

References:

1. Antonopoulos, R., An Alternative Theory of Real Exchange Rate Determination for the Greek Economy, Unpublished PhD dissertation, New School for Social Research, New York, 2011.
2. Dornbusch, R., Exchange Rates and Inflation, Cambridge, The MIT Press, 2014
3. Antonopoulos, R., An Alternative Theory of Real Exchange Rate Determination for the Greek Economy, Unpublished PhD dissertation, New School for Social Research, New York, 2015.
4. Frenkel, J.A. and M.L. Mussa, The efficiency of foreign exchange markets and measures of turbulence, American Economic Review 70. May, 374-381, 2013
5. Dornbusch, R., Exchange Rates and Inflation, Cambridge, The MIT Press, 2010.
6. Milberg, W., “Is absolute advantage passe? toward a Keynesian/Marxian theory of international trade”, in M. Glick (ed.), Competition, Technology and Money, Classical and Post-Keynesian Perspective, United Kingdom, Edward Elgar, 2013.
7. Abdullayev S. Analysis of factors affecting global oil prices in the long term: Journal article Securities Market - Moscow, 2012. - №18. Access: http://www.rcb.ru/rcb/2008-18/14797/?phrase_id=755367.
8. Froot, K. and K. Rogoff, Perspective on PPP and long-run real exchange rates”, National Bureau of Economic Research (NBER), Working Paper no. 4952, 2015.
9. Harvey, J., “Orthodox approach to exchange rate determination: a survey”, Journal of Post-Keynesian Economics, vol. 18, no. 4, 2013.
10. Ilienkov IV, LP Kislov Oil prices and its impact on the Russian economy: an article from the Student Scientific Forum - 2010. Access: <http://www.rae.ru/forum2010/45/614>
11. Kondrashov, D, Prospects for the formation of the Russian ruble as an international currency. EI - № 1 (18) February 13, 2014.
12. Rogoff, K.; K. Froot, and M. Kim, “The law of one price over 700 years”, International Monetary Fund (IMF), Working Paper no. 01/174, 2010.

EFFECTIVENESS ESTIMATION OF LIFE CYCLE CONTRACTS

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1. Introduction

Estimation of public private partnerships (PPP) effectiveness is becoming more and more urgent due to growing interest to this kind of partnerships from government institutions. There are many conceptual schemes of PPP projects. But the majority of them are theoretical. A lot of methods maintain the elements of classical investment analysis that is close to PPP mechanism. The life cycle contracts (LCC) model differs from traditional investment projects and from PPP projects, because the life cycle model is implemented during the whole life cycle of a project and that kind of project requires detailed risk analysis and has a social – budget orientation due to the project life prolongation on several periods of budgetary terms. In the article there is provided the framework methodology of the life cycle project effectiveness.

2. Method description

Methods of effectiveness evaluation of LCC projects should be different from the traditional methods of investment projects evaluating. Firstly, it should be clear that not only the commercial and budgetary effectiveness should be taken into account but also the social aspect should be considered in LCC projects, ie the project should be implemented in the sectors where the government is traditionally responsible for. Secondly, the investment project should be evaluated in terms of the use of government support and without it. Many methods of investment

projects evaluating do not include the explanation of the necessity of the budget support (public sector comparator model (PSC), and yet, it is crucial to use PSC model to evaluate the most appropriate model for the implementation of socially important projects. Thirdly, analysis of the project, implemented by LCC model should include an analysis of the entire life cycle of an infrastructure object and an analysis of the possible project risks.

It is imperative that there will be no the huge gap between different types of effectiveness. Otherwise the private partner will be not interested in the project (low commercial effectiveness), or society will have negligible results of the project (low social effectiveness), or the government will miss an opportunity to implement other, more efficient project (low budget effectiveness).

After analyzing the methodology of effectiveness estimation of investment PPP projects developed by Russian and foreign authors, we concluded that the effectiveness evaluation stages of LLC project should be as follows:

1. Assessing of project feasibility
2. Risk identification, analysis, estimation and the policy formulation of risk management.
3. Project calculation according to “Value For Money” approach:
 - Estimation of social effectiveness – the viability of a project from a social point of view.
 - Estimation of commercial effectiveness - the viability of a project from an economic point of view.
 - Estimation of budget effectiveness - the viability of a project in terms of saving a budget (federal, regional and / or municipal) and comparison of the project with an alternative option of a traditional budget financing (Public Sector Comparator)..
4. Integral estimation of project effectiveness adjusted with identified risks

