Discussion of "From Free Rider to Innovator"

Florian Ederer
Boston University, CEPR, ECGI & NBER

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It's the same guy and now the slide background is even more appropriate!

What this paper does

- Documents a **structural break** in global pharmaceutical innovation:
  - China overtook the U.S. in clinical trial volume in 2020.
  - Growth concentrated in **high-novelty** and **non-generic** trials
- Provides a **clean policy-based explanation**:
  - 2016 National Reimbursement Drug List (NRDL) reform
  - Centralized price negotiation *plus* massive quantity expansion
- Core message:

Strategic public purchasing can pull frontier innovation.

But before we even go into the details, let's be serious about how interesting this paper is.

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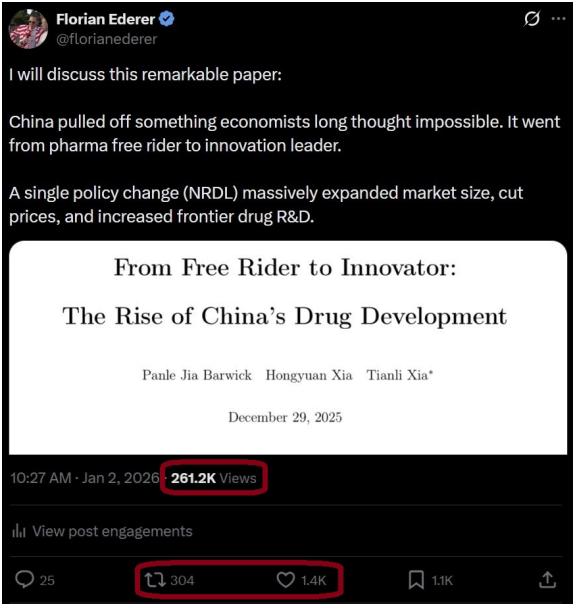

Why this paper is particularly interesting

- Challenges the classic **free-rider view** of innovation:
  - Developing countries need not specialize only in imitation or generics.
  - Market design can endogenously change innovative capacity.
- Shifts focus from **supply-side** to **demand-side** innovation policy:
  - No R&D subsidies, tax credits, or direct grants.
  - Instead: insurance expansion with price-for-volume bargaining.
- Speaks directly to debates on:
  - Market size and innovation
  - Industrial policy
  - Global convergence in frontier R&D
- We have **thousands** of papers on drug trials in the U.S. and Europe but **hardly any** on trials in China.

NRDL Mechanism

- NRDL reform generates a sharp **effective market size shock**:
  - Prices fall by roughly 50–60%.
  - Quantities rise by 300–900%.
- Net effect:
  - Revenue and producer surplus **increase sharply** (because marginal costs are low).
  - Particularly strong in oncology.
- Disease-level exposure predicts:
  - More trials
  - More novel trials
  - Stronger response by domestic firms

Quantity expansion dominates price compression.

Other Factors?

- Not (primarily) driven by:
  - Talent inflows or return migration
  - Upstream scientific publications
  - Investigational new drug backlog clearance
  - Broad industrial subsidies
- Those factors matter:
  - They explain meaningful variation ...
  - ... but they lack the sharp timing of NRDL.

NRDL explains about 40% of oncology trial growth.

Interpretation and Scope

- Conceptually:
  - This is a **demand-pull** innovation story.
  - Closely related to market size and procurement design.
- External validity questions:
  - Would this work without monopsony power?
  - Would it work with fragmented insurers?
  - Would it work anywhere else but China?
  - Is pharma special due to low marginal costs?
- Important boundary:
  - Innovation responds to **expected global revenues**.
  - China matters because it is large enough to move the needle.

Welfare and policy

- Static gains:
  - Large consumer surplus from expanded access.
- Dynamic gains:
  - Back-of-the-envelope suggests induced innovation
  - Comparable in magnitude to short-run access gains.
- Key policy takeaway:

  Access and innovation need not be a zero-sum trade-off.

- Especially relevant for:
  - Middle-income countries
  - Large public buyers
  - Global health policy

Some (boring) suggestions

- **Identification and interpretation**
  - NRDL timing coincides with other reforms and geopolitical shifts
  - Add sharper falsification/heterogeneity tests: predicted eligibility cohorts, diseases with similar pre-trends or IND-backlog changes but different NRDL exposure.
- **Measurement of innovation and novelty**
  - Novelty relies on incomplete MOA data and an LLM classifier.
  - Report out-of-sample accuracy and robustness (structured-only measures, high-confidence subsets) and perhaps molecular (Tanimoto) similarity metrics (Krieger et al., 2022).
- **Decomposition and welfare**
  - Decomposition exercise comes with several (strong) assumptions (e.g., additivity). It would be good to be more explicit about them and to discuss them.
  - Add uncertainty bands, clarify residual vs identified components, and present welfare sensitivity to conversion rates and demand elasticities.

Conclusion

- This is a **big, careful, and important paper**.
- Main contribution:
  - Shows how market design can reshape a country's **position on the global innovation frontier**.
- Broader impact:
  - Reframes debates on industrial policy.
  - Offers a blueprint for demand-side innovation incentives.
- I learned a lot from this paper and highly recommend it.


Thank You!

References I

Krieger, Joshua, Danielle Li, and Dimitris Papanikolaou, "Missing novelty in drug development," *Review of Financial Studies*, 2022, *35* (2), 636–679.