

Discussion

Financing Infrastructure in the Shadow of Expropriation

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Big Picture Question

- ▶ Infrastructure funding gap in developed and emerging economies. Why?
- ▶ **This paper:** infrastructure financing is plagued with financing constraints.
 - ▶ **agency frictions** with project operator (classic corporate finance friction)
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- ▶ Holmström-Tirole model: double moral hazard ↓↓ pledgeable income
- ▶ **Contribution:** optimal use of government tools to alleviate frictions
 1. **allocation of development rights**
 2. **government guarantees vs. cofinancing**
 3. general-obligation vs revenue-only financing.

Model Redux

Simplified Double Moral Hazard Problem

- ▶ Risky, positive NPV, and scalable infrastructure project: $p_h R > 1$
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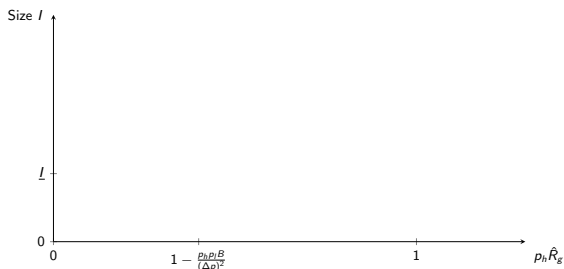
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- ▶ **MH Problem 2:** government's temptation to expropriate operator
 - ▶ Expropriate: \uparrow gov. payoff if success vs. \downarrow success proba (operator shirks).
 - ▶ (almost) sufficient statistics is return “pledgeable” by gov. to financiers:

$$\hat{R}_g \equiv \hat{R} + X - \frac{p_l B}{(\Delta p)^2} < \hat{R}$$

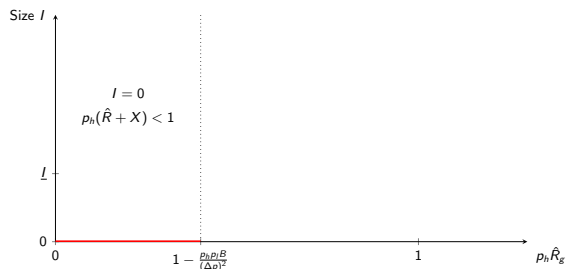
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Government's objective: maximize investment $I = I_g + I_f$



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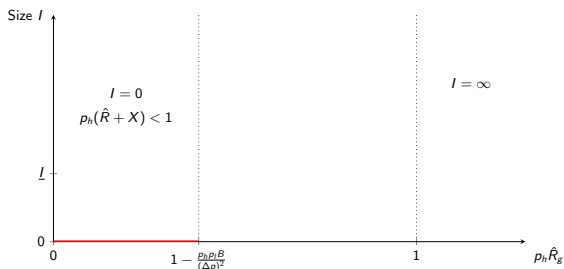
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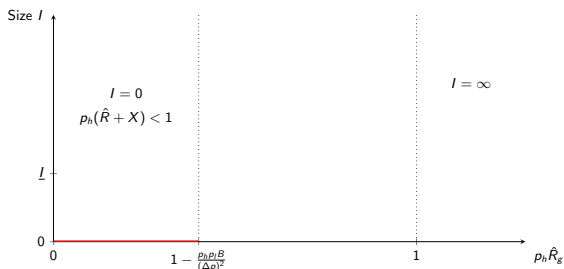


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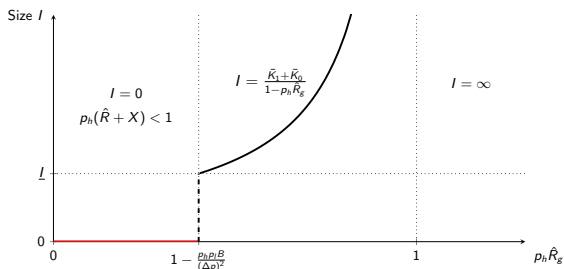


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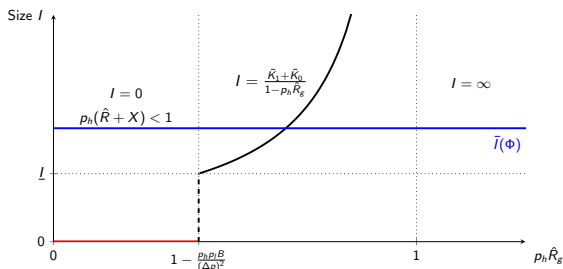


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$$p_h \underbrace{\left[\hat{R}_g I_f + \hat{R}_g I_g + \bar{K}_1 \right]}_{\text{Success } \leq \Phi} + (1 - p_h) \underbrace{\left[0 + \bar{K}_1 \right]}_{\text{Fail } \leq \Phi} \geq I_f \quad (\text{IRP})$$

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The Quest Continues

- ▶ Investment limited by pledgeable income: $I = f(\Phi, \hat{R}_g)$
- ▶ Any policy that increases pledgeable income increases I and welfare.
 1. granting development rights = higher total returns for financiers.
 2. pledging tax revenues
 3. joint financing of projects \sim cross-pledging benefits (Laux, 2001).
- ▶ Theory: clever application of HT framework to infrastructure financing

Comment 1. Clarifying New Results

Result 1: Allocation of development rights

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2. Case 2 high gov. repayment capacity Φ ; $\frac{\partial \hat{R}_g}{\partial D_f} < -1$

- ▶ dev. rights are optimal currency for operator due to double moral hazard!
- ▶ \$1 of dev. rights to operator \rightarrow \$ $1+x$ to financiers.

Result 2: Government Coinvestment vs. Guarantees

Gov. resources \bar{K}_0 : guarantees $\bar{K}_0 - I_g$ may \succeq coinvestment I_g
(set $\bar{K}_1 = 0$ w/o loss)

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- ▶ not clear why guarantees can ever strictly dominate co-investment

Comment 2. Expropriation

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 - ▶ Motivation = ex-post limit on tariffs, toll holidays
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 - ▶ Perfect enforcement of operator contract vs. defrauding external creditors.

 - ▶ Political motivation for expropriation is compelling, but
 - ▶ is it relevant for developed countries?
 - ▶ is there more anecdotal evidence that it constrains financing?
- maybe look at international arbitration cases

Conclusion

- ▶ Simple model of infrastructure financing with rich results
- ▶ Main suggestion: Clarify!
 - ▶ what is the precise role played by repayment capacity Φ ?
 - ▶ what generates the new interesting results (Comment 1)?
- ▶ Good luck with the publication process!

Appendix

Miscellaneous comments

- ▶ Could a contract with no operator effort be optimal if $p_l(R + X) > 1$?
- ▶ Why not a proportional default cost? it would preserve linearity
- ▶ Could be useful to describe the case $\Phi \rightarrow \infty$ explicitly.
→ very difficult to follow derivations in Online Appendix
- ▶ Figure 3 → (IRP) slack for $\hat{R} \in [\bar{\Gamma}, \Gamma_l]$? How is it possible?
- ▶ See previous comment about Proposition 2. Why not set $I_g = \bar{K}_0$ always?
- ▶ Part ii. of Proposition 3: if $p_h \hat{R}_g < 1$, $\lim_{\Phi \rightarrow \infty} I < \infty$
→ How can it be that $\lim_{\Phi \rightarrow \infty} K_g = 0$ while $K_g I \geq \bar{K}_1$