A Financing Channel of Gains From Trade

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Motivation

Trade is a source of growth because it reallocates factors in the economy

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This paper: wealth from trade can **accumulate factors** $\Rightarrow$ growth

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This paper:
Tracing factor accumulation $\Longrightarrow$ dynamic gains that impact both the traded **& non-traded** sectors:

1. Larger gains from trade
2. Causal link explaining the "Levine-Renelt puzzle"

Question & context

Questions: Is there trade-induced investment?

How much growth does it generate domestically?

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$\Longrightarrow$ Shock to Peruvian **firm profits**

Empirical overview

Question: Is there trade-induced investment?

FTA is a trade cost shock to Peruvian firms

We identify:

1. "First stage": FTA impacts traded-sector firm exports & imports
2. Savings: Traded-sector firm profitability impacts banks
3. Re-investment: Banks impact non-traded firm sector growth

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   - ⇒ Firms borrow more
   - ⇒ Real firm outcomes [not today]

Related literature

Static and dynamic gains from trade:

- Smith (1776), Baldwin (1992), Eaton Kortum (2002), Melitz (2003), Arkolakis Costinot Rodriguez-Clare (2012), Ossa (2012), Caliendo Parro (2012), Melitz Redding (2014), Anderson Larch Yotov (2015), Alvarez (2017), Alessandria Choi Ruhl (2018), Ravikumar Satacreu Sposi (2019)

$\Rightarrow$ **Empirical analysis tracing capital accumulation through banking sector**

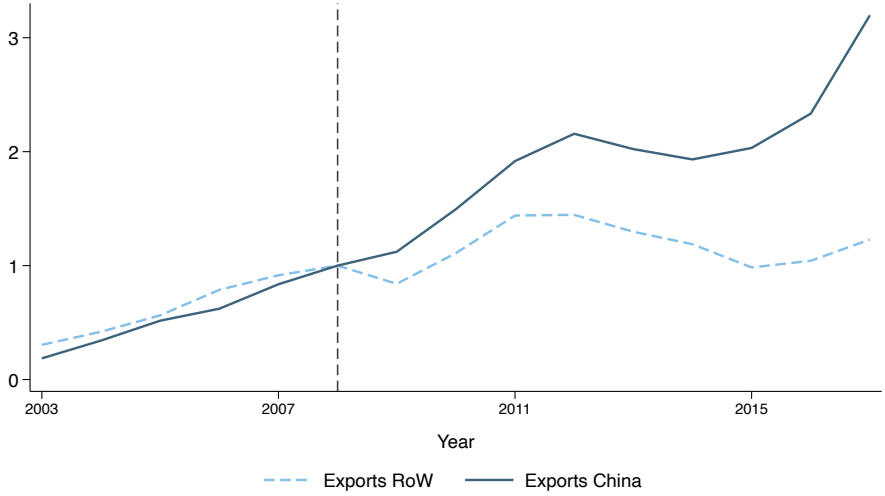
Trade and finance:

- Beck (2003), Levchenko Lewis Tesar (2010), Amiti Weinstein (2011), Chor Manova (2012), Schmidt-Eisenlohr (2013), Manova (2013), Antràs Foley (2014), Paravisini Rappoport Schnabl Wolfenzon (2014), Chaney (2016), Eaton Kortum Neiman Romalis (2016), Paravisini Rappoport Schnabl (2020), Xu (2022)

$\Rightarrow$ **Trade impacts the financial sector**

FTA Institutional Context

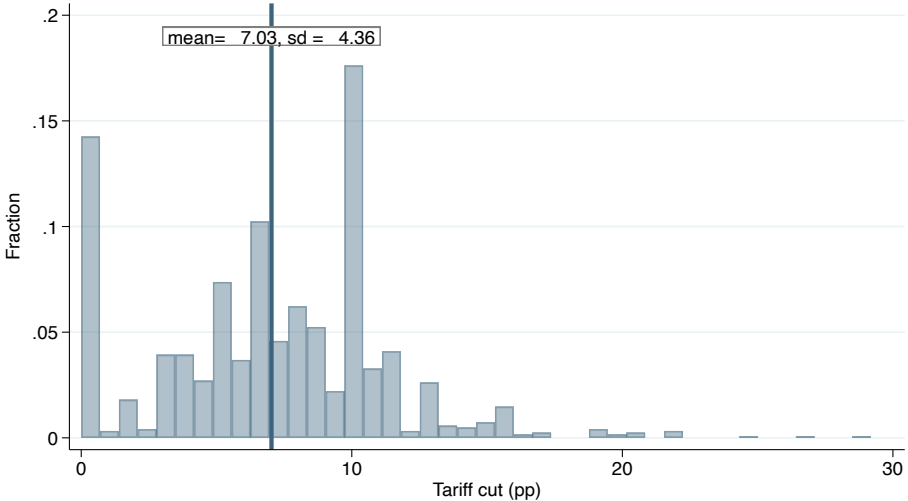
Peru's total exports to China after FTA



Peru's top exports industries & tariff cut

Description	Value (billions pre-FTA)	Tariff rate (pp pre-FTA)
Metals, gold	4.68	0
Copper ores & concentrates	3.17	0
Copper, refined	2.27	2
Fish meals/pellets	1.35	3.5
Zinc ores & concentrates	1.35	0
Petroleum oils	0.85	6.67
Molybdenum ores	0.79	0
Petroleum gases	0.69	6.5
Lead ores & concentrates	0.58	0
Tin, unwrought	0.52	3
Coffee	0.49	8
T-shirts, cotton	0.44	14

Distribution of tariff cut



Total Peruvian firm profits

$$\Delta\pi_i = \Delta Revenue_i - \Delta Costs_i$$

$$\Delta\pi_i(TC_{k,c}, TC_{k,p}) = \overbrace{\underbrace{\Delta Sales_{D,i}}_{f(TC_{k,p})} + \underbrace{\Delta Sales_{X,i}}_{f(TC_{k,c})}}^{\Delta Revenue_i} - \underbrace{\Delta Costs_{M,i}}_{f(TC_{k,p})}$$

$TC_{k,c}$: Δ tariff to export to China

$TC_{k,p}$: Δ tariff to import to Peru

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Direction of effects on profits:

$\Delta Sales_{D,i} : -$

$\Delta Sales_{X,i} : +$

$\Delta Costs_{M,i} : +$

Data & Empirical strategy

Data: 2004 to 2017

1. **Customs data**: firm *i* imports & exports by product *p* to/from countries *c*
2. **Credit registry**: bank *b* loans matched to firm *i*
3. **Bank balance sheets**: bank *b* loans, size, profits, etc.
4. **Firm characteristics & outcomes**:
   - Currently: loans at the firm level & EEA (Encuesta Economica Nacional)
     - "Census" for large & medium firms,
     - $\approx$ 60% of total credit & 50% of exports
   - In progress: real outcomes from firm balance sheets

Measuring exposure to exports tariff cut

Trade cost shock: varies by product k & destination country c:

$$\text{Tariff Cut}_{kct} = \begin{cases} 0 & \text{if destination is not China} \\ \text{TC}_k & \text{if destination is China \& year} \geq 2009 \end{cases}$$

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For any bank-level relationship:

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Firm shocks orthogonal to bank characteristics relevant for bank outcomes **on average after 2008**

Identification threats

Identifying assumption: Firm tariff-cut exposures orthogonal to bank characteristics relevant for bank outcomes after 2008 on average

Example of threats to identification: High TC_i firms are important to...

