Trade Shocks in Distorted Economies:
Evidence from Firm-level Import Data

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Trade shocks in distorted economies: Role of importer concentration

- Consider a trade liberalization in a small open economy in which tariffs fall for some products and partners, but not for others. What is the impact on welfare?
- With distortions, it depends on reallocation across firms with different mg products.
- Our focus: role of distortions from **domestic market power of importer firms**.

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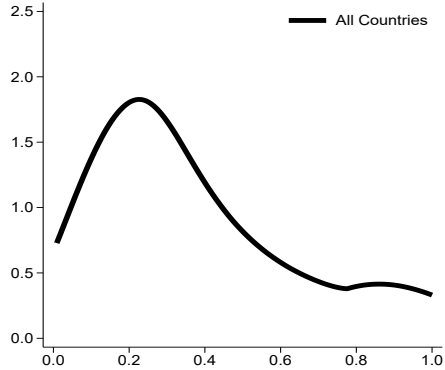
- Our focus: role of distortions from **domestic market power of importer firms**.
- **Two facts** from administrative records of firm imports (57 countries, 1997-2021):
  1. Trade liberalizations generate dispersion in import cost shocks across firms and goods.
  2. Level and dispersion of importer concentration is high across firms, goods and countries.

Correlations Import share distribution

Importer concentration dispersion is higher in poorer and smaller countries



Import Share of the Largest Importer Firm of an HS6 Product

- If import concentration translates into domestic market power, then domestic markups on imports vary across firms, goods, and countries.

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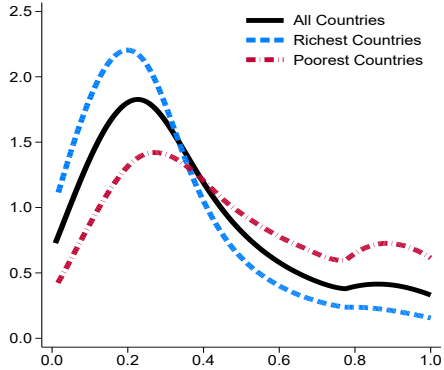

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Today: Impact of importer concentration on welfare response to tariffs

- **Model:** Importer's markup depends on its import share among competitors

$$\text{Welfare Effect} = \text{Cov}_{\text{importers}}\left(\text{Markup} \times \text{Import Elasticity}, \text{Cost Change}\right)$$

- **Estimation:** Firm's import elasticity *declines* with import share among competitors

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- **Counterfactual**: In trade liberalizations, contribution of importer concentration is
  1. Typically negative (median = -40% of neoclassical gains)
  2. More important in poorer and smaller countries
  3. Mostly driven by importers' profits

Related literature

- **Trade shocks in economies with distortions:**
  - *Oligopoly:* Edmond et al. (2015), Amiti et al. (2019)
  - *Theory:* Baqaee-Farhi (2020, 2024), Atkin-Donaldson (2022), Adao et al. (2023)
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- **Impact of trade shocks on other pricing decisions:**
  - Domestic substitutes: Krugman (1979), Edmond et al. (2015), Arkolakis et al. (2019)
  - Foreign firms: Fajgelbaum et al. (2019), Amiti et al. (2019b), Alvarez et al. (2023)
  - **This paper:** We focus on domestic market power of importers

Theory: Model of Oligopolistic Importers

Small open economy with oligopolistic firms f supplying variety of good g

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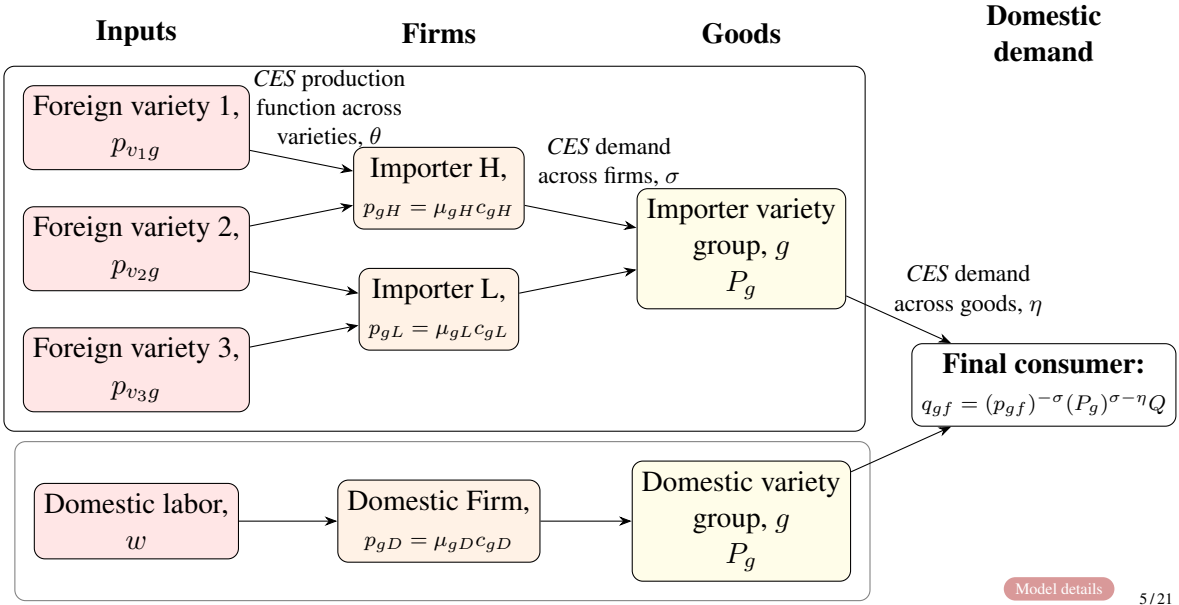

Model details

Firm-level markups and imports

Oligopolistic market (Atkeson-Burstein, 2008): Firms set prices acknowledging their domestic demand curve given aggregate shifter (Q), domestic wage and world prices

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$$\mu_{gf} = \frac{\varepsilon_{gf}}{\varepsilon_{gf} - 1} \quad \text{and} \quad \varepsilon_{gf} = \sigma - (\sigma - \eta) e_{gf}$$

with e_{gf} firm f's share of domestic spending on good g

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- In the cross-section, firms with lower mg cost have higher markups and imports:

$$\beta^{\mu}_{gf} \equiv -\frac{\partial \log \mu_{gf}}{\partial \log c_{gf}} \in [0, 1) \quad \text{and} \quad \beta^{q}_{gf} \equiv -\frac{\partial \log q_{gf}}{\partial \log c_{gf}} \in (0, \sigma]$$

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- **Strictly decreasing mapping** between domestic markup and import elasticity:

$$\mu_{gf} = \mathcal{M}(\beta^{q}_{gf})$$

$\mathcal{M}$ mapping

Impact of tariff changes on firms: Importer concentration matters

Comparative Statics: First-order approximation to impact of tariff change, $d\log(1+\tau_v)$

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$$d\log c_{gf} = \sum_v m_{vgf} d\log(1+\tau_v)$$

with m_{vgf} the share of variety v in the imports of firm f of group g

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    where $d\ln c_g = \sum_f \omega_{gf} d\log c_{gf}$ is a weighted-average of cost change across firms

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- **For domestic firms,** $d\ln c_{gf} = d\ln w \implies d\log \mu_{gf} = 0$ and $d\log q_{gf} = d\log q^D$

Toward aggregate incidence: Closing the model in a simple way

- **Government:** Sets tariffs $\{\tau_v\}$ and rebates revenue, $T = \sum_g \sum_f \sum_v \tau_v M_{vgf}$

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- **Trade balance:** Exogenous export revenue and, thus, import spending
  - Report robustness with endogenous exports due to integrated labor market

Aggregate welfare: Covariance of initial markups and import responses

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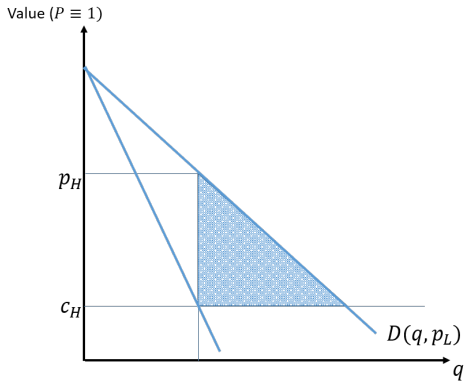

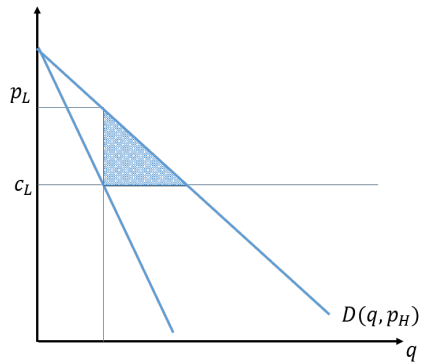

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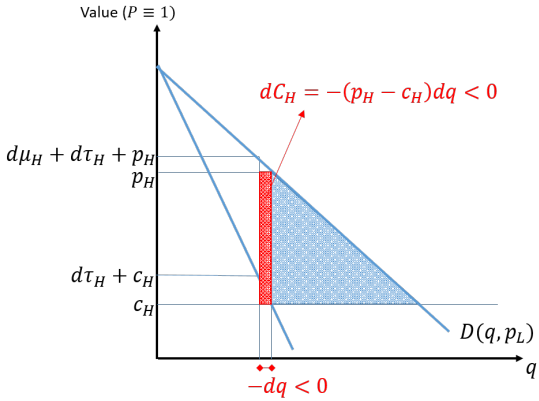

