The Value of Deep Trade Agreements

in the Presence of Pricing-to-Market

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(PRELIMINARY and INCOMPLETE)

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Introduction

- How firms respond to trade policy changes has important implications for market competitiveness and welfare.
- Existing work has studied the problem from the perspective of
  - firms from multiple origins to a single destination
    e.g. De Loecker, Goldberg, Khandelwal & Pavcnik 2016
  - firms from a single origin to multiple destinations
    e.g. Berman, Martin & Mayer 2012; Fitzgerald & Haller 2018
- However, the indirect effects of trade policy changes on the third countries are often overlooked, calling for analyses using data on firms from multiple origins to multiple destinations.

This paper

Using product-level exports from 640k firms located in 13 emerging and low-income countries to 165 destinations, we examine the direct and indirect impacts of preferential trade agreements (PTAs) and tariffs on firms' exporting decisions (trade values, markups and entry/exit):

- We develop a new empirical measure that captures the competitive pressure due to third-country policy changes and document significant third-country impacts of PTAs and tariffs.
- We exploit the newly constructed Deep Trade Agreements Database from the World Bank and inspect the effects of individual provisions.

Main findings

PTAs

Direct effects:
(origin and destination sign a PTA)

- No impact on export values
- Markups $\downarrow$ by 4%
- Encourage entry

Preferential Tariffs

Direct effects:
(1% bilateral tariff drop)

- Export values $\uparrow$ by 1.3%
- Markups $\downarrow$ by 0.4%
- Encourage entry

Main findings

PTAs

Direct effects:
(origin and destination sign a PTA)

- No impact on export values
- Markups ↓ by 4%
- Encourage entry

Third-country competition effects:
(10% competitors have a PTA)

- Export values ↓ by 2.5%
- Markups ↓ by 0.5%
- Encourage entry

Preferential Tariffs

Direct effects:
(1% bilateral tariff drop)

- Export values ↑ by 1.3%
- Markups ↓ by 0.4%
- Encourage entry

Third-country competition effects:
(competitors' avg tariff ↓ by 1%)

- Export values ↓ by 3.1%
- No significant impact on markup
- Lead small firms to exit

⇒ Significant third-country competition effects of PTAs and tariffs

Literature

- **Gravity**

  Anderson & vanWincoop 2003; Feenstra 2004; Redding & Venables 2004; Baier & Bergstrand 2007; Head & Mayer 2014; Bas, Mayer & Thoenig 2017

- **Price and markup responses to trade policy**

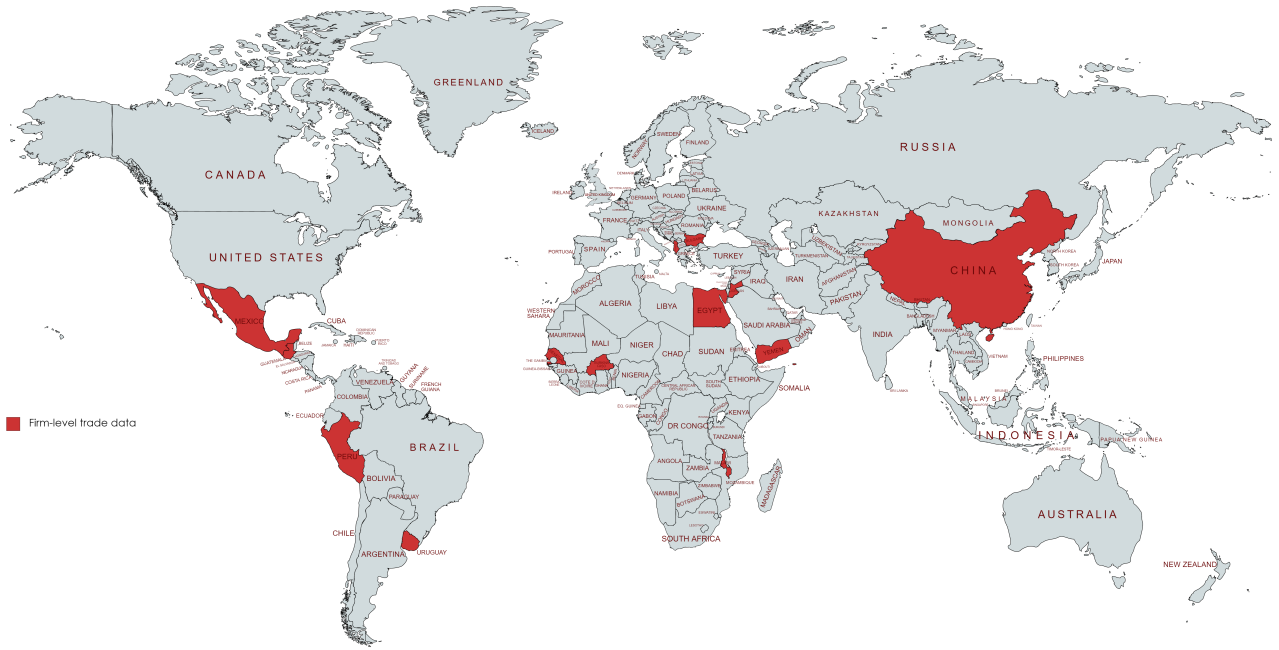
  Konings & Vandenbussche 2005; Bown & Crowley 2006; Amiti & Konings 2007; Pierce 2011; De Loecker, Goldberg, Khandelwal & Pavcnik 2016; Fitzgerald & Haller 2018

