The US-China Trade War and India's Exports

Amit K. Khandelwal

Yale and NBER

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Motivation

US-China trade war taxing ~$450b of annual trade Fajgelbaum & Khandelwal 22

- tariffs on thousands of products increased ~10-25%
- tariffs and retaliations targeted 3.6% of US GDP and 5.5% of China GDP

US-China tariffs increases covered 98.5% of India's exports, leading to early predictions:

- "India vies to fill Chinese commodities gap created by trade war," FT 2019
- "India can boost exports of 300 products to US, China amid trade war" ET 2019
- "India could be a winner in the US-China trade war" CNBC 2019

→ How did India's exports respond during the trade war?

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→ How did India's exports respond during the trade war?

Framework

Many factors would determine India's response:

- Does India export goods that complement or substitute with China and US?
- Can Indian firms overcome non-tariff barries (ROO, quality, regulation)?
- Even if reallocation was seamless, would it come at the expense of exports to RW?
- Did global uncertainty blunt investments in India?
- Maybe bystanders crowd out India's potential gains?

India's response depends on combination of supply/demand forces: Fajgelbaum et al 2021

- India's exports to US increase if it substitutes w/ China
- ...and exports to RW decrease if supply curves slope upward

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2x2 responses to US/CH and RW based on underlying supply+demand parameters

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Results

Use US-China tariffs across products to examine India's responses to US, CH, RW

- period: 2018-19
- (also estimate impacts of direct tariff changes on India)

1. Trade war increased India's global exports by 1.7% (se 3.6%)
   - Exports to US: -7.7% (se 6.0%)
   - Exports to CH: 0.3% (se 12.1%)
   - Exports to RW: 4.2% (se 4.4%)

2. Aggregate bystanders' global exports increase by 5.4% (se 0.7%) Fajgelbaum et al 2021
   - Indonesia (10.2%, se 5.6%), Malaysia (7.7%, se 5.4%), Mexico (11.3%, se 4.0%), Thailand (8.1%, se 5.1%), Turkey (13.9%, se 4.8%), Vietnam (13.9%, se 5.0%)

3. Noisy heterogenous responses by sectors/product characteristics
   - exception: apparel (19.2%, se 9.1%) and transport (60.8%, se 30.6%)
   - Customs data: tariffs cause firms to enter RW (but noisy...)

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Implications

India is actively signing/debating free trade agreements Krishna 20

But...can India benefit when market access deteriorates between other countries?

- in this episode, "no"
- similar to lack of India's export response to rising wages in China Chatterjee & Subramanian 20

Domestic policies are external policies Bhagwati 71, Bhagwati & Srinivasan 75, Krueger 84, Bardhan 11 Panagariya 08,19

- Productivity, size-dependent distortions, factor misallocation... Atkin & Khandelwal 20, Atkin & Donaldson 21

→ More work necessary to understand the sluggish response

- tailored surveys
- benchmarking
- experimentation

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US-China Trade War

From 2018-19, US-China raised tariffs over several rounds

Most work has focused on impacts US and China: Fajgelbaum & Khandelwal 22

- complete tariff pass-through Amiti et al 19, Fajgelbaum et al 20, Flaeen et al 20, Cavallo et al 21, Chang et al 21, Ma et al 21
- aggregate impact on US economy: -25b (-0.13% GDP) Fajgelbaum et al 20
- aggregate impact on CH economy: -35b (-0.29% GDP) Chang et al 21

India also targeted in the war

- March 2018: US targets Indian steel and aluminum products
- June 2019: US removes India from GSP program
- China lowers MFN rates

Data

Comtrade data covers 5203 HS6 products ω

- India's exports to US (19%), CH (6%), RW (75%)
- $\Delta \ln X_{\omega}^{US}$: India's exports to US in HS6 product ω

Aggregate data to 24-month periods to study long differences

- Examine 2016/17 to 2018/19 export growth in response to tariffs
- Statutory tariff schedules, 2018:1–2019:12
  - Scale tariffs in proportion to their duration through the 24-month interval

Trade war tariffs: Fajgelbaum et al 20, Bown et al. 2019, Federal Register 19

- $\Delta T_{CH,\omega}^{US}$: US tariff changes on China: 4413 products, $\uparrow$ 9.3%
- $\Delta T_{US,\omega}^{CH}$: China tariffs changes on US: 4422 products, $\uparrow$ 11.3%
- $\Delta T_{IN,\omega}^{US}$: US tariffs changes on India: 582 products, $\uparrow$ 2.9%
- $\Delta T_{IN,\omega}^{CH}$: China MFN tariff changes: 2178 products, $\uparrow$ 2.8%

