Protectionism Unchained: Determinants and Consequences of Discretionary Trade Policy in Argentina

David Atkin Joaquin Blaum
Pablo Fajgelbaum Augusto Ospital

MIT, BU, UCLA, UCLA

July 2022

Motivation

- Numerous accounts of discretionary trade policies that favor or punish particular firms or sectors
  - "Discretionary": activist trade policy that "judges each situation on a case by case basis" (Staiger and Tabellini 89)
  - E.g. differential enforcement of regulation, subsidies, local content restrictions, tariff exemptions, import licenses (Ederington and Ruta 16)
  - Used as part of globalization backlash (Colantone et al. 21)

- Difficult to estimate determinants and consequences of these policies:
  - Governments typically do not publicize them (e.g., illegal under WTO)
  - Even then, hard to measure size of non-tariff barriers

- Aggregate effects of trade policy depend on terms of trade, yet still little evidence of price effects (Goldberg and Pavcnik 16), particularly
  - Due to non-tariff barriers (arguably more common than tariff barriers)
  - From less-developed countries whose firms may be disadvantaged (Antras 20)

Motivation

- Numerous accounts of discretionary trade policies that favor or punish particular firms or sectors
  - "Discretionary": activist trade policy that "judges each situation on a case by case basis" (Staiger and Tabellini 89)
  - E.g. differential enforcement of regulation, subsidies, local content restrictions, tariff exemptions, import licenses (Ederington and Ruta 16)
  - Used as part of globalization backlash (Colantone et al. 21)

- Difficult to estimate determinants and consequences of these policies:
  - Governments typically do not publicize them (e.g., illegal under WTO)
  - Even then, hard to measure size of non-tariff barriers

- Aggregate effects of trade policy depend on terms of trade, yet still little evidence of price effects (Goldberg and Pavcnik 16), particularly
  - Due to non-tariff barriers (arguably more common than tariff barriers)
  - From less-developed countries whose firms may be disadvantaged (Antras 20)

This Project

Study an episode of discretionary trade policy in Argentina 2012-2015:

1. Unusual policy experiment: every import transaction required explicit approval
   - Data on universe of trade transactions requested, denied, and approved

2. Identify *firm and sector level* determinants of these discretionary trade policies; Macro imbalances related to the level and dispersion of protection

3. Did these quantitative restrictions improve terms of trade?
   - Restrictions increased import (border) prices
   - Counter to competitive trade models, consistent with foreign market power

4. Rationalize results through model of import-export bargaining and use it for quantitative assessment (preliminary):
   - Domestic bargaining power identified from the price responses to policy
   - Ability to manipulate ToT critically depends on bargaining power

This Project

Study an episode of discretionary trade policy in Argentina 2012-2015:

1. Unusual policy experiment: every import transaction required explicit approval
   - Data on universe of trade transactions requested, denied, and approved

2. Identify *firm and sector level* determinants of these discretionary trade policies; Macro imbalances related to the level and dispersion of protection

3. Did these quantitative restrictions improve terms of trade?
   - Restrictions increased import (border) prices
   - Counter to competitive trade models, consistent with foreign market power

4. Rationalize results through model of import-export bargaining and use it for quantitative assessment (preliminary):
   - Domestic bargaining power identified from the price responses to policy
   - Ability to manipulate ToT critically depends on bargaining power

This Project

Study an episode of discretionary trade policy in Argentina 2012-2015:

1. Unusual policy experiment: every import transaction required explicit approval
   - Data on universe of trade transactions requested, denied, and approved

2. Identify *firm and sector level* determinants of these discretionary trade policies; Macro imbalances related to the level and dispersion of protection

3. Did these quantitative restrictions improve terms of trade?
   - Restrictions increased import (border) prices
   - Counter to competitive trade models, consistent with foreign market power

4. Rationalize results through model of import-export bargaining and use it for quantitative assessment (preliminary):
   - Domestic bargaining power identified from the price responses to policy
   - Ability to manipulate ToT critically depends on bargaining power

