

The Role of Tariff Setting as an Alternative Financing Model for Implementation the Public-Private Partnership Projects

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Abstract

The article analyzes the role of tariff setting for the Public-Private Partnership projects showing investment attractiveness of the project and it's financing. For this reason, we determine the main sources of project income as revenue guarantee for private investors, analyze international experience of tariff regulation of infrastructure projects and determine its advantages and disadvantages. Also the main criteria for setting tariffs of PPP projects are defined and proposed the way to improve tariff regulation in accordance with partner's interests and applicable law.

Keywords: public-private partnership, project investment attractiveness, RAB (Regulatory Asset Base), tariff regulation

Introduction

There is quite an urgent issue of comprehensive modernization of public infrastructure for the CIS countries at the present stage of its development. Budget funds opportunities to finance major infrastructure projects are very limited. Moreover, the main features of most infrastructure projects are immensity, capital intensity and long duration that are complicated by the process of project funding and external financial needs. Furthermore, potential investors' politics have become more balanced and sensitive to the conditions of investment funds and their returns because of dealing with the financial crisis consequences. Accordingly, the essential task is to create favorable conditions for investment to large-scale projects.

It should be noted that the size of the required investment for infrastructure development in Europe over the next 25 years is more than 4 trn euro or 350-450 bn euro annually (ULI Europe's Urban Investment Network, 2011). For example, in Europe approximately 9.1 bn euros per year was spent only on energy projects between 2005 and 2009 (5.8 bn euro for electricity and 3.3 bn euro for the extraction and transportation of natural gas). However, the need for investment in this sector will increase to 14 bn euro per year till 2020 (European Commission, 2011, p. 5). Clearly, the amount of required investment for infrastructure development will significantly increase in the future, and to meet the demand, there is a need to find effective modern financial mechanisms and available sources of financing. Thus, the OECD team estimated the average required investment for infrastructure development of its countries during the period of 2000/2005 - 2025/2030, the sum is enormous - 4,8 US \$ trn (Figure 1). And we should understand that infrastructure condition in OECD coun-

tries is much better than in CIS countries, i.e. Investment needs are absolutely different.

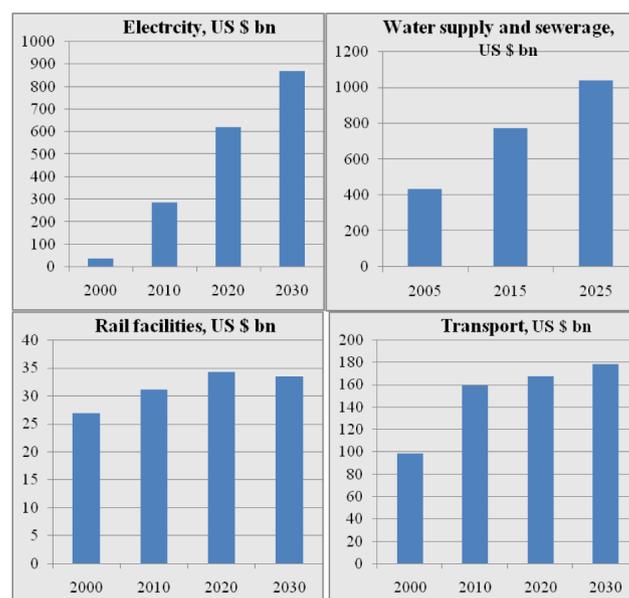


Figure 1: Average required investment for infrastructure development of OECD countries during the period of 2000/2005 - 2025/2030, US \$ bn
Source: (OECD, 2006, p. 167; 195; 199; 314)

Discussion

Thus, the ability to attract sufficient funding for any project depends on the certainty and the creditworthiness of its sources of return. The nature of public-private partnership is a tool to attract investment for large-scale projects, the return of which depends on future cash flows of the project, i.e. future income from the services provision. Accordingly, there are two sources of revenue: public

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instruments (taxes) and income from the operation of the object (tariffs). Thus, the basic mechanisms of the future income from the object operation are (Yescombe, 2007, pp. 232; 235-236) (Iossa, 2007, pp. 22-24) (OECD, 2006, pp. 262-263):

- availability payment, i.e. established by the PPP agreement refers to amount and frequency of payments from the government to the private partner for the usage of public facility by customers. The estimation of payments amount is based on the total capital and operating costs of the private partner over the agreement period;

- “shadow tolls” are viewed as payments from a public entity to a contractor through the covering services provision cost based on the volume of the actual number of consumers (in the case of government’s avoidance of payment for the population). This mechanism stimulates the object operator to provide quality services as the number of consumers directly depends on the quality of work;

- direct consumer payment for services or goods which is established on condition of user’s willingness to pay for the consumption of public goods (roads, bridges, railways, utilities);

- guarantee of minimum return provided by the government to the operator, which secures a minimum level of income in the case of reducing the number of consumers from the target volume (existing risk demand). A payment under the guarantee available only if the minimum income of private operator in a certain period of time is less than it’s established in the PPP agreement.