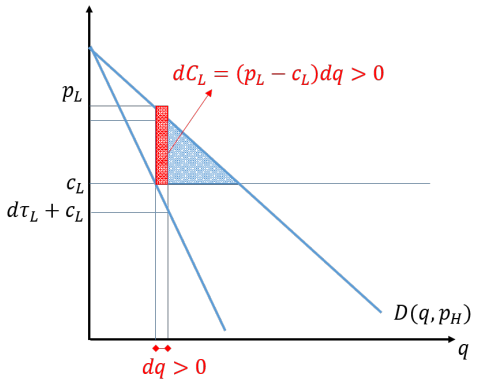

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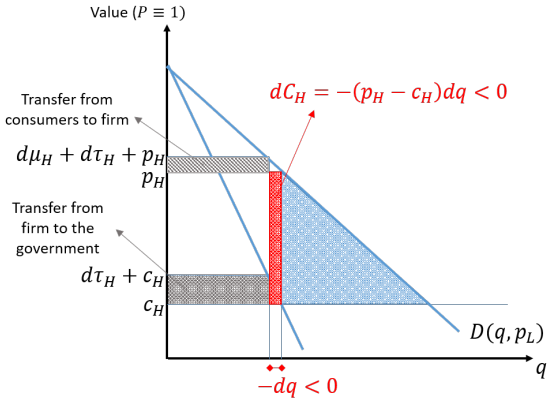

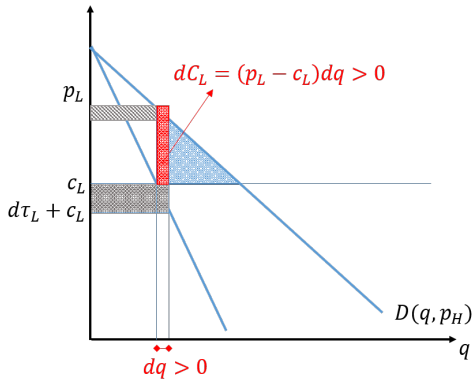

Allocative efficiency: Reallocation between goods and firms

- **Aggregate welfare:** Consumption reallocation

$$\frac{dC}{M} = -Cov_g\left[(\bar{\mu}_g - \bar{\mu})\eta, d\log c_g\right] - \mathbb{E}_g\left[\frac{\bar{\mu}}{\bar{\mu}_g^q} Cov_{f|g}\left[(\mu_{gf} - \bar{\mu}_g^q)\beta_{gf}^q, d\log c_{gf}\right]\right]$$

  - Given shock, effect increases with markup dispersion and, thus, (i) concentration dispersion and (ii) slope of $\beta^q(m)$

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- **Importers' welfare:** Consumption reallocation + Markup responses λ

$$\frac{dC^M}{M} = (1-\lambda)\frac{dC}{M} + Cov_g\left[\frac{\bar{\mu}_g}{\bar{\mu}}, d\log c_g\right] + \mathbb{E}_g\left[Cov_{f|g}\left[\frac{\mu_{gf}}{\bar{\mu}_g^q}\frac{\beta_{gf}^q}{\bar{\beta}_g^q}, d\log c_{gf}\right]\right]$$

Extensions

Measurement: Importer Firm Concentration Across Countries

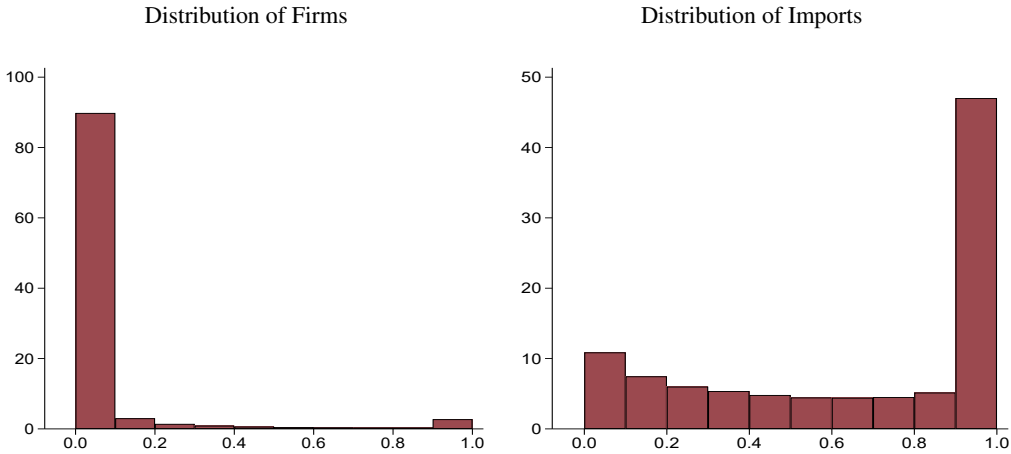
Data: From customs records to panel of firm imports in 57 countries

- From administrative customs records for 57 countries,
  - Harmonize goods identifiers based on the 6-digit HS classification (HS6)
  - Harmonize value and quantity units
  - Create time-consistent firm identifiers

- Obtain tariff data from UNCTAD TRAINS as in Teti (2020)
  - Obtain ad-valorem tariffs applied by a destination to each HS6 good and origin

- **Panel dataset with firm-good-origin-destination-year** Sample
  - Firm f: importer ids in each group
  - Group g: all importers of each HS6 product (robust to HS2, HS4, sector)
  - Import variables: value, quantity, and tariff

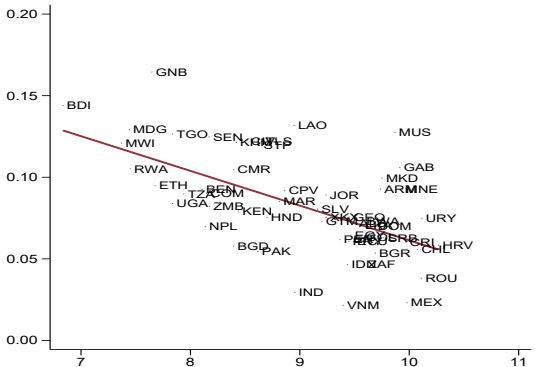
Most importers are small, but imports are concentrated on few large firms



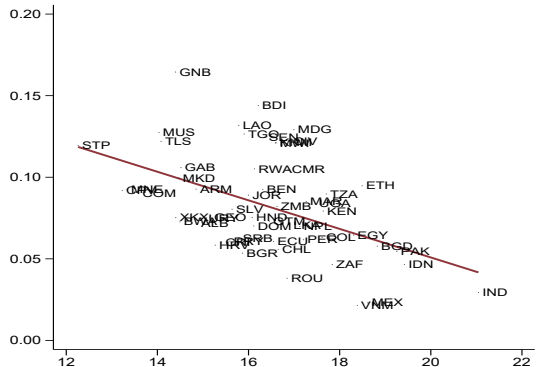
Firm Share of the Country's Imports of each Good, $m_{gf} \equiv M_{gf} / \sum_{f'} M_{gf'}$

Note: Sample of 158,121,069 firm-good-country-year observations HHI dist. HHI by sector

Within-good dispersion is higher in poorer and smaller countries



log GDP/capita



log population

Note: Sample of 57 countries. Vertical axis is the import-weighted average of the standard deviation of firm import shares within a HS6 good-country-year. Table

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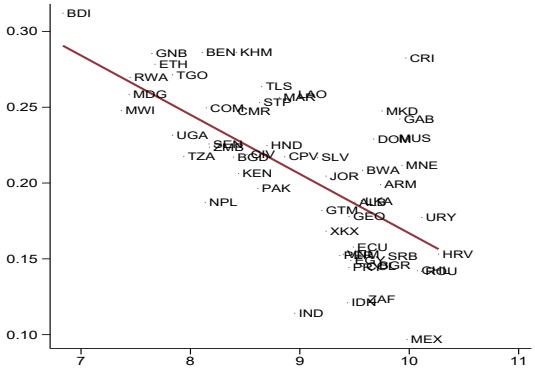

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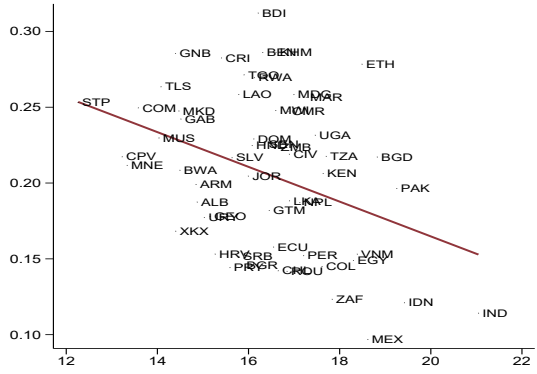

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Note: Sample of 57 countries. Vertical axis is the import-weighted standard deviation across HS6 goods of their HHI of firm import shares. Table | Avg. HHI scatterplot | Avg. HHI regression

Estimation: Import Responses to Tariff Changes

Estimation sample

Subsample of 18 countries such that:

1. We observe at least one year with a trade liberalization episode,
   - More than 10% of origin-good lines have a tariff decline of at least 1 p.p.
   - Average tariff declines by more than 0.1 p.p.

