

Risks and new transformations of PPP contracts

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Abstract: This paper tries to demonstrate that the principle of the risk allocation based on the balance is the most effective way to resolve the risk allocation problems of public-private partnership (PPP) contracts and presents suggestions how to carry out this principle. For PPP projects, it is necessary to set up a workable and commercially viable risk sharing mechanism to satisfy the different interests and the objectives of both the public sector and the private sector. An effective risk allocation mechanism is not only an important part in preparing project documents, but also an essential part in the success of PPP contracts. Risk allocation can be represented in a risk matrix. The more balanced the risk allocation is, the lower the risk degree of PPP contracts is. Therefore, the most effective risk allocation of PPP contracts is that the public sector and the private sector take part in risk management together in all the stages of the project and allocate the balanced risks. The outcomes of this paper can be used by both the public sector and the private sector to make a good choice of the PPP contract form.

Key words: public-private partnership (PPP); contract management; risks allocation; risk matrix

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The public-private partnership (PPP) contracts are made between the public sector and the private sector whose purposes are to make the establishment or the management of a project to provide public services. The significant risks which are related in general to the cost, quality and time of the project are shared between the public and private sectors.

Recently, with the increase in global competition, the governments around the world are focusing on new ways to finance projects, build infrastructures and deliver services. PPP is becoming popular in bringing together the strengths of both sectors. In addition to maximizing the efficiencies and innovations of private enterprises, PPP can provide much capital to finance government programs and projects; thereby, public funds are freed to support core economic and social programs.

PPP contracts can also provide a comprehensive, secure and functional solution to the problems of cost, time and quality of a complex project. These types of contracts are characterized by risk sharing between the public and private sectors.

But to build a project successfully through a public PPP contract, the establishment of an efficient risk allocation mechanism is an essential step in the preparation of a project

documents stage. The issue of risk allocation in PPP contracts has attracted much attention of researchers in various activities fields in recent years.

For example, the report of the Economic Commission for Europe on November 30th, 2009 cited that the total volume of PPP projects in Europe reached 41.3 billion USD in the first nine months of 2009, falling by 26% compared to the same period in 2008^[1]. This drop was directly due to the economic and financial crisis that crossed the world in 2008 and 2009. This dangerous event clearly demonstrated the sensitivity of the risk allocation between the partners and its strong impact on the dynamics of innovation marked in the PPP projects since the beginning of this third millennium.

This paper aims at clearly identifying the risks that may arise in the PPP contracts and analyzing these risks and their balanced distribution between the public and private sectors. It also tries to propose a risk matrix and give comments and general recommendations for managing these risks.

And this paper tries to answer the following question: How can the balanced distribution of risks play a major role in the innovation of PPP contracts? Besides, this paper demonstrates that balanced risk allocation is the only way to the success of PPP contracts.

1 General and Conceptual Framework of PPP Contracts

1.1 Overview on the history of PPP contracts

The history of PPP contracts has shown that these traditional forms were known in Europe, especially in France, in the nineteenth century and a considerable development of PPP in this country in the early twentieth century, particularly, for the equipment of new urban centers that had only low budgets. But various current forms of PPP contracts have been revived by the Anglo-Saxon countries especially in the UK and the USA, and they have been developed and popularized during the last 80 years in the UK for the purpose of catching up the significant delays in the area of infrastructure and, particularly, in the field of public transport and railways. PPP contracts are also used for large international projects in several countries in railways, such as the cases of the Euro-tunnel between France and Spain and the TGV under the Alps between France and Italy^[2].

In the same way, the World Bank has also recommended today that PPP contracts are the most appropriate and effective forms for large and complex investments in emerging countries. But so far, the recommendation is only beginning to be translated into reality in developing countries. Even so PPP contracts are widely used in western countries and some PPP contracts are already very important and significant in other countries such as the contract signed by the Beijing authority to achieve its new metro line.

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1.2 Definition and typology of public-private partnerships

1.2.1 Definition of PPP

In general, the PPP covers all the relevant forms of public and private sectors for implementing all or part of a public service (The PPP is not a privatization or a sale of public services)^[3].

These relationships are part of the context of long-term contracts. We prefer to cite the definitions of PPP chosen by international financial and economic institutions such as the European Investment Bank (EIB), the International Monetary Fund (IMF), the European Commission (EC) and the Organization for Economic Cooperation and Development (OECD).

For the European Commission, PPPs involve “all forms of cooperation between public authorities and companies in the financing, construction, renovation, management and maintenance of infrastructure or the provision of service”.

