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

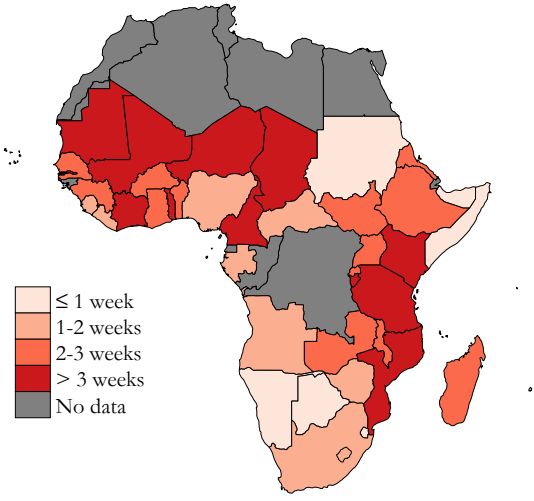
Immo Schott & Idossou Marius Adom

(Université de Montréal)

2023 Annual Bank Conference on Development Economics

June 6, 2023

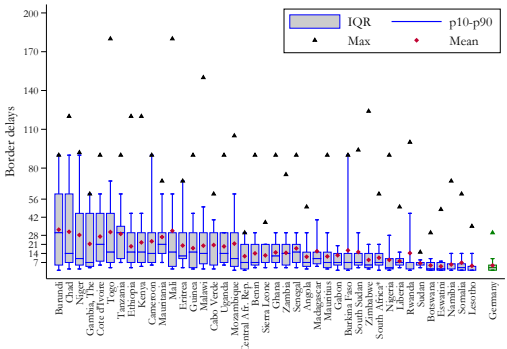
Border delays in Sub-Saharan Africa



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

Paper in a nutshell

- 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

$$F(k_t, n_t, m_t, x_t) = \left(\phi\left(k_t^{\alpha_1} n_t^{\alpha_2}\right)^{\rho_f} + (1-\phi) M(m_t, x_t)^{\rho_f}\right)^{1/\rho_f}$$

- Materials can be of local or foreign origin

$$M(m_t, x_t) = \left(\phi_m {m_t}^{\rho_m} + (1-\phi_m) {x_t}^{\rho_m}\right)^{1/\rho_m}$$

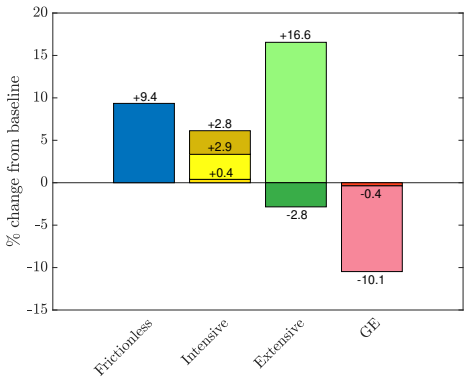
- Imported foreign materials can be stochastically delayed

- 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