

Government Opportunism in Public-Private Partnerships

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- Increasing use of the private sector in the provision of public services
- Construction and operation of infrastructure: roads, schools, prisons, hospitals ...
- Two types of contract:
 - Traditional Procurement (TP): two different firms
 - Public-Private Partnership (PPP): a consortium
- Growing attraction of PPP contracts:
 - Developed countries: UK, Australia...
 - Emerging and developing countries: Chile, Hungary...

- Two types of institutional environment:
 - government commitment
 - government opportunism
- *Problem:* The risk of government opportunism affects PPP's efficiency
- *Research question:* When should the government prefer a PPP contract rather a TP contract according to government's ability to make credible commitment?

- The optimality of bundling construction and operation activities in PPP projects:
 - Hart 2003
 - Bennett and Iossa 2005
- The problem of commitment in procurement contract:
 - Guash, Laffont and Straub 2006
 - Iossa and Martimort 2008

The Model

The Model (1/2)

- Two parties:
 - a government delegates the provision of a public service,
 - a private firm builds and/or manages it :
 - risk neutral, limited liability,
 - private information about her efficiency $\theta \in \{\underline{\theta}, \bar{\theta}\}$,
 - hidden actions: investment I at cost $g(I) = \frac{I^2}{2}$ and effort e at cost $\Psi(e) = \frac{e^2}{2}$.
- Two period model:
 - the construction stage,
 - the operation stage,
 - a common discount factor, δ .

The Model

The Model (2/2)

- The structure of the stochastic costs (C_l, C_h) :

- The construction cost C^1 :

$$\text{prob}(C^1 = C_l^1 / \theta) = \theta$$

- $\Delta\theta = \bar{\theta} - \underline{\theta} > 0$.
- The operation cost C^2 :

$$\text{prob}(C^2 = C_l^2 / \theta) = \theta + \beta I + e$$

- The contract:

- based on realized costs
- a monetary transfer t in addition to the reimbursement of the cost

The timing of the game:

- 1 the government proposes a contract to the consortium who accepts or refuses,
- 2 the consortium learns her efficiency type θ (fixed over time),
- 3 the consortium chooses a level of investment I ,
- 4 the first part of the contract is executed C^1 (no transfer takes place),
- 5 the consortium chooses the second part of the contract corresponding to her type
- 6 the consortium exerts e ,
- 7 the second part of contract is executed C^2 and transfer t takes place.

The timing of the game:

- 1 the government proposes a contract to the builder who accepts or refuses,
- 2 the builder learns her efficiency type,
- 3 the builder realizes I induced by the government,
- 4 the first part of the contract is executed C^1 ,
- 5 the government proposes a contract to the operator who accepts or refuses,
- 6 the operator exerts e ,
- 7 the second part of contract is executed C^2 and transfer t takes place.

Government Commitment

The PPP

- The consortium's rents:

$$\begin{aligned} -g(\underline{l}) + \delta \underline{U}^2 &= 0, \\ -g(\bar{l}) + \delta \bar{U}^2 &= \delta \underline{e} \Delta \theta. \end{aligned}$$

- The levels of investment:

$$\begin{aligned} \bar{l}^{PPP} &= \delta \beta \bar{e}^{PPP}, \\ \underline{l}^{PPP} &= \delta \beta \underline{e}^{PPP}, \end{aligned}$$

- The levels of effort:

$$\begin{aligned} \bar{e}^{PPP} &= (C_h^2 - C_l^2), \\ \underline{e}^{PPP} &= (C_h^2 - C_l^2) - \frac{\nu}{(1-\nu)(1+\delta\beta^2)} \Delta \theta. \end{aligned}$$

Government Commitment

The TP

- The construction stage

- the builder's rents:

$$\underline{U}^1 = \bar{U}^1 = 0.$$

- The operating stage

- the operator's rents:

$$\underline{U}^2 = 0 \text{ and } \bar{U}^2 = \underline{e}\Delta\theta.$$

- the levels of effort:

$$\bar{e}^{TP} = (1 - \delta\beta^2)(C_h^2 - C_l^2),$$

$$\underline{e}^{TP} = (1 - \delta\beta^2)(C_h^2 - C_l^2) - \frac{v}{(1 - v)}\Delta\theta.$$

⇒ the level of the investment:

$$I^{TP} = \delta\beta[(1 - \delta\beta^2)(C_h^2 - C_l^2) + v\Delta\theta].$$

Government Commitment

Comparison PPP/TP

- Evaluation of the efficiency of both contracts comparing their total cost:

$$C^{PPP} < C^{TP}.$$

- PPP more efficient \Rightarrow synergies between the different stages of production.

Proposition

With government commitment, PPP contracts are more cost efficient than TP contracts.

Government Opportunism

The PPP (1/2)

- The process of beliefs revision according to Bayes' rule:

$$\sigma = P(\theta = \bar{\theta} / C^1) \text{ and } 1 - \sigma = P(\theta = \underline{\theta} / C^1).$$

- The PPP is run by two short-term contracts.
 - At the operation stage:

- the firm's rents:

$$\underline{U}^2 = 0 \quad \text{and} \quad \bar{U}^2 = \underline{e}(\Delta\theta + \beta\Delta I^A),$$

where I^A is the anticipated level of investment.

- the levels of effort:

$$\begin{aligned}\bar{e}^0 &= C_h^2 - C_f^2, \\ \underline{e}^0 &= C_h^2 - C_f^2 - \frac{\sigma}{(1-\sigma)} (\Delta\theta + \beta\Delta I^A).\end{aligned}$$

Government Opportunism

The PPP (2/2)

- At the construction stage:

$$\bar{I}^O = \delta\beta\bar{e}^O \Leftrightarrow \bar{I}^O = \delta\beta(C_h^2 - C_l^2),$$

$$\underline{I}^O = \delta\beta(\underline{\theta}e_L^O + (1 - \underline{\theta})e_H^O) \Leftrightarrow \underline{I}^O = \delta\beta[C_h^2 - C_l^2 - \frac{v}{(1 - v - v\delta\beta^2)}\Delta\theta]$$

Proposition

In PPP contracts, government opportunism affects investment incentives negatively and induces a higher cost of the PPP project.

Government Opportunism

Comparison PPP/TP

- Evaluation of the efficiency of both contracts comparing their total cost:

$$C^O < C^{TP} \text{ if } v \rightarrow 0 \text{ and/or } \Delta\theta \rightarrow 0.$$

Proposition

PPP contracts may be more efficient than traditional contracts even when the government is tempted to behave opportunistically. However, it is the case only when the firm are "sufficiently homogeneous" and/or if the probability of facing an efficient firm is "low enough".

- Government commitment is a key factor responsible for success of PPP projects.
- Government opportunism reduces the PPP's efficiency...
- ... but it can be still preferred to TP:
 - when the firm are "sufficiently homogeneous",
 - if the probability of facing an efficient firm is "low enough".
- Some possible extensions:
 - the consortium can influence the realisation of the construction cost.

Thank you for your attention!
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