

# Which Foreigners Are Worth Wooing?

## A Meta-Analysis of Vertical Spillovers from FDI

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# FDI and Productivity Growth

## Hypothesis: vertical spillovers

Local firms benefit from supplying foreign investors.

- The rationale for FDI subsidies.
- Over 100 researchers have estimated vertical spillovers.
- But results vary across countries and methods.  
No consensus exists.

# How to Make Sense of All These Papers?



# Questions Addressed

We collect all estimates of spillovers and ask:

- 1 How large, on average, is the spillover to suppliers?
- 2 What makes host countries benefit from FDI?
- 3 Investors from which source countries generate the highest spillovers?

# Estimation of Spillovers

Researchers employ a variant of the following model:

$$\log(\text{productivity})_{ijt} = \alpha_i + e \cdot (\text{foreign presence in } \%)_{jt} + \text{controls}_{ijt} + \epsilon_{ijt}.$$

Boost to local productivity due to FDI

$$\rightarrow e \approx \% \Delta (\text{productivity}) / \Delta (\text{foreign presence in } \%).$$

- $e$  is directly comparable across studies  $\Rightarrow$  ideal conditions for a meta-analysis.

# Meta-Analysis: More than a Literature Survey

## Meta-Analysis

The quantitative method of research synthesis.

- Developed in medicine to aggregate clinical trials.
- This paper is the first meta-analysis of vertical spillovers.
- With 3,626 observations it is the largest meta-analysis conducted in economics so far.

# Data

- All empirical studies estimating vertical spillovers were used: 57, including 1 in Spanish and 1 in Portuguese.

Data collection took 3 months

Quarter million cells in Excel had to be manually filled.

- Often some information was missing  $\Rightarrow$  we had to ask the authors for clarifications.
- Our sample includes evidence on 47 countries produced by 107 researchers.

# Methodology: Meta-Regression Analysis

In the absence of heterogeneity and publication selection, estimates should be randomly distributed around the true spillover:

$$\hat{\epsilon}_i = \underbrace{e}_{\text{true effect}} + \underbrace{\sum_k \beta_k X_{kij}}_{\text{heterogeneity}} + \underbrace{\beta_0 SE_i}_{\text{publication bias}} + \mu_i.$$

$X_k$  include method dummies, publication characteristics, and country-level variables.



# Question 1: How Large Is the Average Spillover?

## Innovation for meta-analysis: best practice

We construct a synthetic study with ideal methodology, huge data set, and maximum number of citations.

- Plugging the values to the estimated meta-regression yields spillover coefficient equal to 1.1.
- ⇒ Average FDI robustly increases the productivity of local suppliers.

## Question 2: What Makes Countries Benefit More?

- 1 Spillovers are larger with higher trade openness.
  - Firms used to foreign competition are more flexible in adopting technology from multinationals.
- 2 Spillovers are larger with lower financial development.
  - If foreign investors help to improve their local suppliers' access to financing, benefits from FDI are higher in countries with underdeveloped financial sector.

# Question 3: Which Foreigners Generate Most Spillovers?

- 1 More spillovers are generated by FDI from **distant countries**.
  - Investors from distant countries will buy more local inputs, because it is expensive to import inputs from their home countries.
- 2 More spillovers are generated by FDI from countries with **modest technology edge**.
  - Investors from much more developed countries will buy less local inputs, because local firms are unable to produce goods of sufficient quality.

# Conclusion

## Policy implications

- 1 Knowledge spillovers from FDI to local suppliers are positive and economically significant  $\Rightarrow$  consistent with FDI subsidies.
- 2 Countries with high trade openness and low financial development benefit most from FDI subsidies.
- 3 Investors from distant countries with modest technology edge are most worth attracting.