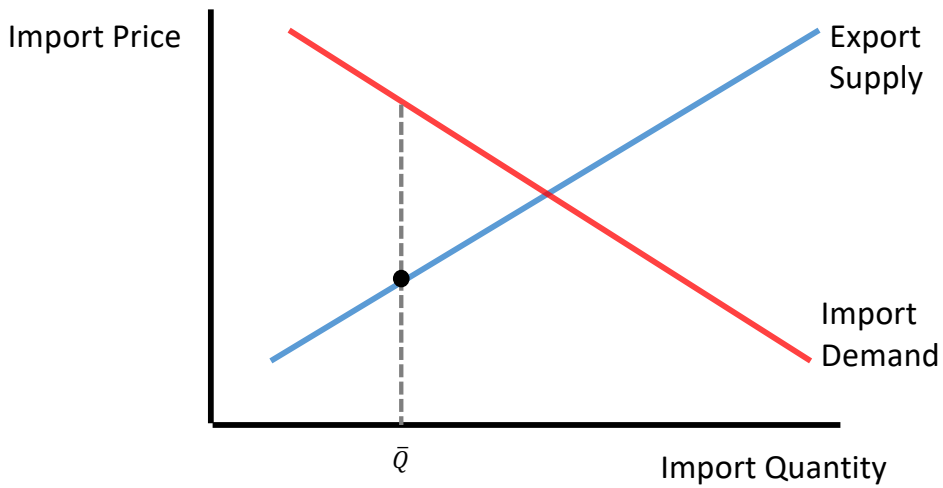
This Project

Study an episode of discretionary trade policy in Argentina 2012-2015:

1. Unusual policy experiment: every import transaction required explicit approval
   - Data on universe of trade transactions requested, denied, and approved

2. Identify *firm and sector level* determinants of these discretionary trade policies; Macro imbalances related to the level and dispersion of protection

3. Did these quantitative restrictions improve terms of trade?
   - Restrictions increased import (border) prices
   - Counter to competitive trade models, consistent with foreign market power



This Project

Study an episode of discretionary trade policy in Argentina 2012-2015:

1. Unusual policy experiment: every import transaction required explicit approval
   - Data on universe of trade transactions requested, denied, and approved

2. Identify *firm and sector level* determinants of these discretionary trade policies; Macro imbalances related to the level and dispersion of protection

3. Did these quantitative restrictions improve terms of trade?
   - Restrictions increased import (border) prices
   - Counter to competitive trade models, consistent with foreign market power

4. Rationalize results through model of import-export bargaining and use it for quantitative assessment (preliminary):
   - Domestic bargaining power identified from the price responses to policy
   - Ability to manipulate ToT critically depends on bargaining power

Related Literature

- Trade shocks and policies in Argentina
  - Gopinath Neiman 14, Conconi Schepel 17, Bernini Lembergman 20
- Determinants of Protection
  - Large literature, summarized by Rodrik 95, Gawande Krishna 03
  - Firm-level trade policies: Grant 20 (SEZ), Kim Yoon 22 (Trump Tariffs Exemptions)
- Price effects of trade policy
  - Tariffs: Feenstra 89, Hummels Skiba 04, Romalis 07, Irwin 14 , De Locker et al. 15
  - Quotas: Goldberg 95, Winkelmann Winkelmann 98, Khandelwal et al. 13
  - 2018-2020 Trade War: Amiti et al. 19, Fajgelbaum et al. 20, Flaaen et al. 20, Cavallo et al. 21,...
- Trade with imperfect competition
  - Strategic trade policy: Brander Spencer 84, Eaton Grossman 86
  - Quotas and VERs: Bhagwati 65, Shibata 68, Helpman Krugman 89, Krishna 89, Feenstra Lewis 91, Bagwell Staiger 95,...
  - Bargaining: Ornelas Turner 08, Antras Staiger 12, Bernard Dhingra 19, Grossman Helpman 20, Alviarez et al. 22
  - Price Discrimination: Meleshchuk 17
  - Developing vs developed countries: Antras 20, WDR 20

Trade Policy in Argentina: 2012-2015

- Stagnating economy, external imbalances, currency controls more
  - Trade restrictions on small number of sectors started in 2009
- In February of 2012, new regulations to importing (DJAI system):
  - *Applied to all products*
  - Firms had to request authorization in advance of goods reaching customs (granted request valid for 6 months)
  - Foreign currency only cleared for granted requests
  - Government could block the request at their discretion (no formal rules)
  - Guidelines for appeals introduced informally to trade associations
- Stated goals of the policy:
  - Trade balance, import substitution, domestic prices, investment more
- DJAI system ended when opposition party unexpectedly won presidency in November 2015

