



Economic Theory

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**PUBLIC-PRIVATE JOINT VENTURE,
INVESTMENT AND ECONOMIC
DEVELOPMENT**

Abstract

Public-private joint ventures are institutional forms chosen by local governments and city authorities to attract capital investment. In this paper we describe an economic set-up where a company decides on the volume of investment and the local authorities offer a package specifying sharing rules and taxes by a public-private joint venture. Such sharing rules can be designed to enhance the level of investment under the presence of distortions to stimulate economic development in the region. This might be important for Eastern European countries in transition in the case of foreign investments. In general, public-private joint venture contracts lead to efficient outcomes. However, we also provide an example in which a joint contract might not work.

Key words:

Economic development, investment, public-private joint venture, regional policy, European integration.

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1. Introduction

In this study we describe a set-up in which a national or international company decides on the volume of investment and the local public authorities offer them a package specifying taxes and sharing rules. Such sharing rules can be designed to enhance the level of foreign investment under the presence of distortions and asymmetric information between the joint venture parties. The gain by having a public-private joint venture is the increased total net surplus due to the elimination of the distortion present in a non-joint venture arrangement. For good reasons it is assumed that higher capital investment will stimulate economic development in the city or region (see Svejnar/Smith 1984; Marjit 1990; Chan/Hoy 1991; Marjit et al. 1995; Fujita et al. 1999).

International business professionals use the term models of entry in order to describe different methods and approaches available to enter markets and conduct business in other countries or regions. One mode of entry is the joint venture where two or more organizations joint together to enter a market. The joint venture is now one of the most common and effective means of conducting business internationally. However, the joint venture agreements are critical to the success of the venture.

In traditional international trade theory, institutions and contract arrangements as a determinant of trade and integration do not figure prominently. However, the treatment of the decision whether to organize a national or international economic activity with the firm or via the market, which is relevant for such international business activities like foreign direct investment, joint venture, alliances, barter trade and other international partnerships, has now received great interest in the literature. This is true especially in the reform programs of transition countries. In the present study we develop a model of public-private joint venture with cost sharing as the main motivation. A private company decides whether to undertake full ownership investment in the region/city, or to form a public-private joint venture with the local government. It is demonstrated that investment cost sharing by the local authorities encourages investment.

The paper is divided into four sections. After the introduction in section 2, we discuss the basic model and introduce the mechanism of a public-private joint venture contract. In section 3, we show how the model can be altered to incorporate uncertainty between venture parties. We also discuss the possibility where a joint venture scheme might cease to be feasible. In section 4, we conclude the paper after some general remarks.

2. A Public-Private Joint Venture

In this section we study the arrangement a company and the local (or host country) government will enter into and how a public-private joint venture can influence the outcome. Joint ventures are contractual relationships as they involve binding commitments on the amount of investment and the division of the net surplus between the local government and the firm. For the basic model and the applications the important question is whether an efficient public-private joint venture contract is feasible.

To build up the basic model we shall use the following notations: I amount of investment, R gross future profits, s gross profit tax rate, r the common rate of discount, a_1 share of gross profits accrued to the firm, a_2 share of investment borne by the firm. We assume that there is a national or international company which is interested in making an investment in the region or city concerned.

In the initial period the company invests I and gets $R(I)$ in the next period. The benchmark case is the one where the local government charges s as a tax on revenues $R(I)$ and the company chooses I to maximize:

$$\frac{(1-s)R(I)}{1+r} - I.$$

This yields

$$\frac{R'(I^s)}{1+r} = \frac{1}{1-s},$$

i. e., the optimal investment I^s .

For any given s , the firm undertakes I^s , earning $(1-s)R(I^s)/(1+r) - I^s$ and we assume that s is such that the company at least earns a higher profit than the one obtainable from the same level of investment in the rest of the country. The non-joint venture arrangement will be referred to this benchmark case where the local or host country government earns $sR(I^s)/(1+r)$.

