



DEVELOPMENT  
**RESEARCH**

# Exporter Dynamics, Superstar Firms, and Trade Policy

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# Firms at the center of globalization

- Open economies tend to grow faster
- Development strategies typically prioritize export growth and diversification
- But countries do not trade, firms do!
- Firms are at the center of globalization and globalization changes firms



# Plan for today

I. Firms in international trade – why do we care?

II. The Exporter Dynamics Database

III. Understanding patterns of trade at firm level

- The role of “superstars”
- Exporter dynamics
- Evolution with stage of development

IV. The role of policy for export growth

- Export promotion
- Trade facilitation

# I. Firms in international trade – why do we care?

Exposure to international competition improves firm performance

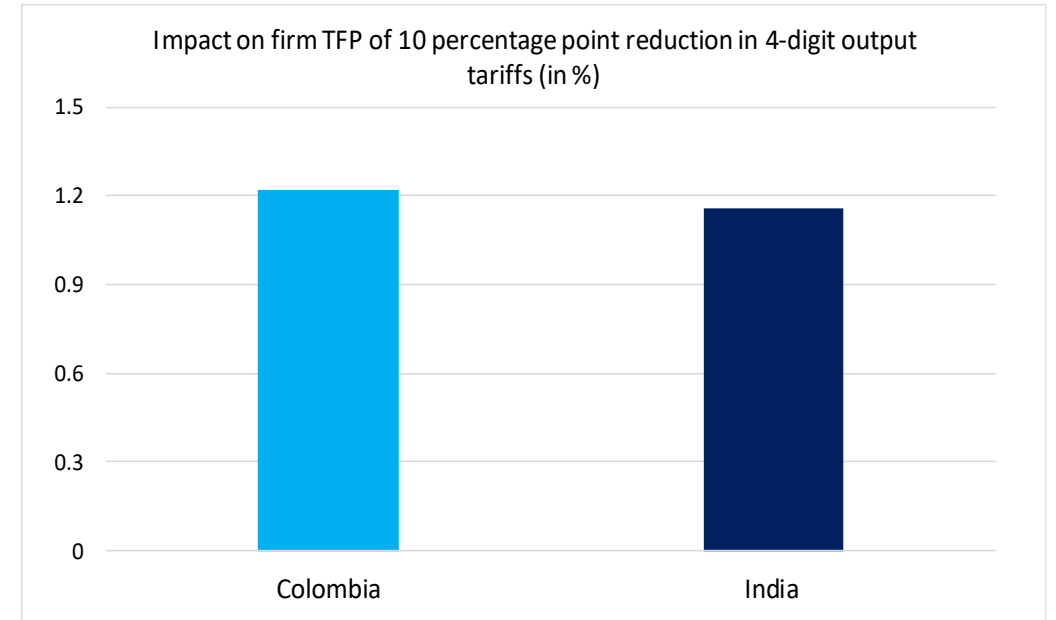
Evidence

Exporting firms perform better

Evidence

# Firms exposed to trade perform better

- Trade liberalization increases firm productivity: evidence for Colombia and India
- Similar results for Chile, Indonesia, and China  
(Pavcnik, 2002; Amiti and Konings, 2007; Brandt, Van Biesebroeck, Wang, Zhang, 2017)
- Exposure to trade increases firm technology upgrading and innovation  
(e.g., Bustos, 2011; Fernandes and Paunov, 2013)

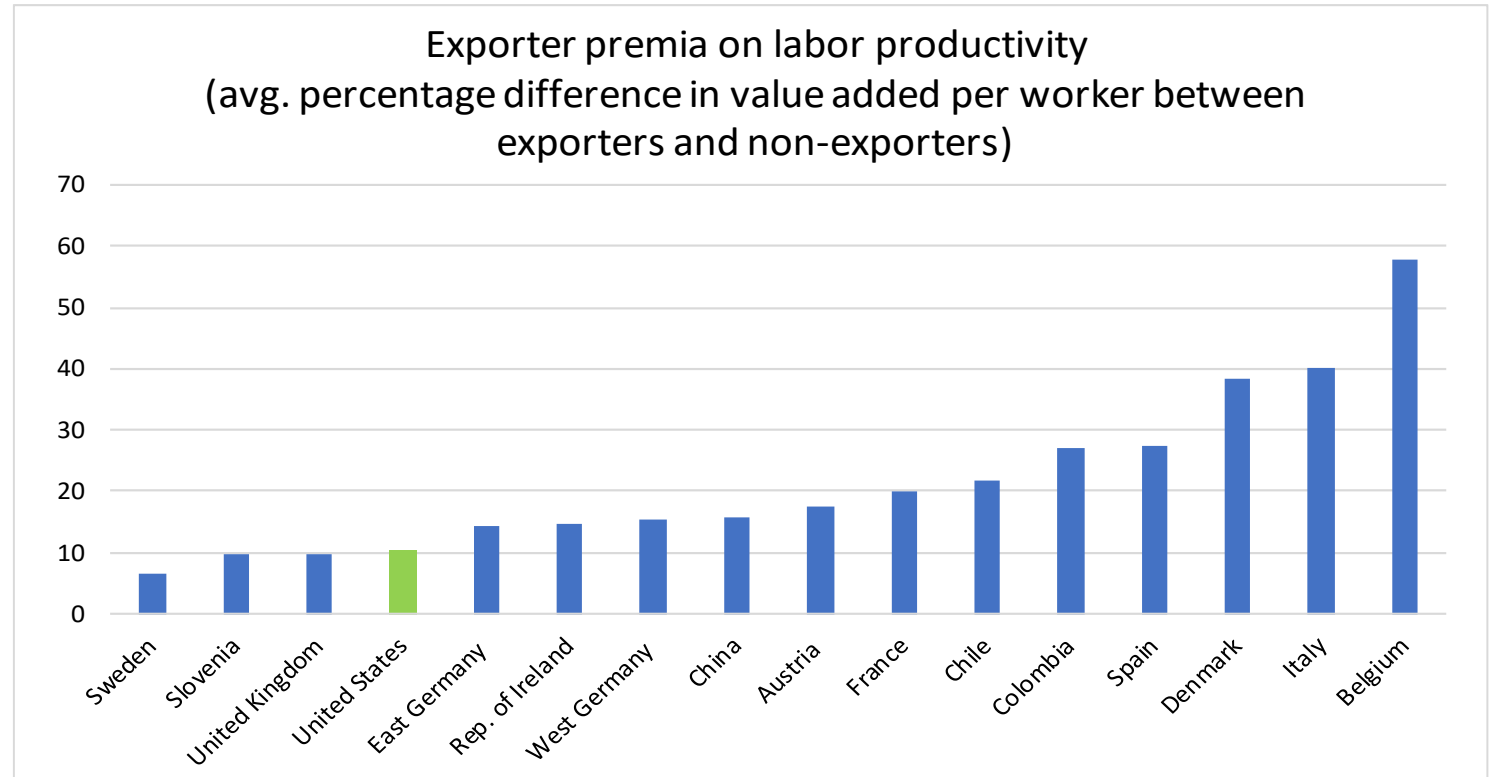


Source: for Colombia Fernandes (2007) and for India Topalova and Khandelwal (2011).

Note: firm TFP accounts for endogeneity of tariffs following modified Levisohn and Petrin (2003) estimation.

# Exporting firms perform better

- Within industries, exporting firms are more productive ...
- ... and more innovative, pay higher wages, use more skills and capital, and are less likely to exit
- Interesting debate on self-selection versus learning-by-exporting



Source: for United States Bernard, Jensen, Redding, and Schott (2007) and for other 14 countries International Study Group on Exports and Productivity (2008).