- Banks less exposed to the US in 2008
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We verify:

- No pre-trends in outcomes
- Firm exposure correlation with bank characteristics [Graph]
  - Foreign liability exposure (Schnabl 2012)
  - Exports market specialization in China (Paravisini Rappoport Schnabl 2021)
  - Product demand booms in China
  - Size, geographic location, foreign ownership
- Controlling for potential confounders

Results

Outcomes

1. Exports growth
2. Banking sector growth
3. Transmission of loans to non-traded sector
4. Firm outcomes

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Firm level exports

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- EX_{it}: exports by firm i in year t
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- SEs two-way clustered by product & destination

Firm level exports

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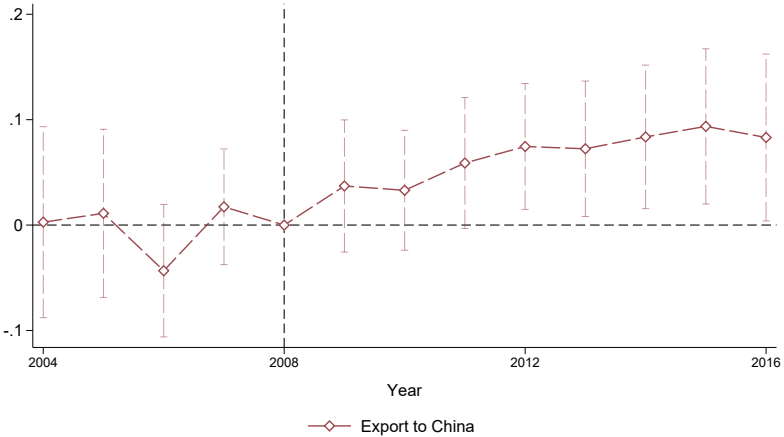

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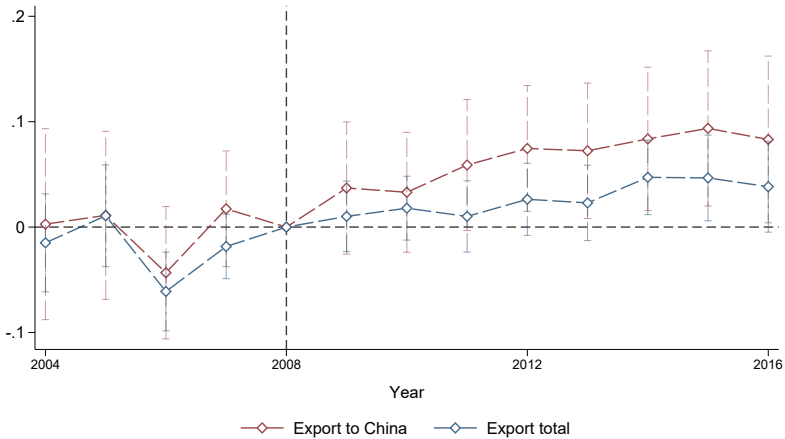
$$\log(EX_{it}^{Total}) = \beta \mathrm{TC}_{it} + \alpha_{i(Q)t} + \gamma_i + \varepsilon_{it}$$



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[Distribution of TC_b]

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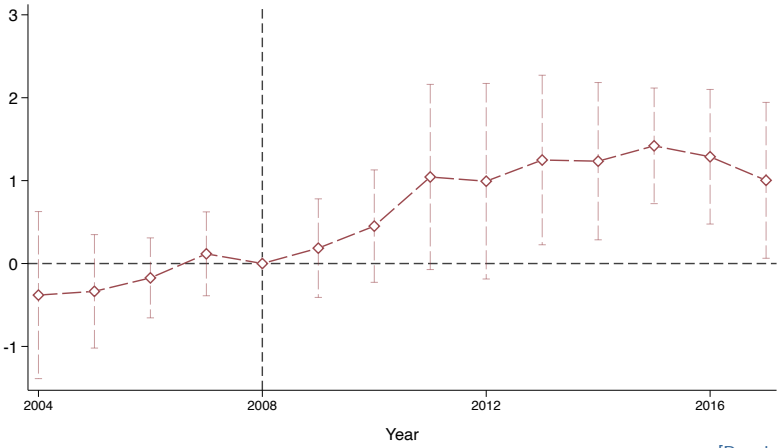

[Benchmarking magnitudes]

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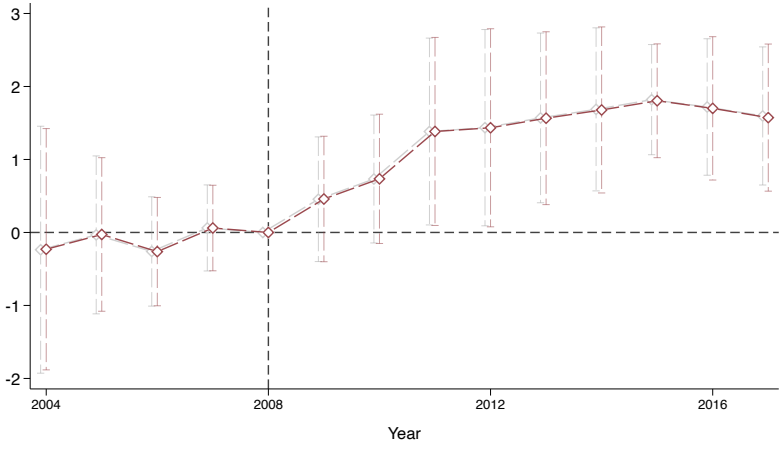
$$\log(\text{Loans}_{blt}) = \beta \text{TC}_{bt} + \delta_{bl} + \lambda_{lt} + \alpha_{b(Q)t} + \nu_{b(China)t} + \varepsilon_{blt}$$