Now we introduce the public-private joint venture in the following way. For any given s the local government offers a sharing rule $C(a_1, a_2 | s)$ where a_1 is the share of gross profits and a_2 is the share of investment of the company. The shares of the local government are $(1-a_1, 1-a_2)$. The question is whether such a sharing rule exists that the system induces greater surplus than the benchmark case. We assume that if a public-private joint venture creates greater surplus then the benchmark local (host country) government gets the whole additional gain and the foreign firm's reservation pay-off is determined in the non-joint venture case. This is a simplifying assumption and does not affect the qualitative results we derive.

The local government's problem is to choose a sharing rule such that

$$\frac{R(I)}{1+r} - I - \left[\frac{(1-s)a_1 R(I)}{1+r} - a_2 I \right] \geq \frac{sR(I^s)}{1+r},$$

subject to the participation constraint by the company:

$$\frac{(1-s)a_1 R(I)}{1+r} - a_2 I = \frac{(1-s)R(I^s)}{1+r} - I^s.$$

Substitution tells us that for the joint venture contract to be *feasible* the new level of investment $I(a_1, a_2, s)$ generated through the contract must satisfy the following condition:

$$\frac{R(I)}{1+r} - I \geq \frac{R(I^s)}{1+r} - I^s.$$

Note that $R(I)/(1+r) - I$ reaches a maximum value for $I = I^0$, where $R'(I^0)/(1+r) = 1$ and

$$\frac{R(I^0)}{1+r} - I^0 > \frac{R(I^s)}{1+r} - I^s.$$

Now we are in a position to state the following claim

Proposition 1. For $a_1 = a_2/(1-s)$ a public-private joint venture is efficient, i. e., dominates a non-joint venture arrangement.

Proof. As the firm maximizes the left hand side of the participation constraint to find out the optimal investment level, it must choose $I = I^0$, as $(1-s)a_1 = a_2$, and by definition we know $R(I^0)/(1+r) - I^0 > R(I^s)/(1+r) - I^s$. Hence, although the firm gets its non-joint venture pay-off, the government obtains a greater pay-off than $sR(I^s)/(1+r)$.

The intuition behind the result can be explained as follows. By choosing $a_1 = a_2/(1-s)$, the joint venture eliminates the distorting effect of a gross profit tax. The firm is then induced to choose I^0 , leading to a larger surplus both parties can share. By choosing the principal-agent relationship between the local government and the firm, we highlight one of the many possible bargaining solutions. But designed this way a joint venture is economically superior to a non-joint-venture-arrangement. Interestingly, if in the non-joint venture case the tax rate s was chosen to maximize tax revenue (assuming such s exists), the local government can do better by offering a joint venture and collect more taxes just by inducing the firm to invest more given such a tax rate.

3. Some Applications

In this section we discuss some economic applications of the public-private joint venture between a national or international firm and a local government.

3.1 Uncertain Taxation

So far we have assumed that the government can credibly pre-commit to a tax rate as well as to a public-private sharing rule. At this point, we consider a situation where the local government cannot credibly pre-commit to an announced tax rate but can write a binding venture contract. The company internalizes such a possibility. Let s_A be the announced tax rate. But for the firm the tax rate follows a distribution $s \in [s_A, 1]$ with a density $f(s)$, i. e., the investor believes that the local tax rate can increase with certain probabilities.

The risk neutral firm chooses I to maximize:

$$\frac{(1-\bar{s})R(I)}{1+r} - I,$$

where \bar{s} is the expected tax rate, which yields $I = I^{\bar{s}}$. The host (country) government gets $s_A R(I^{\bar{s}})/(1+r)$.

In a sharing contract, the local government wants to choose $C(a_1, a_2 | s_A)$ such that

$$\frac{R(I)}{1+r} - I - \left(\frac{(1-\bar{s})a_1 R(I)}{1+r} - a_2 I \right) \geq \frac{s_A R(I^s)}{1+r}$$

subject to the participation constraint by the firm

$$\frac{(1-\bar{s})a_1 R(I)}{1+r} - a_2 I = \frac{(1-s)R(I^s)}{1+r} - I^s.$$

If the local government chooses $a_1 = a_2/(1-\bar{s})$, the company chooses $I = I^0$. By substituting we get that the public-private joint venture is feasible as

$$\frac{R(I^0)}{1+r} - I^0 > \frac{R(I^{\bar{s}})}{1+r} - I^{\bar{s}} + \frac{(s_A - \bar{s})R(I^{\bar{s}})}{1+r},$$

with $s_A < \bar{s}$.