US-China tariffs cover 98.5% of India's trade

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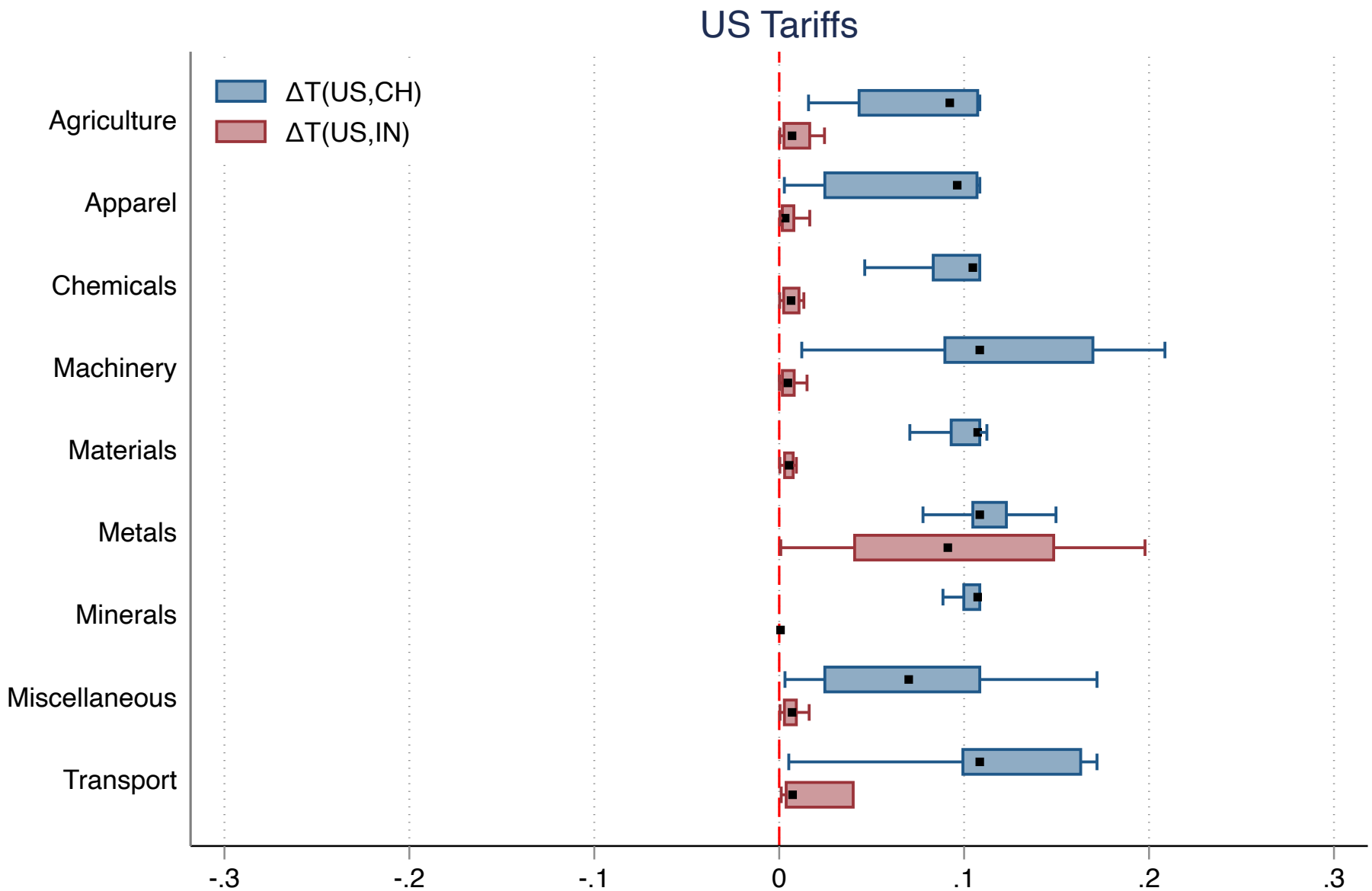
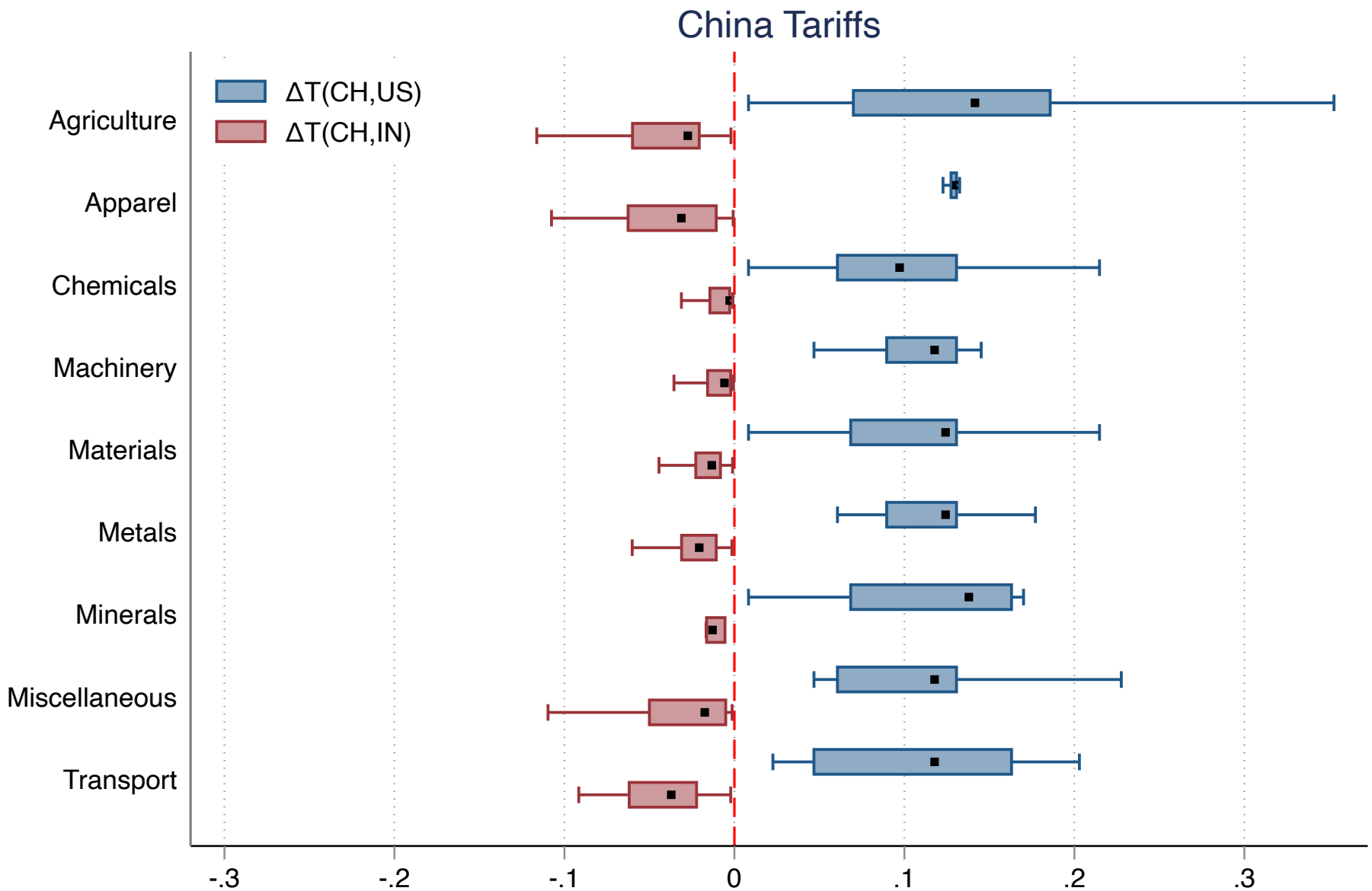
US Tariff Changes