$\nu_{b(China)t}$: China specialization-year $\Rightarrow$ differential shocks to China-specialized banks



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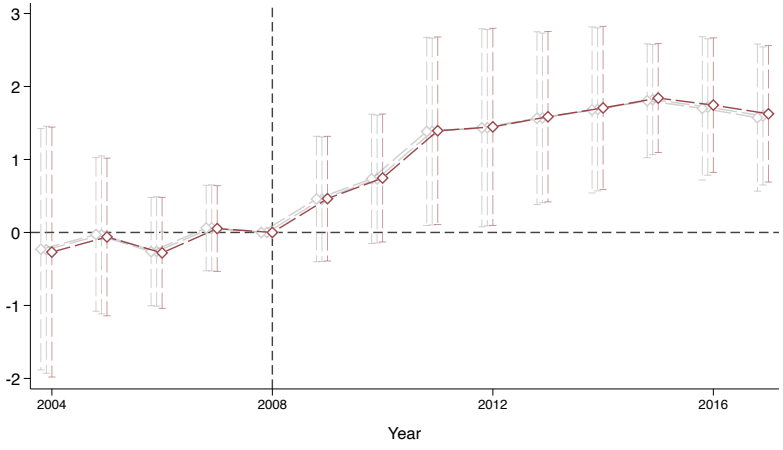
$\nu_{b(LiabF)t}$: foreign liability-year $\Rightarrow$ differential shocks to banks with high share of foreign liabilities



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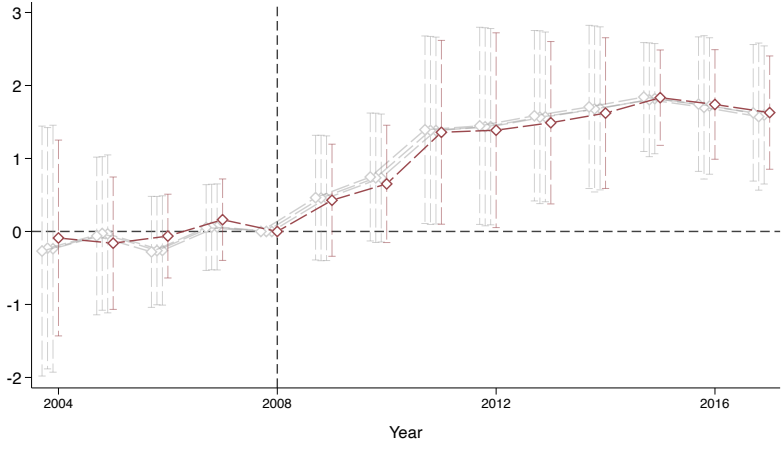
$\nu_{b(Foreign)t}$: foreign ownership-year FE $\Rightarrow$ absorbs differential shocks to foreign banks



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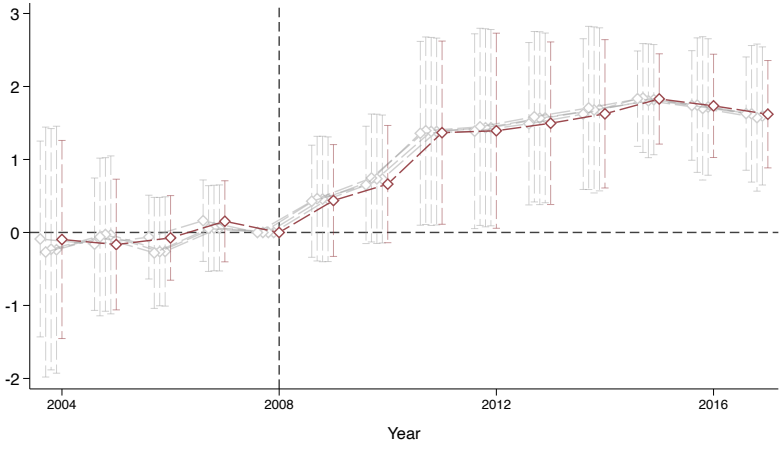
$$\log(\text{Loans}_{blt}) = \beta \text{TC}_{bt} + \delta_{bl} + \lambda_{lt} + \alpha_{b(Q)t} + \nu_{b(X')t} + \varepsilon_{blt}$$

$\nu_{b(X')t}$: all controls



Channels for increased bank lending

Hypothesized channel for bank growth: firm profits decrease non-performing loans & increase savings

$$\log(\text{Outcome}_{bt}) = \beta \text{TC}_{bt} + \gamma_b + \alpha_{b(Q)t} + \varepsilon_{bt}$$

	ROA	Asset	Net worth	Credit
	(1)	(2)	(3)	(4)
Bank shock×Year$_{\geq 2009}$	0.0181**	0.525***	0.418***	0.703***
	(0.00802)	(0.128)	(0.134)	(0.202)
Fixed Effects				
Bank	✓	✓	✓	✓
Controls	✓	✓	✓	✓
Bank size×Year	✓	✓	✓	✓
Observations	619	619	619	619

Outcomes

1. Exports growth
2. Banking sector growth
3. Transmission of loans to non-traded sector
4. Firm outcomes

Bank loans to firms in each sector

$$\log(Loans_{i(T,NT)bt}) = \beta \mathrm{TC}_{bt} + \alpha_{b(Q)t} + \delta_{it} + \gamma_{ib} + \varepsilon_{ibt}$$

- $\mathrm{Loans}_{i(T,NT)bt}$: loans to firm i in sector T (traded) or NT (non-traded) by bank b
- $\mathrm{TC}_{bt} = \sum_i \mathrm{TC}_i \cdot \omega_{bi}$

Endogeneity concern: banks lending to firms with high TC_i grew after 2008 for other reasons

Bank loans to firms in each sector

$$\log(Loans_{i(T,NT)bt}) = \beta \text{TC}_{bt} + \alpha_{b(Q)t} + \delta_{it} + \gamma_{ib} + \varepsilon_{ibt}$$

- $\text{Loans}_{i(T,NT)bt}$: loans to firm i in sector T (traded) or NT (non-traded) by bank b
- $\text{TC}_{bt} = \sum_i \text{TC}_i \cdot \omega_{bi}$

Endogeneity concern: banks lending to firms with high TC_i grew after 2008 for other reasons

- $\alpha_{b(Q)t}$: pre-shock bank size Quartile $\times$ year FE

Bank loans to firms in each sector

$$\log(Loans_{i(T,NT)bt}) = \beta \mathrm{TC}_{bt} + \alpha_{b(Q)t} + \delta_{it} + \gamma_{ib} + \varepsilon_{ibt}$$

