and control in the interests of the investor. This is a problem, as the ability to respond to changing circumstances affecting the project is an integral part of successful funding. Investors must be able to constantly influence the course of the project. Despite the fact that the bonds are issued by the guardian, he/she does not want (in normal circumstances) to make serious decisions, except for routine issues. The right to actively participate is reserved for bondholders, but it is difficult to convene them at a general meeting to make informed joint decisions. The majority of bondholders want to have a general idea of the progress of the project in which they are involved, and the ratio of profit and risk, with minimal involvement in the activities of the issuer [8].

Although several bonds have already been issued for projects, they have been mainly aimed at private placement in a limited and complex market of investors, such as most institutional buyers in the United States. In order for the project company's bonds to gain a foothold in the market, three main schemes were used:

- issue of bonds secured by a specialized insurer;
- mixed bank and bond financing regulated by an agreement between creditors;
- appointment of a project agent.

Highly specialized insurers are companies that provide financial guarantees to investors, and their activity is to insure municipal and secured bonds, as well as bonds secured by real estate and some corporate. Guaranteeing the payment of bonds, a highly specialized policyholder uses its own credit ratings for the debt it provides. As a rule, it should have the highest credit rating according to the main rating agencies, secured by the appropriate level of capital and able to meet the requirements and diversification and characteristics of portfolio risks. As a rule, bonds should be investment grade, so that the policyholder, providing their insurance, at the same time increase their credit rating.

The highly specialized insurer becomes a kind of coordinator with whom investors can negotiate deferrals and discuss possible changes in the project itself. Bondholders can rely more on guarantees and less on project management. The risks

associated with the project will not affect their financial condition, as it now depends on the balance sheet of the policyholder (except for events that will adversely affect the policyholder).

A relatively inexpensive way to solve the above problems is to appoint a project agent (whose role can be taken over by a bank branch or other institution) on behalf of the bondholders. A number of banks already have experience as syndicate agents in some projects and can take on this role. The project agent acts in the interests of bondholders and is accountable only to them. He/she must be well versed in the relevant sector of the project, the financial sector, the financing scheme through the issuance of bonds and documentation. The rating agency will provide objective information on the current status of the project. The activities of the project agent together with the rating agency will allow bondholders to hardly worry about how their investments are used. The investor, if necessary, turns directly to the agent, relying on his/her knowledge and experience in this area.

In search of new approaches and with the growing interest in bond loans as a way to raise funds for the project, the growing popularity of this type of financing of infrastructure projects becomes apparent.

The basic concept of leasing – the owner of the property (landlord) transfers the right to use and operate the property to the other party (tenant) for a specified period and receives payment for its use and operation throughout the period (lease) – is reflected in law.

The method for calculating the lease may differ depending on the legal right of ownership in accordance with the provisions of some agreements, or economic benefits in accordance with others. Depending on the method of calculation, on who will have the leased property on the balance sheet (the landlord or tenant), how the book value, rental income and the amount to be paid at the end of the lease are calculated. The calculation of tax on book value, rent income and the amount payable at the end of the lease is not always carried out in accordance with the method of calculation.

In some jurisdictions, leasing has its own characteristics, sometimes quite significant ones. For example, under the French form of leasing (credit bail), the lessee is required to acquire ownership of the leased property, while in the UK financial leasing implies that the lessee has no ownership of the property and cannot acquire it at the end of the lease [2].

There are three main reasons for leasing in financing large-scale infrastructure projects: financial benefits from tax benefits (depreciation deductions) for the project enterprise; attracting new sources of funding (i.e. producers or financial institutions that are not creditors of the project); opportunity for the landlord to obtain ownership of the leased property, if permitted by law certifying the lien.

The term “leasing” is applicable to two types of financial transactions. In the first case, the landlord is the sole or main financing entity that provides funds for the purchase of the leased property and relies on the proceeds of the project under the SCE lease agreement and a certain final amount upon completion of the lease. However, most such schemes have elements of commitment or guarantee from the investor, so they cannot be classified as limited liability financing.