ΔT_{CH}^{US} & ΔT_{IN}^{US}

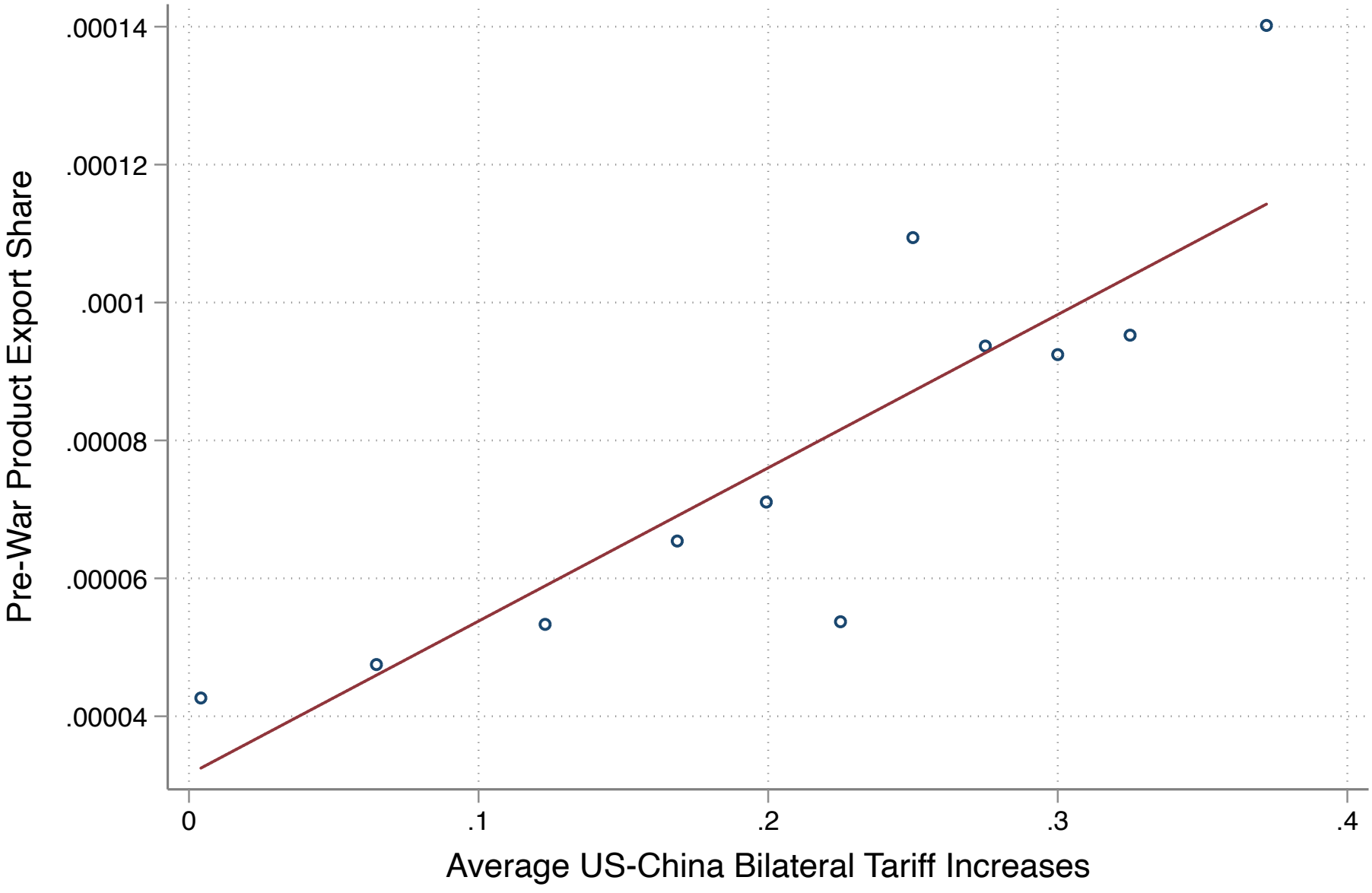


China Tariff Changes

ΔT_{US}^{CH} & ΔT_{IN}^{CH}



US-China Bilateral Tariff Changes and Export Shares



Framework

Consumers have translog preferences

- India can export goods that substitute or complement with US/CH

Supply curves could be upward (textbook) or downward sloping (eg, scale)