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- $\mathrm{TC}_{bt} = \sum_i \mathrm{TC}_i \cdot \omega_{bi}$

Endogeneity concern: banks lending to firms with high TC_i grew after 2008 for other reasons

- $\alpha_{b(Q)t}$: pre-shock bank size Quartile $\times$ year FE
- δ_{it}: firm shocks $\Rightarrow$ absorbs "credit demand"

Bank loans to firms in each sector

$$\log(Loans_{i(T,NT)bt}) = \beta \text{TC}_{bt} + \alpha_{b(Q)t} + \delta_{it} + \gamma_{ib} + \varepsilon_{ibt}$$

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- $\alpha_{b(Q)t}$: pre-shock bank size Quartile $\times$ year FE
- δ_{it}: firm shocks $\Rightarrow$ absorbs "credit demand"
- γ_{ib}: within-bank-firm relationships $\Rightarrow$ restricts variation to relationships that exist throughout

Bank loans to firms in each sector

$$\log(Loans_{i(T,NT)bt}) = \beta \text{TC}_{bt} + \alpha_{b(Q)t} + \delta_{it} + \gamma_{ib} + \varepsilon_{ibt}$$

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- $\text{TC}_{bt} = \sum_i \text{TC}_i \cdot \omega_{bi}$

Endogeneity concern: banks lending to firms with high TC_i grew after 2008 for other reasons

- $\alpha_{b(Q)t}$: pre-shock bank size Quartile $\times$ year FE
- δ_{it}: firm shocks $\Rightarrow$ absorbs "credit demand"
- γ_{ib}: within-bank-firm relationships $\Rightarrow$ restricts variation to relationships that exist throughout
- SEs clustered by bank

Bank loans to firms in each sector

$$\log(Loans_{i(T,NT)bt}) = \beta \text{TC}_{bt} + \alpha_{b(Q)t} + \delta_{it} + \gamma_{ib} + \varepsilon_{ibt}$$

Sample	All					
	(1)					
Bank shock×Year$_{\geq 2009}$	0.124***					
	(0.0114)					
Fixed Effects						
Bank×Firm	✓					
Firm×Year	✓					
Bank size×Year	✓					
Observations	4,397,494					

[Firm classification]

Bank loans to firms in each sector

$$\log(Loans_{i(T,NT)bt}) = \beta \mathrm{TC}_{bt} + \alpha_{b(Q)t} + \delta_{it} + \gamma_{ib} + \varepsilon_{ibt}$$

Sample	All	Exporter	Non exporter
	(1)	(2)	(3)
Bank shock×Year$_{\geq 2009}$	0.124***	0.172***	0.139***
	(0.0114)	(0.0462)	(0.0114)
Fixed Effects			
Bank×Firm	✓	✓	✓
Firm×Year	✓	✓	✓
Bank size×Year	✓	✓	✓
Observations	4,397,494	223,670	4,173,824

[Firm classification]

Bank loans to firms in each sector

$$\log(Loans_{i(T,NT)bt}) = \beta TC_{bt} + \alpha_{b(Q)t} + \delta_{it} + \gamma_{ib} + \varepsilon_{ibt}$$

Sample	All	Exporter	Non exporter	EEA	Tradable (EEA)	Non tradable (EEA)
	(1)	(2)	(3)	(4)	(5)	(6)
Bank shock×Year$_{\geq 2009}$	0.124***	0.172***	0.139***	0.209***	0.164***	0.355***
	(0.0114)	(0.0462)	(0.0114)	(0.0371)	(0.0410)	(0.0830)
Fixed Effects						
Bank×Firm	✓	✓	✓	✓	✓	✓
Firm×Year	✓	✓	✓	✓	✓	✓
Bank size×Year	✓	✓	✓	✓	✓	✓
Observations	4,397,494	223,670	4,173,824	445,069	297,677	147,392

[Firm classification]

Accounting for entry & exit: midpoint growth

Midpoint growth rates allow for (dis)aggregation into subsamples with a "balanced" sample:

$$\Delta Y_i = \frac{Y_{i,post} - Y_{i,pre}}{[(Y_{i,pre} + Y_{i,post}) \times 0.5]}$$

- Y_{post}: average "post" ($t \geq 2009$)
- Y_{pre}: average "pre" ($t < 2009$)

Bank loans to each sector: midpoint growth with entry & exit

$$\Delta(Loans_{ib}^{sample}) = \beta_{sample} \mathrm{TC}_b + \delta_i + \gamma_{b(Q)} + \varepsilon_{ib}$$

Sample	All					
	(1)					
Bank shock	0.308***					
	(0.00388)					
Fixed Effects						
Firm	✓					
Bank size	✓					
Observations	1,241,028					

Bank loans to each sector: midpoint growth with entry & exit

$$\Delta(Loans_{ib}^{sample}) = \beta_{sample} \mathrm{TC}_b + \delta_i + \gamma_{b(Q)} + \varepsilon_{ib}$$

$\beta_{All} = 0.308$

Sample	All					
	(1)					
Bank shock	0.308***					
	(0.00388)					
Fixed Effects						
Firm	✓					
Bank size	✓					
Observations	1,241,028					

Bank loans to each sector: midpoint growth with entry & exit

$$\Delta(Loans_{ib}^{sample}) = \beta_{sample} TC_b + \delta_i + \gamma_{b(Q)} + \varepsilon_{ib}$$

$$\beta_{All} = 0.308 \ ; \ \beta_{Exp} = 0.253 \ ; \ \beta_{Non-Exp} = 0.322$$

Sample	All	Exporter	Non exporter			
	(1)	(2)	(3)			
Bank shock	0.308***	0.253***	0.322***			
	(0.00388)	(0.0116)	(0.00418)			
Fixed Effects						
Firm	✓	✓	✓			
Bank size	✓	✓	✓			
Observations	1,241,028	45,683	1,195,345			

Bank loans to each sector: midpoint growth with entry & exit

$$\Delta(Loans_{ib}^{sample}) = \beta_{sample} TC_b + \delta_i + \gamma_{b(Q)} + \varepsilon_{ib}$$

Sample	All	Exporter	Non exporter	EEA	Tradable (EEA)	Non tradable (EEA)
	(1)	(2)	(3)	(4)	(5)	(6)
Bank shock	0.308***	0.253***	0.322***	0.318***	0.367***	0.295***
	(0.00388)	(0.0116)	(0.00418)	(0.00918)	(0.0159)	(0.0112)
Fixed Effects						
Firm	✓	✓	✓	✓	✓	✓
Bank size	✓	✓	✓	✓	✓	✓
Observations	1,241,028	45,683	1,195,345	84,470	29,751	54,719