2. Information on value and quantity of imports

3. Time-consistent firm identifiers in entire sample period

Sample summary | Tariff change and Initial tariffs | Binscatterplot

Firm's elasticity of imports to tariff changes, $\beta^q(m)$

$$\Delta \log M_{gf,dt} = -\beta^q(m_{gf,dt})(\Delta \log c_{gf,dt} - \zeta_{g,dt}) + \delta_{g,dt} + \phi_{f,dt} + \epsilon_{gf,dt}$$

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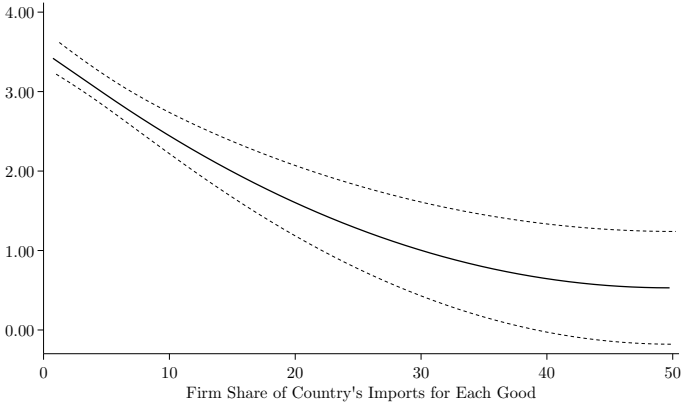
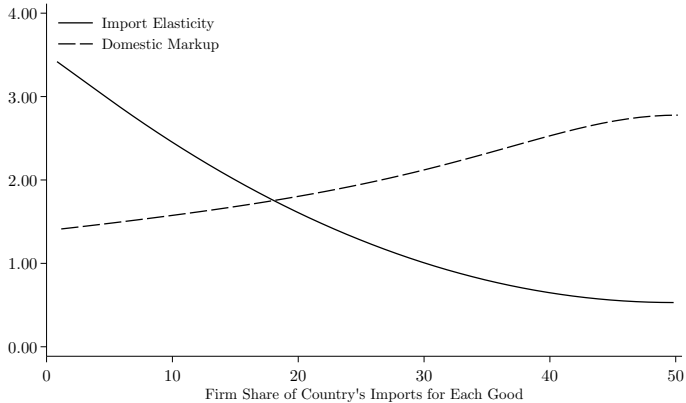


Firm Share of Country's Imports for Each Good

Note: 15,716,798 firm-good-destination-year. Dashed lines: 95CI clustered by firm-good-destination and good-destination-year. Between-Origin | Shock distr. | Specification | $\beta^W(m)$ | $\mu(m), \beta^\mu(m)$ | η

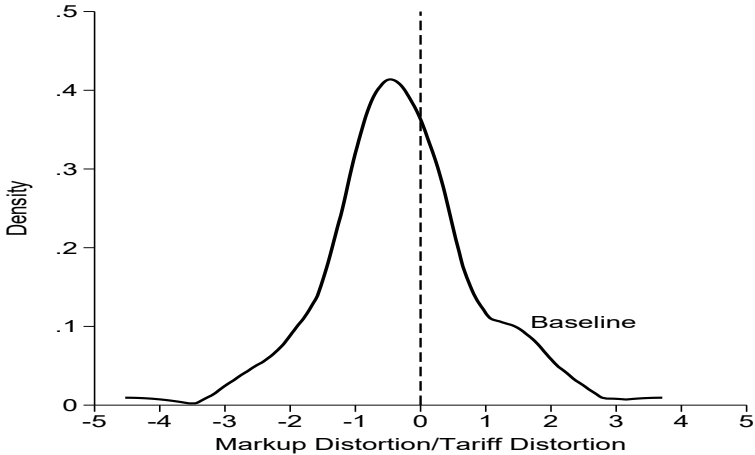
From firm's import elasticity to firm's domestic markup



Note: We use estimates of $\beta^q(m)$ to recover $\mu(m) = \mathcal{M}(\beta^q(m))$. $\mu(m), \beta^\mu(m)$

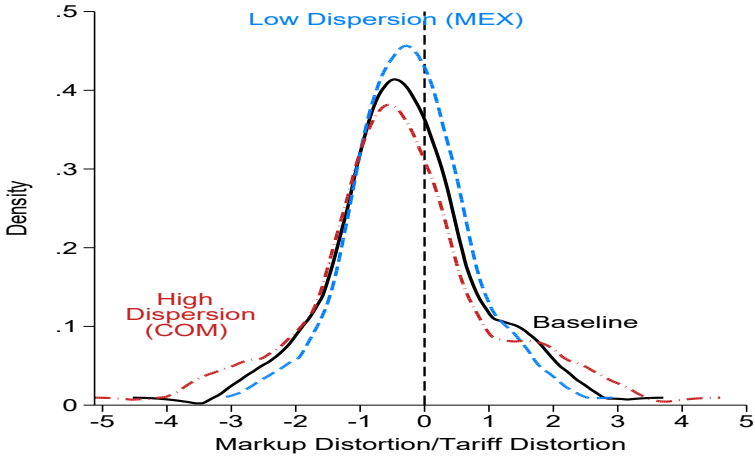
Counterfactual: Import Markup Dispersion and Tariff Incidence

77% of episodes have negative contribution of markup distortions



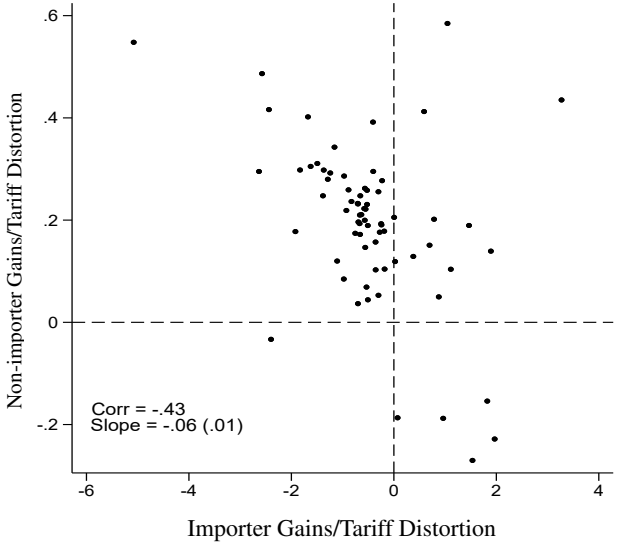
Note: Sample of 73 country-year pairs defined as liberalization episodes. P10 is -2.02, P50 is -0.41, and P90 is 1.22.

Markup distortion: more important in poorer and smaller countries



Note: Sample of 73 liberalization episodes. P10/P50/P90: Low dispersion is -1.55/-0.29/0.98, Baseline is -2.02/-0.41/1.22, High dispersion is -2.71/-0.50/1.50. Markup dispersion across countries Case study

Distributional effects: importers vs workers and non-importers



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Concluding remarks

- Importer concentration determines incidence of tariff changes
  - Dispersion of importer concentration is high and varies across countries
  - Larger importers respond less to tariff changes and, in our model, have higher markups

- Trade liberalizations: markup distortion effects are (i) sizable fraction of aggregate gains, (ii) captured by importer profits, and (iii) larger in poorer, smaller countries.

Appendix

Trade liberalizations $\Rightarrow$ Heterogeneous cost shocks across firms and goods

- Across trade liberalization episodes in our sample (defined as broad tariff declines),

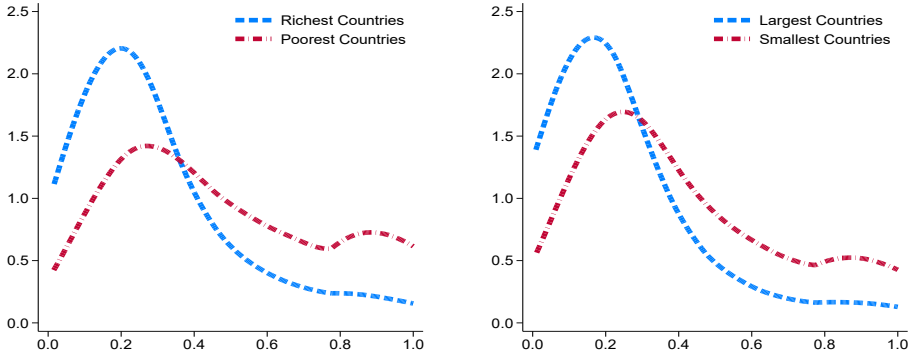
$$\text{Corr}_{\text{countries}}\left(\text{Avg}_{\text{goods}}(\Delta\text{tariff}), \text{St Dev}_{\text{goods}}(\Delta\text{tariff})\right) = -0.66$$

$$\text{Corr}_{\text{countries}}\left(\text{Avg}_{\text{goods}}(\Delta\text{tariff}), \text{St Dev}_{\text{firms}}(\Delta\text{tariff})\right) = -0.77$$

  - Variation caused by heterogeneity in tariff changes across varieties and goods
  - Current trade war is a clear example of this type of dispersion

Back

Importer firm concentration is high and varies across goods and countries



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Environment: Small open economy with oligopolistic firms

- **Small open economy** with exogenous world prices
  - **Workers:** inelastically supply $\bar{L}^D$ units of labor
  - **Owners:** operate *exogenous* discrete set of firms f supplying a variety of each good g
- **Domestic Preferences:** Nested CES across goods (elast. of η) and firms (elast. of σ)

$$q_{gf} = (p_{gf})^{-\sigma}(P_g)^{\sigma-\eta}Q \quad \text{with} \quad (P_g)^{1-\sigma} = \sum_f (p_{gf})^{1-\sigma},$$

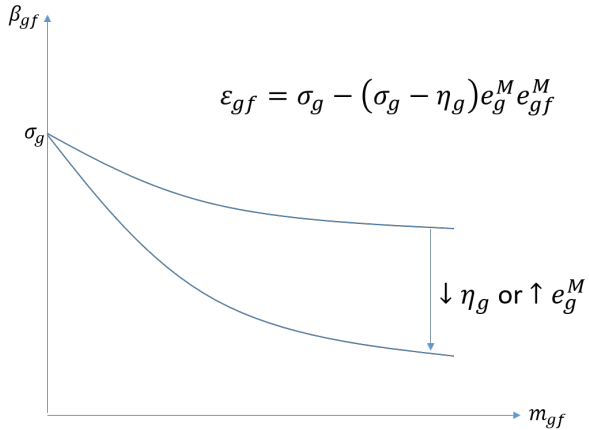
  with $Q = P^{\eta-1}E$ an aggregate demand shifter (P is price and E is spending)
- **Technology:** Two types of goods consumed domestically
  - **Imported good** g: CES across varieties v of good g, with firm f's productivity shifters

$$Y_{gf} = \left[\sum_v (a_{vgf})^{\frac{1}{\theta}}(q_{vgf})^{\frac{\theta-1}{\theta}}\right]^{\frac{\theta}{\theta-1}}$$

  - **Domestic good** g: Linear in domestic labor, $Y_{gf} = a_{gf}L^D_{gf}$

Back

Import elasticity function: baseline and extensions



- With baseline demand nests, $\sigma_g = \sigma$, $\eta_g = \eta$ and $e_g^M = 1$
- Valid with arbitrary between-good nests or domestic/importer firms in the same nest

back

Mapping from β_{gf}^{q} to μ_{gf}

- Dropping subscripts for goods,

$$\beta = \frac{\sigma}{1 + \frac{(\sigma-\varepsilon)(\sigma-1)}{\varepsilon(\varepsilon-1)}}$$