The European Investment Bank refers to “a wide variety of work arrangements, the more informal strategic partnership in the design, construction, finance, and operation contracts and semi-public companies”. For the IMF, PPPs are explicitly presented as an alternative to privatization, and they are “arrangements whereby the private sector provides infrastructure and services that traditionally are the responsibility of the State”.

The OECD focuses on PPP contract arrangements. In the opinion of the OECD, PPPs are indeed contract agreements between “the state and one or more private partners (which may include the operators and financiers) under which the private partners provide services in such a way that the objectives of public service delivery are aligned with the goals of profitability of private partners, and the efficiency of the alignment depends on a sufficient transfer of risk to private partners”.

1.2.2 Typology of PPP

There are various structures of PPP. Actually each is specific to each PPP project, and the risks of a project are varied according to the competence of partners and those objectives and the nature of the project^[4].

However, distinctions can be made between different models of PPP and it can, therefore, be categorized according to the intensity of PPP risk allocations between the partners as follows:

- Risks related to the overall cost of construction;
- Risks related to the completion of the project;
- Risks related to the quality of the construction;
- Risks related to the operational phase (debt, maintenance, competition...).

But we can also categorize these types of contracts based on the division of responsibilities. The purpose of the categorization of PPP is to determine who has the responsibility in each project development step, including the initiative stage, the design stage, the financing stage, the construction stage, the maintenance stage and the operation stage).

Fig. 1 gives a better representation of different models of PPP contracts and each type is defined by the degree of the private sector involvement and the degree of risk transferred to this private partner in a PPP project.

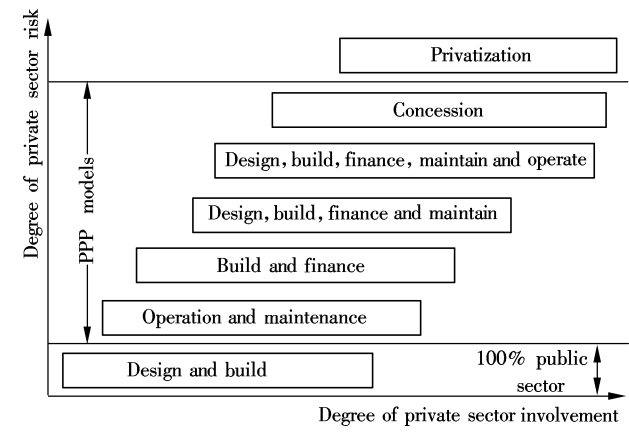


Fig. 1 The scale of PPP: risk transfer and private sector involvement

Take the concession model for example, the private sector involvement is very strong, which is contrary to the operation and maintenance model. In the PPP concession, for the government, the advantage is that the private partner provides the project 100% funding but the degree of risk is very high in this case. On the contrary, in the operation and maintenance model, we note that the degree of involvement and risk is low.

In these types of PPP, we can take the concession contract type for example. The general principle of this type is that the public authority has confidence that a private partner is able to finance and operate the infrastructure of the public sector successfully. The contracts for the concession type are signed for a fixed period (for example 25 to 30 years) after which the rights of the operation returns to the public authority.

In Fig. 2, the public sector selects a private operator to design, build and operate the public infrastructure. The operator is paid payments made by users in exchange for consumption of services provided by this infrastructure. The operator acts in a regulatory and contractual framework determined by the public sector. The duration of the contract should enable the company to recoup its investment^[5].

The public and the private sectors can also build up a joint venture. This is to ensure the mixed finance for the projects

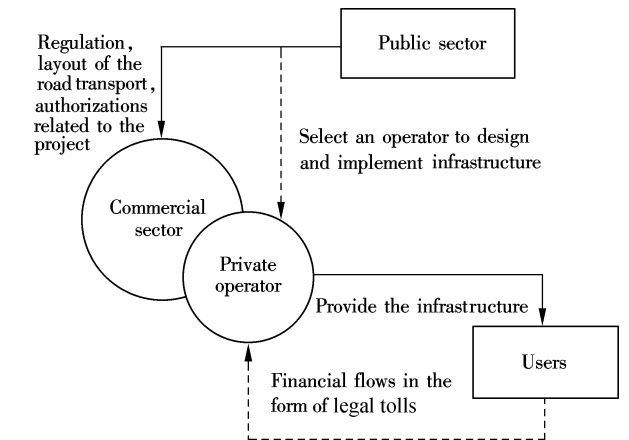


Fig. 2 PPP as a public service concession; the case of Queen Elizabeth II Bridge

and to ensure the achievement of the required benefits. For example, the high-speed line linking London to Dover illustrates this. After signing a PPP contract in 1996, it appeared in 1997 that the private operator had misjudged both the costs and delays in construction of the infrastructure that was estimated in the revenues of the exploitation. The result was that it was difficult to raise funds in financial markets. This situation prompted the British government to grant the private operator a new public funding and restructure the project by creating a joint company^[5-6].

