



The cost of second best pricing and the value of risk premium

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A B S T R A C T

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Private provision of public infrastructure (PPP) is meant to give incentives to increased efficiency in construction as well in operation and maintenance of the infrastructure e.g. within the transport sector. Efficiency is not only (private) economic efficiency, but also social efficiency e.g. social marginal cost pricing of use of the infrastructure.

Is it possible to design contracts concerning payment mechanisms and financial instruments for transport infrastructure that will stimulate social efficiency and optimal allocation of risks between parties? The paper discusses whether different targets can be met and whether compromises may lead to acceptable second best solutions.

PPP implies an opportunity to let the user-payment give desired incentives in the form of Social Marginal Cost Pricing (SMCP). A PPP project is a set of contracts and agreements between several parties, including the Government, the private contractor, subcontractors, banks and infrastructure users. These contracts should be designed to give the right incentives to the parties to achieve optimal risk allocation and utilising of resources.

Long contract-periods are a common feature of PPPs. The paper examines the way that financial solutions should be designed to achieve the goals for the PPP-projects concerning economic and social efficiency. The expected size and variation of the income stream from the project will influence the loan conditions offered by banks concerning interest rates, guarantees and repayment and also the ability to attract investors. The balance between equity and loans again influences the conditions of the loans. An additional problem is asymmetric information between parties. The private contractor usually knows more about the task than the Government (hidden knowledge), and the Government cannot have full knowledge of the efforts of the contractor (hidden actions).

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1. Introduction

Private-public provision of infrastructure (PPP) has become increasingly more common over the last three or four decades both in Europe and other continents. Earlier private-public cooperation in provision of public transport infrastructure was very uncommon. This was and still is mainly a public responsibility at least concerning the main transport network in all four transport forms.

By PPP we usually mean the commissioning out of building, operating and maintenance of publicly owned infrastructure for a certain period of years. This usually means that the private provider gets some freedom in designing and building the infrastructure as long as the private party also has the responsibility for the maintenance. The PPP scheme has mainly been known from the road sector, but similar contract forms has also been used in infrastructure provision of railways, seaports and airports.

Originally the motivation for applying PPP seems to have been the lack of public capital, but later on focus has changed in the direction of efficiency. To leave the responsibility of infrastructure provision to a private party makes it necessary for the project owner to see to that society gets value back for its payments. Also by traditional projects the use of private contractors and subcontractors has been very common over the years. The efficiency of

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these contributions has of course varied quite much. Probably therefore it has been an aim in PPP projects to have contracts between the state and private party that stimulates efficiency.

The objectives of this paper are to give a contribution to a better understanding of the following matters:

- *The efficiency drives of PPP transport infrastructure projects.* This means that we want to shed some light upon what contract mechanisms that stimulate efficiency and which mechanisms that do not.
- *The role of the financial sector in PPP projects.* Banks and other financial institutions will through their conditions for loans as well as their concern for not losing money influence the PPP projects in several ways.
- *How PPP income mechanisms can contribute to social efficiency.* Income for the private PPP concessioner may come from user charges or directly from the state as payment for e.g. quality and availability. The design of such mechanisms may be of crucial importance for the efficiency of the project.

One of the main ideas behind PPP is that the concessioner takes a life-cycle responsibility for the infrastructure project. Thus the concessioner is made to look upon investment cost in relation to maintenance and operation cost as well. The idea is to minimise total costs of the project given the required standards and services of the infrastructure piece. By this the detailed regulation in the contract of the technical specifications of the project in advance should be more or less affluent. At least the regulations may be less detailed.

Payment for the infrastructure provision may be the responsibility of the concessioners themselves as ticket income or road tolls. Alternatively the money is paid from the public party to the concessioner – either as a shadow toll per passage or as a payment for availability and quality. A shadow toll is just proportional to the number of vehicles of different size groups passing the road, bridge or similar project. A different and more performance based model is that the public commissioner pays the concessioner according to the performance of the infrastructure project.

2. Risk and risk costs

All projects are subject to risk. This goes with all kinds of projects, traditional ones as well as PPP projects. Infrastructure projects in all sectors usually have been the responsibility of the government. An important reason for the government to procure a PPP project instead of a traditional one may be the wish to increase productive efficiency by transferring risks to parties that are most capable of controlling it, minimizing its negative impacts (“managing it”) and, if neither is possible, bearing it. The other two commonly named reasons for PPPs are incentives and bundling of project phases to induce life-cycle thinking.

It is frequently believed that the contractors of the private sector are more efficient in handling the risks of the different phases of a PPP project. Of course a publicly owned company may possess to a large extent the same abilities, but it is claimed that in many cases a public company will be subject to soft budget constraints, ambiguous objectives and the heterogeneity of the public sector.

In traditional projects usually the risks of cost overruns and delays according to contract are shared between the government and the private contractor. The life-cycle thinking should be present in the traditional project as well as the PPP project on behalf of the state, but the concessioner in charge for construction only may have no incentive to take future operation and maintenance of the projected piece of infrastructure into consideration. In addition, the

financial resources of the private sector are usually not utilised in the traditional procurement process. For one thing the public budgets have to take the full costs of the project activities on an annual basis. Usually there is no loan-financing or a total financing of the project over the budget as one parcel. Then the contractor has to ‘wait for the money’ every year not being able to apply an optimal time schedule.

2.1. Stakeholders and risk sharing

In the traditional case of public provision of infrastructure the public sector usually is taking a big part of the risk itself, and just a modest part of it is transferred to the private sector. As mentioned above this means that risk can be retained and remain un-priced and risk may be transferred from one party to another, e.g. from the contractor to the government to a zero price, which in its turn may be inefficient, since it may be expected that the party that takes on a risk should be compensated. Assumedly any party that has a risk will do its best to reduce it, but the ability to do so is not evenly distributed.

In a PPP there will be several parties involved. Each of them will be taking over risks from the initial project owner, which is the public sector. To do so they will include risk compensation in the amount they are charging. This is also the case for the sub-contractors. The private concessioner is usually a separate entity, a single purpose vehicle (SPV), but the SPV will have several sub-contractors, like construction firms and service companies. To each of them risks will be transferred through the negotiated contracts. Risk is also transferred to financial institutions like banks and insurance companies. The compensation is materialised in the interest rates or the insurance premium.

To the extent that risks in PPP are priced more correctly than in a conventional project it is usually expected that it will lead to a higher degree of efficiency both concerning allocative efficiency and productive efficiency. This implies that risk should be transferred to the party that is able to handle it in the best way. If none of the parties can control the risk, it may be shared. This may be settled through contract details, or the contract may be incomplete, leaving the outcome to negotiations.

2.2. Global risks

In valuing risks it is useful to distinguish between risks that can be controlled and risks that are beyond the control of either party. The latter may be called global risk or risk that is external to the project.

The global risk is usually impossible or very difficult to eliminate by any of the parties. It includes both systematic and non-systematic risk. Systematic risk includes general business cycles and more specific the demand directed towards the project. Non-systematic risk is related to natural conditions like extreme weather and geological conditions.

Most global risks are outside the control of either party. However, some may be influenced to some extent, either directly or indirectly. As previously stated, in many cases risk should be allocated to the party best able to handle it. In many cases the public sector may have at *some* influence on the risk, at least more than the private party.

2.3. Project risks

The internal project risks are under control by the parties. Project risks are related to every phase of the project. However, construction risk is an important part of it and includes the risk of cost overruns as well as the risk of delayed opening of the project.

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