- Thus, $\mu = \mathcal{M}(\beta)$ such that

$$\mathcal{M}(\beta) \equiv \frac{\varepsilon(\beta)}{\varepsilon(\beta) - 1}$$

where

$$\varepsilon(\beta) \equiv \frac{(1-\beta)\sigma + \sqrt{((1-\beta)\sigma)^2 + 4(\sigma-\beta)\beta(\sigma-1)\sigma}}{2(\sigma-\beta)}$$

- $\beta \in (0, \sigma]$ implies $\varepsilon > 1$

Back

Expression for λ

$$\lambda \equiv \frac{(\bar{\mu}-1)(1-\bar{\mu}m)}{\eta\bar{\mu}}$$

where $m \equiv M/E$ is share of imports in domestic spending

Back

Extensions: same intuition for aggregate and distributional effects

- **Neoclassical benchmark:** Terms from Tariff Distortions and Terms of Trade Formulas
- Away from our model, slope of import elasticity with respect to m_{gf} still captures importers' market power and markup dispersion, but implementation differs
  - **Integrated labor market for all goods:** Need to account for reallocation across (distorted) firms due to labor cost changes in exporters and importers Formulas
  - **Nest with importer and domestic firms:** Slope of import elasticity identifies market share of domestic firms. Measurement needs firm-level employment. Formulas
  - **General demand:** Requires pass-through of domestic prices of importers (to measure μ_{gf}) and cross-elasticity between domestic and imported goods (to measure dq_{gf})
  - **Input-Output:** Effect on cost of domestic firms, so IO tables determine dq_{gf}

Back

Tariff distortions and Terms of Trade

- In the presence of initial tariffs,

$$\begin{aligned} dC^{\text{TD}}/M &= \sum_g \sum_f \sum_v T_{vgf} dq_{vgf} \\ &= -\chi \quad \mathbb{E}_g[\bar{\tau}_g \eta (d\log c_g - d\log c_M)] \\ &\quad -\chi \quad \mathbb{E}_g[\mathbb{E}_{f|g}[\bar{\tau}_{gf} \beta^q_{gf} (d\log c_{gf} - d\log c_g)]] \\ &\quad -\chi \quad \mathbb{E}_g[\mathbb{E}_{f|g}[\mathbb{E}_{v|f}[\bar{\tau}_v \theta (d\log p_v - d\log c_{gf})]]] \end{aligned}$$

  with $\chi \equiv \bar{\mu}(1+\bar{\tau})$

- With changes in world prices,

$$dC^{\text{ToT}}/M = \chi \mathbb{E}_g[\mathbb{E}_{f|g}[\mathbb{E}_{d|f}[d\log p^W_d] - \chi \mathbb{E}_g[\mathbb{E}_{f|g}[\mathbb{E}_{v|f}[d\log p^W_v]]]$$

Extensions Aggregate Welfare

Large Economy with Integrated Labor Markets

- Foreign supply is inelastic, but export demand is $q_{vgf} = a_{vgf}^{W}(p_{vgf})^{-\sigma^W}$
- Exporter and domestic firms use labor. Thus, $\sum_{g\in\mathcal{G}^X\cup\mathcal{G}^M}\sum_f q_{gf}/a_{gf} = \bar{L}$
- Welfare responses associated with Markup (MD) and Tariff Distortions (TD) are

$$\frac{dC^{\text{MD}}}{M} = \tilde{\chi}\frac{dC^{\text{MD}}}{M}\Big|^{\text{baseline}} + (\bar{\mu}^D - \bar{\mu}^M)\ell^D\rho d\log c$$

$$\frac{dC^{\text{MD}}}{M} = \tilde{\chi}\frac{dC^{\text{TD}}}{M}\Big|^{\text{baseline}} + \frac{\bar{\tau}}{1+\bar{\tau}}e^D\rho d\log c$$

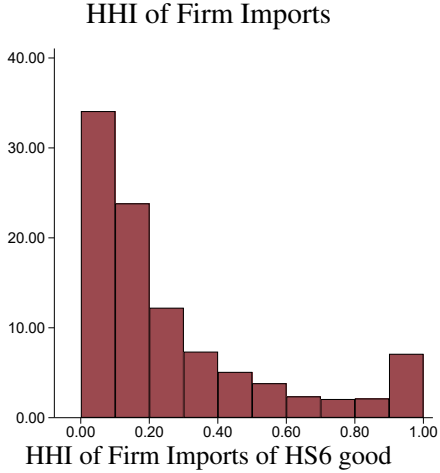
Extensions Aggregate Welfare

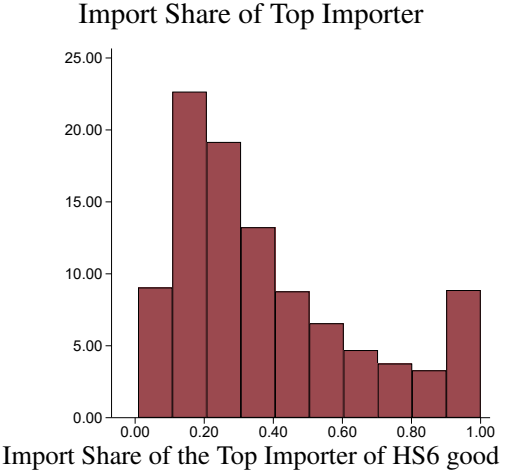
Countries and Years in Importer Database

Country	Years	Country	Years
Albania	2007 - 2021	Sri Lanka	2016 - 2021
Burundi	2010 - 2022	Morocco	2002 - 2013
Benin	2016 - 2021	Madagascar	2007 - 2021
Bangladesh	2005 - 2016	Mexico	2011 - 2021
Bulgaria	2001 - 2006	Macedonia	2008 - 2018
Botswana	2004 - 2010	Montenegro	2004 - 2020
Chile	1997 - 2021	Mauritius	2000 - 2021
Cote d'Ivoire	2000 - 2021	Malawi	2005 - 2021
Cameroon	2007 - 2017	Nepal	2011 - 2014
Colombia	1997 - 2023	Pakistan	2019 - 2022
Comoros	2016 - 2022	Peru	2000 - 2021
Cabo Verde	2010 - 2021	Paraguay	2000 - 2023
Costa Rica	2010 - 2021	Romania	2005 - 2011
Dominican Republic	2002 - 2021	Rwanda	2002 - 2016
Ecuador	2002 - 2021	Senegal	2000 - 2020
Egypt	2005 - 2016	El Salvador	2006 - 2021
Ethiopia	2012 - 2021	Serbia	2006 - 2019
Gabon	2009 - 2021	Sao Tome and Principe	2017 - 2019
Georgia	2000 - 2022	Togo	2015 - 2021
Guinea Bissau	2012 - 2018	Timor-Leste	2018 - 2023
Guatemala	2005 - 2013	Tanzania	2003 - 2021
Croatia	2007 - 2015	Uganda	2011 - 2020
Indonesia	2020 - 2020	Uruguay	2001 - 2021
India	2016 - 2023	Viet Nam	2018 - 2022
Jordan	2008 - 2021	Kosovo	2013 - 2019
Kenya	2006 - 2022	South Africa	2010 - 2021
Cambodia	2016 - 2022	Zambia	2010 - 2021
Lao PDR	2015 - 2023		

back

Distribution of import firm concentration across good-country-year





Note: Sample of 2,416,606 good-country-year observations. Each panel reports the fraction of good-country-year observations by bracket of the import firm concentration measure.

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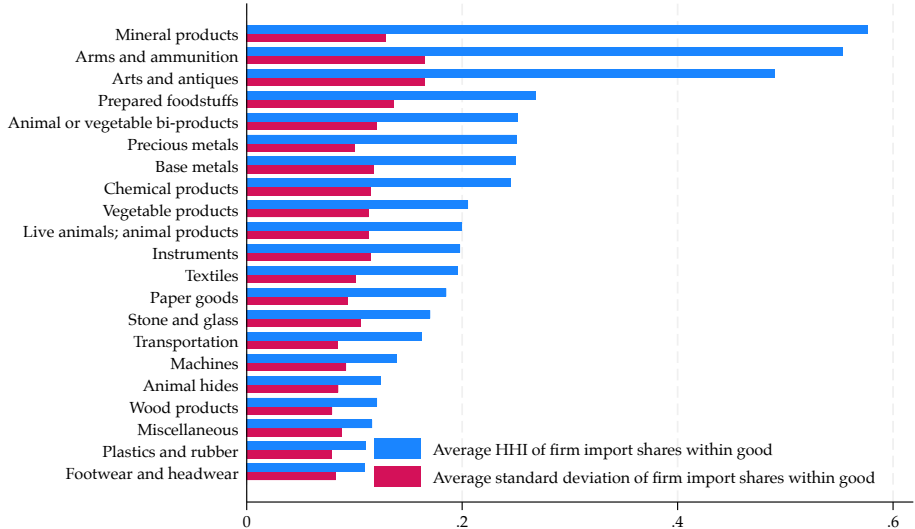
Importer Concentration by HS Section



Note: Pearson correlation: 0.87, Spearman (rank) correlation: 0.92

back

Within-Good Dispersion of Importer Concentration vs. Income/Population

	St. dev. of firm import shares				
log GDP/capita	-0.015***	-0.014***	-0.010***	-0.045***	-0.065***
	(0.001)	(0.002)	(0.002)	(0.011)	(0.016)
log Population	-0.008***	-0.008***	-0.005***	-0.032**	-0.048**
	(0.001)	(0.001)	(0.001)	(0.015)	(0.019)
log Imports		-0.001	0.004***	0.018***	0.015***
		(0.001)	(0.001)	(0.001)	(0.001)
log Importers			-0.007	-0.015	
			(0.006)	(0.011)	
log Multi-good Importers			-0.013**	-0.004	
			(0.006)	(0.011)	
R^2	0.334	0.334	0.364	0.716	0.712
Fixed Effects:					
HS6-Destination	No	No	No	Yes	Yes
HS6-Year	Yes	Yes	Yes	Yes	Yes