- **Third-country trade-policy spillovers**

  Chang & Winters 2002; Bown & Crowley 2007; Romalis 2007; Estevadeordal, Freund & Ornelas 2008; Lee, Mulabdic & Ruta 2019

Firms' product-level exports from 13 origin countries

27.5 million firm-product-origin-destination-year observations



Albania	2004-2012	Guatemala	2005-2013	Senegal	2000-2012
Burkina Faso	2005-2012	Jordan	2003-2012	Uruguay	2001-2012
Bulgaria	2001-2006	Mexico	2000-2012	Yemen	2008-2012
China	2000-2006	Malawi	2006-2012		
Egypt	2005-2016	Peru	1993-2013		

HS06 product-level data on destination trade policy against origin AND destination trade policy against origin's competitor countries.

Estimating the impact of PTAs with firm level data

We start with a simple model by regressing trade values, unit values, and market shares, on preferential trade agreements (PTAs) with a set of fixed effects:

$$\ln(y_{fodit}) = \beta_1 * \text{PTA}_{odt} + \delta_{foit} + \delta_{dit} + \delta_{od} + \epsilon_{fodit}$$

where

- $y_{fodit} \in \{\text{trade values}, \text{unit values}, \text{market shares}\}$
- $f, o, d, i, t =$ firm, origin country, destination country, product and year
- δ_{foit}: firm-origin-product-year fixed effects (control for e.g. marginal cost)
- δ_{dit}: destination-product-year fixed effects (e.g. changes in demand)
- δ_{od}: origin-destination fixed effects (e.g. gravity variables)

Capturing third-country competition effects

We then introduce a measure to capture the share of country o's competitors that have a PTA with destination d.