Requests and Approvals

Transaction-Level Descriptive Statistics

- Rejections were frequent (30%), almost all full

	During DJAI (2012-15)	Post DJAI (2016-17)
Requests per year	3,413,878	2,623,489
Requests fully approved	69.5%	98.1%
Requests partially approved	1.3%	0.2%
Requests fully rejected	29.2%	1.7%
Total value approved	63.5%	89.5%

Variation in Policy Across Sectors and Firms

- Firm identities explain greater fraction of variation in approval rates (value approved/value requested) than granular products do

	During DJAI	Post DJAI
Total sum of squares	1,968,648	47,986
Fraction explained by:		
Firm IDs (μ_f)	24.58%	10.58%
Product IDs (μ_i)	2.20%	8.46%

Note: Sample restricted to largest connected set (99% of firms and products)

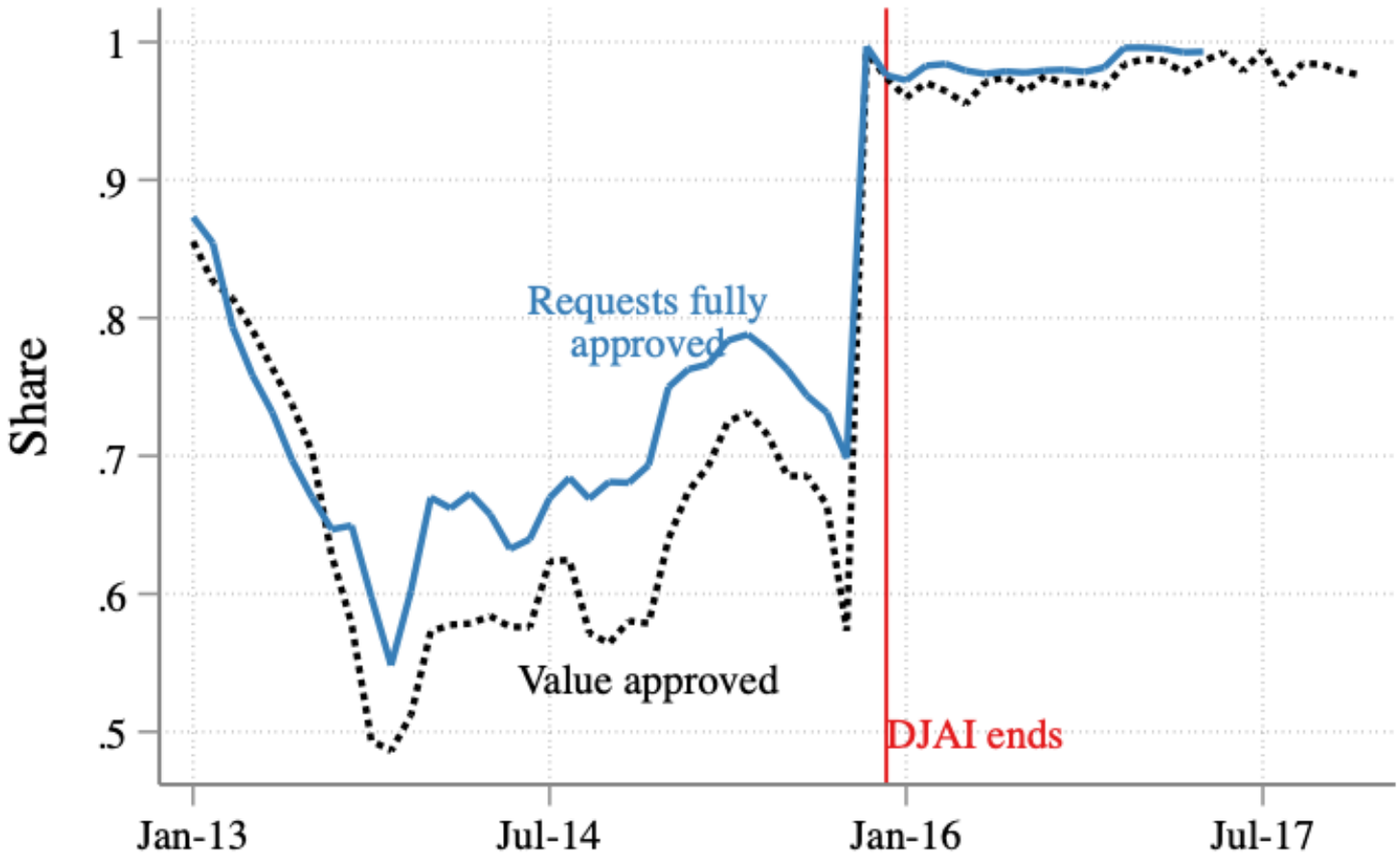
Approval Rates and Firm and Sectoral Characteristics