Hence, the scheme of LLC effectiveness estimation is as follows:

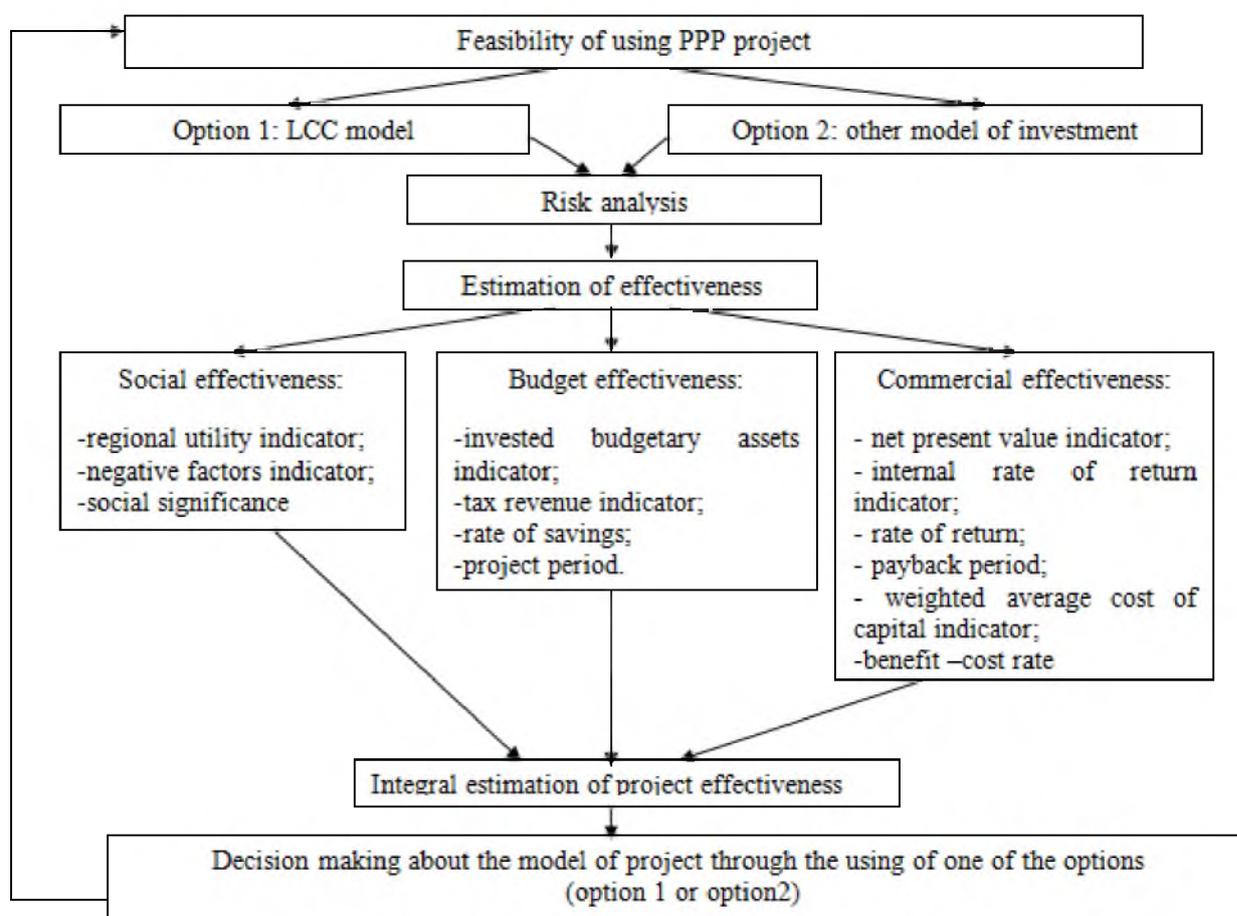


Figure 1. The scheme of LLC project effectiveness estimation

3. Assessing of project feasibility

According to the foreign and Russian publications, the feasibility estimation of the project is a confirmation of the fact that the project is crucial for regional economic development, demographic situation improvement, infrastructure quality development (Delmon, 2009). It means that the feasibility of LLC project is a justification for matching LLC model to ensure effective implementation of the objectives and tasks of the project.

The project should have a strategic "pattern", ie the concept of the project implementation and its necessity should be emphasized in regional legal documents (such as the concept of social-economic development of the region, the strategy of social - economic development, etc.).

