Learning to Import from Your Peers

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Motivation

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- Importing increases firm productivity. (Amiti-Konings, 2007, Halpern-Koren-Szeidl, 2015)
- There are puzzling differences in firms' import behavior.
- Informal trade barriers can be responsible for that.
- Knowledge diffusion in managerial (Mion and Opromolla, 2014) and spatial networks (Fernandes and Tang, 2014, Kamal and Sundaram, 2016) affects exports.
- There is evidence on knowledge spillovers in exporting, but we know much less about importing.

Research question

Are firms more likely to start importing from a country if they have peers with country-specific trade experience?

Contribution

- ▶ We estimate **knowledge spillovers in importing** through spatial and managerial networks, using firm-level data from Hungary.
- ▶ We **credibly identify** spillovers from within-firm variation across source countries, exploiting the precise neighborhood structure.
- ▶ We estimate **heterogeneous effects** in firm and peer productivity;
- ▶ The model-implied social multiplier is highly skewed, suggesting that **policy targeting** leads to efficiency gains.

Estimation

Data

We use rich firm-level panel data from Hungary (1992-2003):

- the Hungarian firm register,
  - with the full universe of Hungarian firms,
  - the precise location of the headquarters,
  - all owners with their country of origin,
  - all the people having signing right in the firm,
  - with changes over time;
  - with industry and foreign ownership share;
- trade data from the Hungarian Customs Statistics,
  - with annual import and export flows at the HS6 product level for each firm-country pair.

Sample

- not yet importers from country c until $t-1$,
- looking at four source countries similar in terms of imports:
  - the Czech Republic, Romania, Russia and Slovakia,
- including firms in Budapest in 1994–2003.

Identification

- ▶ The main challenge: a firm and its peer's import decision might be correlated for reasons other than learning.
- ▶ We address this concern using two research designs:

1. A linear hazard model

What is the effect of peer firms' country-specific experience on a firm's decision about starting to import from the same country? We identify the effect from the cross-country variation within a firm in a given year.

2. An event study exploiting firm moves

We consider moves of experienced firms as a positive shock to local country-specific knowledge. Are firms in the building more likely to start importing from the same country after the move?

Peer networks

We look at peers in two networks:

- ▶ Close spatial neighborhoods:
    - ▶ in the same, neighboring (± 2) or cross-street buildings (± 1).
- ▶ Managerial networks:
    - ▶ firms from which a person with signing rights has moved to the firm of interest.
- ▶ We control for ownership links
    - ▶ excluding firms with shared ultimate owners from the spatial and person-connected peers,
    - ▶ controlling for the country-specific experience of ownership connected firms.

Linear probability model of import entry

$$Y_{ict} = \sum_n \beta_n X_{ic,t-1}^n + \alpha_{it} + \mu_{ct} + \epsilon_{ict}$$

- with firm i and country c in year t as the unit of observation,
- Y_{ict} as an import indicator,
- a firm is an importer in t if it has ever imported up to t;
- X_n as an indicator of a type n peer having import experience with country c,
- $n =$\{same-building, neighbor-building, cross-street building, person-connected, ownership-connected\}
- country-year and firm-year fixed effects μ_{ct} and α_{it},

Results

Peer effects in importing

| Dependent variable: starting to import | | | | | Type of other experience | |
| | | | | | Exporter | Owner |
	(1)	(2)	(3)	(4)	(5)	(6)
Import experience						
Same-building peer	0.22***			0.22***	0.22***	0.22***
	(0.03)			(0.03)	(0.03)	(0.03)
Neighbor-building peer	0.04**			0.04**	0.04*	0.04**
	(0.02)			(0.02)	(0.02)	(0.02)
Cross-street peer	0.03			0.03	0.03	0.03
	(0.02)			(0.02)	(0.02)	(0.02)
Person-network peer		0.46***		0.44***	0.43***	0.43***
		(0.09)		(0.09)	(0.09)	(0.09)
Ownership-network peer			0.54***	0.53***	0.51***	0.53***
			(0.05)	(0.05)	(0.05)	(0.05)
Peers with other experience	NO	NO	NO	NO	YES	YES
Firm-year FE	YES	YES	YES	YES	YES	YES
Country-year FE	YES	YES	YES	YES	YES	YES
Observations	3,778,517	3,778,517	3,778,517	3,778,517	3,778,517	3,778,517