For the second type of operation (which, for example, is more common in the UK), the leasing scheme is used to finance the project, where the risks of the project are borne primarily by creditors and investors, not the landlord. In this case, the landlord relies primarily on a guarantee or letter of credit, which (most often) is provided by several or all creditors of the project to pay the “agreed value of losses” or to provide cash, which can also be provided by project investors. The amount that can be recovered is often taken from these sources as much as possible, so part of the risk from the project also falls on the landlord. This is usually due to changes in the tax rate for the project company or a violation of the structure of the leased object [9].

The leasing described in the second case has been widely used in the UK to finance independent energy companies for

the cable sector and in various operations under the Private Finance Initiative. Both types of financial transactions can be used in CMT projects.

In the United Kingdom, such tax rebates are granted when a landlord receives depreciation deductions for leased property, or if:

- discounts are not granted to the SCE as the owner of the property;

- discounts are not granted to the SCE as soon as they become available to the lessor (for example, because the SCE has no sales revenue where discounts can be set or its commercial revenue is insufficient to absorb them) [10].

The landlord may provide the full amount of the proceeds of the tax rebate to the SCE or the SCE and its investors, or take a share of the income on the basis that it makes a profit from the financing margin and not from tax benefits. Sometimes it is possible to take advantage of depreciation or tax rebates in more than one jurisdiction (the so-called “double immersion” rule) due to different rules of law. First of all, differences in tax legislation are of significance here. For example, discounts for the owner of property in one jurisdiction together with depreciation deductions for the party receiving the right of redemption (for lease with redemption right) in another jurisdiction, or differences in interpretation when determining the characteristics of property in different jurisdictions (under English law) to land – “immovable property”, while in other jurisdictions it may be treated as “movable property”).

The main advantages of leasing are: increase in cash flow, which has a positive effect on the attractiveness of the project; a new or additional source of funding for the project; greater interest of the landlord-supplier or manufacturer in the success of the project.

Risks (for example, increases in liabilities due to changes in tax law) should be analyzed by investors and creditors and assessed against the expected cash flow or other benefits of the lease. It would be best to model and analyze the project so that all parties can assess the effect of leasing and other methods from the outset (for example, there is a consortium tax rebate in the UK). In some jurisdictions, leasing is most beneficial if it is introduced into the project structure at an early stage, while the introduction of leasing at a later stage is accompanied by certain complications.

All these forms of financial support are used in both developed and developing countries. They play an important role in emerging markets due to common shortages or limited access to long-term financing.

However, there are other, more sophisticated ways to raise funds, maintain viability, or increase availability. But, say, unlike grant funding, they may not be seen as public funding (in the sense of traditional public funding, which affects the public sector investment budget), but then the government acts as a market lender or investor.

As an alternative to grants, these schemes are revolving forms of support, i.e. the funds will be repaid. Sometimes it is provided on market terms at market price, and in others it is provided on favorable terms, “soft terms” or “preferential terms”. The latter case is usually a response to the difficulty of availability, while financing under market conditions is usually a decision about the availability of funds (for example, because of the crisis) or market demand [11].

Currently, the most common type of financial investor in the world is the “infrastructure fund”. Such funds are structured in the same way as any other investment fund (for example, a direct investment fund). These are funds in which several initial investors contribute their money, and the “management company” is responsible for managing these funds throughout the life of the fund [12].

Financial investors in public-private partnerships and infrastructure, including infrastructure funds, are more interested in existing projects (to avoid the risk of construction and gain more immediate access to “profits”, i.e. distribution from the

project company). Their investment in assets when they are in their operating period is also beneficial to the developer industry, as it will help them increase capitalization and have the cost to invest in new projects. However, investor participation in new projects should help governments increase the market capacity of developers in a specific public-private partnership program.

In many infrastructure projects (including transport), the value of private real estate surrounding the infrastructure is increased by improving connections or directly to rebuild the city in some projects. This approach is hidden in transit-oriented development projects. Land valuation mechanisms aim to maintain or capture some of the increased value to offset some of the cost of infrastructure development; this is achieved through various means, such as land value taxes, "improvement taxes" or "development impact fees".

Governments need to be positive about and approach specialized financial investors when promoting their public-private partnership programs. Contracts should be carefully structured to facilitate the participation of such investors.

Financial structuring and strategy are the responsibility of the private investor. Thus, the Government should not impose restrictions on where a private investor should raise funding (for example, by insisting on local banks) or what instruments or structure should be discussed, other than setting maximum leverage or insisting on credit competition.