Note: Table reports regressions of the standard deviation of firm import shares of each HS6-country-year on the variables listed on the rows from a sample of 1,757,466 HS6-country-year observations. All regressions include HS6-year fixed effects. Observations weighted by its share of the country's imports in a given year. Standard errors clustered by country. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

back

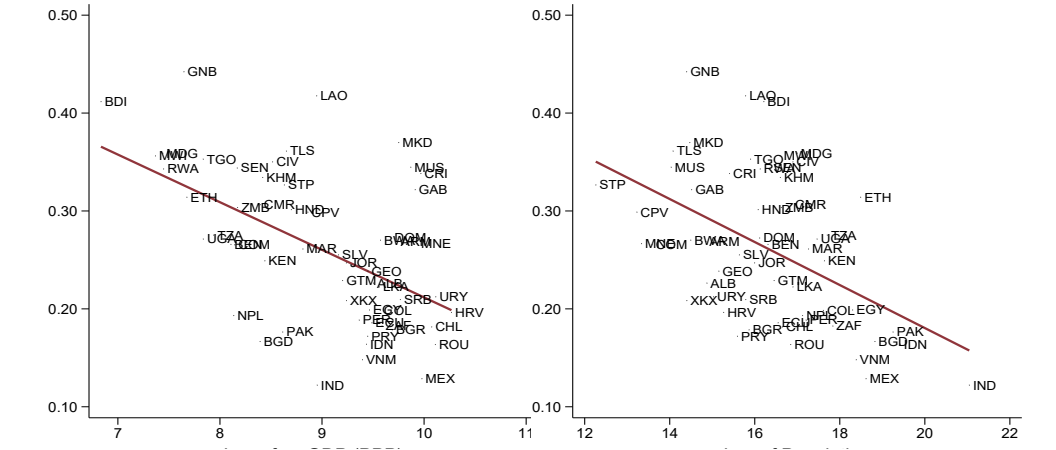
Between-Good Dispersion in Importer Concentration vs Income/Population

	St. dev. of HHI across goods		
log GDP/capita	-0.043***	-0.046***	-0.102**
	(0.004)	(0.010)	(0.048)
log Population	-0.016***	-0.018**	-0.119*
	(0.003)	(0.008)	(0.067)
log Imports		0.002	0.029
		(0.008)	(0.021)
R^2	0.472	0.472	0.754
Fixed Effects:			
Country	No	No	Yes
Year	Yes	Yes	Yes

Note: Table report regressions of the import-weighted standard deviation of HHI of a HS6 good across the subset of common HS6 goods for each country-year on log GDP per capita and log population from a sample of 704 country-year observations. All regressions include year fixed effects. Standard errors clustered by country. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

back

Average Importer Concentration Across Countries



log GDP/capita

log population

Note: Sample of 57 countries with import data between 1997 and 2022. Vertical axis is the simple average across years of the import-weighted average across HS6 goods of their HHI of firm import shares.

back

Average Importer Concentration vs. Income/Population

	HHI of firm import shares				
log GDP/capita	-0.062***	-0.068***	-0.043***	-0.074***	-0.215***
	(0.004)	(0.005)	(0.005)	(0.021)	(0.044)
log Population	-0.038***	-0.043***	-0.026***	-0.104***	-0.217***
	(0.004)	(0.004)	(0.004)	(0.034)	(0.051)
log Imports		0.006**	0.037***	0.080***	0.056***
		(0.003)	(0.004)	(0.004)	(0.004)
lop Importers			-0.026	-0.040***	
			(0.023)	(0.013)	
log Multigood Importers			-0.095***	-0.096***	
			(0.024)	(0.012)	
R^2	0.334	0.334	0.364	0.716	0.712
Fixed Effects:					
HS6-Destination	No	No	No	Yes	Yes
HS6-Year	Yes	Yes	Yes	Yes	Yes

Note: Sample of 1,757,466 HS6-country-year observations. Table shows coefficients from regressions of HHI of firm import shares in each HS6-country-year on the variables listed on the rows. All regressions include HS6-year and year fixed effects. Observations weighted by its share of the country's imports in a given year. Standard errors clustered by country. *** $p<0.01$, ** $p<0.05$, * $p<0.1$

back

Sample Summary

Country	Initial year	Final year	N. of continuing importers
BGR	2001	2007	570,586
COL	2001	2017	2,209,592
DOM	2002	2017	1,622,880
EGY	2005	2017	1,122,080
GEO	2001	2017	837,572
HRV	2007	2016	1,514,991
JOR	2008	2017	287,486
MAR	2002	2014	1,319,384
MDG	2007	2017	203,182
MKD	2008	2017	644,284
MWI	2005	2017	199,698
PER	2001	2017	2,145,866
PRY	2001	2017	709,240
ROU	2005	2012	1,686,512
SLV	2006	2017	952,836
URY	2001	2017	1,112,741
Total			17,138,930

back

Note: We define continuing importers as firms with positive imports in two consecutive years.

Tariff Change: All Countries Pooled Sample

$$\ln(1+\tau_{og,dt_f}) - \ln(1+\tau_{og,dt_0}) = \alpha \ln(1+\tau_{og,dt_0}) + \delta_d + \epsilon_{og,dt}$$

	(1)	(2)	(3)	(4)	(5)
	Dep. Var.: $\ln(1+\tau_{og,dt_f}) - \ln(1+\tau_{og,dt_0})$				
$\ln(1+\tau_{og,dt_0})$	-0.367***	-0.398***	-0.312***	-0.157***	-0.439***
	(0.026)	(0.032)	(0.028)	(0.010)	(0.042)
R-squared	0.457	0.506	0.441	0.372	0.494
Observations	840,351	840,344	730,464	729,124	432,047

back

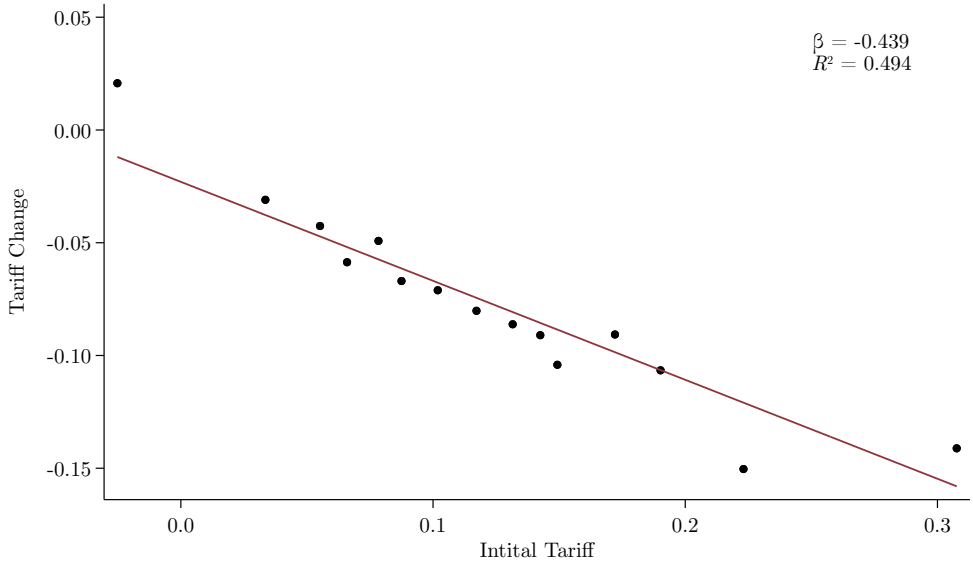
Tariff Change: Country Specific α_d

$$\ln(1+\tau_{og,dt_f}) - \ln(1+\tau_{og,dt_0}) = \alpha \ln(1+\tau_{og,dt_0}) + \delta_d + \epsilon_{og,dt}$$

	(1) α_d	(2) SE	(3) Correlation
BGR	-0.155	0.006	-0.321
COL	-0.486	0.009	-0.590
DOM	-0.123	0.006	-0.204
EGY	-0.151	0.040	-0.361
GEO	-0.716	0.066	-0.806
HRV	-0.695	0.011	-0.779
JOR	-0.177	0.017	-0.339
MAR	-0.616	0.007	-0.771
MKD	-0.161	0.006	-0.410
MWI	-0.083	0.008	-0.156
PER	-0.604	0.006	-0.691
PRY	-0.101	0.005	-0.199
ROU	-0.826	0.006	-0.937
SLV	-0.213	0.008	-0.637
URY	-0.082	0.003	-0.176

back

Initial tariffs and tariff changes

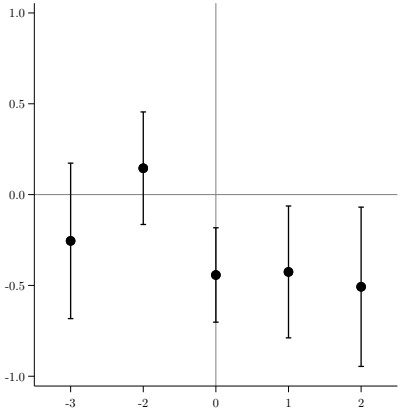


Between-origin elasticity of firm imports to tariff changes, θ

$$\Delta^h \log M_{ogf,dt} = \theta^h \Delta^0 \log(1 + \tau_{og,dt}) + \delta^h_{og,dt} + \phi^h_{gf,dt} + \epsilon^h_{ogf,dt}$$

Between-origin elasticity of firm imports to tariff changes, θ

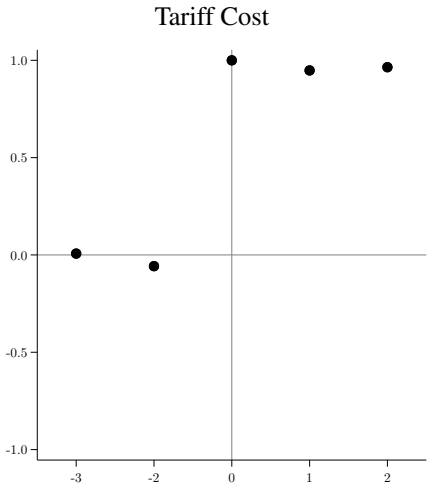
$$\Delta^h \log M_{ogf,dt} = \theta^h \Delta^0 \log(1 + \tau_{og,dt}) + \delta^h_{og,dt} + \phi^h_{gf,dt} + \epsilon^h_{ogf,dt}$$



Note: Sample of 22,624,698 origin-HS6-firm-destination-year observations. Bars are 95CI clustered by origin-good and destination-good.

