Deforestation: A Global and Dynamic Perspective (Farrokhi, Kang, Pellegrina, and Sotelo 2024)

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April 12, 2024

Summary

- Model deforestation in dynamic, spatial equilibrium
  - Structural change and comparative advantage
  - Extent, location, and timing of deforestation

- Global reductions in trade costs can reduce global deforestation
  - Global agricultural trade costs 30% ↓
  - Steady-state global forest share 0.5pp ↑ (%?)

1. Brazil is a large open economy

For a small open economy, demand is elastic, due to trade; globally it is inelastic, due to structural change.

- Elasticity of demand governs change in deforestation
    - For SOE, demand is perfectly elastic
    - For LOE, it isn't

- Potentially interacts with changes in trade costs
    - Lower trade costs, more trade
    - Bigger seller, more market power

2. Dynamics

- To first order, dynamics = forest regrowth?
  - In counterfactuals, have slow forest regrowth
  - Affects speed of convergence to steady state

- Landowners and workers are forward-looking with perfect foresight
  - Could explain dynamics a bit more here

- Data constraints
  - FAO Forest Resource Assessment reports
  - 1990, 2000, 2010, 2015 and 2020

3. Population growth

- Seems less central to the main message

- Just part of forecasting the future
  - Rather than holding "productivity, population, and land" fixed over time

- Could present as baseline and decompose effects
  - Can project changes in productivity (climate change)
  - Can project changes in preferences (meat)
  - Although trade policy will also change!