Bank loans to each sector: midpoint growth decomposition

$$\Delta(Loans_{ib}^{sample}) = \beta \mathrm{TC}_{b}^{sample} + \delta_i + \gamma_{b(Q)} + \varepsilon_{ib}$$

$$\beta_{All} = \underbrace{\omega_{Exp}\beta_{Exp}}_{\widehat{\beta_{Exp}}} + \underbrace{\omega_{Non-Exp}\beta_{Non-Exp}}_{\widehat{\beta_{Non-Exp}}}$$

	All
	(1)
Bank shock	0.308***
	(0.00388)
Fixed Effects	
Firm×Year	✓
Bank size×Year	✓
Observations	1,241,028

Bank loans to each sector: midpoint growth decomposition

$$\Delta(Loans_{ib}^{sample}) = \beta TC_b^{sample} + \delta_i + \gamma_{b(Q)} + \varepsilon_{ib}$$

$$\beta_{All} = \underbrace{\omega_{Exp}\beta_{Exp}}_{\widehat{\beta_{Exp}}} + \underbrace{\omega_{Non-Exp}\beta_{Non-Exp}}_{\widehat{\beta_{Non-Exp}}}$$

$\Rightarrow$ 92% of the magnitude of the impact on lending goes to non-exporters

	All	Exporter share	Non exporter share
	(1)	(2)	(3)
Bank shock	0.308***	0.0235***	0.284***
	(0.00388)	(0.00116)	(0.00377)
Fixed Effects			
Firm×Year	✓	✓	✓
Bank size×Year	✓	✓	✓
Observations	1,241,028	1,241,028	1,241,028

Bank loans to each sector: midpoint growth decomposition

$$\Delta(Loans_{ib}^{sample}) = \beta TC_b^{sample} + \delta_i + \gamma_{b(Q)} + \varepsilon_{ib}$$

$$\beta_{All} = \underbrace{\omega_{Exp}\beta_{Exp}}_{\widehat{\beta_{Exp}}} + \underbrace{\omega_{Non-Exp}\beta_{Non-Exp}}_{\widehat{\beta_{Non-Exp}}}$$

$\Rightarrow$ 92% of the magnitude of the impact on lending goes to non-exporters

$\Rightarrow$ 62% goes to non-traded firms (in the EEA)

	All (1)	Exporter share (2)	Non exporter share (3)	EEA (4)	Tradable share (5)	Non tradable share (6)
Bank shock	0.308***	0.0235***	0.284***	0.318***	0.120***	0.199***
	(0.00388)	(0.00116)	(0.00377)	(0.00918)	(0.00549)	(0.00780)
Fixed Effects						
Firm×Year	✓	✓	✓	✓	✓	✓
Bank size×Year	✓	✓	✓	✓	✓	✓
Observations	1,241,028	1,241,028	1,241,028	84,470	84,470	84,470

Outcomes

1. Exports growth
2. Banking sector growth
3. Transmission of loans to non-traded sector
4. Firm outcomes

Firm-level outcomes

$$\log(Y_{it}) = \beta \mathrm{TC}_{it}^{indirect} + \alpha_i + \gamma_{i(X)t} + \widehat{\nu_{it}} + \varepsilon_{it}$$

- Y_{it}: firm outcomes; today: total loans
- $\mathrm{TC}_{it}^{indirect} = \sum_b \mathrm{TC}_b \cdot \frac{loans_{bi}}{loans_i}$

Firm-level outcomes

$$\log(Y_{it}) = \beta \mathrm{TC}_{it}^{indirect} + \alpha_i + \gamma_{i(X)t} + \widehat{\nu_{it}} + \varepsilon_{it}$$

- Y_{it}: firm outcomes; today: total loans
- $\mathrm{TC}_{it}^{indirect} = \sum_b \mathrm{TC}_b \cdot \frac{loans_{bi}}{loans_i}$

Endogeneity concern: Y_{it} are affected by exposure to bank b for reasons other than TC_b

Firm-level outcomes

$$\log(Y_{it}) = \beta \mathrm{TC}_{it}^{indirect} + \alpha_i + \gamma_{i(X)t} + \widehat{\nu_{it}} + \varepsilon_{it}$$

- Y_{it}: firm outcomes; today: total loans
- $\mathrm{TC}_{it}^{indirect} = \sum_b \mathrm{TC}_b \cdot \frac{loans_{bi}}{loans_i}$

Endogeneity concern: Y_{it} are affected by exposure to bank b for reasons other than TC_b

- α_i: firm FE

Firm-level outcomes

$$\log(Y_{it}) = \beta \mathrm{TC}_{it}^{indirect} + \alpha_i + \gamma_{i(X)t} + \widehat{\nu_{it}} + \varepsilon_{it}$$

- Y_{it}: firm outcomes; today: total loans
- $\mathrm{TC}_{it}^{indirect} = \sum_b \mathrm{TC}_b \cdot \frac{loans_{bi}}{loans_i}$

Endogeneity concern: Y_{it} are affected by exposure to bank b for reasons other than TC_b

- α_i: firm FE
- $\gamma_{i(X)t}$: firm characteristics (size quartile) $\times$ year $\Rightarrow$ restricts comparison to within firm groups

Firm-level outcomes

$$\log(Y_{it}) = \beta \mathrm{TC}_{it}^{indirect} + \alpha_i + \gamma_{i(X)t} + \widehat{\nu_{it}} + \varepsilon_{it}$$

- Y_{it}: firm outcomes; today: total loans
- $\mathrm{TC}_{it}^{indirect} = \sum_b \mathrm{TC}_b \cdot \frac{loans_{bi}}{loans_i}$

Endogeneity concern: Y_{it} are affected by exposure to bank b for reasons other than TC_b

- α_i: firm FE
- $\gamma_{i(X)t}$: firm characteristics (size quartile) $\times$ year $\Rightarrow$ restricts comparison to within firm groups
- $\widehat{\nu_{it}}$: estimated FEs from bank-firm regression $\Rightarrow$ controls for firm demand shocks

Firm-level outcomes

$$\log(Y_{it}) = \beta \mathrm{TC}_{it}^{indirect} + \alpha_i + \gamma_{i(X)t} + \widehat{\nu_{it}} + \varepsilon_{it}$$

- Y_{it}: firm outcomes; today: total loans
- $\mathrm{TC}_{it}^{indirect} = \sum_b \mathrm{TC}_b \cdot \frac{loans_{bi}}{loans_i}$