Suppose US imposes a tariff on China $\Delta \ln T^{US}_{CH,\omega} > 0$

	India's Exports:	
	Decrease to US	Increase to US
Increase to RW		
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Increase to RW		China substitute neg sloping supply
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Empirical Strategy

- Framework leads to the following specifications:

$$\Delta \ln X_{\omega}^{n} = \alpha_{j}^{n} + \beta_{1}^{n} \Delta \ln T_{CH,\omega}^{US} + \beta_{2}^{n} \Delta \ln T_{US,\omega}^{CH} + \beta_{3}^{n} \Delta \ln T_{IN,\omega}^{US} + \beta_{4}^{n} \Delta \ln T_{IN,\omega}^{CH} + \epsilon_{\omega}^{n}$$

  - $\Delta \ln X_{\omega}^{n}$ = exports of HS6 product ω to $n = US, CH, RW$
  - sector fixed effect α_{j}^{n} (model-implied supply-demand shifters within sectors)
  - Will also control for pre-existing trends

- Identification: across products within sector

- Important caveat:
  - Does not account for full GE impacts, ie the tariff impacts on sector FE

- examines intensive margin (extensive margin later)

▸ binscatters

Export Response to *US*, *CH*, *RW*

	(1) $\Delta \ln X_{\omega}^{US}$	(2) $\Delta \ln X_{\omega}^{CH}$	(3) $\Delta \ln X_{\omega}^{RW}$
$\Delta T_{CH,\omega}^{US}$ (β_1)	0.73	0.17	0.40
	(0.46)	(0.79)	(0.31)
$\Delta T_{US,\omega}^{CH}$ (β_2)	-0.72	-0.05	0.16
	(0.40)	(0.79)	(0.25)
$\Delta T_{IN,\omega}^{US}$ (β_3)	-4.20	-4.88	1.02
	(1.05)	(1.82)	(0.82)
$\Delta T_{IN,\omega}^{CH}$ (β_4)	1.52	0.07	0.58
	(0.93)	(1.73)	(0.68)
Pre-Existing Trend Control	Yes	Yes	Yes
Sector FE	Yes	Yes	Yes
R2	0.06	0.07	0.11
N	3,578	2,806	5,050

▸ pretrends

Aggregation

- Predicted export growth to n in product ω:

$$\widehat{\Delta \ln X_{\omega}^{n}} = \widehat{\beta_1^n} \Delta \ln T_{CH,\omega}^{US} + \widehat{\beta_2^n} \Delta \ln T_{US,\omega}^{CH} + \widehat{\beta_3^n} \Delta \ln T_{IN,\omega}^{US} + \widehat{\beta_4^n} \Delta \ln T_{IN,\omega}^{CH}$$

- Aggregate to destination using pre-war weights:

$$\widehat{\Delta \ln X^{n}} = \sum_{\omega} \lambda_{\omega}^{n} \widehat{\Delta \ln X_{\omega}^{n}}$$

- Aggregate across destinations:

$$\widehat{\Delta \ln X^{WD}} = \sum_{n=US,CH,RW} \Lambda^{n} \widehat{\Delta \ln X^{n}}$$

- Aggregation ignores "macro" GE impacts of the tariffs
- Bootstrap standard errors

Export Response to *US*, *CH*, *RW*

Baseline

US	CH	RW	World
-7.7	0.3	4.2	1.7
(6.0)	(12.1)	(4.4)	(3.6)

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US-China Tariffs Only

US	CH	RW	World
-3.1	0.6	4.8	3.0
(5.5)	(12.1)	(4.2)	(3.4)

Heterogeneity

- Agriculture 6.8% (8.0)%
- Apparel 19.2% (5.8)%
- Chemicals -5.6% (6.6)%
- Machinery -5.9% (10.8)%
- Materials -7.1% (10.6)%
- Metals -13.1% (13.0)%
- Minerals 30.7% (45.8)%
- Misc -12.6% (10.9)%
- Transport 60.8% (26.2)%

- Overall 6.0% (5.7)%

- Large Products 2.2% (5.6%)
- RCA Products 12.7% (10.0%)
- ATP Products 6.9% (5.6%)
- KL-intensive Products 5.1% (10.5%)
- Intermediates 1.4% (5.5%)
- Contract-intensive 6.6% (6.2%)
- Upstream 15.0% (15.3%)
- Differentiated 1.8% (3.9%)

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Extensive Margin

- Product extensive margin accounts for only 0.4% of India's growth in 2018/19

- Firm extensive margin
  - Datamyne customs records for 2017 and 2019
  - Capture firm name, export value, and HS product code

- Caveats
  - aggregates do not match Comtrade aggregates
  - product-level growth rates noisier than Comtrade details

- Decomposition

$$X_\omega \equiv \frac{X_\omega}{N_\omega} N_\omega$$

  - implies $\Delta \ln X_\omega \equiv \Delta \ln \frac{X_\omega}{N_\omega} + \Delta \ln N_\omega$

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Aggregate Reponse Decomposition