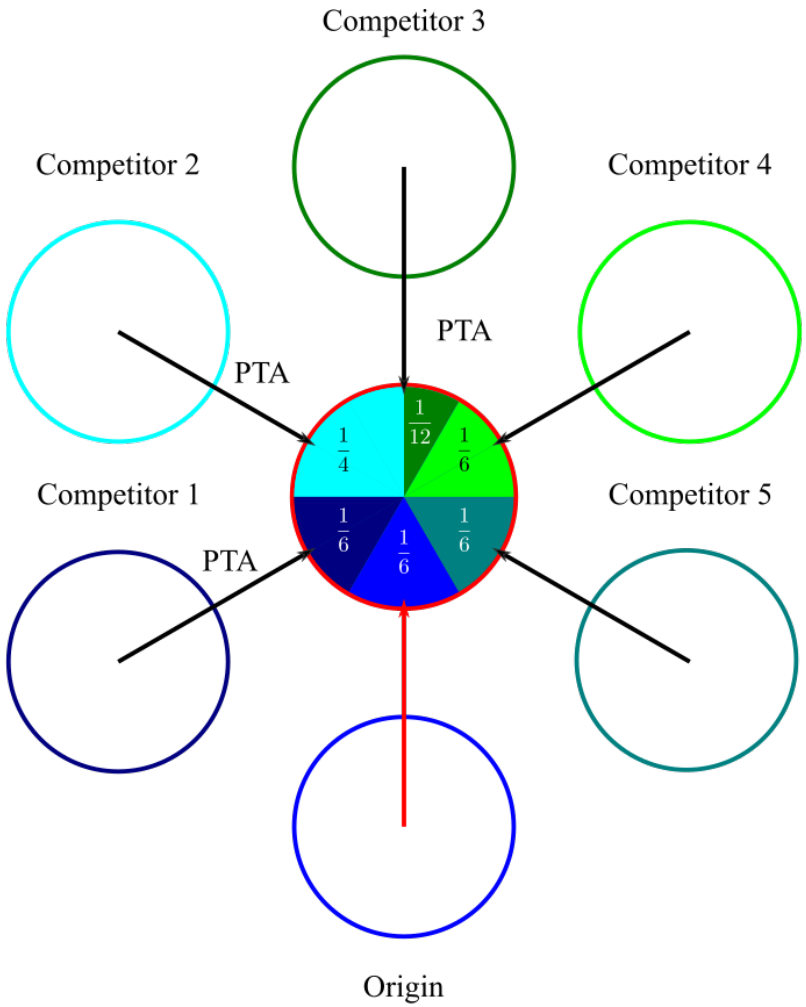
$$\ln(y_{fodit}) = \beta_1 * \text{PTA}_{odt} + \beta_2 * \text{Competitors' PTA}_{(-o)dit} + \\ + \delta_{foit} + \delta_{dit} + \delta_{od} + \epsilon_{fodit}$$

where

- $y_{fodit} \in \{\text{trade values, unit values, market shares}\}$
- $f, o, d, i, t =$ firm, origin country, destination country, product and year

Capturing third-country competition effects

Calculating the proportion of competitor countries with access to a PTA



- Origin (bottom) exports to destination (center)
- Firms in five competitor countries also export to destination
- Countries 1-3 have PTAs with destination
- Countries 4-5 do NOT
- Product-level import-wt'd share of competitor countries with PTA = 0.6

$$competitor\_pta_{(-o)dit} = \frac{\frac{1}{6} * 1 + \frac{1}{4} * 1 + \frac{1}{12} * 1 + \frac{1}{6} * 0 + \frac{1}{6} * 0}{\frac{1}{6} + \frac{1}{4} + \frac{1}{12} + \frac{1}{6} + \frac{1}{6}} = 0.6$$

Final estimation equation

including measures of tariffs and trade agreement provisions

We extend the specification to include:

- Tariffs (on origin and on third-country competitors) and
- PTA provisions (for origin and third-country competitors).

$$\begin{aligned}\ln(y_{fodit}) = \; & \beta_1 * \text{PTA}_{odt} + \beta_2 * \text{Competitors' PTA}_{(-o)dit} \\ & + \beta_3 * \ln(1 + \text{Tariff}_{odit}) + \beta_4 * \ln(1 + \text{Competitors' Tariff}_{(-o)dit}) \\ & + \beta_5 * \text{Provision}_{odt} + \beta_6 * \text{Competitors' Provision}_{(-o)dit} \\ & + \delta_{foit} + \delta_{dit} + \delta_{od} + \epsilon_{fodit}\end{aligned}$$

Impacts of PTAs and tariffs on export values

	Value
PTA_{odt}	-0.03*
	(0.02)
Competitors' $PTA_{(-o)dit}$	-0.25***
	(0.03)
$Tariff_{odit}$	-1.33***
	(0.11)
Competitors' $Tariff_{(-o)dit}$	3.12***
	(0.37)
Observations	15,200,754
Firm-origin-product-year FE	✓
Destination-product-year FE	✓
Origin-destination FE	✓

- If origin and destination have a PTA $\Rightarrow$ no substantial effect on bilateral trade flows
- If 10% of origin's competitors in destination have a PTA $\Rightarrow$ avg exports from origin $\downarrow$ 2.5%
- A 1% increase in the bilateral tariff in destination $\Rightarrow$ avg exports from origin $\downarrow$ 1.3%
- A 1% increase in the avg tariff against competitors in destination $\Rightarrow$ avg exports from origin $\uparrow$ 3.1%

Impacts of PTAs and tariffs on markups

Counter-intuitive results?