The government can try to financially support the project if it is a cost-effective project paid for by the user, but the projected revenue from the use is not enough to make the project commercially viable. Another reason is to keep the prices of services provided by assets at a socially/politically acceptable level. This is called breakthrough funding.

However, regardless of the mode of receipt and the type of public-private partnership (paid by the user or the state), the government may still decide to provide financial support for the project for several reasons: there is a structural or temporary lack of affordable private lending; the project is too large or too risky, its commercial viability and banking viability are at stake.

Governments may decide to supplement the funding required for the project by freeing the private partner from part of the capital needs. In these cases, the government will provide public funding for part of the project's initial investment needs by creating a hybrid scheme. These schemes will ideally retain all the typical features of a normal public-private partnership, with the difference that there should be a certain level of compensation during construction, which will then pay a fixed part of the cost of the work.

Net co-financing is represented by the provision of grant funding, i.e. the provision of payments during construction, which partially offset the cost of work (monthly or quarterly as work is performed, or on the basis of specific stages during or at the end of the construction period).

The amount of co-financing in a public-private partnership should not reduce their total cost by reducing the equalization of interest associated with a deferred compensation scheme related to the results of a public-private partnership. Too much government funding will reduce the risks and motivation for a private partner to properly manage a project that can be converted into regular procurement in terms of risk and incentive allocation.

Conclusions. It is important to emphasize that the structure of financing infrastructure projects should be designed in such a way as to optimize the cost of their financing. It should also facilitate the sharing of risks between the public and private sectors. In particular, project financing should ensure proper management of financial and other risks among all PPP participants. This should reassure, in particular, the government that the private partner is encouraged and empowered to address issues that may arise under the project. To a very large extent, the project financing structure should ensure that the interests of the main creditors of the project are aligned.

Ukraine has an extremely low business initiative for cooperation with the state. The situation is complicated by the fact

that potential investors are frightened by the neglected state of the social sphere and economic infrastructure, where almost all government facilities need modernization, which in turn leads to additional costs for the investor.

In practice, the model is chosen in terms of ensuring efficient, quality service delivery and cost optimization. In our opinion, the most optimal model of public-private partnership is a mixed model, according to which public and private partners have the opportunity to agree on the distribution of risks, obligations and benefits from a particular project. At the same time, all stages of the project implementation should be managed by the state, but carried out by a private partner. A phased partnership allows public authorities to continue or suspend cooperation with different partners, depending on the quality of their work. In addition, participants can form a model of cooperation in which they already agree on joint construction, design, financing, management and maintenance of the facility.

Unlike foreign countries, which are gradually mastering various forms of partnership – from simple to complex, gaining experience and improving legal relations, in Ukraine such forms are developing slowly, as only projects are implemented in the form of concessions and joint activities. The lack of a strategy and program for the development of public-private partnership leads to spontaneous and unreasonable decisions on the choice of forms of public-private partnership without taking into account the real needs and capabilities of the economy. Therefore, it is necessary to improve the implementation of forms of partnership between the government and business with the establishment of guarantees to the private partner on the risks associated with changes in exchange rates, lending, parity liability of partners for breach of contract. This will attract financial resources of the business in various forms of cooperation.

Infrastructure is important for economic growth, but there is a shortage of funding to build and maintain infrastructure around the world, especially in low- and middle-income countries. The private sector, together with funding institutions, can play an important role in bridging this gap.

Thus, own and borrowed funds of private partners are one of the main sources of funding for domestic projects. Therefore, in the financial mechanism of public-private partnership, the corporate form of project financing is important, which is the investment of investment resources of economic entities in the form of cash, fixed and current assets, property rights and intangible assets, loans, etc. in partnership projects of the state and business. The success of the PPP project depends on the accuracy of the definition of financial tactics by a private partner, on the solution of financial problems in the short term, taking into account the most important elements of the outlined financial strategy.

References.