Panel A: All Tariffs

US	CH	RW	World
	Overall		
5.7	22.7	-1.2	0.7
(9.6)	(17.3)	(6.5)	(5.7)
	Intensive Margin		
3.4	14.2	-3.2	-1.5
(8.5)	(15.6)	(6.1)	(5.3)
	Extensive Margin		
2.3	8.5	1.9	2.2
(2.7)	(4.3)	(2.1)	(1.8)
	Extensive Margin Contribution		
40.6%	37.5%	156.7%	319.3%

Discussion

- Recent and large shocks to global trade system: trade war, pandemic, russia-ukraine conflict, nationalism
  - reshuffling market access for all countries
- US-China trade war did not (statistically) change India's overall exports
  - suprisingly hard to find even heterogeneity
- Administrative data alone cannot determine deep determinants of sluggish response
- Path forward?
  - tailored surveys of exporters
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	(0.48)	(0.85)	(0.32)
$\Delta T^{CH}_{US,\omega}$ (β_2)	0.14	0.30	0.66**
	(0.42)	(0.83)	(0.26)
$\Delta T^{US}_{IN,\omega}$ (β_3)	-1.26	5.16**	-0.77
	(1.10)	(1.95)	(0.85)
$\Delta T^{CH}_{IN,\omega}$ (β_4)	-2.48*	-1.12	0.27
	(0.97)	(1.80)	(0.71)
Sector FE	Yes	Yes	Yes
R2	.01	.009	.0023
N	3,530	2,714	5,054

return

Comtrade vs Datamyne

Panel A: Comtrade Data

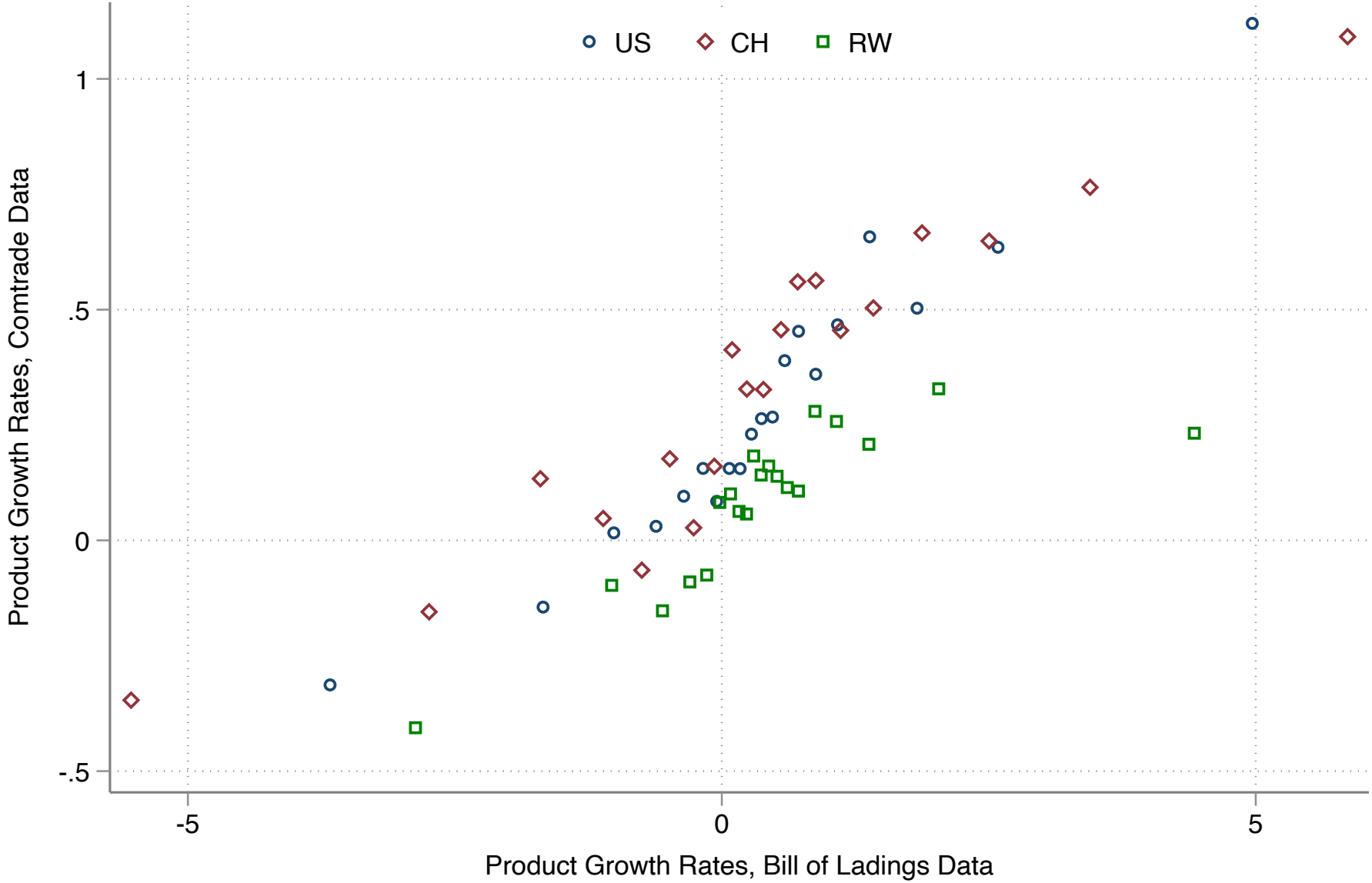
	2017	2019
Exports to US	46	54
Exports to CH	12	17
Exports to RW	236	252
Exports to World	294	323