Proposition 2. *When the local (host country) government fails to pre-commit to a tax rate but can write a binding public-private joint venture contract, there exists a public-private joint venture scheme which dominates a non-joint venture arrangement.*

Note that in this case a public-private joint venture scheme removes two types of distortions. First, it removes the distortion caused by the tax rate in the non-joint venture case. Second, it removes the distortion caused by the failure of the local government to pre-commit to the announced tax rate. Since the firm did not believe the local government, the system initially was losing a surplus of $(s_A - \bar{s})R(I^{\bar{s}})/(1+r)$, which now can be revived through the public-private joint venture.

The purpose of this section has been to analyze the situation of an honest government which cannot convince a foreign investor about the credibility of an announced tax policy. We argue, that even if the local or host country government decides to follow the announced tax policy and the investor assigns some positive probability that the host country government will do this, investment might not be forthcoming. However a joint venture scheme can help to establish investment. Extending the analysis of the foregoing discussion, one may assume that the company not only cares about an expected tax rate but also takes into account the variability of the tax rate. In the case of a risk-averse international firm facing uncertain taxation, it can be shown there exists a public-private joint venture that dominates a non-joint venture arrangement (see Marjit et al. 1995; Broll et al. 2003).

3.2. Infeasibility of Public-Private Joint Ventures

In the following we provide an example where a joint venture contract might not be feasible. Supposing that the discount rate of the local government r_g is different from the private discount rate of the company, i. e. $r_g \neq r$, it can be shown that whenever the local government's discount rate r_g is greater than private discount rate r , a public-private joint venture might not be feasible. Or in other words, the necessary condition for a public-private joint venture might not hold.

With different discount rates the government chooses a_1 and a_2 such that

$$\frac{R(I^0)}{1+r_g} - I^0 - \left[\frac{(1-s)a_1 R(I^0)}{1+r} - a_2 I^0 \right] \geq \frac{sR(I^s)}{1+r_g},$$

subject to the participation constraint of the firm:

$$\frac{(1-s)a_1R(I^0)}{1+r} - a_2I^0 \geq \frac{(1-s)R(I^s)}{1+r} - I^s.$$

Combining both inequalities we obtain

$$\frac{R(I^0)}{1+r_g} - I^0 \geq \frac{R(I^s)}{1+r_g} - I^s + [sR(I^s) - R(I^0)] \frac{(r-r_g)}{(1+r_g)(1+r)}.$$

We claim.

Proposition 3. *When the discount rate of the local government is greater than the private discount rate, then a public-private joint venture might not be feasible.*

Proof. If $r_g > r$, the second term on the right hand side is positive as $sR(I^s) < R(I^0)$. Hence, $I = I^0$ may not satisfy the constraint.

If $r_g > r$, the government is a costly partner. Hence, sharing the investment by the public-private joint venture partners the local government increases the cost of the project. Now, there is a trade-off between increasing investment and increasing cost. Therefore, the result can go either way.

4. Conclusions for Ukraine

This paper constructs a model of public-private joint venture with cost sharing as the main motivation. A private firm decides whether to undertake full ownership investment, or to form a public-private joint venture with the local government. It is demonstrated that investment cost sharing by the local authorities encourages investment. We have discussed various cases where public-private joint ventures can increase the efficiency of an investment project. Although we deal with a simple model, the message is clear. For example, the case with uncertain taxation assumes that the government can commit to a joint venture contract but not to a tax rate. Hence, the ability to pre-commit to a particular policy in comparison to another policy becomes important. What we suggest is that if some policies are easier to pre-commit, then the public authorities should choose such instruments appropriately to achieve the efficient outcome to obtain economic development. This might be important for Eastern European countries in transition (see Marjit et al. 1999; Marin/Schnitzer 2002; Broll et al. 2003; 2004).

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