## II. The Exporter Dynamics Database

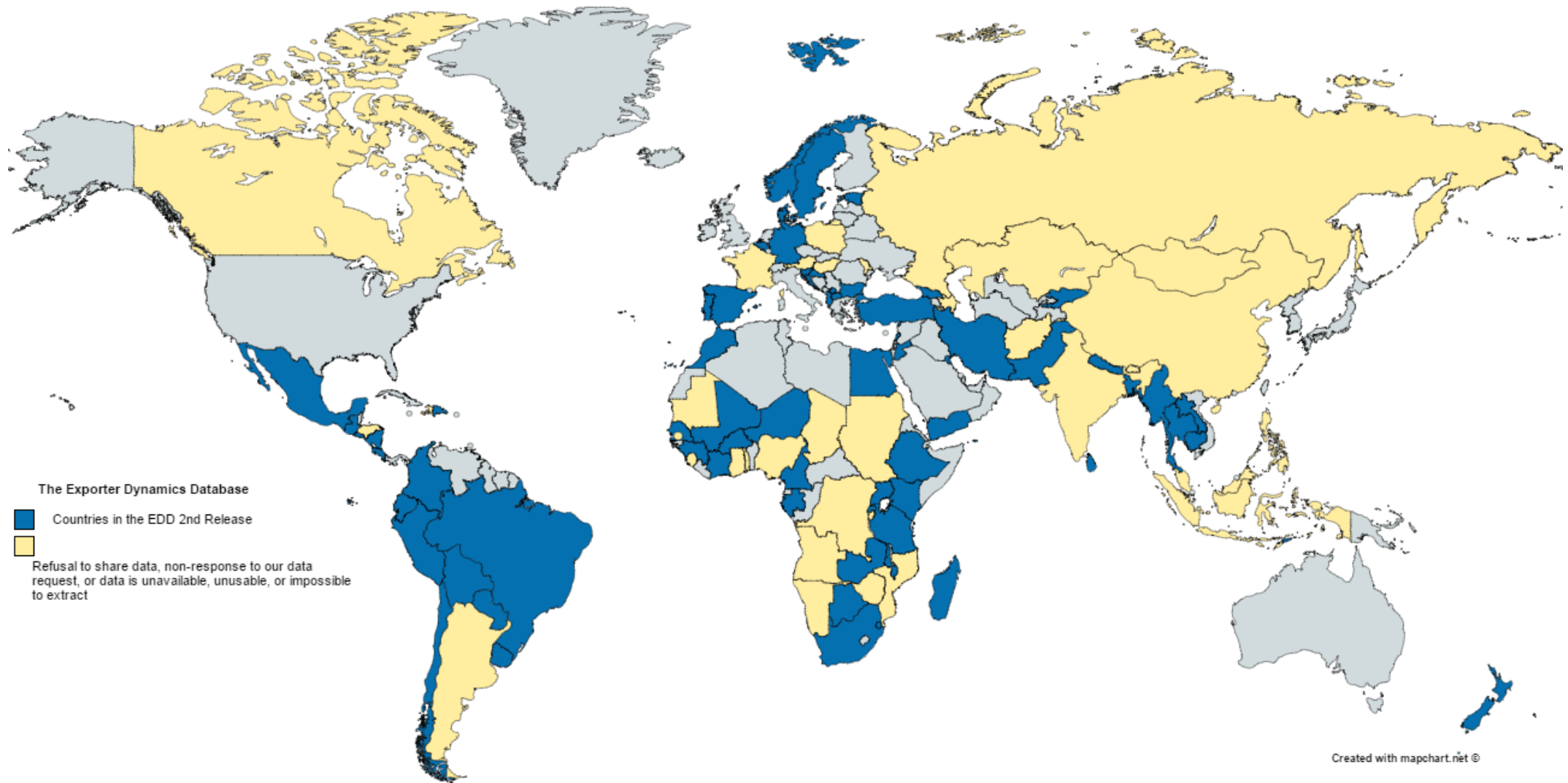
Made possible by the growing digitization of customs agencies worldwide

Aimed at improving understanding of the micro foundations of export growth, especially in developing countries



# EDD: first database with global coverage of firms that export

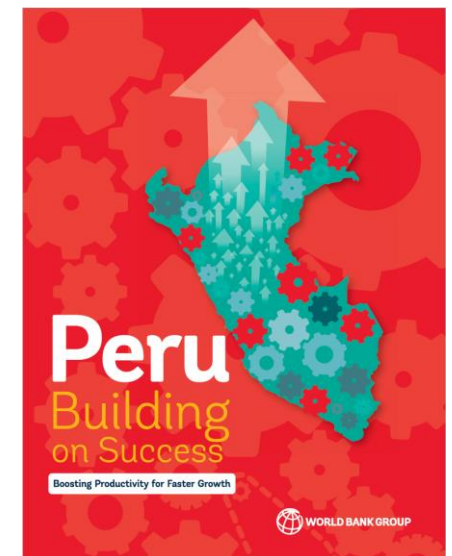
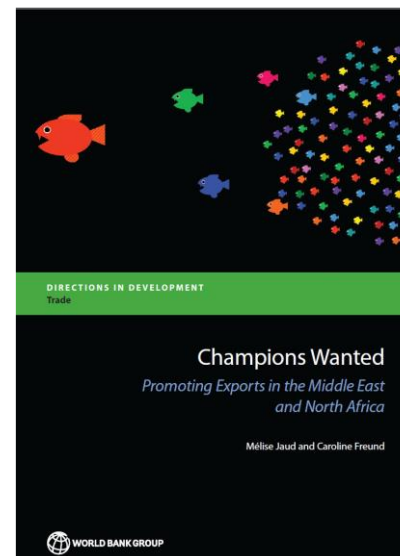
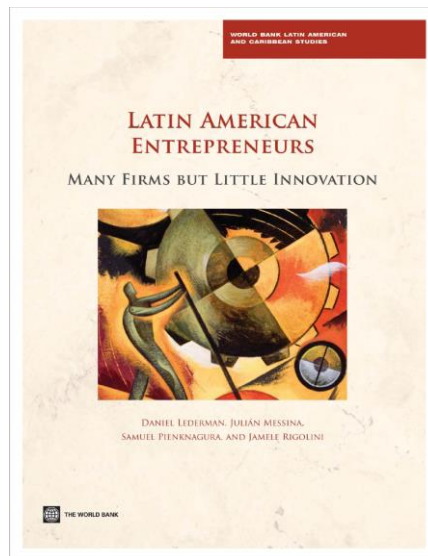
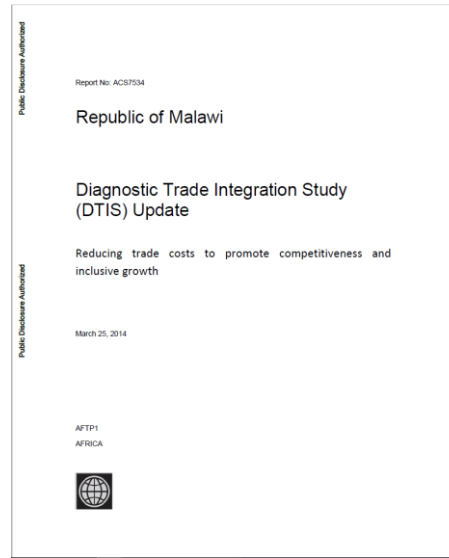
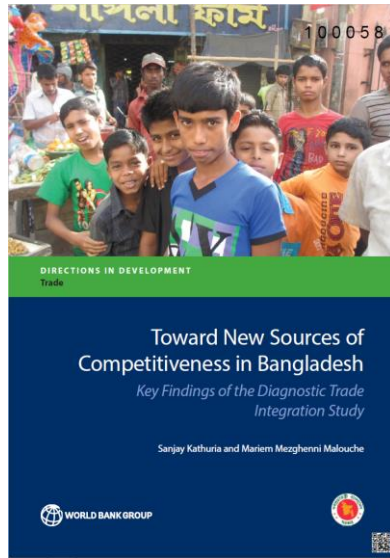
EDD version 2.0 released in 2015 for 70 countries mostly during period 2002-2014