However, if the payment for services or products is a major component of the funding source, the price sets for services must be prudent and economically justified. Thus, the establishment of adequate payment for the usage of commodities or services is an equation with three components: the price that consumers are willing to pay (if any are willing to pay, in case of transport infrastructure), the costs that the government is willing to accept, (if any are willing to accept) and investment rate of return for the

concessionaire. The last one has a significant influence on the tariff setting because private partner can be stimulated to invest in the project only by return on invested capital.

Accordingly, it is necessary to create favorable conditions for potential investors in order to finance the large-scale projects, i.e. to introduce new models of tariff setting. Thus, in international practice, exists method of tariff calculating based on rate of return on invested capital (Regulatory Asset Base - RAB) - a long-term tariff setting system, whose main objective is to encourage investment in the expansion and modernization of infrastructure, usually utilities sector. The basic principle of RAB-regulation is that capital invested in natural monopoly, should bring a minimum return required to attract new investment and development company, as well as to meet the level of investment risk.

First, the tariff setting method based on regulatory asset base has been applied in the UK in the late 1980’s during the process of privatization of the electric grid complex and electricity market liberalization. In the mid-1990s Canada, USA, Australia and many countries of the Western Europe are passed to the RAB, however, each country sets its own characteristics. In 2002, the European Union ordered the countries of Eastern Europe to apply RAB-regulation in tariff setting for monopolies. Also in 2011 the transfer to RAB was completed in all Russian electricity distribution companies. RAB-regulation proved to be very effective: the power companies lowered their costs several times, as a result, rates of tariffs have fallen and investments in the sector have been increased (Гарарова, 2011, p. 1) (Губанов, 2010).

According to RAB-method tariff setting for the service or product, it is based on calculating of the revenue requirements which is defined as the maximum allowable income that can get a company and is determined for some pre-regulatory period as the amount of invested capital (CAPEX), funds paid for a given rate of return and operating expenditures (OPEX).

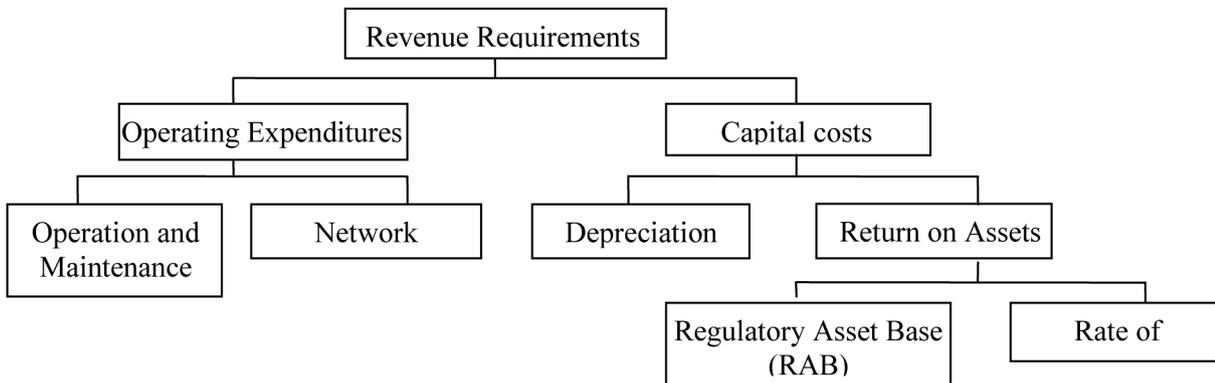


Figure 2: Scheme of the revenue requirements calculating

Revenue Requirements = OPEX + Depreciation+
(RAB x WACC),

OPEX – operating expenditures of the company,

Depreciation – technical depreciation,

RAB – regulatory asset base,

WACC – weighted average of the cost of debt and equity financing (rate of return).

The most displaying experience in terms of attracting investment through the transition to RAB is Romanian reform. In 2004, Romania has attracted to the distribution networks (electric and gas) regulation reform Italian company “Enel” and the investment bank “Credit Suisse”. Reform was carried out over several years, during its implementation hundreds of millions of dollars investments were attracted. And in 2006, at a joint conference of regulators from the European Union, Eastern Europe and the CIS the Romanian experience was recognized as the most successful.