Table 2

The feasibility of using PPP and LLC model

Description of the investment question	Positive decision	Negative decision
Is the project necessary for the society?	Yes	No (project will be declined)
Has the project strategic importance for the region?	Yes	No (project will not be considered as PPP)
Whether the project will be carried out in the infrastructure sector, where the government is responsible?	Yes	No (project will not be considered as PPP)
Do they plan to make a long term contract for the project?	Yes (LCC model is preferred)	No (partners should choose other models of investment)
Do they plan to make a contract for the whole life cycle of the infrastructure object?	Yes	No (partners should consider other models of PPP)
Is PPP project the best option of financing in comparison with the traditional budget financing?	Yes	No (partners should choose traditional budget financing model)
Is a partner satisfied with a risk allocation?	Yes	No (partners should make amendments in the responsibilities and obligations for the parties or they should decline the idea of using LLC model)
Can the project be implemented in the current institutional and regulatory - legal conditions of a particular region?	Yes	No (partners should decline the idea of using LLC model and should consider other models of investments)
Will the partnership provide the expected effect of value for money?	Yes	No (partners should decline the idea of using PPP)

Answers to these questions will help to solve an issue whether to use an LCC model or not.

4. Risk analysis

Risk is an essential part of any investment process. LLC is intimately associated with lots of risks, especially for private partner. And this is a keystone, because the profit maximization interrelates with high level of risks. The knowledge of how to allocate and manage risks could solve the problem.

According to our model, risks divided into several blocks:

1. Political risk
2. Legislative risk
3. Technical risk
4. Ecological risk

5. Social risk
6. Commercial risk
7. Project risk
8. Force – majeure risk
9. Specific risk

Allocation of partner responsibilities is a crucial part of risk analysis. It is shown in the following table.

Table 3

Allocation of partner responsibilities in LLC projects

Area of private partner responsibility	Area of public partner responsibility
Design	Expense reimbursement for maintenance of built (reconstructed) object
Built (reconstruction)	Partly expense reimbursement for design and construction
Operation (maintenance)	
Assure compliance of performance specifications	
Finance of design and construction process	

5. Estimation of effectiveness

Thus, the effectiveness estimation of LLC projects includes social, budget and commercial effectiveness calculated one by one, which help to identify possible strengths and weaknesses in the implementation of the project to the society, the government and the private partner.

Social effectiveness

Social effectiveness is an integral indicator of LLC project implementation for society. Social effectiveness shall include 3 cumulative indicators:

Regional utility of project: $\text{Reg}_{ut} = \text{In}_b * U_1 * W$

Evaluation of negative factors: $\text{Neg}_{im} = \sum_{i=1}^n (\text{In}_{neg\ i} * W)$

Evaluation of social significance of project: $S_w = \sum_{i=1}^n (\text{In}_{s\ i} * W)$

Thus, the social effectiveness formula will be the following:

$$S_{\Phi} = (\text{Reg}_{ut} + S_w - \text{Neg}_{im}) / (1+r)^t,$$

S_{Φ} - integral indicator of social effectiveness

r- discount rate

W – weight of an indicator

If $S_{\Phi} \geq 10$ than the indicator is socially oriented and should be implemented through LLC project.

Budget effectiveness

Budget effectiveness is a performance indicator of invested public funds into LLC project. This indicator could be calculated using different methods, ie CBA – cost benefit analysis, CEA – cost effectiveness analysis, CUA – cost utility analysis, PSC – public sector comparator.

PSC is the most general method that included other types of analysis, that's why we use it for our model. Thus, budget effectiveness looks like the following one:

$$NPV_{B\Phi} = \sum_{t=1}^n \frac{(\text{In} + \text{EEE}_t + \text{Non Tax Rev}_t - \text{Ex})}{(1+r)^t}$$

NPV_{БЭ} - integral indicator of budget effectiveness

In – fiscal revenues received from project implementation

Ex – fiscal expenditures spent on project

NonTaxRev_t – revenues from using government or municipal estate

EBE_t – budget economy from using LLC project

r – discount rate

n – period of object life cycle

t – year of project implementation

If NPV_{БЭ} > 1 than LLC is the most effective mechanism for project.

If NPV_{БЭ} < 1 than the model of traditional budget financing is better.