Endogeneity concern: Y_{it} are affected by exposure to bank b for reasons other than TC_b

- α_i: firm FE
- $\gamma_{i(X)t}$: firm characteristics (size quartile) $\times$ year $\Rightarrow$ restricts comparison to within firm groups
- $\widehat{\nu_{it}}$: estimated FEs from bank-firm regression $\Rightarrow$ controls for firm demand shocks
- SEs clustered by firm

[Distribution of TC_i]

Indirect firm-level borrowing

$$\log(Loans_{it}) = \beta \text{TC}_{it} + \alpha_i + \gamma_{i(Q)t} + \varepsilon_{it}$$

	All
	(1)
Firm shock×Year$_{\geq 2009}$	0.153***
	(0.00694)
Fixed Effects	
Firm	✓
Firm size×Year	✓
Industry×Year	—
Region×Year	—
Controls	
Firm×$\widehat{\text{Year fixed effect}}$	—
Observations	1,903,976

Indirect firm-level borrowing

$$\log(Loans_{it}) = \beta \text{TC}_{it} + \alpha_i + \gamma_{i(Q)t} + \varepsilon_{it}$$

	All	Non exporter
	(1)	(2)
Firm shock×Year$_{\geq 2009}$	0.153***	0.136***
	(0.00694)	(0.00697)
Fixed Effects		
Firm	✓	✓
Firm size×Year	✓	✓
Industry×Year	—	—
Region×Year	—	—
Controls		
Firm×$\widehat{\text{Year}}$ fixed effect	—	—
Observations	1,903,976	1,810,964

Indirect firm-level borrowing

$$\log(Loans_{it}) = \beta \text{TC}_{it} + \alpha_i + \gamma_{i(Q)t} + \varepsilon_{it}$$

	All	Non exporter	EEA
	(1)	(2)	(3)
Firm shock×Year$_{\geq 2009}$	0.153***	0.136***	0.0751**
	(0.00694)	(0.00697)	(0.0335)
Fixed Effects			
Firm	✓	✓	✓
Firm size×Year	✓	✓	✓
Industry×Year	—	—	—
Region×Year	—	—	—
Controls			
Firm×$\widehat{\text{Year}}$ fixed effect	—	—	—
Observations	1,903,976	1,810,964	201,314

Indirect firm-level borrowing

$$\log(Loans_{it}) = \beta \text{TC}_{it} + \alpha_i + \gamma_{i(Q)t} + \widehat{\nu_{it}} + \varepsilon_{it}$$

	All	Non exporter	EEA	Non tradable (EEA)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Firm shock×Year$_{\geq 2009}$	0.153***	0.136***	0.0751**	0.201***	0.238***	0.232***	0.109***
	(0.00694)	(0.00697)	(0.0335)	(0.0522)	(0.0562)	(0.0570)	(0.0374)
Fixed Effects							
Firm	✓	✓	✓	✓	✓	✓	✓
Firm size×Year	✓	✓	✓	✓	✓	✓	✓
Industry×Year	—	—	—	—	✓	✓	✓
Region×Year	—	—	—	—	✓	✓	✓
Controls							
Firm×$\widehat{\text{Year}}$ fixed effect	—	—	—	—	—	—	✓
Observations	1,903,976	1,810,964	201,314	69,958	69,958	33,128	33,128

Indirect firm-level borrowing

$$\log(Loans_{it}) = \beta \text{TC}_{it} + \alpha_i + \gamma_{i(Q)t} + \widehat{\nu_{it}} + \varepsilon_{it}$$

	All	Non exporter	EEA			Non tradable (EEA)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Firm shock×Year$_{\geq 2009}$	0.153***	0.136***	0.0751**	0.201***	0.238***	0.232***	0.109***
	(0.00694)	(0.00697)	(0.0335)	(0.0522)	(0.0562)	(0.0570)	(0.0374)
Fixed Effects							
Firm	✓	✓	✓	✓	✓	✓	✓
Firm size×Year	✓	✓	✓	✓	✓	✓	✓
Industry×Year	—	—	—	—	✓	✓	✓
Region×Year	—	—	—	—	✓	✓	✓
Controls							
Firm×$\widehat{\text{Year}}$ fixed effect	—	—	—	—	—	—	✓
Observations	1,903,976	1,810,964	201,314	69,958	69,958	33,128	33,128

Recap

- Peru's FTA with China is the setting for a trade-induced profit shock
- Exposure to the tariff cut measured for:
  - Sectors (direct)
  - Exporting firms (direct)
  - Banks (indirect)
  - Non-exporting firms (indirect)

  $\Longrightarrow$ Growth in financial capital and firm borrowing (& real outcomes)

Conclusion & future work

This paper so far: identifies and traces factor accumulation in the domestic economy following trade expansion

Future work:

- Empirical: import tariffs, import competition, tax authority data on real firm outcomes
- Theoretical: quantifying the gains using our estimated parameters in a framework with capital accumulation

Thank you!

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APPENDIX

FTA and firm profits

$TC_{k,c}$: Δ tariff to China

$TC_{k,p}$: Δ tariff to Peru

$$\Delta\pi_i = \overbrace{\underbrace{\Delta Sales_{D,i}}_{f(TC_{k,p})} + \underbrace{\Delta Sales_{X,i}}_{f(TC_{k,c})}}^{\Delta Revenue_i} - \underbrace{\Delta Costs_{M,i}}_{f(TC_{k,p})}$$

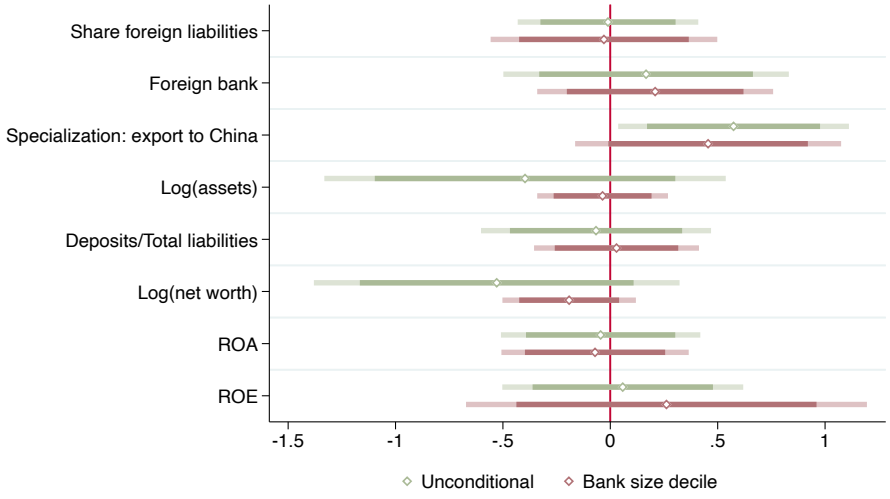
$\Delta Sales_{D,i}$: $+/-$ depending on import competition effect (if $TC_{k,p} \approx TC_{k,c}$)