Panel B: Datamyne Data

	2017	2019
Exports to US	32	42
Exports to CH	9	15
Exports to RW	171	225
Exports to World	212	283

return

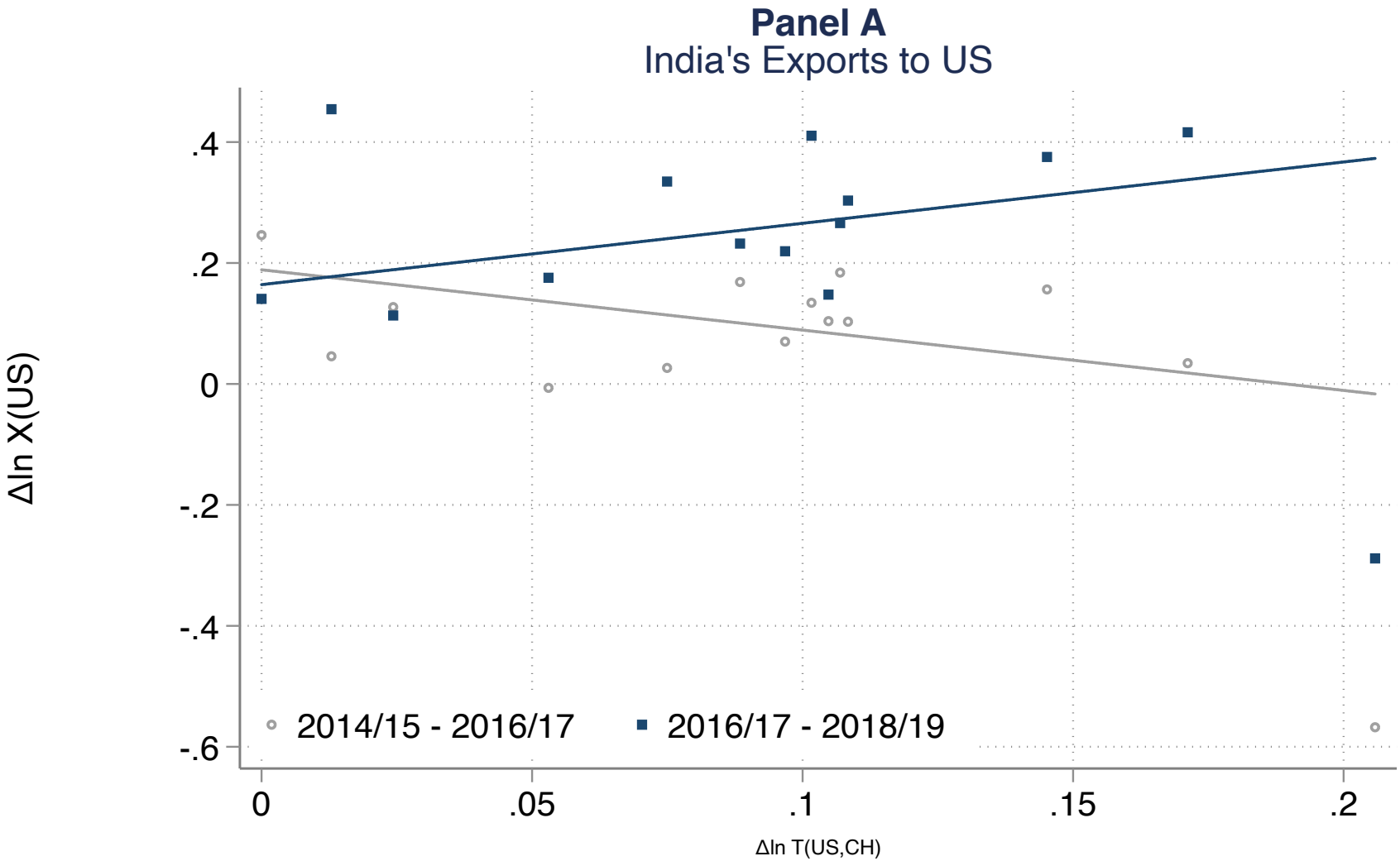
Comtrade vs Datamyne



return

Data Plots

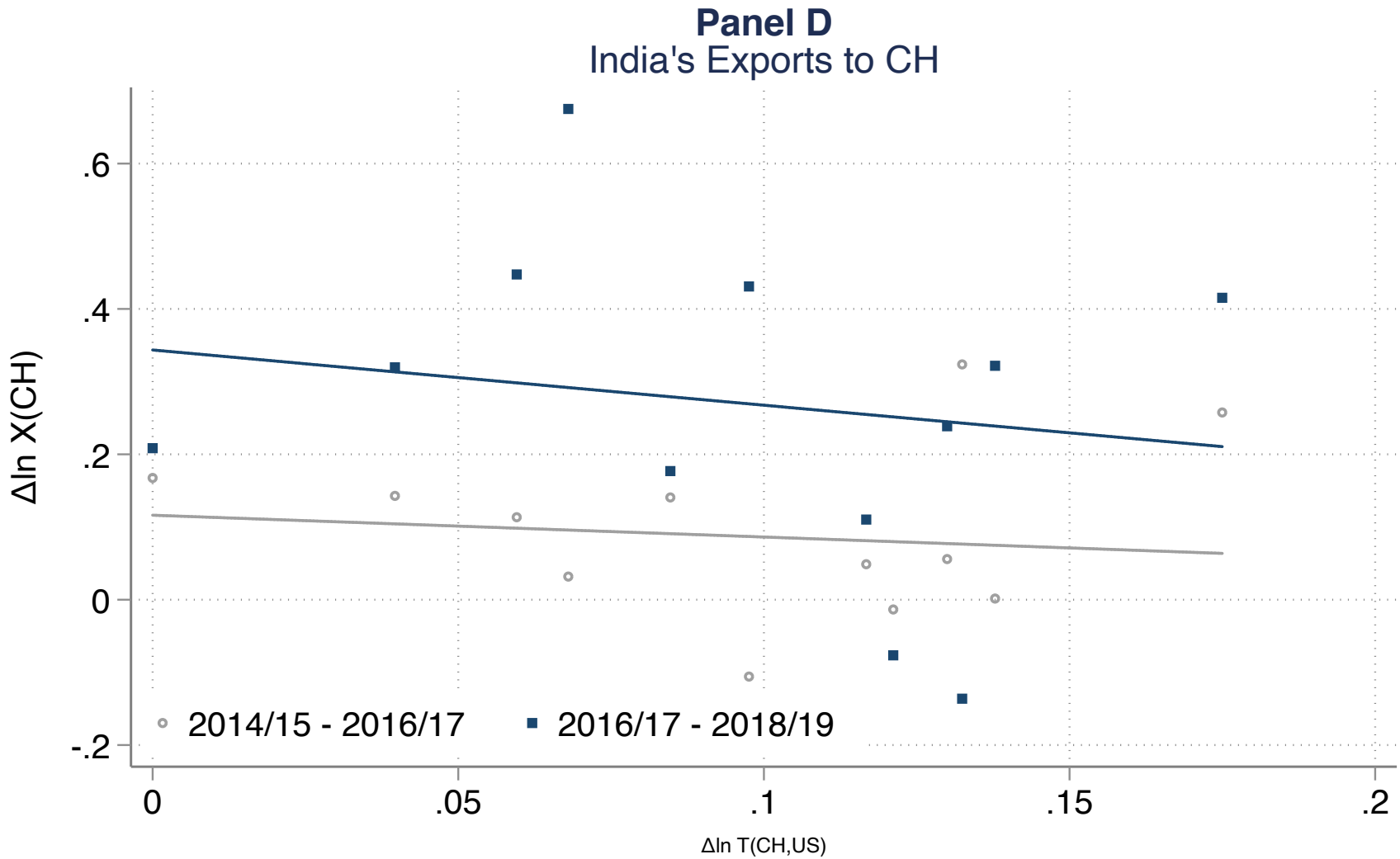
Exports to US on ΔT_{CH}^{US}



2015-17: β=-0.73 (0.41). 2017-19: β=0.95 (0.41).