	Markups
PTA_{odt}	-0.03***
	(0.01)
Competitors' $PTA_{(-o)dit}$	-0.05***
	(0.01)
$Tariff_{odit}$	0.39***
	(0.05)
Competitors' $Tariff_{(-o)dit}$	-0.21
	(0.17)
Observations	14,931,830
Origin-firm-product-year FE	✓
Destination-product-year FE	✓
Origin-destination FE	✓

- If origin and destination have a PTA $\Rightarrow$ avg markup from origin $\downarrow$ 3%
- If 10% of origin's competitors in destination have a PTA $\Rightarrow$ avg markup from origin $\downarrow$ 0.5%.
- Avg markup increases in bilateral tariff

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Competitors' $Tariff_{(-o)dit}$	-0.21
	(0.17)
Observations	14,931,830
Origin-firm-product-year FE	✓
Destination-product-year FE	✓
Origin-destination FE	✓

Some results may seem to be counter-intuitive ⇒ One may expect

1. Competitors' PTA effects to have a positive sign

2. Markups to decrease (rather than increase) as bilateral tariff increases

Impacts of PTAs and tariffs on markups

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	(0.17)
Observations	14,931,830
Origin-firm-product-year FE	✓
Destination-product-year FE	✓
Origin-destination FE	✓

Some results may seem to be counter-intuitive ⇒ One may expect

1. Competitors' PTA effects to have a positive sign

   ⇒ not true if the PTA contains provisions that also affect the non-participating countries (e.g. competition policy, in two slides)

2. Markups to decrease (rather than increase) as bilateral tariff increases

Impacts of PTAs and tariffs on markups

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Observations	14,931,830
Origin-firm-product-year FE	✓
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Origin-destination FE	✓

Some results may seem to be counter-intuitive ⇒ One may expect

1. Competitors' PTA effects to have a positive sign

   ⇒ not true if the PTA contains provisions that also affect the non-participating countries (e.g. competition policy, in two slides)

2. Markups to decrease (rather than increase) as bilateral tariff increases

   ⇒ ignores extensive margin adjustments; if higher tariffs lead small firms to exit, then avg markup will go up (next)

Indirect evidence on extensive margins

	Mkt share $f \in oidt$
PTA_{odt}	-0.03**
	(0.02)
Competitors' $PTA_{(-o)dit}$	-0.37***
	(0.03)
$Tariff_{odit}$	1.23***
	(0.11)
Competitors' $Tariff_{(-o)dit}$	-6.81***
	(0.36)
Observations	16,069,093
Firm-origin-product-year FE	✓
Destination-product-year FE	✓
Origin-destination FE	✓

e.g. two firms of same size from origin sell in destination ⇒ Mkt share of 50% each. A new firm of similar size from origin enters destination ⇒ Mkt share of 33% each.

The average market share among all firms from the origin:

- drops if origin and destination have a PTA ⇒ entry
- drops if more of the origin's competitors have a PTA ⇒ entry
- rises if bilateral tariff increases ⇒ small firms from origin exit the market ⇒ possibly explains the rise in avg markup
- drops if competitors' tariffs increase ⇒ entry

PTA provisions

An application of the methodology to competition policy provisions

Examine the effect of the following two competition policy provisions on firms' trade values:

1. "Does the agreement prohibit or regulate cartels or concerted practices?"
2. "Does the agreement prohibit or regulate abuse of market dominance?"

Pro-trade effects of competition policy provisions

	Value	Quantity
Origin has a PTA...		
prohibits cartels	0.10***	0.20***
prohibits market dominance	0.09***	0.19***
10% of competitors have a PTA...		
prohibits cartels	0.06***	0.09***
prohibits market dominance	0.06***	0.09***

- Both provisions promote competition and boost trade flows
- Competitors' effects of the provisions go to the same direction as the own effects because these provisions influence the market condition in general.

Conclusions

We examine the direct and indirect third-country effects of PTAs and preferential tariffs:

- PTAs and tariff reductions are in general pro-competitive as they reduce markups and encourage entry.
- However, drops in tariffs between the origin's competitors and the destination can have significant trade deflection effects

  $\Rightarrow$ Small firms from the origin exit; bilateral trade flows $\downarrow$
- Direction of competitors' effects of PTAs depends on provision

  $\Rightarrow$ Both origin and third countries can benefit from provisions improving the general market environment, e.g. competition policy.