Crucially, the RAB model provides a guarantee to investors that they will earn a return not only on new CAPEX and OPEX, but also their sunk investments in the network. This guarantee typically takes the form of statutory legislation which places a duty on the independent regulatory body to ensure that it sets the company’s allowed revenues such as that the company can finance its regulatory functions (so long as it runs efficiently). Although it has never been formally tested, companies can have recourse to the courts in the event that the regulator does not meet its duty. It has thus been seen ‘as a particularly credible and robust

long-term contract ultimately guaranteed by law’ (Meaney A., 2012, p. 34). This feature means that the RAB model has the potential to solve the underinvestment problem in infrastructure investment largely resulting from the time-inconsistency problem .

Accordingly, regulators calculates the tariff for services or products with consideration the necessary gross proceeds. Tariff at RAB-regulation is set for a long period of 3-5 years, allowing the company to save and reduce their operating costs within 1-3 years of current rates. Income received by tariffs aimed at servicing debt and used to attract additional funds (loan) to upgrade equipment and develop the company.

The regulatory asset base comprises the assets used to provide the regulated services. Typically regulators apply the following principles for RAB:

- It includes only assets necessary to provide regulated services;
- It is based on the residual (depreciated) value of fixed assets:
- It may include allowance for net working capital;
- It excludes any capital contributions (external funding, subsidies) from customers, government or third parties.

World practice shows that tariff regulation in the power supply sector based on RAB methodology has several advantages for power supply companies and consumers to the existing system “cost-plus” (Table 1).

Table 1: Comparison of tariff regulation methods Sources: (Гарагова, 2011, р. 3) (Губанов, 2010) (Meaney A., 2012, pp. 35-37)

Indicator	Existing model "cost plus»	RAB - regulation
Term of tariff revision	1 year	3-5 years
Adjustment of operating expenses	Direct calculation of economically justified cost levels	Indexed model based on approach of analogies comparison
Incentives to reduce operating costs	Absent	Available savings for 5 years remain in the company
Depreciation	Accounting Based	Regulatory calculation (initial estimation + result of investment programs)
Profit	The economically justified profit	Fixed return on capital
Sources of investment covering	Depreciation + income of current year	Equity and debt capital, which will be paid for 35 years by consumers through tariffs
Adjustment of the capital value	The actual volume of the loan interest on the actual cost	Legal method. Actual cost of capital may differ
Consideration of other factors	Absent	There are 6 types annual adjustment based on changes in the number of assets, additional or foregone income, the efficiency of operating expenses
Adjustment of the service reliability and quality	Absent	Investment programs and required gross receipts tied to the level of reliability and quality

However, the RAB model has several issues which mean that it does not always represent a superior option over PPPs (Meaney A., 2012, pp. 3-4) (Губанов, 2010):

- Difficulties in providing an accurate initial RAB valuation;
- Funding—the RAB model doesn't necessarily resolve the question of who ultimately pays for investments;
- Public procurement—for green-field projects, the RAB model still requires a method of public procurement;
- Bias towards higher gearing—as in the PPP model, there may be a tendency for assets to be financed with high levels of gearing. This may be considered a concern from a public policy perspective if it results in risk of default that might lead to users being asked to pay more for using the asset;
- CAPEX bias resulting from the fact that CAPEX is added to the RAB and earns a rate of return over time, whereas OPEX is remunerated on a pay-as-you-go basis.

Thus, the calculation and prediction tariff plan for the entire period of the object operation in the development of the feasibility study of the project is an important condition for the success of its implementation. This would help to estimate the size of investments, their payback period quite easily and to determine future tariff revenues as a major factor of investment risks. Accordingly, the tariff plan of the project must be submitted in the competition by all bidders and the weighted average tariff for the period of the facility operation will act as significant economic criteria of potential partner selection.

The calculation of the weighted average tariff could be done according the next formula (Сиваев С.Б., 2012, p. 162):

$$T = \frac{\sum_{j=1}^n (t_0 \times \prod_{i=1}^j (1+k_i))}{n}$$

- T – the weighted average tariff;
- t₀ – the initial rate of the tariff for a period of signing the contract;
- k_i – the tariff change in the i- year, expressed as a fraction of the tariff of the previous period;
- n – number of tariff regulation periods.

It should be emphasized that the tenders for PPP contracts in the municipal sector forms the special situation of competition for monopoly markets. But competition in the economy cannot be without a competitive price. Thus, in the contests of PPP, contracts in the municipal sector should be moved from regulated tariffs by authorities to unregulated competitive tariffs (can be also competitive but regulated in some bands). Moreover, these tariffs may be a criterion in terms of competition and according to competition rules cannot be above the level specified in

the tender documentation (Сиваев С.Б., 2012, p. 161). In addition, it is necessary to consider the annual rate of inflation in tariff setting, i.e. tariff brings in real prices each year depending on changes of the inflation level.