This form allows the partners to make a state guarantee and the industrial risks are allocated to the party that can manage it better, but the business risks are always the responsibility of private enterprise.

2 Census Methods and Risk Allocation in PPP Projects

Risk identification is made through a risk matrix that shows the nature of each risk and the sector which fully supports it, or how much it is shared between different sectors.

In general, the public sector can identify those risks that usually exist in similar projects including those directly and indirectly related to the time, cost and quality of the construction.

But the best way to allocate the risk is largely based on the nature of the project and depends on, in particular, its technical characteristics and the uncertainties that may affect the construction or operation of the project.

It is necessary for the public sector to pay special attention to the risk matrix which is the dashboard to find the risk allocation during the competitive process^[7-8].

Based on the risk identification and allocation of different types of projects (see Fig. 3), it is time to select, among all the identified risks, significant risks in terms of cost and time to integrate their impacts on the overall final costs.

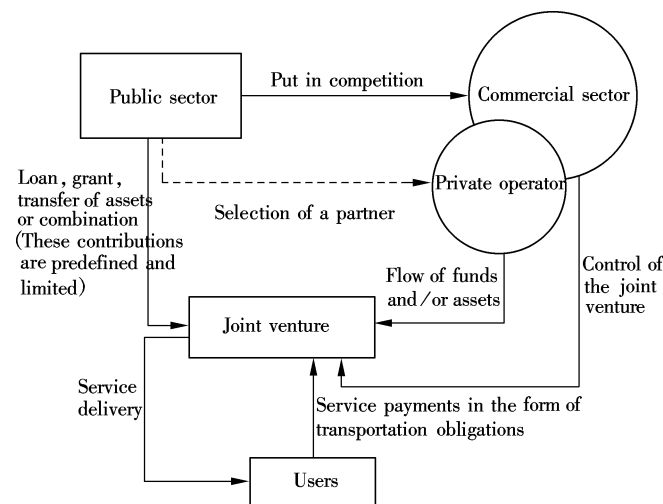


Fig. 3 PFI as a joint venture public-private: the case of channel tunnel Rail Link

2.1 Risk calculation method in PPP projects

The transfer of risks on investment is relatively rare in some areas, but it becomes frequent in PPP projects. The PPP contracts are the preferred framework for the risk

transfer but the duration of these contracts is generally longer than that of the operating contracts because operators rather than owners are managers in most of the infrastructures. In concession contracts, the operators' responsibility is to make initial investments.

Fig. 4 presents the cost benefit function, considering a typical project is assumed to have a duration d , which represents a number of years during which the annual investment costs c are assumed to be constant. At the commissioning, the net profit a is generated from operations and it is supposed to grow annually by an amount b ^[6,9].

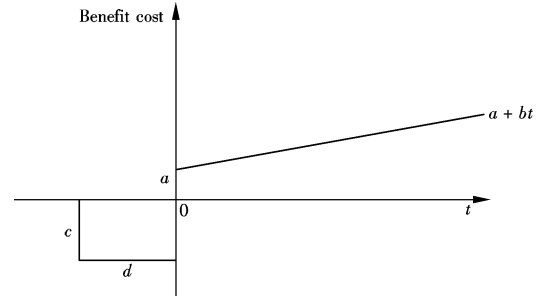


Fig. 4 The cost benefit function

The internal rate of return (IRR) of the project is to compare the rate of return that an operator (public or private) is entitled to expect. We will use the following notations: α is the discount rate to calculate the discounted net present value (NPV); α_0 is the discount rate that cancels the NPV of the project.

For a discount rate α , the net present value of the project can be written as

$$NPV = \int_{-d}^0 -ce^{-\alpha t} dt + \int_0^T (a + bt)e^{-\alpha t} dt \quad (1)$$

In order to simplify calculations, we assume that the discount is extended to infinity, which impacts on the outcomes of interest. Then, Eq. (1) becomes

$$NPV = \frac{1}{\alpha} \left[c(1 - e^{-\alpha d}) + a + \frac{b}{\alpha} \right] \quad (2)$$

The project IRR, α_0 , is then given by

$$c(1 - e^{-\alpha_0 d}) + a + \frac{b}{\alpha_0} = 0 \quad (3)$$

2.2 Risk matrix for PPP projects

The risks are generally analyzed according to the period during which they are likely to occur such as the design stage, the construction stage and the operation stage. They are either temporary or permanent^[4,10].