- Both traditional and interventionist motives predict approval rates

		Approval Rate over DJAI Period
Firm-level characteristic	$\mathbb{1}\{$Capital importer$\}$	0.090*** (0.001)
	$\mathbb{1}\{$Exporter$\}$	0.086*** (0.001)
	$\mathbb{1}\{$Domestically owned$\}$	-0.069*** (0.001)
	log(Revenue)	-0.011*** (0.000)
	log(Employees)	0.018*** (0.000)
	$\mathbb{1}\{$Revenue missing$\}$	-0.236*** (0.003)
	$\mathbb{1}\{$Employment missing$\}$	0.090*** (0.002)
Sector-level characteristic (of imported good)	Fraction of capital importers	0.035*** (0.003)
	Fraction of exporters	0.192*** (0.003)
	Fraction domestically owned	0.011*** (0.002)
	log(Total revenue)	-0.012*** (0.001)
	log(Total employment)	0.022*** (0.001)
Observations		990,982
R^2		0.142
F-statistic		11,083.5

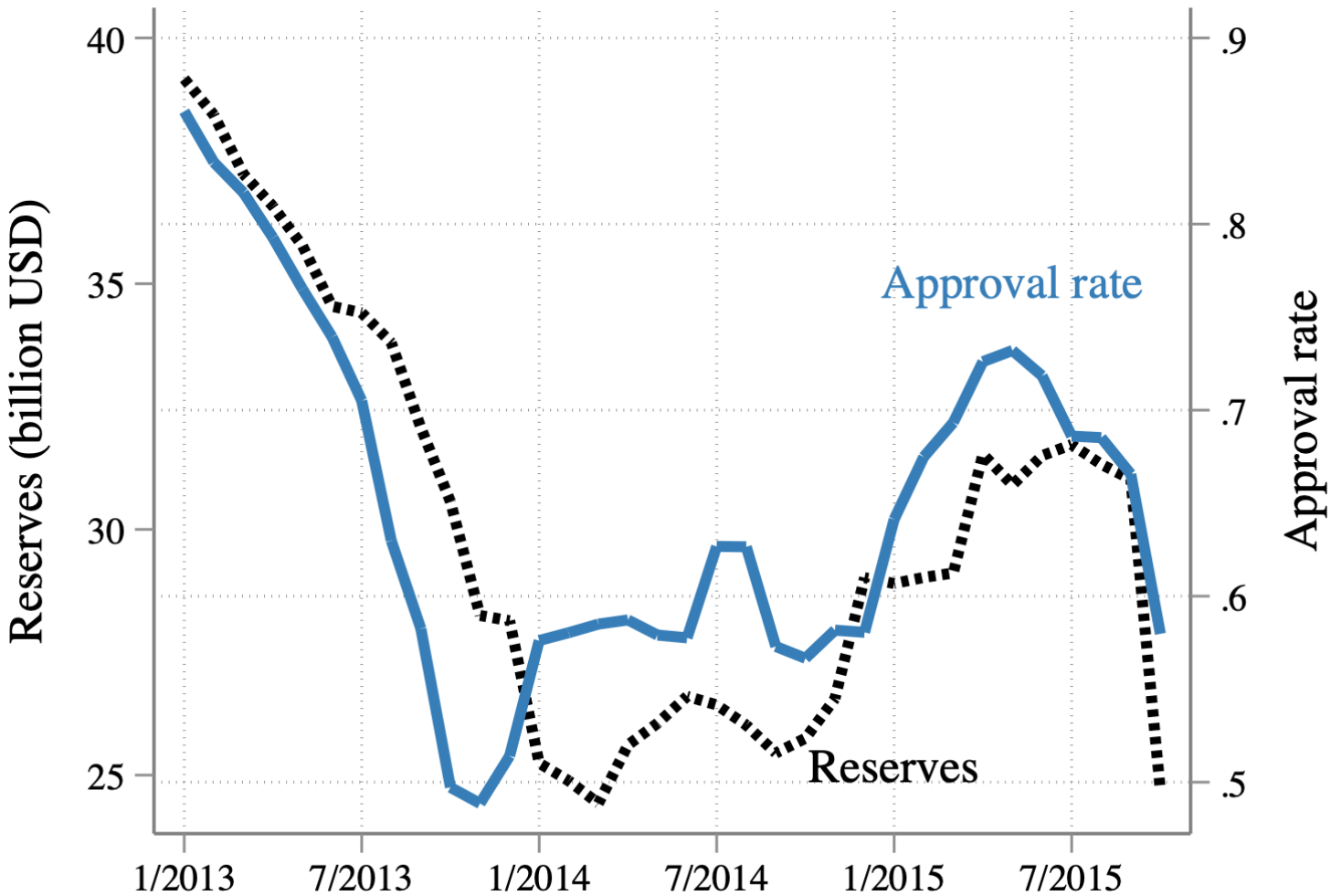
Requests and Approvals Over Time

- Substantial variation in the share of requests and value approved within the DJAI period



Approvals and Foreign Currency Reserves During DJAI

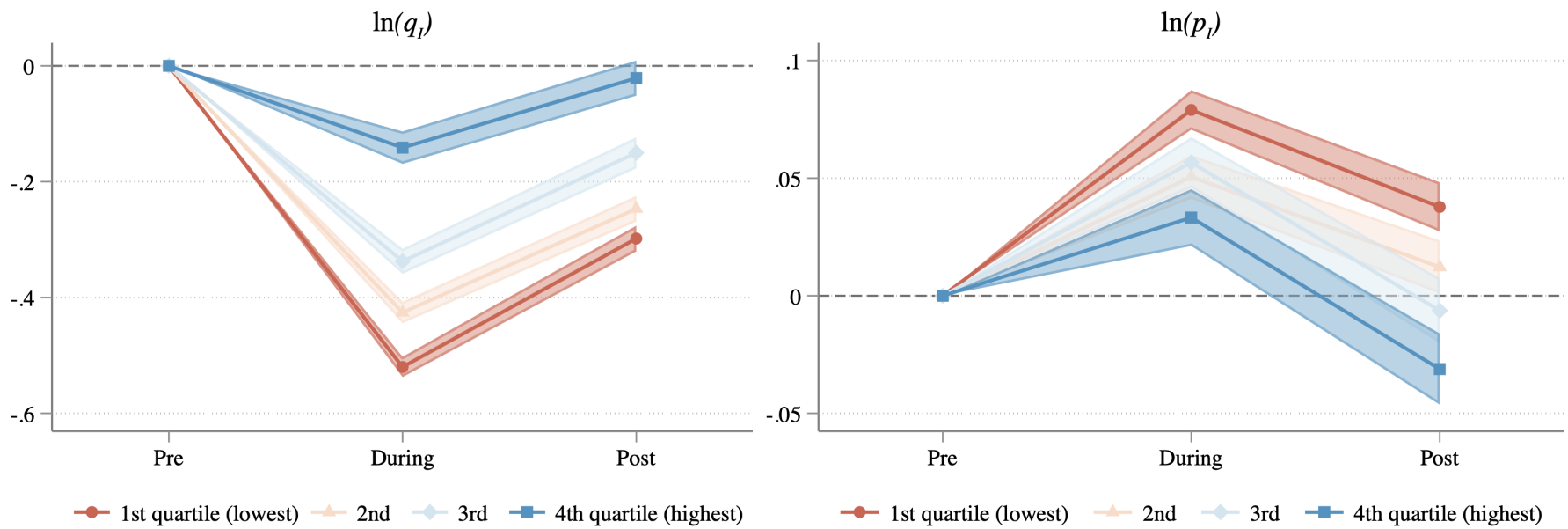
- Strong co-movement between the fraction of value approved and international reserves



Did DJAI-Induced Quantity Restrictions Raise Prices?