# EDD: ingredients and measures

- Ingredients: transaction-level customs datasets collected from each country's customs agency
  - Covering *universe* of export transactions
  - Following individual firms over time
  - Including for each firm, each product (HS 6-digit) to each destination market in a year, export value and quantity
- More than 100 measures covering:
  - number, size and growth of exporting firms
  - firm concentration
  - firm product and market diversification
  - firm, firm-product, firm-destination dynamics
  - firm unit prices

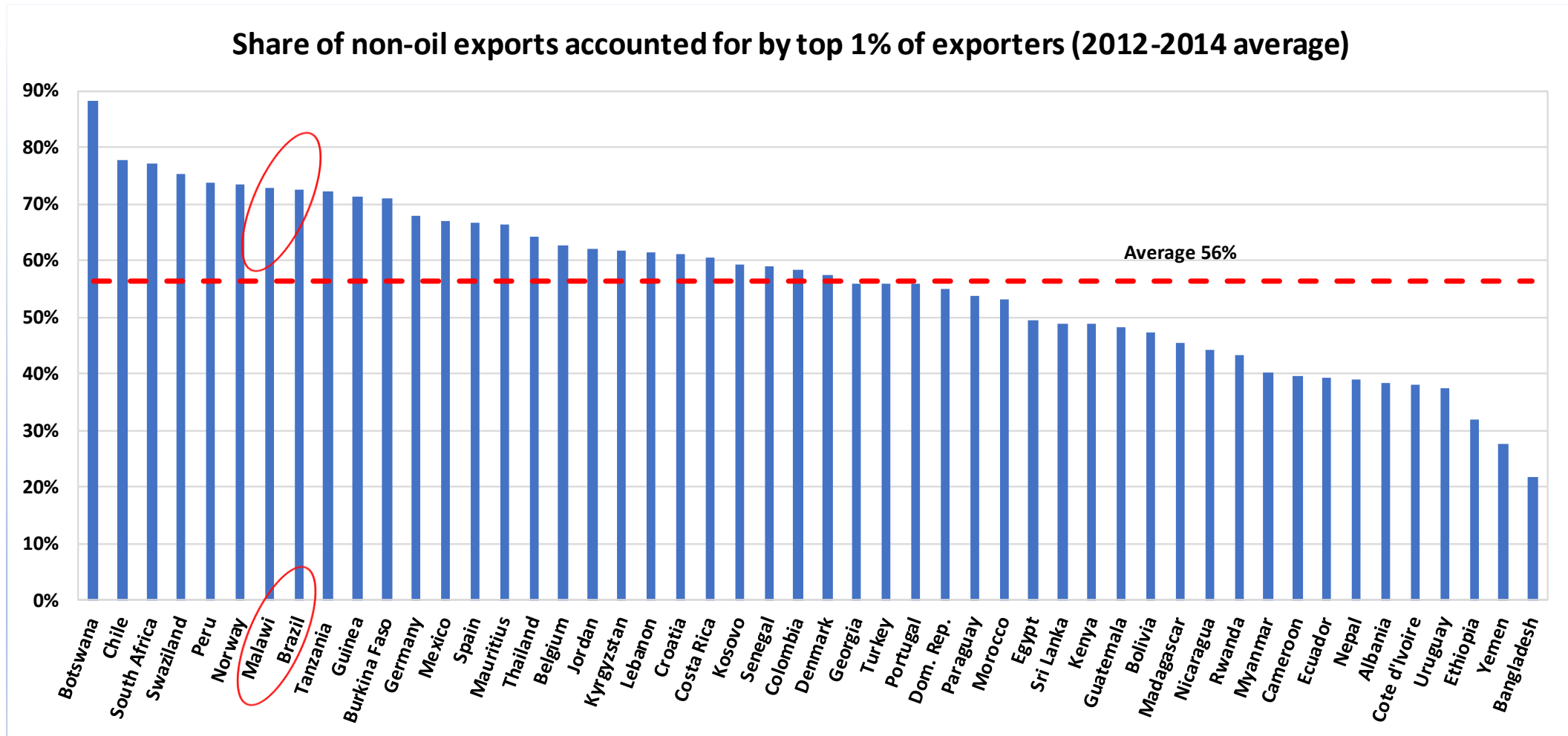
# EDD in support of WB analytical work: examples



### III. Understanding patterns of trade at firm level: The role of “superstars”

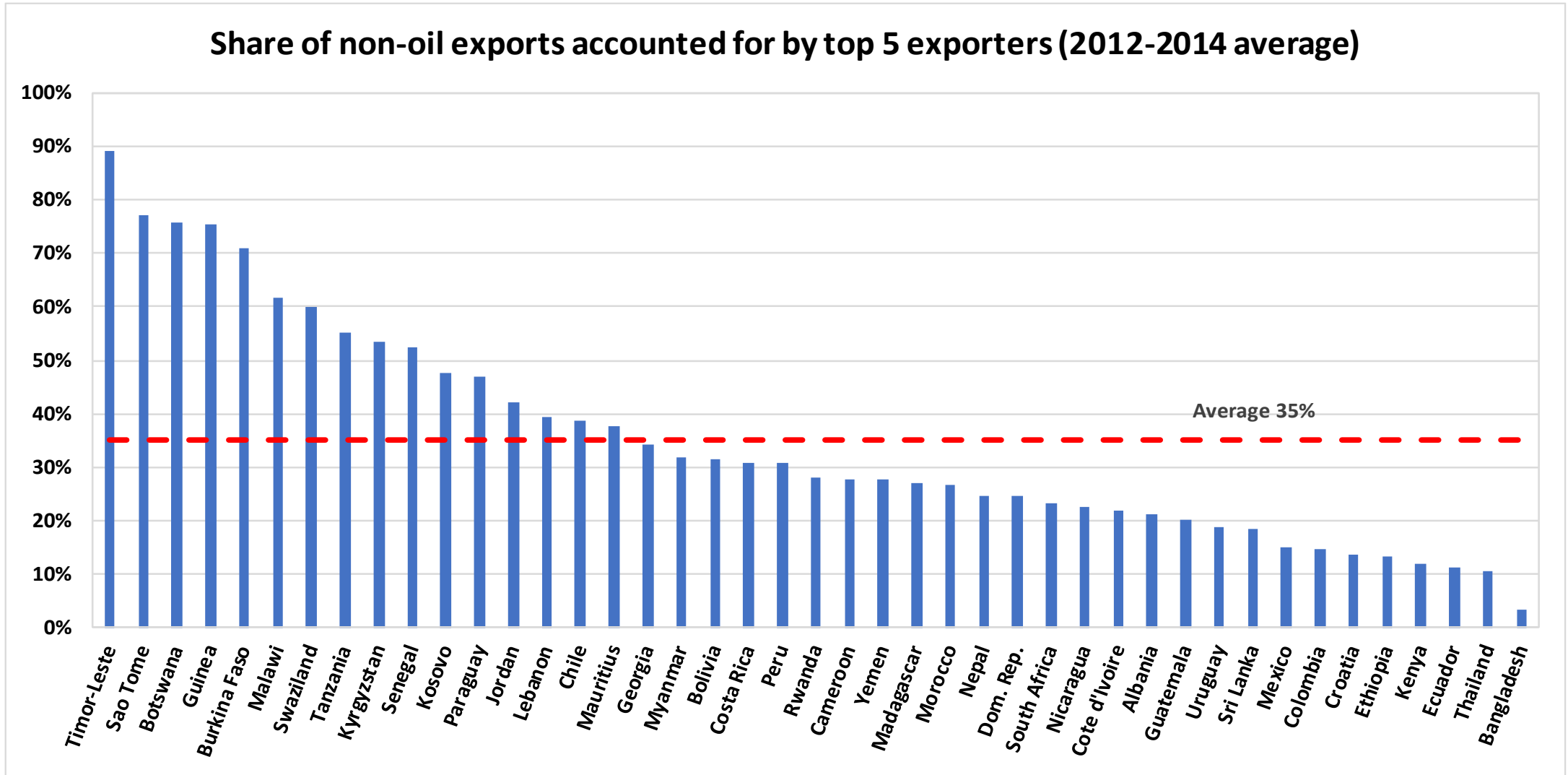
# Exports are extremely concentrated

Very few firms account for a very large share of exports – the “export superstars”



Source: adapted from Freund and Pierola (2015) based on Exporter Dynamics Database version 2.0.