From the discussions above, it should be noted that there are several matrices that can be constructed according to the nature of the projects. But we can offer here a basic matrix which can help managers in different areas to define a specific template for their projects as indicated in Tab. 1.

3 Discussion of Findings

A reasonable and realistic new risk allocation mechanism is the key issue and factor for success of the PPP project.

The received wisdoms can be drawn on the aforementioned important issues on the different risk allocation mechanisms in different models of PPP contracts as follows.

Tab.1 General risk matrix

Allocation	Similarities
Public sector	Site risk (land acquisition-related) ;
	Political risk;
	Currency inconvertibility and non transferability;
	Expropriation;
	Discriminatory and specific change of law (including tax) ;
	Regulatory consent;
	Authority’s default;
	Operational risk;
	Input quantity, quality and continuity;
	Revenue risk;
	Tariff adjustment breach;
	Network connectivity risk;
	Competing route and connectivity
Private sector	Site risk (ground conditions-related) ;
	Design, construction and commissioning;
	Operating risks;
	Output quantity and quality;
	Political risk;
	General change of law;
	Revenue risk;
	Financial risks;
	Sponsor risks;
Shared	PC, contractor’s default
	Force majeure risk;
	Interface risk;
	Disparity of the quality of the work

Transferring too many risks to private sectors is not a good solution for improving the performance of PPP projects. Generally, this approach is ineffective and very expensive and makes the stakeholders of PPP project vulnerable to change.

It is impossible to anticipate all the risks or to take measures for all the risks in advance. Therefore, it is necessary to design mechanisms to cope with changes and other challenges during the construction phase of the PPP project.

The risk allocation method based on the efficiency principle is, of course, the ideal solution to managing risk and the goal of project managers. In practice, the allocation of risks between two parties to the PPP contracts depends on the bargaining power and negotiation skills of the contracting parties. As a result, the party with competitive and contracting advantages can obtain benefits by an unreasonable allocation of risks in PPP contracts. It is not an effective and efficient way to manage the risks which may happen in a PPP project.

To succeed in a project, it is very important to have a mechanism for workable, commercially viable and profitable risk sharing. An efficient allocation of risks will be an essential part of the preparation of project documents and will be an integral part for a PPP contract success in order to satisfy all the parties with different interests and

objectives.

The best way for a good management of risks in PPP projects starts from an accurate and efficient assessment of all the identified risks. To implement this task, it is necessary to incorporate all the identified risks into a matrix. This developed management tool will facilitate the assessment of the major risks and the understanding of their interactions.

4 Conclusion

The main task in the process of managing different types of PPP contracts is risk analysis and a balanced risk distribution among all the partners of a project, and the distribution of these risks is largely based on the nature of the project and will depend in particular on its technical characteristics and the uncertainties that may affect it during the construction or the operation.

But a successful PPP project requires that the public partner gives special attention to the risk matrix, which is a dashboard to search the balance of the project. We can also conclude that the degree of risk in the PPP contracts is directly related to the degree of involvement of the private partner in different phases of the project. In this sense, the most effective risk allocation of PPP contracts is that the public sector and the private sector take part in risk management together in all the stages of the project and allocate the risks in a balanced manner.

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PPP 合同的风险及新的转移方式

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摘要:本研究试图论证基于平衡的风险分担原则在解决公私合作伙伴关系 (PPP) 项目风险分担问题上是最有效的, 并提出实施该原则的建议. 为了满足公共部门和私人部门的不同利益和目标, PPP 项目应建立一个可行及有利可图的风险分担机制. 一个有效的风险分担机制既是项目文件准备的重要部分, 也是 PPP 合同成功不可或缺的一部分. 风险分担可用风险矩阵表示, 风险分担越平衡, PPP 合同的风险等级越低. 因此, PPP 合同最有效的风险分担需要公共部门和私人部门在项目的各个阶段共同参与风险管理, 并平衡分担风险. 该结论将有助于公共部门和私人合作伙伴更好地选择 PPP 项目的合同形式.

关键词:公私合作伙伴关系 (PPP); 合同管理; 风险分摊; 风险矩阵

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