Commercial effectiveness

Commercial effectiveness is the main integral indicator for private partner. This indicator describes the financial results for private partner from LLC implementation. The most frequently used indicators for commercial effectiveness are:

NPV – net present value

IRR – internal rate of return

PBP – payback period

PI – profit index

WACC – weighted average cost of capital

According to our model, the general indicator of commercial effectiveness should be NPV. Thus, the formula looks like the following:

$$NPV_{КЭ} = \sum_{t=0}^n \frac{CF_t - IC}{(1+r)^t}$$

NPV_{КЭ} - integral indicator of commercial effectiveness

CF_t – private partner revenues for t-year

IC – the value of start-up investment

r – discount rate

t – period of project implementation

If NPV_{КЭ} > 0 than the project is profitable

If NPV_{КЭ} < 0 than the project is un-profitable

If NPV_{КЭ} = 0 than the project is neither profitable nor un-profitable

6. Integral estimation of project effectiveness

Effectiveness of LLC project is a summary benefit from the project implementation for society (social effectiveness), government (budget effectiveness) and private partner (commercial effectiveness) adjusted for possible project risks and strategic feasibility of the project to the regional economy.

The integral estimation indicator is:

$$\Xi_{КЭЦ} = \frac{\sqrt[4]{((NPV_{БЭ} * NPV_{КОМЭ} * S_{ef}) * (1 - R_i))}}{100}$$

If $\Xi_{КЭЦ} > 40$ than LLC will be the most effective model for implementation project;

If $10 < \Xi_{КЭЦ} < 40$ than the effectiveness of LLC is medium

If $5 < \Xi_{КЭЦ} < 10$ than implementation of LLC model is reasonable, also recommended to estimate other possible PPP models

If $\Xi_{КЭЦ} < 5$ than it is better not to use LLC model but other possible investment model.

7. Conclusion

Our method of LLC project effectiveness estimation includes not only benefits for private and public partners, acting in the framework of LLC project, but also benefits for population which pay for the right to use the constructed object. Our method differs from others due to

several reasons: firstly, it is important to assess project feasibility and at this stage to choose or cancel using LLC model; secondly, to analyze risks and appropriate allocate them to manage effectively; and thirdly, to estimate social effectiveness to prove social orientation and necessity of project for population.

References:

1. Blum, J. D.; Damsgaard, A., & Sullivan, P.R. (1980). Cost-benefit analysis. *Regulating Health Care: The Struggle for control. Proceedings of the Academy of Political Science*, 4, 137-147.
2. Cost - effectiveness analysis (2012). [Online] Available: http://ec.europa.eu/europeaid/evaluation/methodology/examples/too_cef_res_en.pdf (May 19, 2015)
3. Delmon, J.(2009). *Private Sector Investment in Infrastructure. The World Bank, PPIAF.*
4. Hood, J., Fraser, I., & McGravey N. (2006) Transparency of risk and reward in UK. *Public-private partnerships. Public Budgeting and Finance*, 26:4, 40-58.
5. Laktyushina, O.V. (2011), *Formirovaniye organizatsionno-ekonomicheskogo mekhanizma gosudarstvenno - chastnogo partnerstva (na primere Bryanskoj oblasti).* [Online] Available: <http://pandia.ru/text/77/203/78235.php> (March 21, 2015) (In Russian)
6. Litovka, G. L. (2013). *Logika formirovaniya mekhanizma otsenki effektivnosti proyektov gosudarstvenno-chastnogo partnerstva na urovne regiona. Upravleniye ekonomicheskimi sistemami: elektronnyj nauchnyj zhurnal*, (In Russian) 7 (55), 33. (In Russian)
7. Makarov, I.N. (2014) *Metodika otsenki effektivnosti proektov gosuderstvenno-chastnogo partnerstva v regionalnoy infrastructure. Gosudarstvenno-chastnoe partnerstvo*, 1 (1), 41-55 (In Russian)
8. Mas-Colell, A., Whinston, M.D., & Green, J.R. (2005). *Microeconomic Theory.* Oxford University Press.
9. McEwan, P.J., (2012) *Cost-effectiveness analysis of education and health interventions in developing countries.* [Online] Available: <http://academics.wellesley.edu/Economics/mcewan/PDF/cea.pdf> (May 19, 2015)
10. Novikova, T.S., Chukhlomin, N. V. (2010), *Otsenka effektivnosti gosudarstvenno-chastnogo partnerstva pri sozdanii osobykh ekonomicheskikh zon.* [Online] Available: <http://www.nsu.ru/xmlui/handle/nsu/2982> (March 21, 2015) (In Russian)
11. *Postanovlenie Pravitelstva RF No.134 ot 01.03.2008 "Ob utverzdenii pravil formirovaniya I ispolzovaniya budgetnykh assignovaniy Investizionnogo fonda Rossiiskoi Federazii"* (2008) [Online] Available: <http://base.garant.ru/12159225/#ixzz3IKHcRDOS> (September 03,2015) (In Russian)
12. *Prikaz Ministerstva regionalnogo razvitiya RF No. 117 ot 31.07.2008 "Ob utverzhdenii metodiki rascheta pokazateley i primeneniya kriteriev effektivnosti regionalnykh investizionnykh proektov"* (2008). [Online] Available: http://www.consultant.ru/document/cons_doc_LAW_79095/ (March 15, 2015) (In Russian)
13. Prokopovich, S. Yu. (2013). *Gosudarstvenno-chastnoye partnerstvo v sisteme privlecheniya investitsiy kak mekhanizm realizatsii strategii sotsial'no-ekonomicheskogo razvitiya: aspekt effektivnosti i riskov. Upravleniye ekonomicheskimi sistemami: elektronnyj nauchnyj zhurnal*, 9 (57), 50 (In Russian)
14. Orlov, M.R. (2010). *Economicheskij analiz proektov gosudarstvenno-chastnogo partnerstva. Trudy mezhdunarodnogo simpoziuma "Nadezhnost i kachestvo"*, 2, 38 (In Russian)
15. *Value for money Assessment guidance* (2006). [Online] Available: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/252858/vfm_assessmentguidance061006opt.pdf (April 01, 2015)
16. Wamalwa, K., Castiello, M., Munyua, S., Mohamed, H. A. & Ahmed, A. M. (2012) *PPP: An Appraisal of Efficiency, Effectiveness and Success in the Meat Sector in*