Main findings

- ▶ Firms with experienced peers are more likely to start importing.
- ▶ Spillovers are highly localized in space:
  - ▶ the effect of peers in the same building is 0.2 pp,
  - ▶ which doubles the baseline probability of 0.19%;
- ▶ same-building effects are 5-times larger than neighbor-building effects,
  - ▶ the effect is small and insignificant for placebo peers in cross-street buildings.
- ▶ The effect of experienced peers in person networks is twice the same-building effect.
- ▶ The magnitude of import spillovers is comparable to
  - ▶ export spillovers,
  - ▶ the predicted increase in the probability of starting to import as a firm moves from the second (0.28%) to the third (0.47%) productivity quartile (same-building spillovers).

Identification concerns

- Importers tend to be connected to other importers.
  - We exploit variation across source countries.
- There might be remaining country-specific omitted variables.
  - We use comparable source countries and firms located in Budapest.
  - We control for ownership links.
  - We find diffusion across industries.
  - There are no significant spillovers from peers in cross-street buildings.
- There might be remaining highly spatially correlated country-specific omitted variables.
  - A second research design exploiting firm moves supports our findings.
  - Results identified in different networks and from increasingly narrow sources of variation are consistent.

Mover design

- ▶ We do an event study, using firms moving to a new building, focusing on same-building spillovers.
- ▶ The estimation sample: firms in Budapest, located in buildings where no firm imported from country c so far, in years after a firm with or without c-specific knowledge moves in.
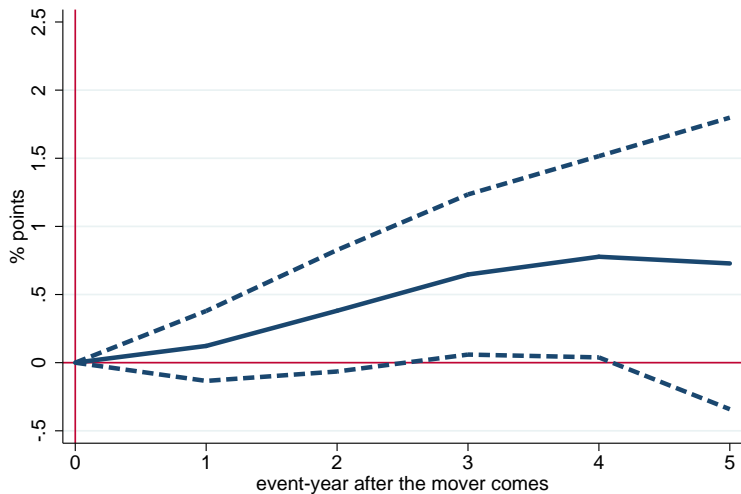
$$Y_{ict} = \sum_{\tau=1}^{5} \beta_\tau D_{it}^\tau + \sum_{\tau=1}^{5} \gamma_\tau \cdot D_{it}^\tau \times X_{ic} + \alpha_{it} + \mu_{ct} + \epsilon_{ict}$$

- ▶ firm i and country c in year t as the unit of observation,
- ▶ Y_{ict} as an import indicator,
- ▶ D_{it}^τ as an event-year indicator for a mover firm coming to the building τ years before,
- ▶ X_{ic} as an indicator for the mover having c-specific import experience.

Importing after experienced firm moves in (OLS)
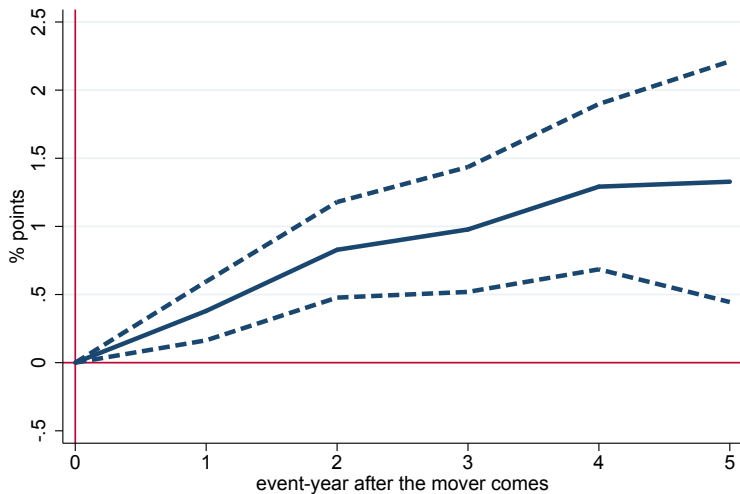
Importing after experienced firm moves in (FE)

