Input delays, Firm Dynamics, and Misallocation in Sub-Saharan Africa

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Border delays in Sub-Saharan Africa

Border delays constitute a key obstacle for development

- Micro-data from Sub-Saharan Africa (SSA)
- A large number of firms uses directly imported foreign inputs in production.
- These foreign inputs are often significantly delayed after arriving at a country’s border.
Border delays in Sub-Saharan Africa

Border delays as a source of firm-level uncertainty

- Average delays range from one week to one month
- Significant uncertainty likely to reduce investment
- Firms select into using local inputs to avoid delays
- We find that the largest firms are most strongly affected by delays
What are the macroeconomic consequences of border delays?

We develop an equilibrium model with heterogeneous firms
  - Technology choice
  - Stochastic delays when importing foreign material inputs

We evaluate a counterfactual scenario:
  - Elimination of border delays
  - Improvements in total factor productivity and factor demand
  - More firms select into importing foreign materials
  - Output gains of up to 10%
Sketch of our model

- Firms produce using capital, labor, and materials
  \[ F(k_t, n_t, m_t, x_t) = (\phi (k_t^{\alpha_1} n_t^{\alpha_2})^{\rho_f} + (1 - \phi) M(m_t, x_t)^{\rho_f})^{1/\rho_f} \]

- Materials can be of local or foreign origin
  \[ M(m_t, x_t) = (\phi_m m_t^{\rho_m} + (1 - \phi_m) x_t^{\rho_m})^{1/\rho_m} \]

- Imported foreign materials can be stochastically delayed

- Firms can choose to operate simpler production technologies, without foreign or all materials
Key tradeoffs

- Simpler production technology vs. input delays
- Self-insurance vs. cost of inventory holdings
The cost of border delays

Output losses from delays of up to 10%

- Intensive margin
  - More factor demand, TFP gains
- Extensive margin
  - More firms use advanced technology
- General equilibrium effects