Tariff Cost Unit Import Value back

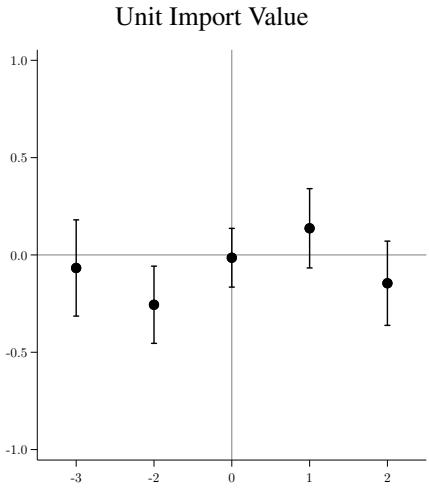
Between-origin elasticity of firm imports to tariff changes



Note: Sample of 28,868,922 origin-HS6-firm-destination-year observations. Bars are 95CI clustered by origin-good and destination-good.

back

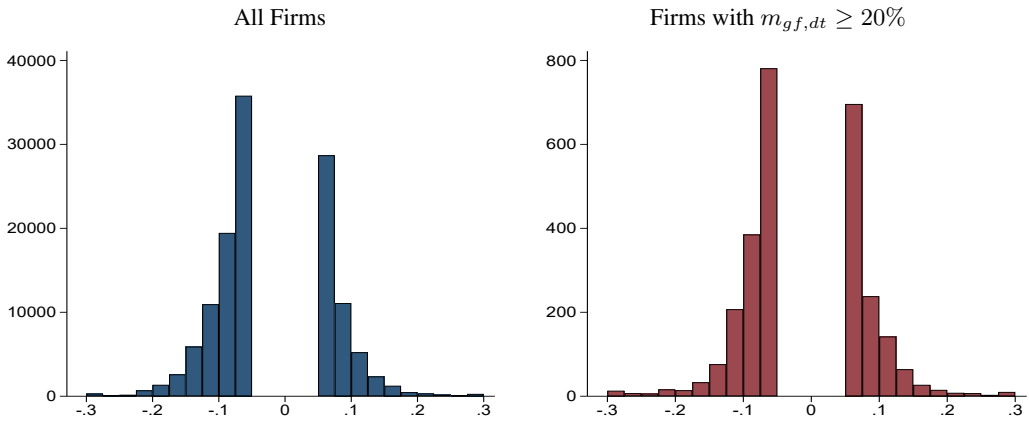
Between-origin elasticity of firm imports to tariff changes



Note: Sample of 20,997,941 origin-HS6-firm-destination-year observations. Bars are 95CI clustered by origin-good and destination-good.

back

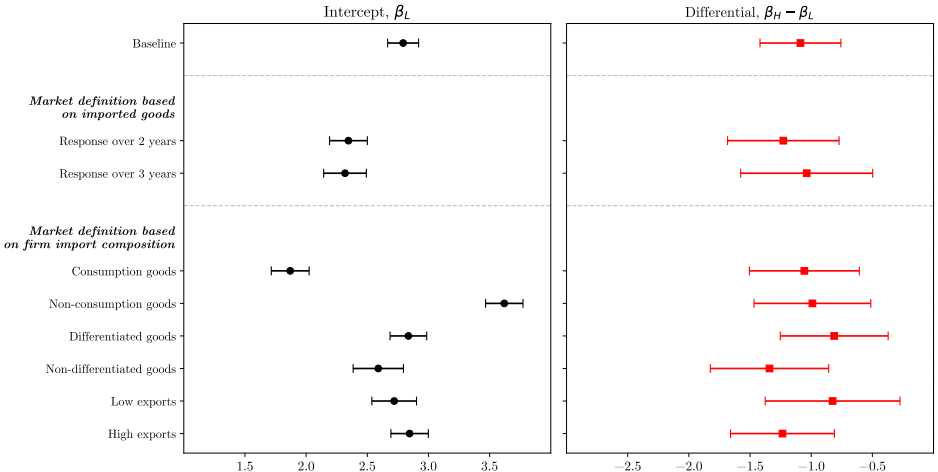
Frequency Distribution of Changes in Average Tariff Costs, $\Delta \log c_{gf,dt}$



Note: *Left:* frequency distribution for the 127,156 firm-good-destination-year observations whose value of the residualized $\Delta \log c_{gf,dt}$ is greater than 5% or smaller than -5%. *Right:* analogous frequency distribution but restricted to the subset of 2,748 observations whose share of the destination's imports of the good exceeds 20%. Bin at 0.3 is $\geq .3$; bin at $-.3$ is $\leq -.3$

back

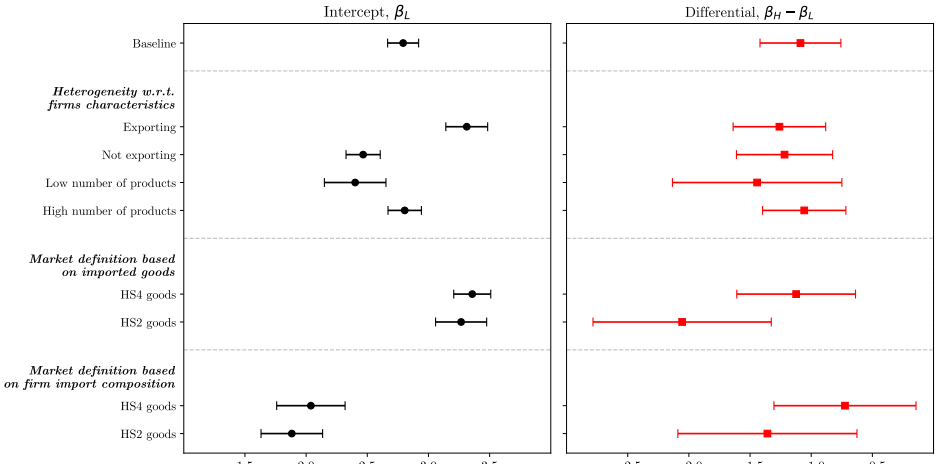
Alternative specifications



$\beta(m_{gf}) = \beta_L \cdot D_L + \beta_H \cdot D_H$, with $D_H = 1[m_{gf} > c]$ with $c = 0.1$ for all specifications. Bars are 90CI clustered by firm-good-destination and good-destination-year.

back

Alternative specifications

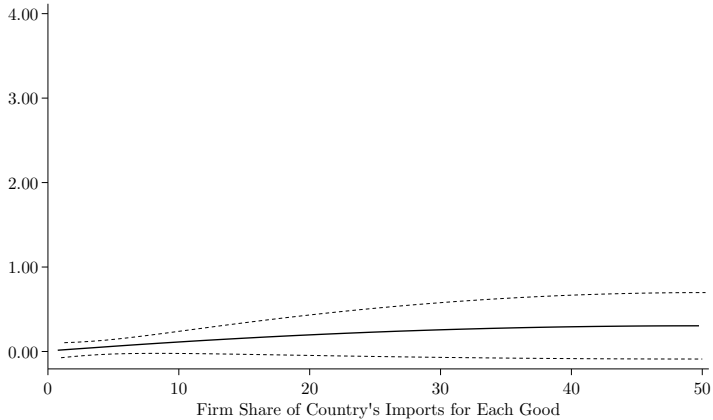


$\beta(m_{gf}) = \beta_L \cdot D_L + \beta_H \cdot D_H$, with $D_H = 1[m_{gf} > c]$ with $c = 0.1$ for all specifications and $c = 0.05$ for HS2 goods. Bars are 90CI clustered by firm-good-destination and good-destination-year.

back

Firm's elasticity of world price to tariff changes, $\beta^W(m)$

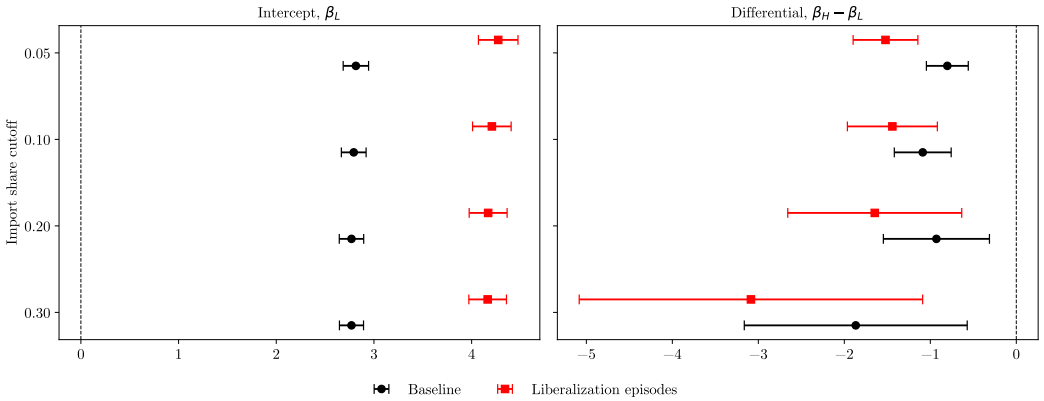
$$\Delta \log p^W_{gf,dt} = -\beta^q(m_{gf,dt})(\Delta \log c_{gf,dt} - \zeta_{g,dt}) + \delta_{g,dt} + \phi_{f,dt} + \epsilon_{gf,dt}$$