$\Delta Sales_{X,i}$: $+$

$\Delta Costs_{M,i}$: $-$

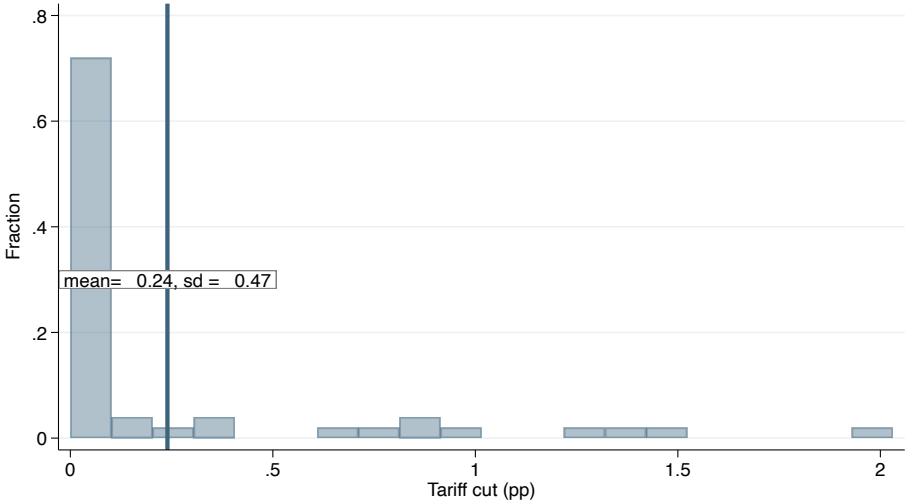
[Back]

Bank covariate balance



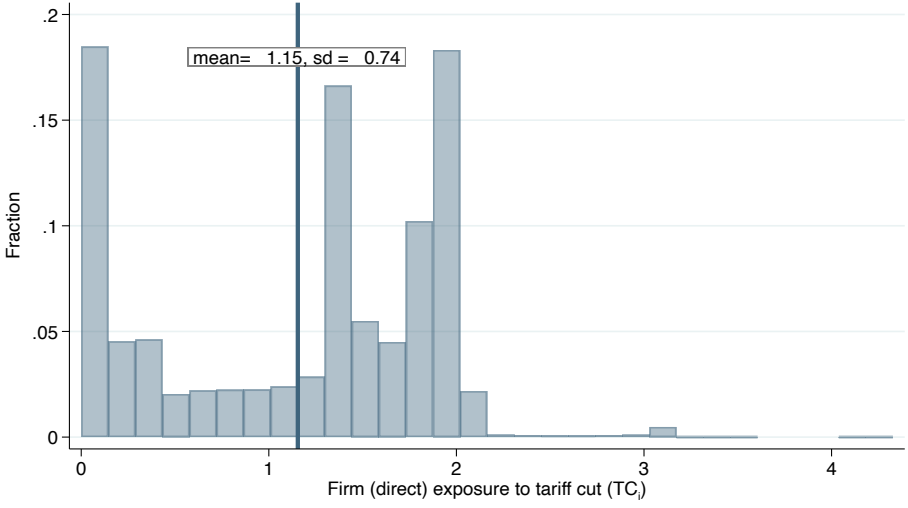
[Back]

Bank-level distribution of exposure to tariff cut



[Back]

Firm-level distribution of exposure to tariff cut



[Back]

Classification of firms

Firms in credit registry:

Exporters	Non-exporters
Ever export from 2004–2017	Never export from 2004–2017

Firms in the EEA:

Traded sector	Non-traded sector
Agriculture	Travel agencies
Wholesale & retail	Education
Oil (hydrocarbons)	Construction
Fishing	Hotels
Manufacturing	Electricity
Aquaculture	Transportation
	Education (universities)
	Restaurants
	Services

[Back]

Estimating impact on the traded sector

$$\log(EX_{kct}) = \beta \text{TC}_{pct} + \delta_{pt} + \alpha_{pc} + \varepsilon_{pct}$$

- EX_{pct}: exports from Peru in product p to destination c in year t
- Tariff Cut_{pct}:
  - Non-China trade: 0
  - China trade: varies by product k (mean 7.0 and sd 4.4)

Endogeneity concern: TC_{pt} correlated with unobserved expected product growth or demand

Estimating impact on the traded sector

$$\log(EX_{kct}) = \beta \text{TC}_{pct} + \delta_{pt} + \alpha_{pc} + \varepsilon_{pct}$$

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- Tariff Cut_{pct}:
  - Non-China trade: 0
  - China trade: varies by product k (mean 7.0 and sd 4.4)

Endogeneity concern: TC_{pt} correlated with unobserved expected product growth or demand

- δ_{pt}: product growth shocks $\Rightarrow$ within-product-year variation

Estimating impact on the traded sector

$$\log(EX_{kct}) = \beta \text{TC}_{pct} + \delta_{pt} + \alpha_{pc} + \varepsilon_{pct}$$

- EX_{pct}: exports from Peru in product p to destination c in year t
- Tariff Cut_{pct}:
  - Non-China trade: 0
  - China trade: varies by product k (mean 7.0 and sd 4.4)

Endogeneity concern: TC_{pt} correlated with unobserved expected product growth or demand

- δ_{pt}: product growth shocks $\Rightarrow$ within-product-year variation
- α_{pc}: average trade in product-destination $\Rightarrow$ deals with correlation between product char. & tariff

Estimating impact on the traded sector

$$\log(EX_{kct}) = \beta \text{TC}_{pct} + \delta_{pt} + \alpha_{pc} + \varepsilon_{pct}$$

