

Discussion notes on  
*Macroeconomic Aspects of Infrastructure Investment  
And Its Application in Asia*

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# Summary of the paper

- Proposed a **floating-interest-rate infrastructure bond** to attract private capital for infrastructure projects
  - Challenge of infrastructure finance in Asia
    - Use fee income from infrastructure project to repay investors
    - Dilemma: keep service price low for infra assets VS satisfactorily high return to investors
    - Unattractive return make PPP less efficient in Asia
  - Solution:
    - Mobilize some spillover tax revenues to increase return to investors while keeping service fee low
    - Logic: infra assets generate additional tax revenues from co-benefits such as new jobs, higher income from new markets and new business. These co-benefits shall also be considered as return on infra investments
    - bond pays a floating interest which depends on spillover tax revenues
    - interest rate = fixed-rate government bond during early phases, and uses return from user charges + spillover tax revenues during the later operation stage

# Summary of the paper

- Diff-in-diff econometric method to estimate **spillover effects** :
  - First diff-- the difference (GDP or tax revenue) between the region that gains significantly by the infrastructure and the region outside the spillover benefits of the infrastructure ; Second diff- before and after the infrastructure investment
  - Control: policies, various economic variables affecting tax revenue and GDP, time and location fix effects
  - Three cases: the railway in Uzbekistan (2% GDP growth), Star Highway in Manila (₱1 208 billion more tax revenue), the high-speed railway on Kyushu island in Japan (nearly 200,000 Yen more total tax revenue)
- Discussed other key issues in infra investment in Asia
  - Land acquisition
    - a major barrier in many Asian countries
    - Proposal: land trust -- land owners keep their land and lease land to infrastructure operating company (pay annual rent) with the facility from a trust banks to manage the land.
    - Shorten the time taken in negotiations
  - Green infrastructure
    - Pricing in emission in the infra project
    - Proposal: considering global taxation on CO2

# Comments and suggestions (bond design)

- Current design: use spillover tax revenue to increase return to the investors...
- On the measure and share of spillover tax revenue:
  - To measure spill over tax, Diff-in-diff approach is sound. It would be useful to add a table summarizing possible extra revenue sources, which will benefit the reader.
  - The share of spillover tax revenue is currently set to be 50%. Suggest to allow flexibility, making it vary across different project nature and how broadly it can serve local community
- On bond structure:
  - Rather than setting the floating phase along the construction and operation phases, you may specify it as an **option like** payment structure: set a guaranteed return plus additional return based on fees and spillover taxes (under certain conditions, say applicable when % of fees+taxes is higher than guaranteed return)
- On the pricing of the bond:
  - Government bond yield might not be a good benchmark, as the project bears its own risk, which requires higher risk in nature.
  - Consider adding a risk premium to the current pricing model in the design

# Comments and suggestions: structure and contents

- More possible contribution: This financing idea also applies to social infrastructure such as health and education related services like hospital and schools: *you may highlight such infrastructure as these infra faces more financing challenges because they hardly generate fee income, but generate huge co-benefits such as healthy and skilled human capital and Increased productivity*
- More discussion on related product: Need to discuss infrastructure bond practice in Europe and highlight why this does not happen in developing Asia, which helps to highlight the importance of this product
- Need to strengthen the link between land trust and the float rate bond
  - How will the usage of land trust affect the design of float rate bond?
- More discussion on Green infrastructure bond:
  - Current proposal is global taxation on CO<sub>2</sub>: challenging as there is no global carbon market yet. There are different carbon prices and schemes running in different regions around the world and across developing Asia, there are discrepancies also even within each economy due to gradual implementation of carbon pricing program (different geographic and sector coverage etc).
  - For Green infra, additional cost and benefit analysis shall be discussed beyond CO<sub>2</sub> taxation:
    - Reduced emission be delivery multiple benefits which shall be counted beyond the spillover tax revenue, thus local government can mobilize more revenue for such projects
    - Possible arguable environmental benefits include reduced pollution, better air quality, and some social benefits such as health benefits
    - Low bond yield may also be considered as it is negotiable to investors if it generates reliable (accurately stated and monitored) environmental benefits.



Very insightful and innovative paper. Thanks!