Firm Share of Country's Imports for Each Good

Note: Sample of 15,060,828 firm-good-destination-year observations. Dashed lines are 95CI clustered by firm-good-destination and good-destination-year. back

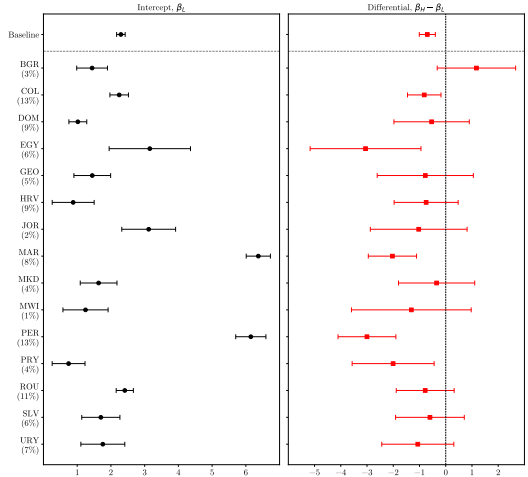
Alternative estimation Sample



$\beta(m_{gf}) = \beta_L \cdot D_L + \beta_H \cdot D_H$, $D_H = 1[m_{gf} > c]$ for c in vertical axis. Bars are 90CI clustered by firm-good-destination and good-destination-year.

back

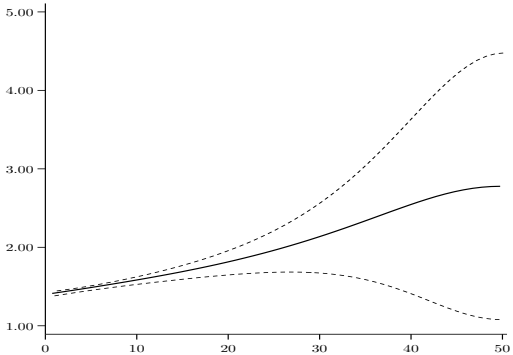
Firm Import Elasticity by Country



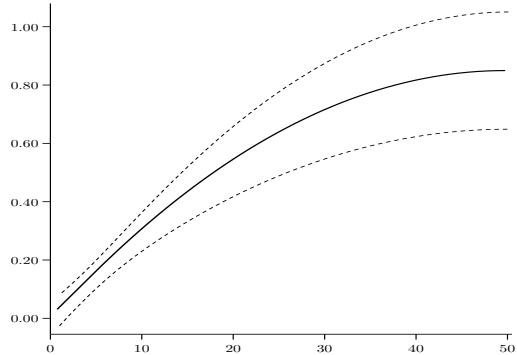
$\beta(m_{gf}) = \beta_L \cdot D_L + \beta_H \cdot D_H$, $D_H = 1[m_{gf} > c]$ for $c = 0.10$. Bars are 90CI clustered by firm-good-destination and good-destination-year.

Domestic Markup of Importer Firms

Markup, $\mu(m)$



Markup Elasticity, $\beta^{\mu}(m)$



Firm Share of Country's Imports for Each Good

back

Between-good elasticity of imports to tariff changes, η

$$\Delta \log M_{g,dt} = -\eta \Delta \log c_{g,dt} + \zeta_{dt} + \epsilon_{g,dt}$$

where $\Delta \log M_{g,dt}$ is the average markup-adjusted import change across importers of g

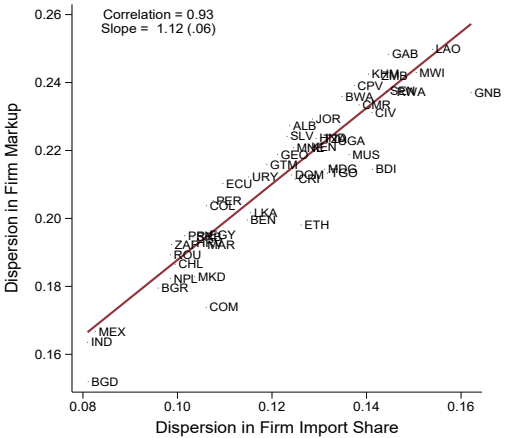
	(1)	(2)	(3)
	1.855	2.052	2.119
	(0.379)	(0.349)	(0.371)
R^2	0.038	0.061	0.092
Fixed Effects:			
Country-Year	Yes	No	No
Country-Year-HS2	No	Yes	No
Country-Year-HS4	No	No	Yes

Note: Table reports estimates of elasticity of substitution across HS6 products, η, from equations (21) with country-year fixed effects (column 1) and (21) with fixed effects for country-year-HS2 (column 2) and country-year-HS4 (column 3) from sample of 787,750 good-destination-year observations. Standard errors in parentheses clustered by good-destination.

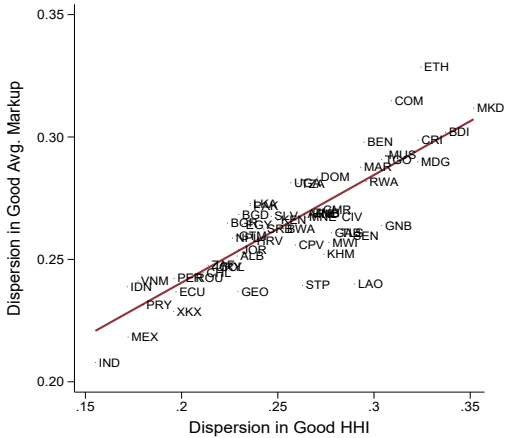
back

Initial conditions: Dispersion in markups and importer firm concentration

Within-Good Dispersion



Between-Good Dispersion

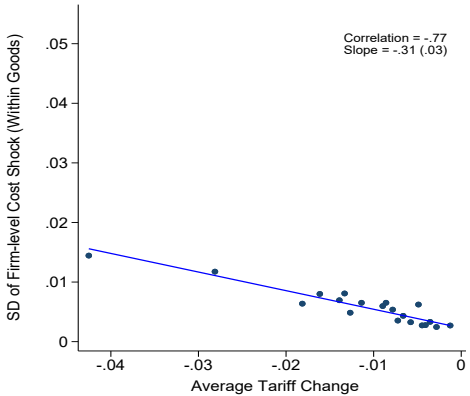


Note: Sample of 57 countries with import data between 1997 and 2022.

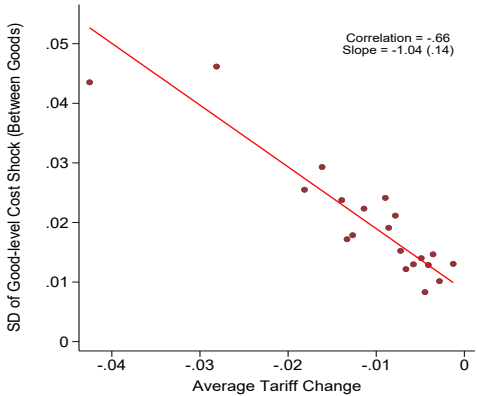
back

Trade liberalization episodes: Dispersion in tariff cost changes

Within-Good Dispersion



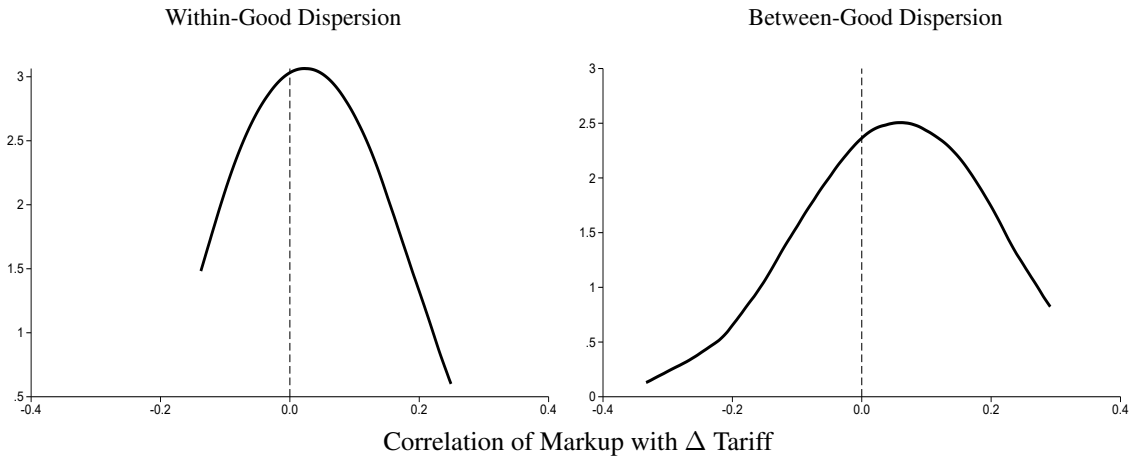
Between-Good Dispersion



Note: Binscatter plot in sample of 73 country-year pairs defined as liberalization episode.

back

Correlation of Markups and Import Cost Changes



Note: Sample of 73 country-year pairs defined as liberalization episodes.

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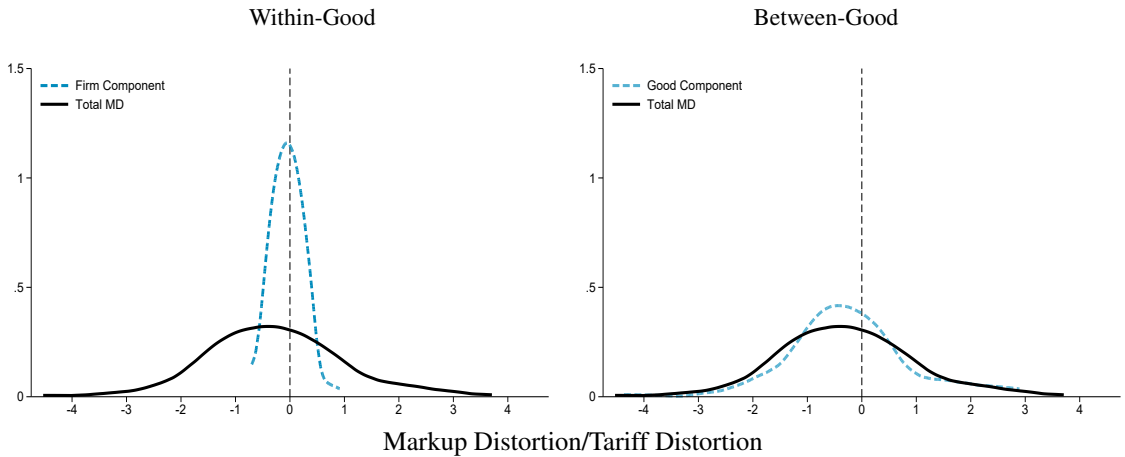
Components of markup distortion effect: goods vs firms



Note: Sample of 73 country-year pairs defined as liberalization episodes.