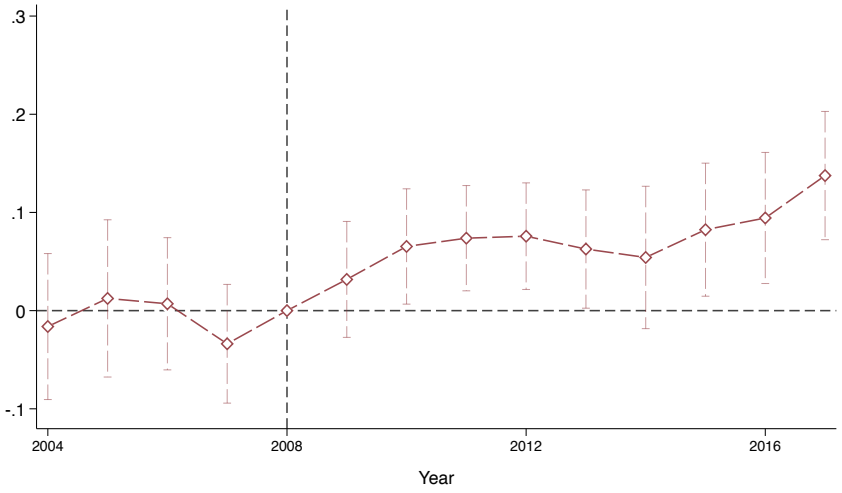
- EX_{pct}: exports from Peru in product p to destination c in year t
- Tariff Cut_{pct}:
  - Non-China trade: 0
  - China trade: varies by product k (mean 7.0 and sd 4.4)

Endogeneity concern: TC_{pt} correlated with unobserved expected product growth or demand

- δ_{pt}: product growth shocks $\Rightarrow$ within-product-year variation
- α_{pc}: average trade in product-destination $\Rightarrow$ deals with correlation between product char. & tariff
- SEs two-way clustered by product & destination

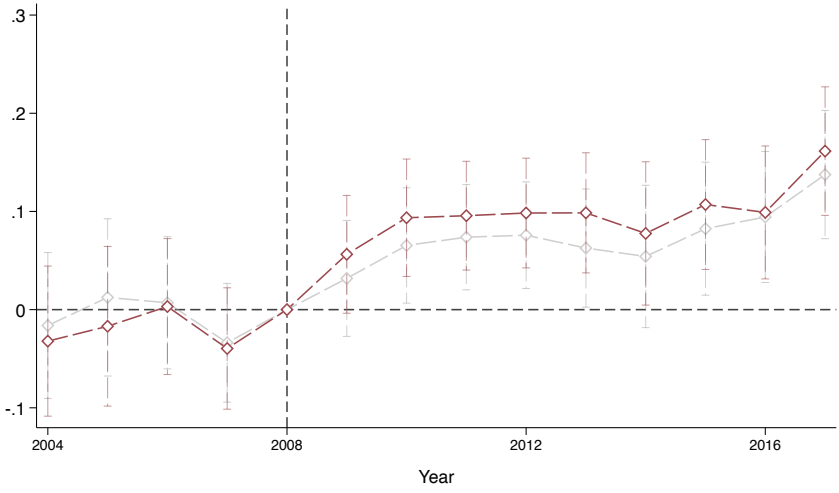
Growth in relative exports

$$\log(EX_{pct}) = \beta \text{Tariff Cut}_{pct} + \delta_t + \alpha_{pc} + \varepsilon_{pct}$$



Growth in relative exports

$$\log(EX_{pct}) = \beta \text{Tariff Cut}_{pct} + \delta_{pt} + \alpha_{pc} + \varepsilon_{pct}$$



Product exports using midpoint growth

$$\Delta EX_{pc} = \beta \mathrm{TC}_{pc} + \alpha_p + \varepsilon_{pc}$$

Unit of analysis	Product			
Margin of export	All	Entry	Exit	Continuous
	(1)	(2)	(3)	(4)
Tariff Cut×Year$_{\geq 2009}$	0.0775***	0.0135***	0.00293**	0.0611***
	(0.00771)	(0.00312)	(0.00140)	(0.00699)
Fixed Effects				
Product	✓	✓	✓	✓
Firm	—	—	—	—
Observations	5,563	5,563	5,563	5,563

Product exports using midpoint growth

$$\Delta EX_{pc} = \beta \text{TC}_{pc} + \alpha_p + \varepsilon_{pc}$$

$\Rightarrow$ Entry & exit account for small ($\approx 8\%$) of total change in product exports

Unit of analysis	Product			
Margin of export	All	Entry	Exit	Continuous
	(1)	(2)	(3)	(4)
Tariff Cut$\times$Year$_{\geq 2009}$	0.0775***	0.0135***	0.00293**	0.0611***
	(0.00771)	(0.00312)	(0.00140)	(0.00699)
Fixed Effects				
Product	✓	✓	✓	✓
Firm	—	—	—	—
Observations	5,563	5,563	5,563	5,563

Firm-product exports using midpoint growth

$$\Delta EX_{ipc} = \beta \text{TC}_{pc} + \alpha_p + \gamma_i + \varepsilon_{ipc}$$

Unit of analysis	Product				Firm	
Margin of export	All	Entry	Exit	Continuous	All	
	(1)	(2)	(3)	(4)	(5)	(6)
Tariff Cut×Year$_{\geq 2009}$	0.0775***	0.0135***	0.00293**	0.0611***	0.0775***	0.0717***
	(0.00771)	(0.00312)	(0.00140)	(0.00699)	(0.00127)	(0.000724)
Fixed Effects						
Product	✓	✓	✓	✓	✓	✓
Firm	—	—	—	—	—	✓
Observations	5,563	5,563	5,563	5,563	394,745	394,745

Firm-product exports using midpoint growth

$$\Delta EX_{ipc} = \beta \text{TC}_{pc} + \alpha_p + \gamma_i + \varepsilon_{ipc}$$

$\Rightarrow$ Firm-level characteristics (γ_i) like anticipated growth do not explain impact of tariff cut

Unit of analysis	Product				Firm	
Margin of export	All	Entry	Exit	Continuous	All	
	(1)	(2)	(3)	(4)	(5)	(6)
Tariff Cut×Year$_{\geq 2009}$	0.0775***	0.0135***	0.00293**	0.0611***	0.0775***	0.0717***
	(0.00771)	(0.00312)	(0.00140)	(0.00699)	(0.00127)	(0.000724)
Fixed Effects						
Product	✓	✓	✓	✓	✓	✓
Firm	—	—	—	—	—	✓
Observations	5,563	5,563	5,563	5,563	394,745	394,745

Benchmarking magnitudes

Exposures:

- Average firm $TC_{it} = 1.15$
- Average bank $TC_{bt} = 0.24$

Estimated elasticities:

- Elasticity of exports with respect to direct firm exposure: $\approx 0.1 \Rightarrow$ average firm has 11.5% higher exports
- Elasticity of credit with respect to direct bank exposure: $\approx 0.7 \Rightarrow$ average bank has 17% more credit

Rescaling the average bank effect: 17% more credit to firms that experienced 52.9% more exports

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