# Individual firms matter for exports



Source: adapted from Freund and Pierola (2015) based on Exporter Dynamics Database version 2.0.

# Superstars influence comparative advantage

Balassa Revealed Comparative Advantage Index

$$RCA_{country,industry} = \frac{\frac{x_{country,industry}}{X_{country}}}{\frac{x_{world,industry}}{X_{world}}}$$

constructed with and without  
superstars (top 5 firms)

Out of 32 countries  
in the EDD, how  
many have RCA in a  
specific industry?

What share of countries  
lose RCA in an industry  
when superstars are  
excluded?

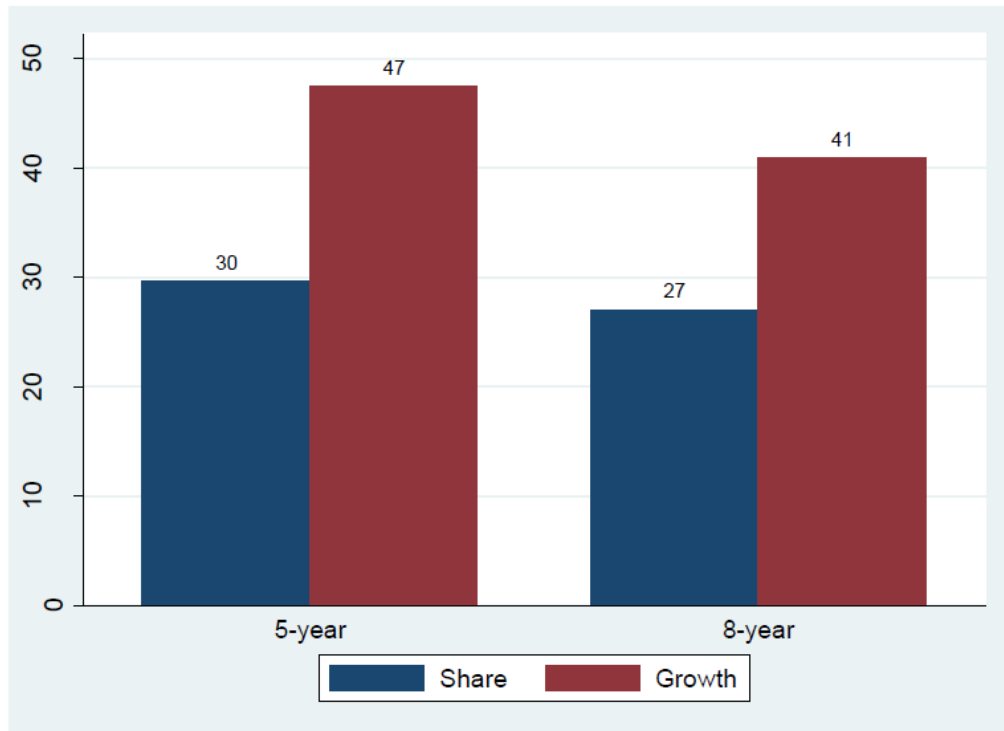
Industry	RCA>1 to RCA<1			
	RCA (1)	No Nr. 1 (2)	No Top 2 (3)	No Top 5 (4)
Apparel	18	0.00	0.00	0.11
Chemicals	5	0.60	0.60	0.60
Electrical machinery	2	0.50	0.50	0.50
Food and kindred	27	0.00	0.00	0.00
Machinery	0	NA	NA	NA
Metals	13	0.15	0.23	0.31
Mineral products	20	0.00	0.15	0.20
Miscellaneous goods	3	0.00	0.00	0.33
Paper	10	0.00	0.10	0.20
Plastic and rubber	4	0.25	0.25	0.25
Precious metals	13	0.08	0.00	0.15
Stone and glass	8	0.00	0.00	0.00
Textiles	15	0.00	0.07	0.13
Transport	1	0.00	0.00	1.00
Wood	5	0.00	0.00	0.00
All	144	0.06	0.09	0.16

Source: Freund and Pierola (2015).

In Costa Rica, a single firm (INTEL) was responsible for the emergence of RCA in electrical machinery

# Superstars contribute to export growth

Contribution of superstars (top 5) – average across EDD countries



Superstars account for an even larger share of export growth over the long-term (>40%)

Source: Freund and Pierola (2018).

Note: average for 5-year [8-year] growth covers 32 [18] countries in the EDD.



# What leads to export superstardom?

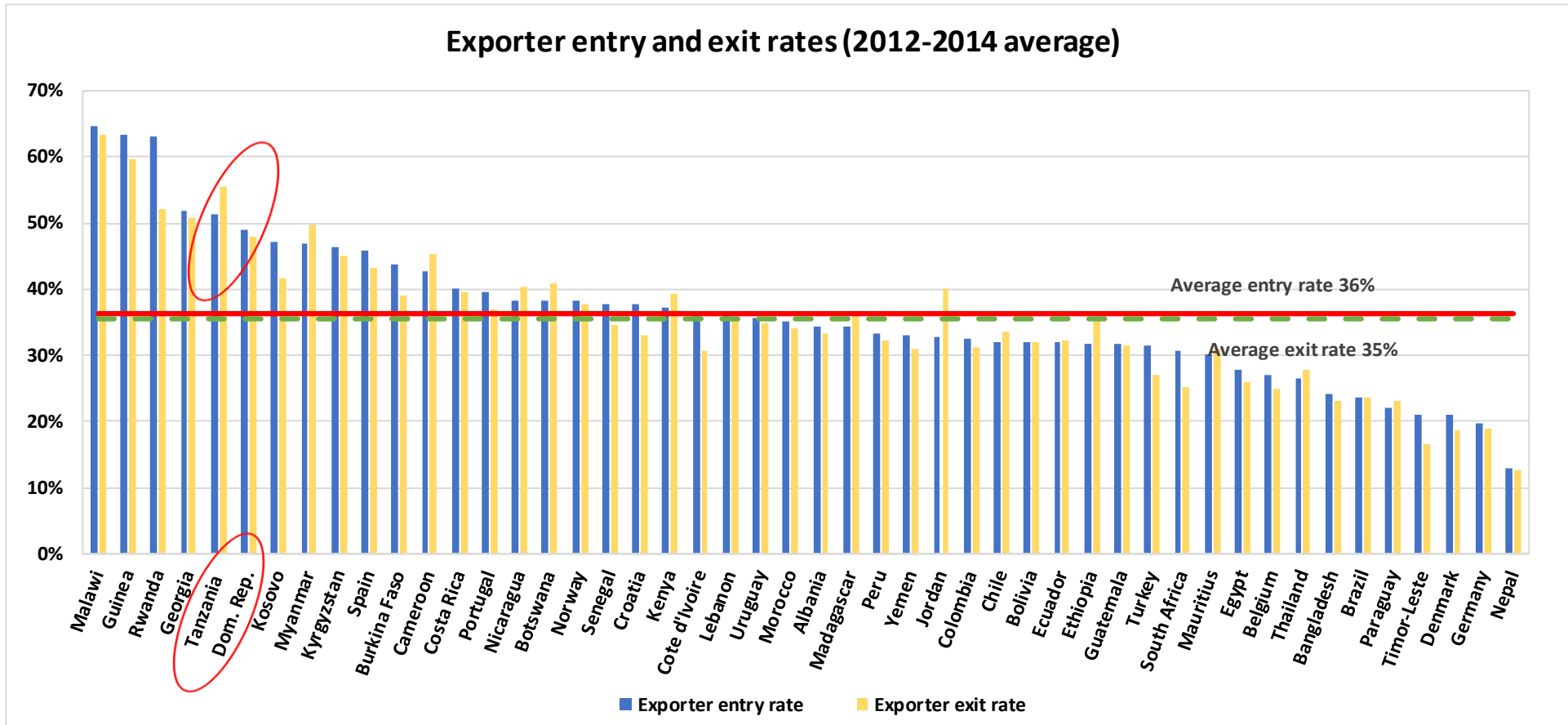
Some preliminary answers:

- Origins of export superstars in developing countries
  - For 18 countries in the EDD, most are born very large, they never grow from small to the top, they are often foreign-owned, and start exporting shortly after being established (Freund and Pierola, 2018)
- Origins of successful exporters in developing countries
  - For Brazil, more educated leaders with past managerial experience (in large firms) (Bastos and Silva, 2018)
  - For Argentina, foreign market knowledge of leaders gained from living or working abroad (Artopoulos, Friel, and Hallak, 2013)

### III. Understanding patterns of trade at firm level: Exporter dynamics

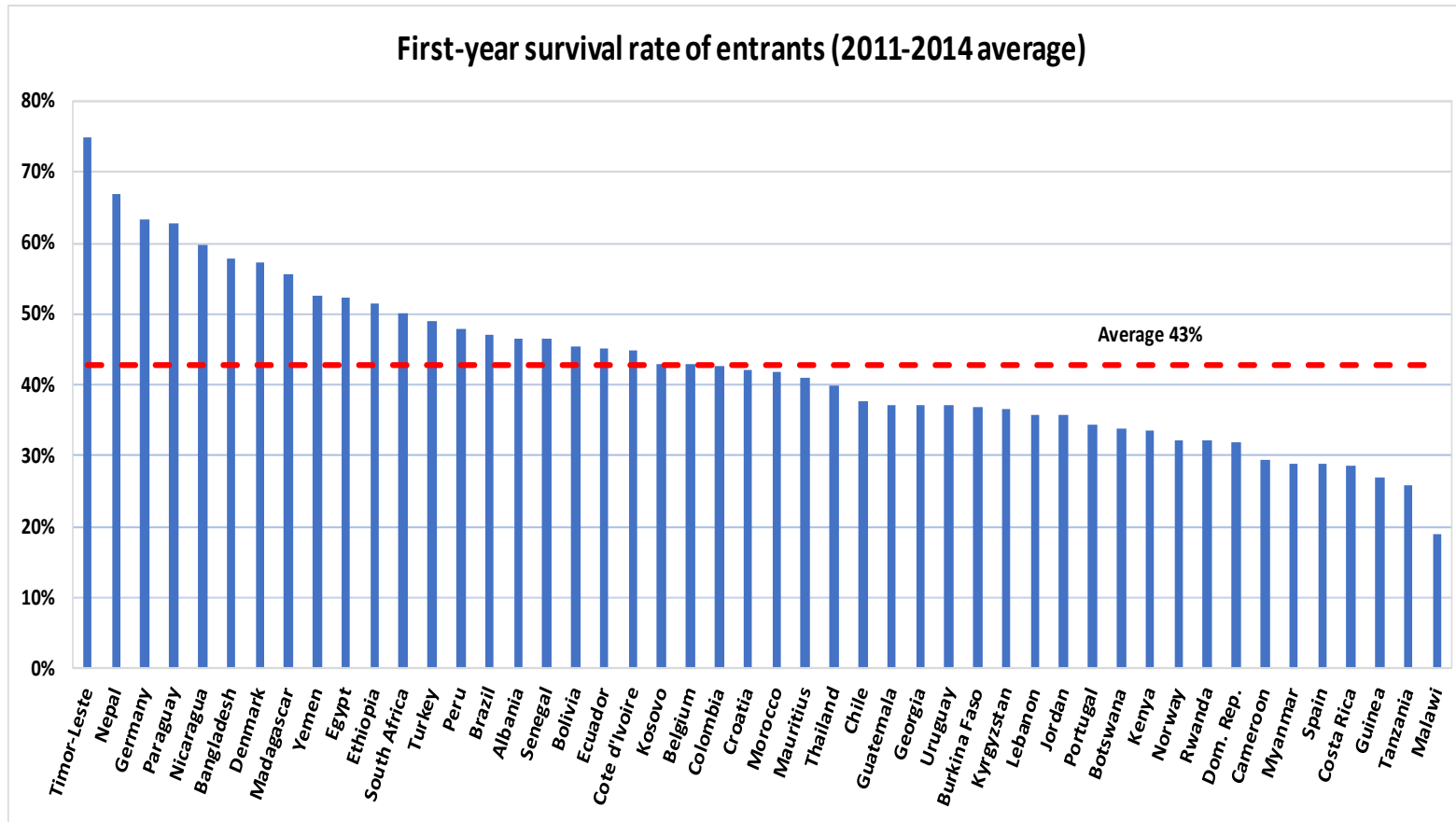
# Tremendous churning in export markets

Many firms break into foreign markets but many also exit



Source: adapted from Fernandes, Freund, and Pierola (2016) based on Exporter Dynamics Database version 2.0.

# Surviving in export markets is a challenge

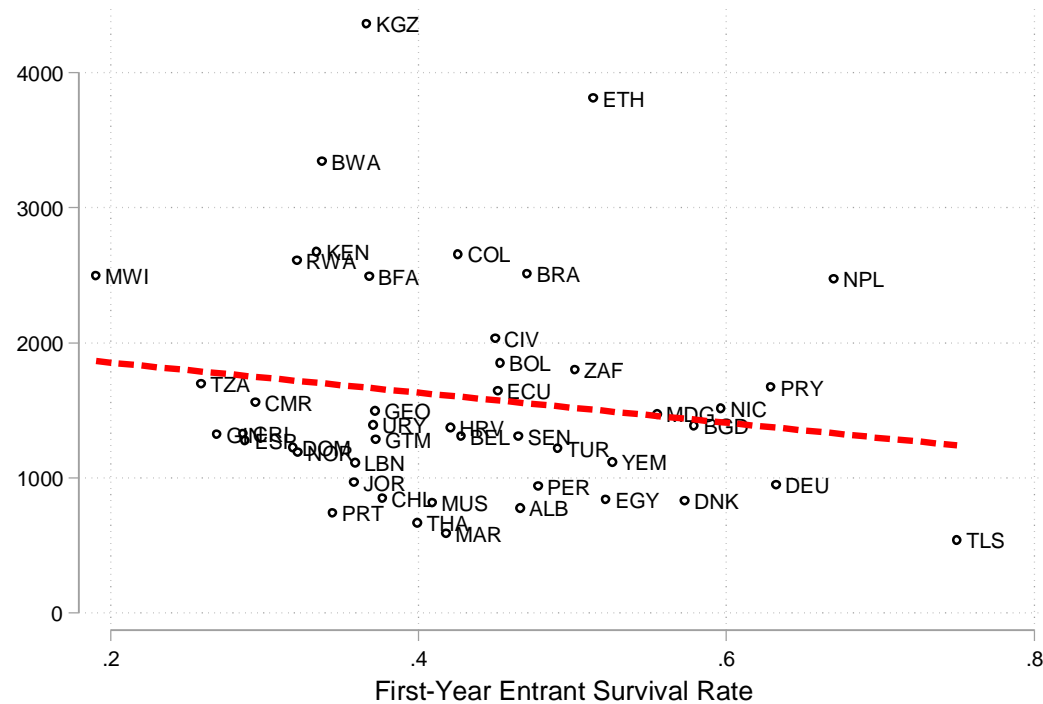


- Tracking individual entrants, few survive beyond the first year
- Entrants that do survive account for meaningful export growth over the longer term in LAC but not in MENA

Source: adapted from Fernandes, Freund, and Pierola (2016) based on Exporter Dynamics Database version 2.0.

