Post-Tender Corruption and Risk Allocation: Implications for Public-Private Partnerships

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Background

- **Anti-corruption program** in public procurement to avoid that corrupted officials alter procurement process to benefit a contractor in exchange for a bribe.

- Fighting **corruption at tendering stage**: rules for: (i) transparency; (ii) adequate advertising of tender calls; (iii) sufficient time to prepare bids; (iv) restrict the discretion on auction format or award criterion; (v) introduce information technology to reduce bids manipulation (Lengwiler and Wolfstetter, 2006).

- ⇒ **Redesign tendering process**: (i) Underweight on quality; (ii) increase tendering costs; (iii) less use of local information.
Background ‘ctd

- **Corruption at contract execution stage**: (i) Use of sub-standards materials hidden by complacent public officials; (ii) False materials invoices; (iii) Undue price revisions or contract lengthening when specific circumstances arise; (iv) undue supplementary works; (v) penalties for underperformance waived (Søreide, 2002)

- ⇒ **Redisign contractual arrangement**: (i) limit on supplementary works; (ii) limit on price revisions.
This paper

- (i) Role of payment scheme and risk allocation to reduce corruption at contract execution stage.
- (ii) Implications on benefit and cost of procurement based on high risk transfer, **PPPs**.

- **Focus**: `Specific Circumstances' clauses:
  - Supervening events
  - Compensation Events
  - Relief Events'
  - Contingent contracts reduce transparency (e.g. revenue guarantees in Hemming, 2006)
The model

- Risk neutral public authority
- Risk averse contractor builds and manages an infrastructure.
- Verifiable Revenue from the service

\[ R = \theta + e + \zeta \]

- \( \theta \): shock at building stage; element of verifiability.
  - \( \theta \) unknown ex-ante; privately observed by contractor ex post
- \( \zeta \): shock at operational stage; not verifiable.
Monitoring

- Public official generates a binary signal: $\sigma \in \{\theta, \emptyset\}$
  - $\sigma = \theta$ w.p. $\epsilon$
  - $\sigma$ hard information
- Official infinite risk-aversion (limited liability)
- Contract btw Authority and Contractor:
  \[ \alpha(\theta,\sigma) + \beta(\theta,\sigma)R \]
- Contract btw Authority and Official: $s(\sigma)$
- Bribe $\tau$ btw Official and Contractor
- official benefits: $k\tau$
- $k$: type of official; private information
Strong institutions

- Perfect monitoring $\varepsilon \equiv 1; \kappa = 0 \Rightarrow \theta$ verifiable
- Contractor chooses operational effort $e(\theta)$ to max

$$\alpha(\theta) + \beta(\theta)(\theta + e) - \frac{e^2}{2} - r\sigma^2\beta^2/2$$

$$\Rightarrow e(\theta) \equiv \beta(\theta)$$

- Only net revenues $R' = R - \theta = e + \zeta$ matter for incentives purposes
- $\Rightarrow$ No value from transferring building risk $\theta$ to the contractor
- Optimal to **fully insure** contractor against $\theta$ shocks $U(\theta^H) = U(\theta^L)$:
- Contractor keeps **constant share** of revenues: $\beta(\theta)$ constant
- Contractor receives **full monetary compensation** (specific circumstances clauses) : $\Delta \alpha = \beta \Delta \theta$
Weak institutions

- $\varepsilon < 1; \kappa > 0$
- Contract now contingent on reported signal
- If $\sigma_1 = \theta$ (informative monitoring): as before (full insurance and monetary compensations)
- If $\sigma_1 = \emptyset$ (uninformative monitoring): asymmetric information btw Authority and Contractor
- Contractor reports $\theta$: incentive to claim always negative shock to receive a compensation $U(\theta^H) - U(\theta^L) \geq \Delta \theta \beta^L$
- $\Rightarrow$ full insurance not possible $U(\theta^H) > 0 > U(\theta^L)$
- $\Rightarrow$ contractor now bears endogenous risk, with associated risk premium $\phi(\Delta U_2)$
The cost of corruption

- Stake from corruption: the additional risk premium $\phi(\Delta U_2)$
- With public officials having all bargaining power, he gets $k\phi(\Delta U)$.
- Anti-corruption program:

\[ s_1 - s_2 \geq k\phi(\Delta U) \]
Anti-corruption program

To reduce corruption need to

• (i) Make public officials **accountable** and increase payment $s_1$ to official if informative monitoring;

$$s_1 = k \phi(\Delta U)$$

• (ii) **Increase risk transfer** to contractor: contractor receives full compensation only if public official is able to prove that negative shock hit the firm. Otherwise, the contractor is only partially compensated.

• (iii) **Reduce revenue share** to contractor to reduce stake from corruption $\phi(\Delta U)$ since $\Delta U = \Delta \theta \beta^L$
Corruption is an equilibrium-phenomenon

\[ s_1 = k^* \phi (\Delta \theta \beta^l) \]

All public officials with \( k > k^* \) will be corrupted
Policy implications

• Guasch (2004), and Guash & Straub (2009) emphasize cost of contract renegotiation due to corruption
• We emphasize cost of contingent clauses due to corruption
• In countries with weak institutions, use of contingent contracts leaves more scope for corruption, which increases cost of risk transfer and reduces the scope for PPP.
• When project risks are higher (Δθ greater), the welfare loss from corruption under PPP is greater.