Data Plots

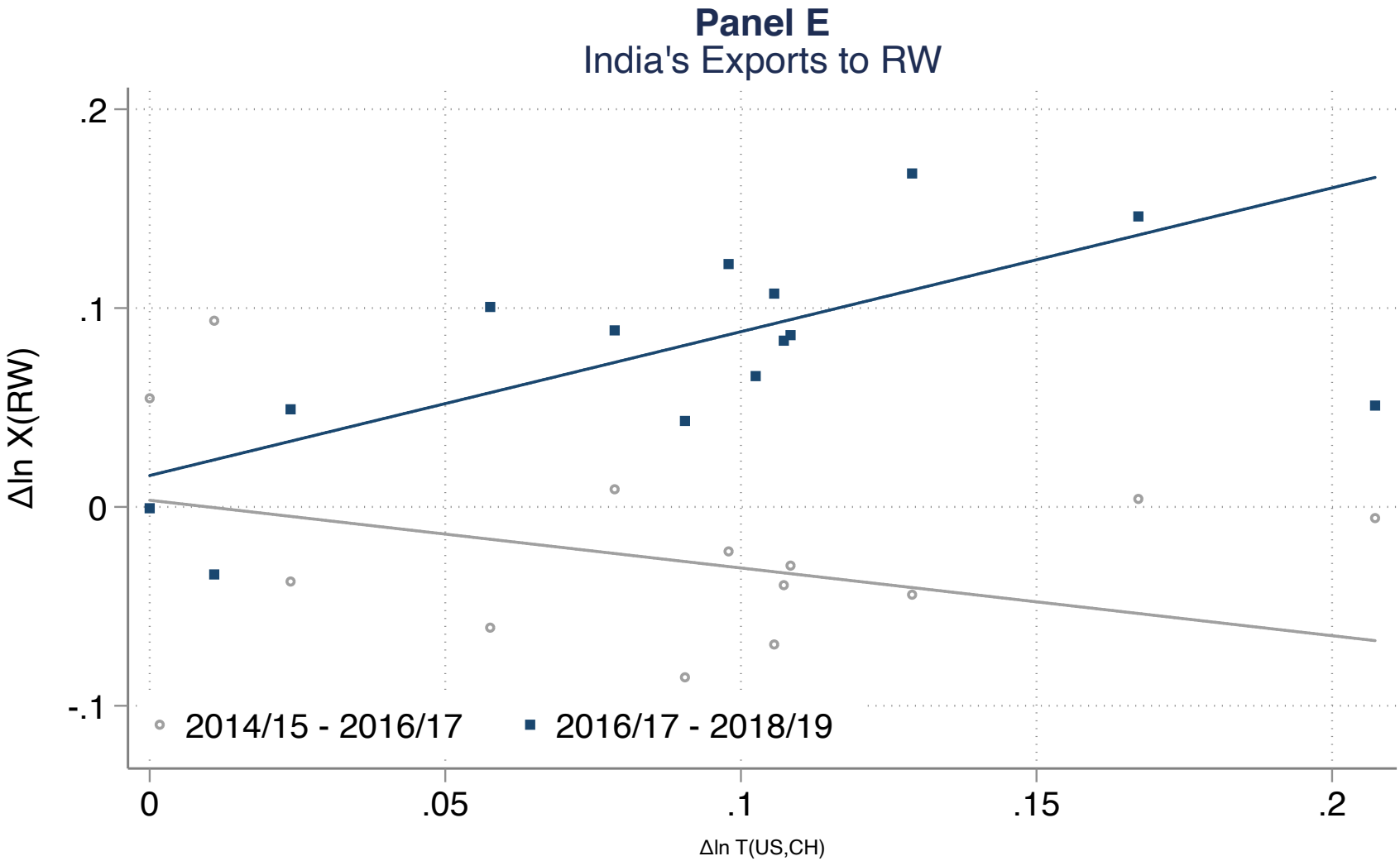
Exports to CH on ΔT_{US}^{CH}



2015-17: β=0.29 (0.81). 2017-19: β=-0.34 (0.79).

Data Plots

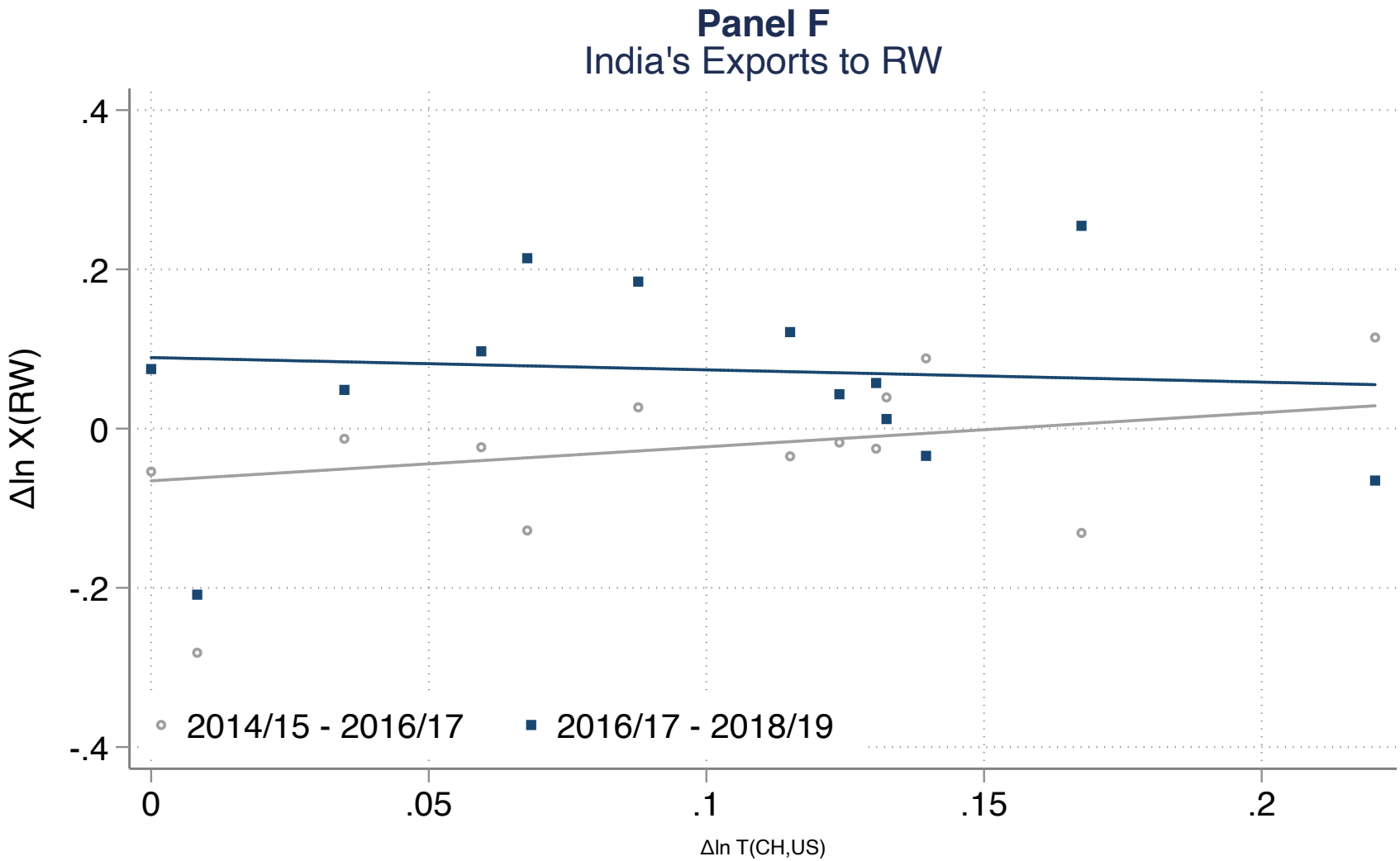
Exports to RW on ΔT_{CH}^{US}



2015-17: β=-0.25 (0.28). 2017-19: β=0.91 (0.29).

Data Plots

Exports to RW on ΔT_{US}^{CH}



2015-17: β=0.54 (0.25). 2017-19: β=-0.10 (0.25).

return