It could be shown on the example of the project of natural gas production and its supply to industrial customers. We calculate and predict the tariff plan at the start of the project operation according to three scenarios: scenario № 1 reflects the rate of 2012, scenario № 2 assumes the annual increase prices by 7% during all period of the project operation and scenario № 3 shows the annual increase prices by 10% during the first 10 years of the project operation (Fig. 3).

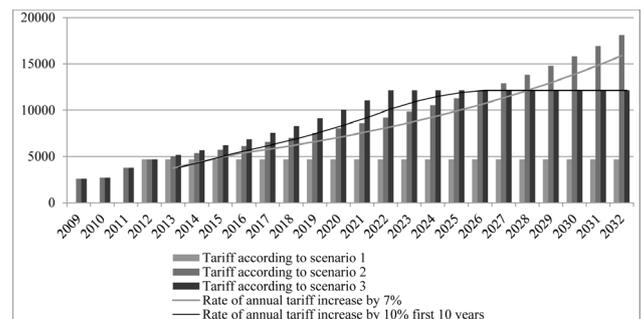


Figure 3: Forecast of the project tariff plan, UAH

Thus, every application for PPP should have the feasibility study that indicates the predicted tariff for the period of the project operation and, if the weighted average tariff is lower than offered by other bidders, then this participant has a significant advantage of others.

However, when the income of private partner in the PPP projects is derived from customers' payment, the current issue is the criteria for setting tariffs, which must also be taken into account. In our opinion, rate of tariff must meet three basic criteria (Iossa, 2007, pp. 19-20) (Meaney A., 2012, pp. 39-40) (Akintoye A., 2009, pp. 206-207):

- Allocative efficiency calls for a pricing rule that sets tariffs as close as possible to social marginal costs, including not only the private production costs facing the private-sector party but also any cost or benefit imposed on other activities;
- Distributional considerations, i.e. the public sector may prefer pricing the service below marginal costs. Further, differentiated tariffs can be set according to types of services, categories of consumers, etc. to reflect different marginal costs. Also differentiated tariffs can help to implement a system of cross-subsidies taking distributional considerations into account (where some groups pay tariffs below costs and others pay tariffs above costs to compensate);
- Bankability of the project, i.e. the tariff level should be such that the revenues collected by the private-sector party are sufficient to cover operation and investments costs, whilst allowing a commercial rate of return.

In cases where the private-sector party makes large capital investments, the marginal-cost pricing will not allow bankability and user charges may have to be increased. However, the option to raise user charges levels should be compared with other means of ensuring bankability, such as using revenue subventions, increasing contract duration, or lowering the cost of capital through debt guarantees.

Furthermore, tariff setting should also cope with other factors such as collection risk, i.e. the risk that users of the service try to avoid paying the user charge. A low collection risk is necessary for an efficient use of user charges.

Conclusion and Propositions

Thus, the research of payment mechanisms of public-private partnership and features of its setting shows the success of involvement sufficient financial resources for the implementation of the project depends on the establishment of a balanced tariff, from which the project company will be able to receive payments for its services in sufficient volume to cover all operating costs, payments on debt obligations and the related earnings per equity.

So far, according to experts, the RAB-method is one of the most promising mechanisms for attracting private investment in the projects of public-private partnership, especially in utilities sector. It creates additional repayment guarantees of borrowed funds through tariffs and increases the attractiveness of the industry investment. Of course, the introduction of RAB-regulation will lead to higher growth rates for services at one time with the reduction of operating expenditures approximately on 20%. However, in the long term, due to increased efficiency of utilities facilities, lower costs, reduced losses and improved quality of services, it is expected the decline of growth tariff rates. This together with the involvement of large-scale private investment in the sector, upgrading fixed assets of facilities will have a beneficial impact on the economy development.

However, the implementation of this method requires significant changes in existing law, which takes long time. That's why we recommend to use a mechanism for the establishment of "computed tariff" in the tender documentation and in the subsequent contractual relationships as a criterion of the competition. The concept of "computed tariff" provides that participants will show an annual tariff index increase, which will allow to achieve the technical and economic performance and upgrade municipal infrastructure. Thus, the tariffs of utilities sector are regulated in accordance with the applicable laws despite the introduction of the "computed tariff" concept. In case of a difference between "computed tariff" and the real price it should be applied to the relevant provisions of the PPP contract governing the consequences of this situation. If there is a situation in which, the "computed tariff" will be higher than the seted rate in accordance with the applicable laws,

the parties may agree that the budget will compensate the missing difference to the operator, or other parties' actions according to the contract (agreement).

1 Government intervention following private sector provision of infrastructure leads to an inherent problem, namely the time-inconsistency problem. This describes the potential for the government to initially provide a guarantee to investors ensuring recovery of costs associated with the investment, only to renege later on to expropriate rent from the private sector (Meaney A., 2012, p. 12)

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