Deforestation: A Global and Dynamic Perspective (Farrokhi, Kang, Pellegrina, and Sotelo 2025)

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Summary

- Important and ambitious
- Deforestation with global trade and **dynamics**
  - **Structural change** and comparative advantage
  - Extent, location, and timing of deforestation
- Global reductions in trade costs can reduce global deforestation
  - While reallocating forests across countries

Two polar approaches

- **Macro:** global structural model of many industries
- Micro: local randomized experiment in one industry

- General vs. partial equilbrium (FKPS model GE effects at scale)
- Reliance on model vs. data (FKPS match features of data)
- External vs. internal validity (FKPS capture global responses)

Why focus on deforestation?

1. Important source of global carbon emissions
2. Classic questions: trade and environment, Borlaug hypothesis
3. Rich observed heterogeneity across space, over time, and on the margin

1. Dynamics

- Dynamic components as stated
  - Perfect-foresight landowners and workers (with population growth)
  - Stock of productive land vs. flow of deforested land (with forest regrowth)
- Are dynamics really, really needed?
  - At each time t, as if static with fixed employment of labor and land
  - Distinguishing between t subscripts and intertemporal choices
- Could emphasize the value of the time path of deforestation
  - And interactions with trade and structural change

2. Modeling and estimation

- Agriculture only uses land; manufacturing and land-clearing only use labor
  - But agriculture uses some labor, and manufacturing uses some land
- Usable agricultural land "depreciates" back into forest
  - But agricultural production might prevent depreciation
- Separate trade costs into costs of policy and distance
  - But trade policy is endogenous

3. Other directions for future work

- Global offset markets
  - Domestic and global distributional effects
  - Taking additionality seriously
- Political economy of conservation
  - Domestic and global political challenges
  - Two-level games (Putnam 1988)
- Rich dynamic, spatial modeling of deforestation
  - Domestic spatial + global trade linkages
  - Dynamic models for dynamic narratives