# Trade costs influence survival of entrants

Survival of entrants beyond the first year is lower where trade costs are higher



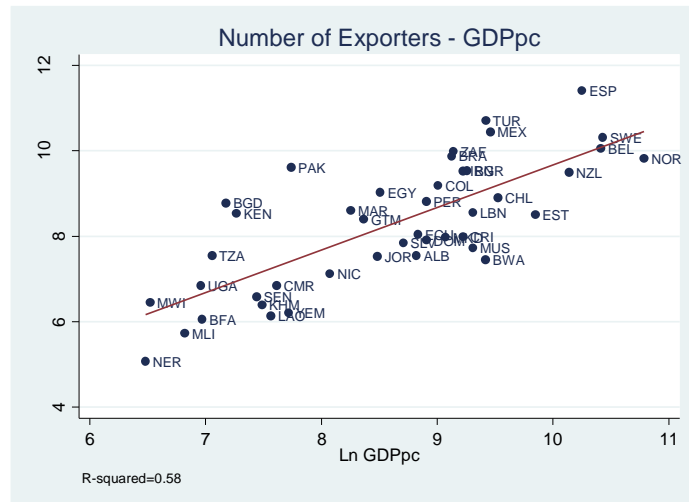
Source: adapted from Brenton, Cadot, and Pierola (2012) based on Exporter Dynamics Database version 2.0.

Notes: 2011-2014 averages used. Cost to export is from the Doing Business Database.

### III. Understanding patterns of trade at firm level: Evolution with stage of development

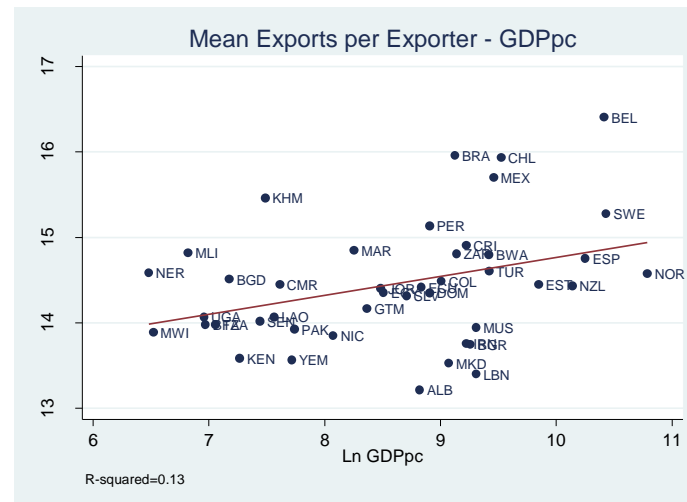
# Evolution of exporter characteristics with development

More developed economies have:

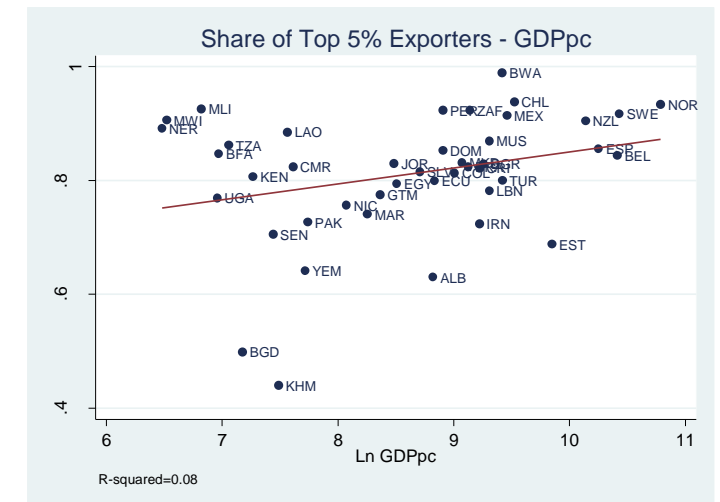


Source: Fernandes, Freund, and Pierola (2016).

More exporters



Larger exporters

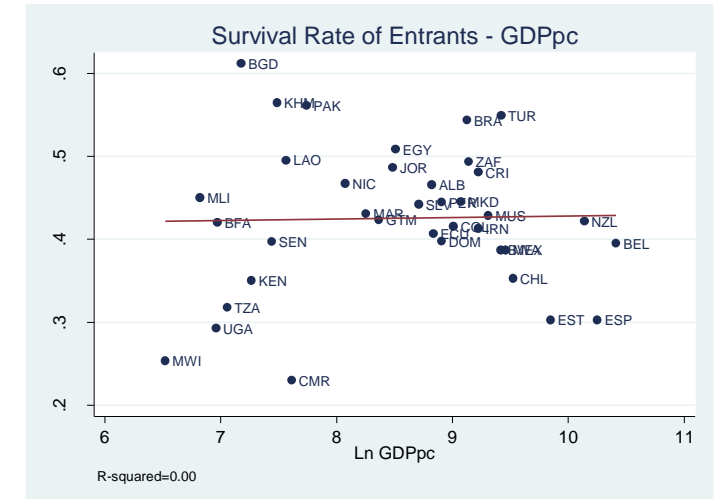
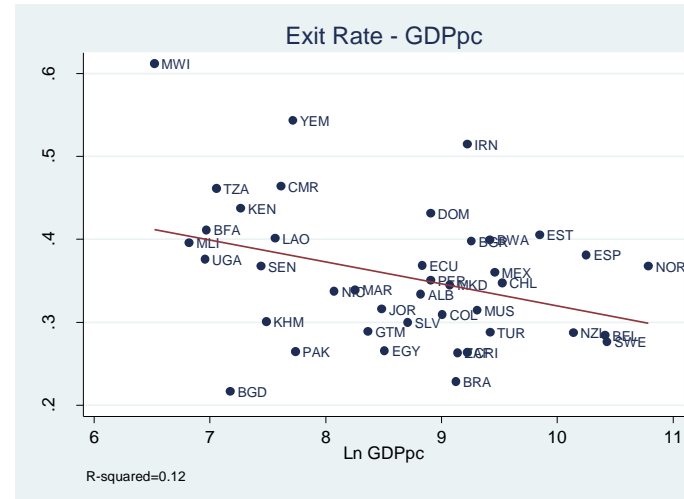
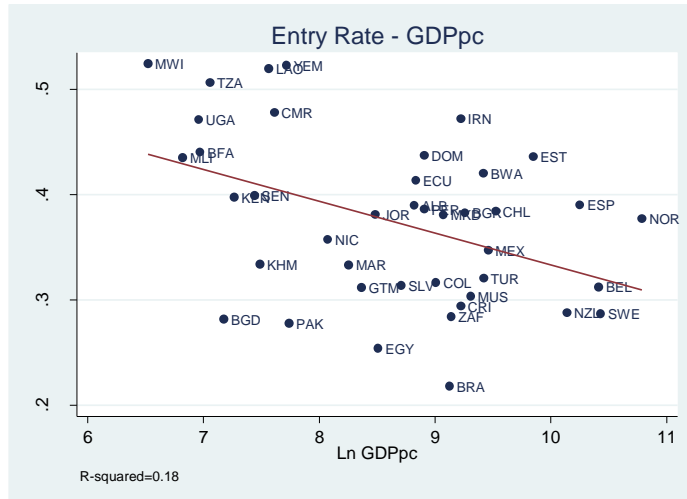


More concentration of exports in the top 5% of firms

Controlling for the sectoral distribution of exports, destination differences and cyclical effects

# Evolution of exporter dynamics with development

In more developed economies:



Source: Fernandes, Freund and Pierola (2016).

Exporter entry rates are lower

Exporter exit rates are lower

First-year survival rates of entrants are higher

Controlling for the sectoral distribution of exports, destination differences and cyclical effects



# Concentration, dynamics and development

- In countries at lower levels of development, more firms but less resilient firms enter export markets

*This is consistent with the hypothesis that informational failures distort firm export entry decisions in developing countries, though entry costs may also be relevant*

- As countries develop, resources are reallocated towards more efficient, larger exporters, resulting in more concentration at the top

*This is consistent with the hypothesis that in developing countries distortions inhibit (the emergence of) large firms resulting in a “truncated top” (rather than a “missing middle”)*

## IV. Role of policy for export growth

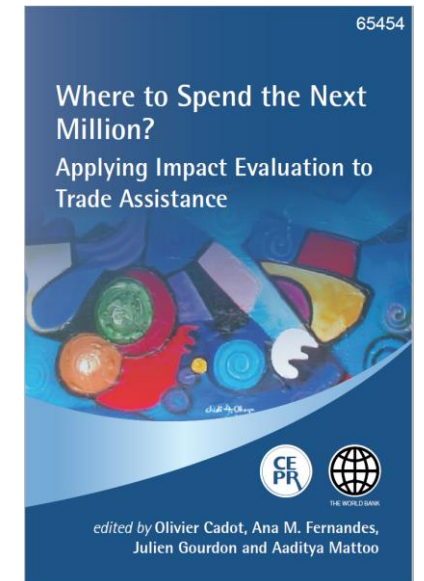
# How should evidence inform trade policy?