1. Kappeler, A., & Nemoz, M. (2010). *Public-private partnerships in Europe – before and during the recent financial crisis*. Retrieved from https://www.researchgate.net/publication/228969372_Public-Private_Partnerships_in_Europe-before_and_during_the_recent_financial_crisis.
2. Brailovsky, I.A. (2012). The current state of public-private partnership in the European Union. *Effective economy*, 12. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=1699>.
3. OECD (2014). *Private Financing and Government Support to Promote Long-Term Investments in Infrastructure*. Retrieved from <https://www.oecd.org/daf/fin/private-pensions/Private-financing-and-government-support-to-promote-LTI-in-infrastructure.pdf>.
4. Efimenko, T.I. (2012). *Public-private partnership in the system of economic regulation. Monograph*. Kyiv: Institute of Economics and Forecasting of the National Academy of Sciences of Ukraine. ISBN 978-966-02-6674-2.
5. Frolov, S.M. (2013). Financial aspects of public-private partnership. *Economics of development*, 4, 18-22.
6. Hallak, I. (2013). Private sector share of external debt and financial stability: Evidence from bank loans. *Journal of International Money Finance*, 17-41. Retrieved from <http://linkinghub.elsevier.com/retrieve/pii/S0261560612000587>.

7. Kurniawan, F., Ogunlana, S., & Motawa, I. (2014). Stakeholders' expectations in utilising financial models for public-private partnership projects. *Built Environment Project and Asset Management*, 4, 4-21. Retrieved from <https://pdf.sciencedirectassets.com/278653/1-s2.0-S1877705815X00336/1-s2.0-S1877705815033366/main.pdf>.
8. Farquharson, E., & Encinas, J. (2010). *The U.K. Treasury Infrastructure Finance Unit: Supporting PPP Financing During the Global Liquidity Crisis. Public-private partnerships solutions note. World Bank, Washington, DC. World Bank*. Retrieved from <https://openknowledge.worldbank.org/handle/10986/23035>.
9. Akintoye, A., Beck, M., & Kumaraswamy, M. (Eds.) (2015). *Public Private Partnerships: A Global Review*. (CIB). Routledge, Taylor & Francis Group. ISBN: 978-041-57-2896-6.
10. Hodge, G., & Creve, C. (2019). *The logic of public-private partnerships: the enduring interdependency of politics and markets*. Edward Elgar. ISBN: 9781 78471 6684.
11. *The Role of Private Finance in Public-Private Partnerships* (n.d.). Retrieved from <https://www.duo.uio.no/bitstream/handle/10852/57716/hegnatorje.pdf?sequence=1&isAllowed=y>.
12. Uzunov, F.V. (2013). The role of public-private partnership in building a socially oriented economy of Ukraine. *Investments: practice and experience*, 15, 133-135.

Стратегії фінансування інфраструктурних проектів у сфері державно-приватного партнерства

П. М. Куліков, П. В. Захарченко, В. М. Лич,
Р. А. Дименко

Київський Національний університет будівництва та архітектури, м. Київ, Україна, e-mail: drainc@ukr.net

Мета. Висвітлення й систематизація основних підходів до розробки стратегій фінансування інфраструктурних проектів у сфері державно-приватного партнерства, зокрема, у будівельному секторі економіки України.

Методика. Методологічною основою статті є наукові видання, нормативні акти України, аналітичні доповіді світових фінансових інституцій, Інтернет-ресурси. Під час дослідження використано системний підхід, методи аналізу та синтезу, порівняння й логічного узагальнення.

Результати. Визначені найбільш прийнятні моделі фінансування інфраструктурних проектів і створення умов для залучення приватного капіталу на засадах державно-приватного партнерства в Україні.

Наукова новизна. У роботі здійснено аналіз класифікації проектів згідно з видом джерела фінансування витрат, узагальнено досвід побудови моделей контрактів стосовно їх фінансування, досліджені найбільш поширені інструменти фінансування інфраструктурних проектів, виявлені положення, на яких ґрунтується фінансування проекту, та з'ясовано, що лежить у його основі.

Практична значимість. Результати дослідження можуть бути корисними для органів державної влади, що повинні заохочувати приватних партнерів до участі в довгострокових проектах. Дослідження може зацікавити суб'єктів господарювання, що є потенційними інвесторами у проекти державно-приватного партнерства.

Ключові слова: державно-приватне партнерство, фінансування проектів, комерційне кредитування, субординований борг, хеджування

The manuscript was submitted 04.08.21.