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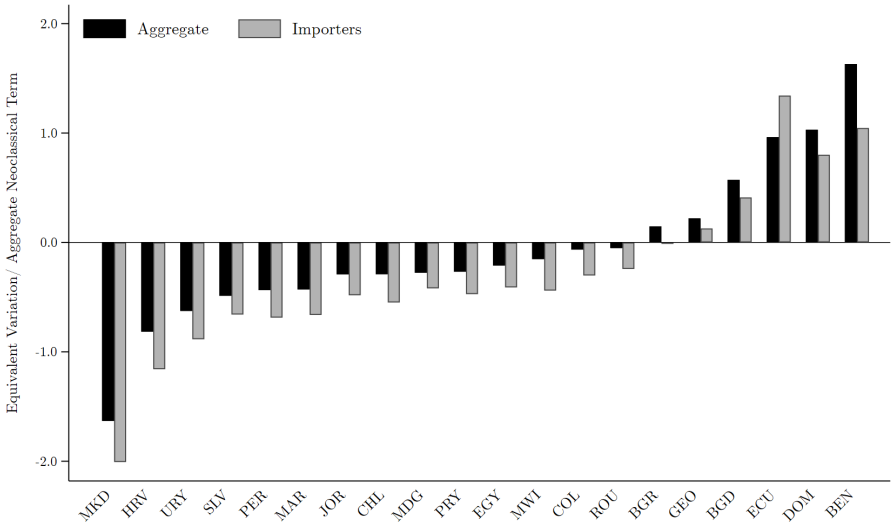
Markup distortion can be large, but it mostly affects importer real profits



Note: Bar chart of 21 countries with at least one year defined as a trade liberalization episode.

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Moments of Markup Distortions

	p10	p50	p90	sd
Baseline	-1.747	-0.225	1.543	1.379
High dispersion	-2.019	-0.303	1.814	1.734
Low dispersion	-1.284	-0.184	1.123	1.059

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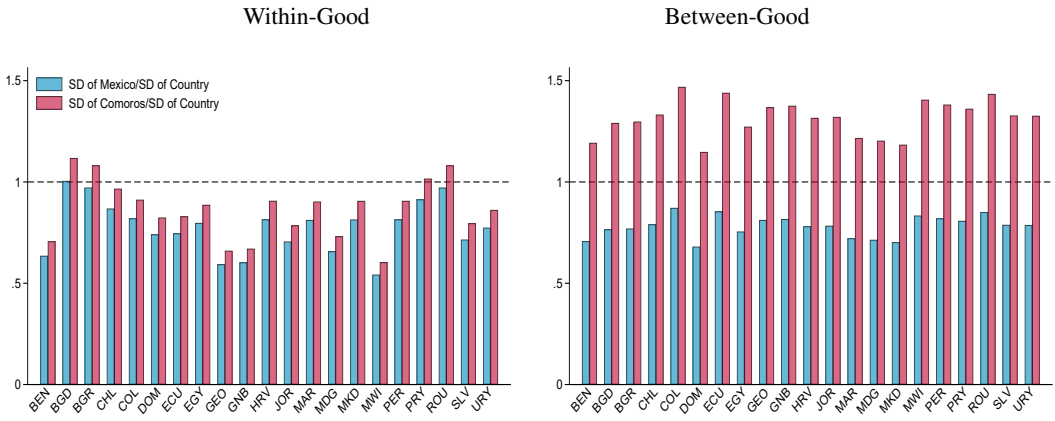
Ratio of Markup Distortion Dispersions Across Countries



Note: Bar chart of 21 countries with at least one year defined as a trade liberalization episode.

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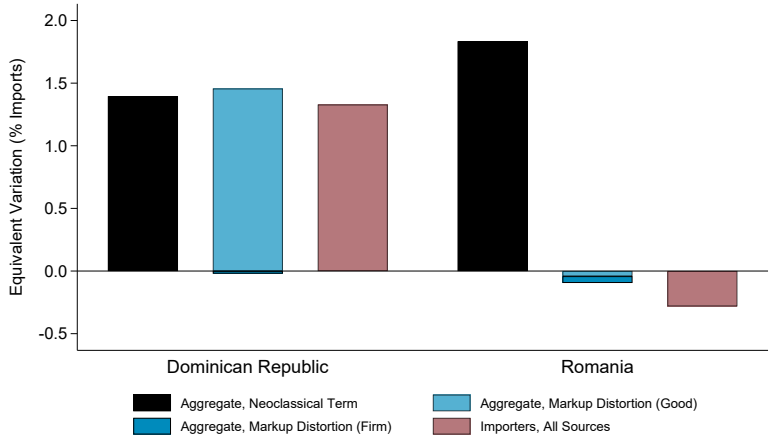
Aggregate Effect: Dominican Republic (CAFTA-DR) & Romania (EU)



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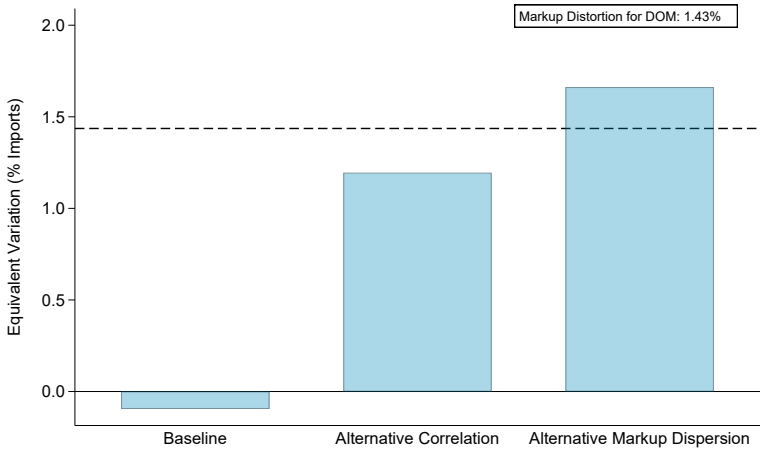
What if Romania had the Dominican Republic's Dispersion and Correlation of Import Cost Changes and Initial Importer Concentration?



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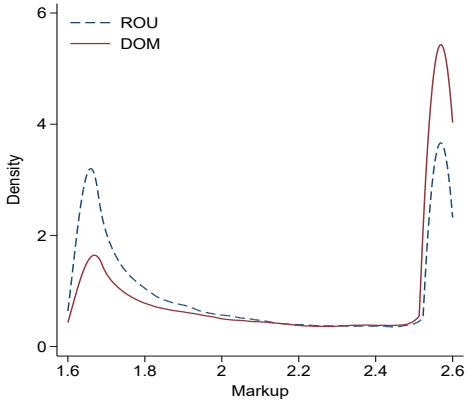
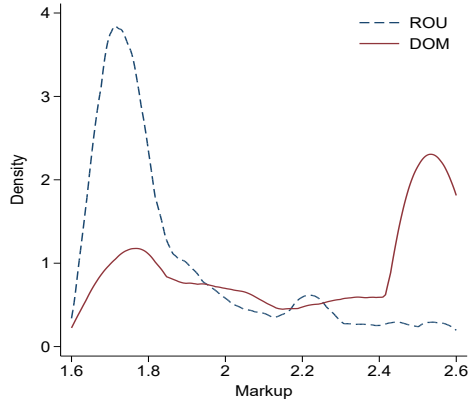
Case Study: Dominican Republic (CAFTA-DR) & Romania (EU)

Both episodes had large tariff declines, but had very different initial conditions.

Distribution of μ_{gf}

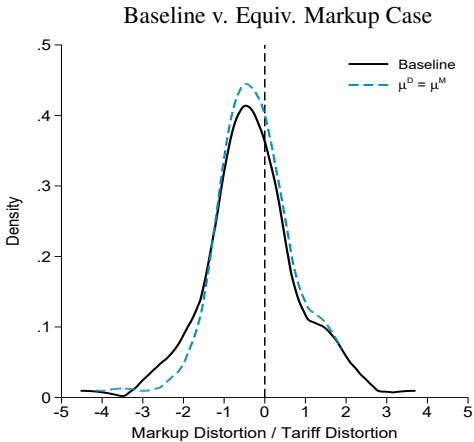


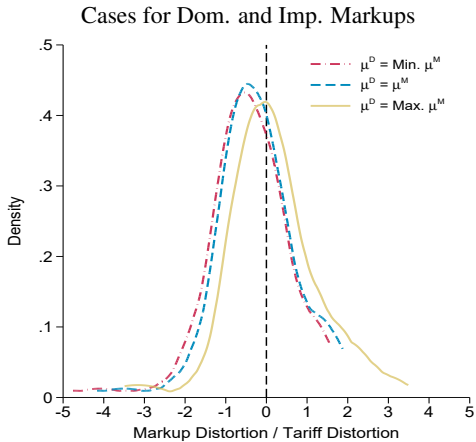
Distribution of $\bar{\mu}_g$



Note: Sample of 800,467 (4,004) firm-product (products) pairs for Romania in 2006 and 327,174 (3,577) for the Dominican Republic in 2005. back

Markup Distortion with Domestic/Importer Reallocation





Note: Sample of 73 country-year pairs defined as liberalization episode. P10/P50/P90: Minimum markup is -1.61/-0.46/0.85, Equivalent Markup is -1.42/-0.36/0.96, Maximum markup is -1.00/-0.08/1.71. back