## *First do no harm*

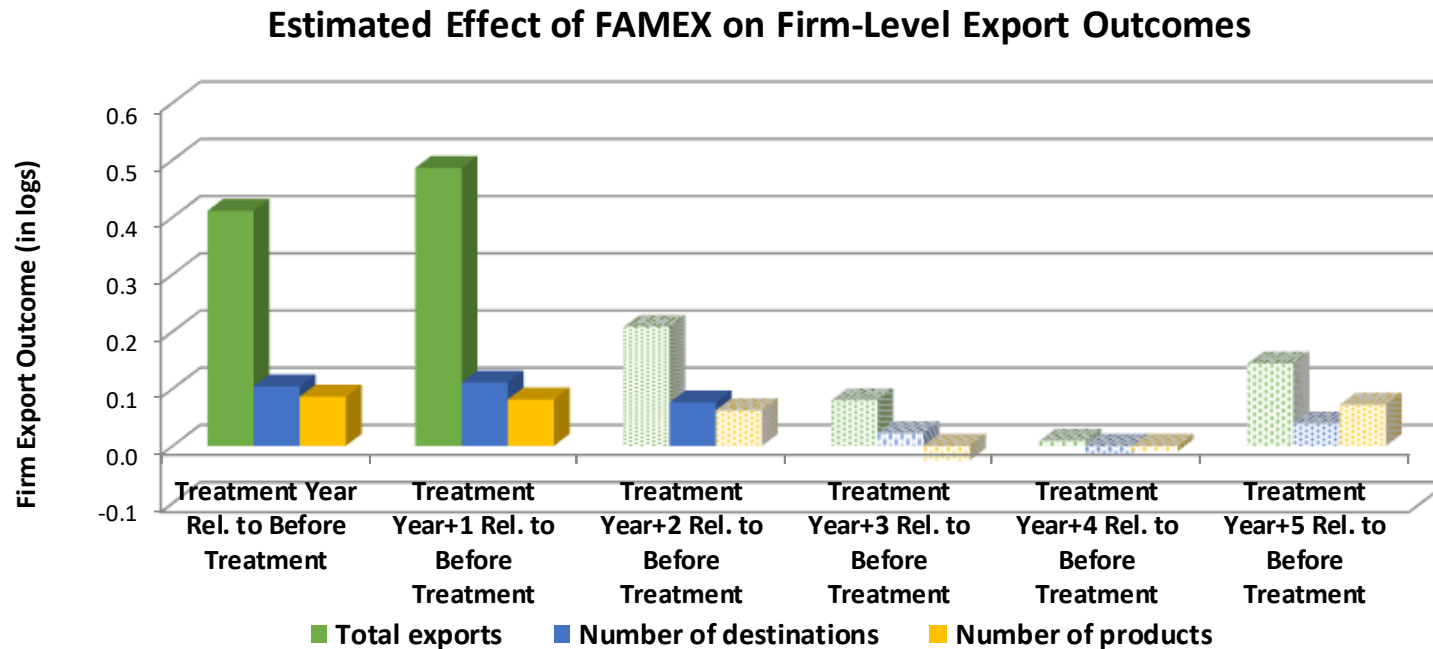
- Eliminating restrictive policies – e.g., tariffs, FDI and services barriers, entry restrictions – allows more productive firms to grow [examples](#)

## *Then think of doing good*

- *Pro-active* trade policy interventions
  - Market failures: asymmetric information that inhibits exports or imperfections in credit markets
  - Public goods: hard or soft “trade infrastructure,” e.g. ports and customs
- Key questions:
  - Does export assistance help and who should receive it?
  - How can trade costs be reduced?



# Effects of export promotion are not durable

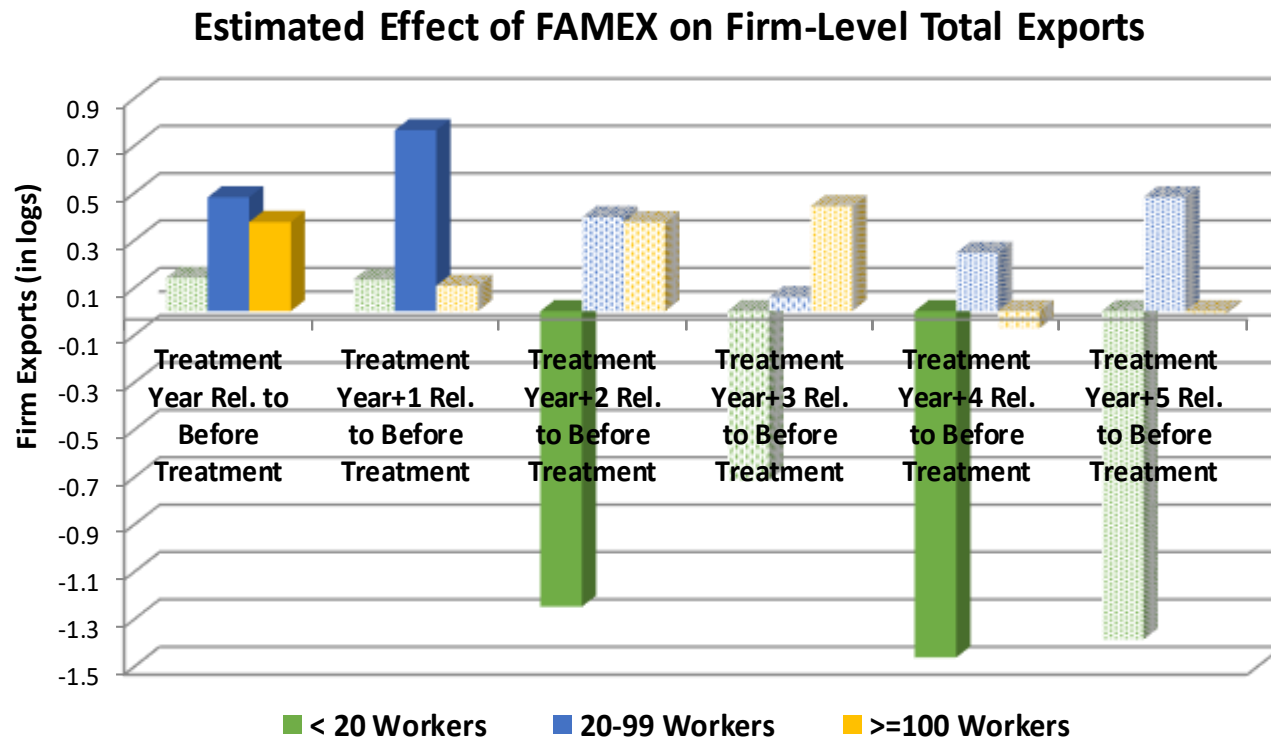


Source: Cadot, Fernandes, Gourdon, and Mattoo (2015).

Note: graph shows the percentage change in FAMEX treated firms' outcome relative to control firms based on estimates from propensity score weighted least squares regressions.