Heterogeneity results

- The effect of same-building peers is higher if
  - the receiver firm is larger, more productive or foreign-owned,
  - the peer is larger, more productive or foreign-owned,
  - the peer is more successful in importing,
  - there are more experienced peers.
- Results are consistent with the knowledge diffusion interpretation.
- Complementarity between receiver firm and peer productivity.
- Same-industry and same-product spillovers are higher.

Counterfactual analysis

- ▶ Policies encouraging imports have additional indirect effects ("spillovers").
- ▶ We calculate the 5-year **social multiplier** of a non-importer firm's exogenously induced entry into importing.
- ▶ The number of importers in a building follows a Markov-process with four state variables: the number of importer and non-importer firms, with high- and low-productivity.

The social multiplier

$$\eta_s^c(i) \equiv \frac{E[M_{a(i),s+5}^c \mid T_s^c(i) = 1, \text{ spillovers}] - E[M_{a(i),s+5}^c \mid T_s^c(i) = 0}{E[M_{a(i),s+5}^c \mid T_s^c(i) = 1, \text{ no spillovers}] - E[M_{a(i),s+5}^c \mid T_s^c(i) = 0}$$

- $M_{a(i),s+5}^c$ as the number of importers from country c on address a of firm i in year $s + 5$,
- $T_s^c(i)$ as an indicator of firm i in year s induced to import from country c.
- How much larger is the treatment effect in the presence, relative to the absence, of import spillovers?

Distribution of the social multiplier
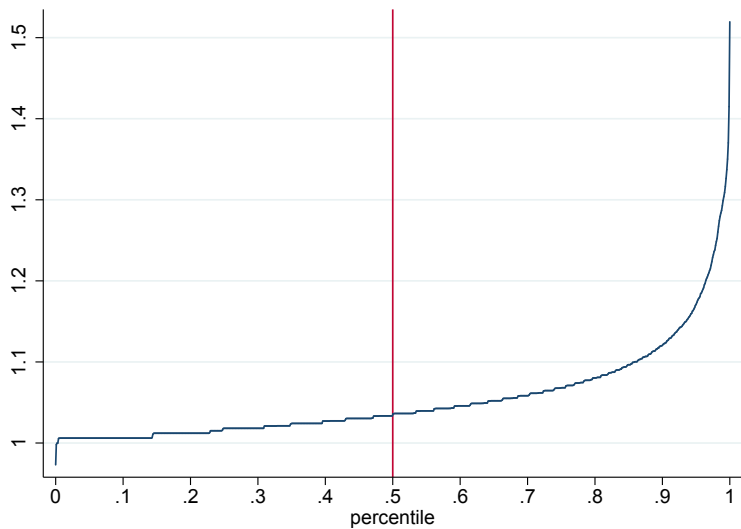
Policy implications

- When treating the median firm, in expectation there are 3% more additional importers because of spillovers.
  - 1.03 is the median and 1.12 is the 90th percentile.
- Numerical example: with a policy treating 1000 firms (only one for each country in a building) the number of additional import starts after 5 years:
  - 204 if firms with the highest treatment effect are treated,
  - 14.6 if random firms are treated.
- There are substantial efficiency gains in targeting an import subsidy policy on firms with high spillover potential, based on observables.

Conclusion

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- ▶ We documented evidence for **import spillovers** in spatial and managerial networks,
    - ▶ **credibly identified** from source-country variation,
    - ▶ using precise spatial neighborhoods and plausibly exogenous firm moves.
- ▶ There is **heterogeneity** in the spillover effect.
    - ▶ Diffusion is stronger when firms or peers are better, the quality of knowledge is higher or there are more learning opportunities.
    - ▶ There are **complementarities** between firm and peer productivity, and within-industry or within-product spillovers are higher:
    - ▶ both high network density and positive sorting can generate aggregate gains in the adoption of good business practices.

Conclusion

- A counterfactual policy analysis suggests that the social multiplier of importing is heterogeneous:
  - a **targeted import subsidy policy** can have substantially larger effects.
- Business networks are important in shaping economic outcomes.