States Recovering from Civil Instability: A Case Study of North Western Somalia [Online] Available: <http://www.omicsonline.org/ppp-an-appraisal-of-efficiency-effectiveness-and-success-in-the-meat-sector-in-states-recovering-from-civil-instability-a-case-study-of-north-western-somalia-2157-7110.1000139.pdf> (September 03,2015)

17. Williams, A., Giardina, E. (1993). Efficiency in the Public Sector: the theory and practice of cost – benefit analysis. Great Britain: University Press, Cambridge.

CRITERIA AND INDICATORS OF ASSESSMENT OF THE EFFICIENCY OF FOREIGN ECONOMIC ACTIVITY

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The importance of the research issue in the contemporary environment is defined by a more significant role of the foreign economic activity (FEA), which became a key factor of financial stability and development of the local production, as well as an important tool to achieve competitiveness, and an element of economic security. FEA priority, both to separate business entities and to the country as a whole, defines necessity of its analytical support. The latter, in its turn, is connected with continuous improvement of the theoretical basis and practical tools of economic and mathematical modelling, including tailored methods to assess the efficiency.

The majority of the applied mathematical models, assessment methods, and indicators are focused on the FEA micro level, and do not permit to assess FEA efficiency with regard to national and regional systems in all aspects. The scientific and theoretical, as well as empirical researches dedicated to study of FEA social and economic efficiency are limited by assessment of the main ways of influence on the economic growth (for example, gross domestic product dynamic).

Insufficiency of mathematical and methodological background used to assess the FEA effects and efficiency with regard to national and regional economic systems, increases the necessity to review this issue, and to search for new scientifically valid modelling tools.

Distinctive feature of the offered methodology is possibility to register and empirically assess the complex of FEA effects for macro- and meso- economical systems. Application of methodologies has high scientific validity as a basis of research becomes fundamental works of economic and mathematical science, national and foreign scientists' classical works and modern researches, devoted to problems of modeling and an assessment of foreign trade activities efficiency.

Delivery of the foreign economic activity is connected with the assessment of its efficiency. The concept of “foreign economic efficiency” may have a different gist and definition with regard to levels of FEA review. A number of authors (Kovshar; Afanasiev; Mikhailova) highlight a two-tier FEA delivery level: micro-level (business entities) and macro-/meso-level (state or region). This approach encourages ultimate understanding of the researched categories.

The key efficiency criterion of FEA with regard to micro business entities is the ratio of transactions outcome (revenue, income) and the cost of their delivery (initial investment, transaction expenses, taxes). The direct economic effect from foreign economic activity means improvement of the company financial performance, the indirect one - cheaper production, familiarization with new processes, increase of production volumes, saving of financial resources, etc.

On macro-/meso-level, the FEA efficiency shall be reviewed from a slightly different point of view. Since on a macro-/meso-level of the economy operation the participant of the FEA