

Performance Bonds in Tropical Concessions

Camp Resources XVIII: Research Sketch

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Introduction: Improving Tropical Forestry Outcomes

- Conventional concession management practices have frequently led to degrading native forest stands. They have also contributed indirectly to deforestation through road building, encroachment, etc.
- How to encourage adoption of Reduced Impact Logging (RIL) and further provide incentives for Sustainable Forest Management (SFM)?
- In addition to other benefits, wider adoption of RIL practices has potential to provide major reductions in GHG emissions (Nasi et al., 2011).

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Policy Options: Performance Bonds

- Royalties have not been working (i.e. the Pigouvian solution).
- As an alternative, performance bonds in the context of tropical concessions have been discussed extensively (e.g., Paris et al., 1994; Boscolo and Vincent, 2000; Leruth et al., 2001; Macpherson et al., 2010).
- There have been some real world policy applications but they have failed to deliver the expected results...
- Bonds still possess desirable properties in an imperfect institutional environment (Boyd, 2001). They can have two policy functions:
 - ① Social insurance (Costanza and Perrings, 1990)
 - ② Incentive device (Shogren et al., 1993)

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Our Research

- Most recently, Ruzicka (2010) demands for further investigation on the properties of performance bonding schemes.
- *Purpose of Our Research:* Identify the obstacles detrimental to performance bonding schemes and propose ways to overcome them.
- *Modeling framework:* Sequential concession game with imperfect information.
- At least three major obstacles (Shogren et al., 1993):
 - ① Moral hazard (principal and agent)
 - ② Financial constraints
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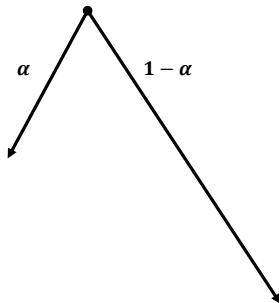
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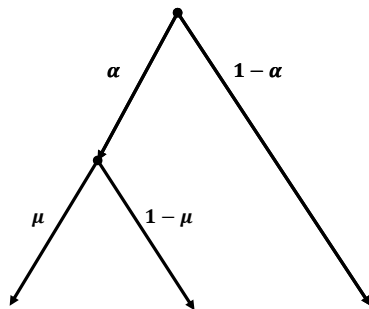
Heuristic Example: Imperfect Information

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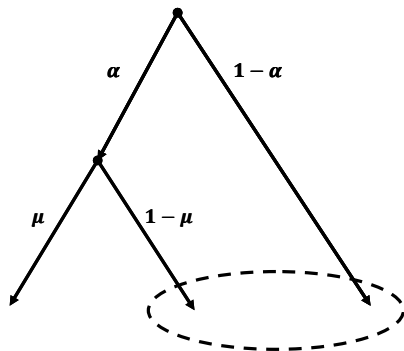
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- 2 Principal believes he can verifiably detect cheating with probability μ .
- 3 Bayes' rule gives the probability of confiscating part of the bond even if the agent has complied in reality.



Policy Recommendations and Future Work

- Better management practices can help to reduce global GHG levels and improve the capabilities to adapt to climate change.
- Third party involvement (e.g., REDD+) can improve on viability of performance bonding schemes:
 - ① Improving monitoring capabilities.
 - ② Reducing moral hazard also lessens financial constraints.
- Simulation study with real world parameters can provide estimates of the required financial support needed.

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Thank You!