- Positive effects of FAMEX on Tunisian firms' total exports, numbers of destinations and products in short-term, but effects do
- FAMEX emphasized “low-hanging fruits” (trade fairs) but no improvements in production processes or products
- A change in assistance is needed to promote durable presence in foreign markets

# Should export promotion target small firms?

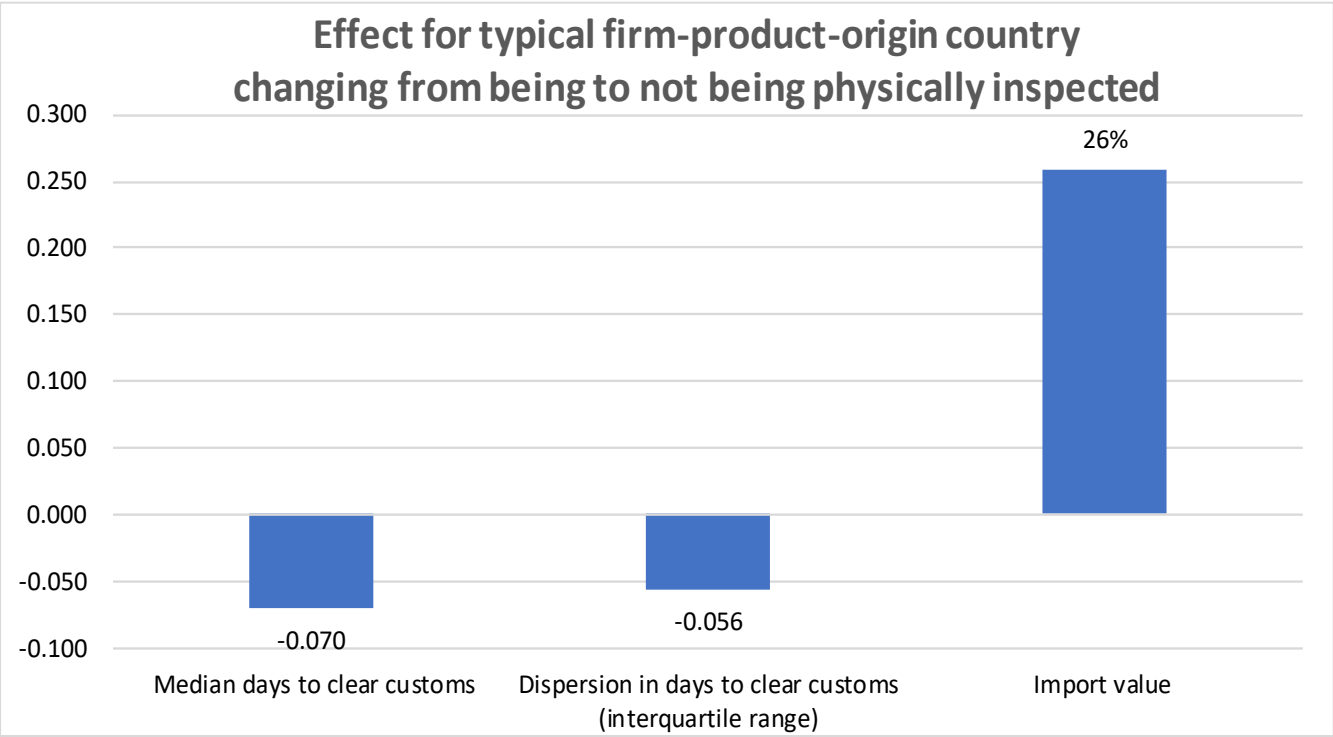


- Small firms did not benefit from FAMEX
- Goldilocks principle?
  - Ongoing effort to identify “marginal” firms using export promotion programs in Chile (Fernandes, Mattoo, and Volpe, 2018)

Source: Cadot, Fernandes, Gourdon, and Mattoo (2015).

Note: graph shows the percentage change in FAMEX treated firms' outcome relative to control firms based on estimates from propensity score weighted least squares regressions (with firm size interactions).

# Customs reforms reduce trade costs and foster trade



Source: Fernandes, Hillberry, and Mendoza-Alcantara (2015).

Note: graph shows coefficients on first-difference in median allocation to red channel defined at firm-HS6-country level from regressions with firm-year and HS6-country-year fixed effects.

- High rates of physical inspection by customs act as trade costs
  - Risk-based approach to inspections is a key trade facilitation intervention
- Reduction in inspections in Albania led to declines in expected & uncertainty of customs clearance time and to growth in firm imports

# Take-aways and going forward

- Large firms matter and exporter churning is high
- Need to rethink which firms receive assistance and in what form
- What creates export superstars and can policy help?
- How do superstars affect workers and inequality?
- Can we identify firms which would use assistance for export success?
- Can assistance promote not just entry but survival?
- What are cost-effective measures for reducing trade costs?
- New data on inter-linked dimensions of globalized firms, GVC participation and employment
- Deeper collaboration with operations on evaluating the impact of policy

## Website & references

<http://www.worldbank.org/en/research/brief/exporter-dynamics-database>

- Amiti, M. and J. Konings. 2007. "Trade liberalization, intermediate inputs, and productivity: evidence from Indonesia." *American Economic Review* 97(5): 1611-1638.
- Artopoulos, A., D. Friel, and J. Hallak. 2013. "Export emergence of differentiated goods from developing countries: export pioneers and business practices in Argentina." *Journal of Development Economics* 105: 19-35.
- Bastos, P. and J. Silva. 2018. "The origins of high-growth firms: evidence from Brazil" World Bank mimeo.
- Bernard, A., J. Jensen, S. Redding, and P. Schott. 2007. "Firms in international trade." *Journal of Economic Perspectives* 21(3): 105-130.
- Brandt, L., J. Van Biesebroeck, L. Wang, and Y. Zhang. 2017. "WTO accession and performance of Chinese manufacturing firms." *American Economic Review* 107(9): 2784-2820.
- Brenton, P., O. Cadot, and M. Pierola. 2012. *Pathways to African Export Sustainability. Directions in Development Trade. The World Bank*
- Bustos, Paula. 2011. "Trade Liberalization, Exports, and Technology Upgrading: Evidence on the Impact of MERCOSUR on Argentinian Firms." *American Economic Review* 101: 304-340.
- Cadot, O., A. Fernandes, J. Gourdon and A. Mattoo. 2015. "Are the benefits of export support durable? Evidence from Tunisia." *Journal of International Economics* 97(2): 310-324.
- Fernandes, A. 2007. "Trade policy, trade volumes and plant-level productivity in Colombian manufacturing industries." *Journal of International Economics* 71: 52-71.
- Fernandes, A. and C. Paunov. 2013. "Does trade stimulate product quality upgrading?" *Canadian Journal of Economics* 46(4): 1232-1264.
- Fernandes, A., C. Freund and M. Pierola. 2016. "Exporter behavior, country size and stage of development: Evidence from the exporter dynamics database." *Journal of Development Economics* 119: 121-137.
- Fernandes, A., A. Mattoo, H. Nguyen and M. Schiffbauer. 2017. "The internet and Chinese exports in the pre-Alibaba era." World Bank Policy Research Working Paper 8262.
- Fernandes, A, R. Hillberry and A. Mendoza-Alcántara. 2015. "Trade effects of customs reform: evidence from Albania." World Bank Policy Research Working Paper 8262.
- Freund, C. and M. Pierola. 2015. "Export superstars." *Review of Economics and Statistics*, 97(5): 1023-1032.
- Freund, C. and M. Pierola. 2016. "The origins and dynamics of export superstars." Inter-American Development Bank IDB Working Paper Series No. IDB-WP741.
- International Study Group on Exports and Productivity (ISGEP) (2008). "Understanding cross-country differences in exporter premia: comparable evidence for 14 countries," *Review of World Economics* 144(4): 596-635.
- Pavcnik, N. 2002. "Trade liberalization, exit and productivity improvements: evidence from Chilean plants." *Review of Economic Studies* 69, 245-276.
- Pierola, M., A. Fernandes and T. Farole. 2018. "The role of imports for exporter performance in Peru." *World Economy* 41: 550-572.
- Topalova, P. and A. Khandelwal. 2011. "Trade liberalization and firm productivity: The Case of India." *Review of Economics and Statistics* 93(3): 995-1009.