Prices and Quantities by Approval Rate Quartile

$$\ln y_{fit} = \mu_t^{Q1AR} + \mu_t^{Q2AR} + \mu_t^{Q3AR} + \mu_t^{Q4AR} + \mu_{fi} + \varepsilon_{fit}$$

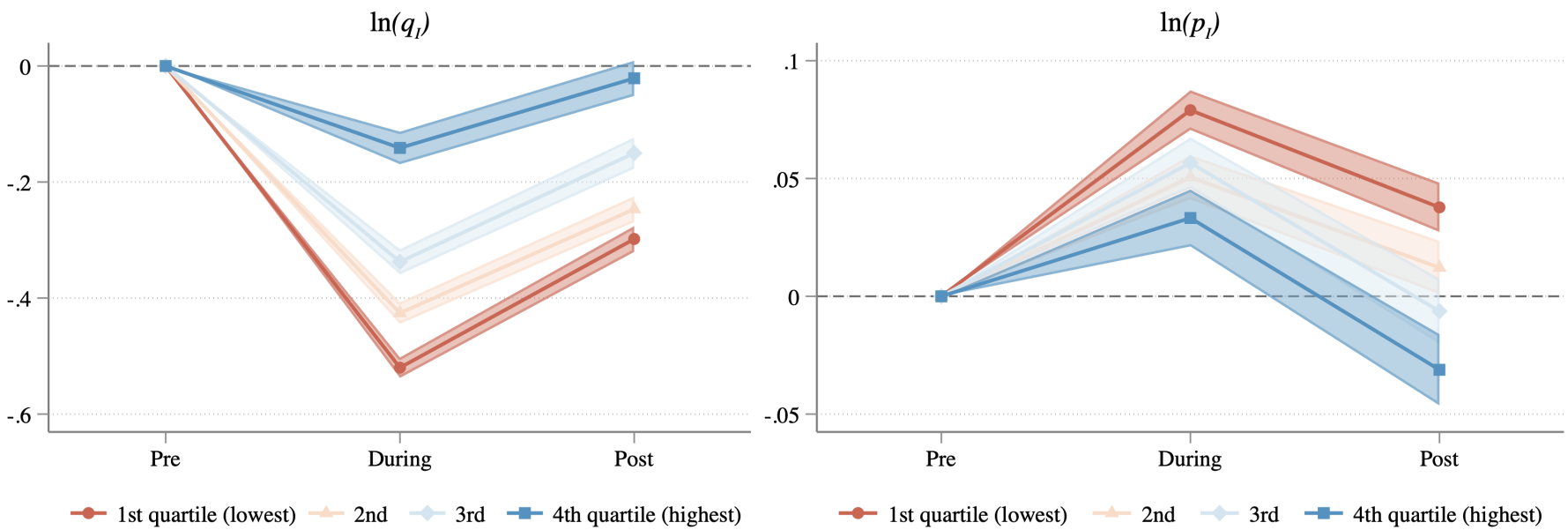


- Terms of Trade worsening with quantity restrictions? Export Prices

Did DJAI-Induced Quantity Restrictions Raise Prices?

Prices and Quantities by Approval Rate Quartile

$$\ln y_{fit} = \mu_t^{Q1AR} + \mu_t^{Q2AR} + \mu_t^{Q3AR} + \mu_t^{Q4AR} + \mu_{fi} + \varepsilon_{fit}$$



- Terms of Trade worsening with quantity restrictions? Export Prices

Instrumenting for DJAI Quantity Restrictions

- Twin determinants of trade policy: reserves and strategic policy preferences over firms-sectors
  - If objectives conflict, targeting may change?

	ΔAR_{fit}
$\Delta \ln(Reserves_t) \times \widehat{AR}_{fh}^{\text{H1-13}}$	0.064^{***}
	(0.014)
Half-year (t) FE	Yes
Firm-product (fi) FE	Yes
Observations	709,107
F-stat	16.8

- Consistent with govt. having ordering of which firms to target, going further down list to initially-favored firms when reserves scarce

Instrumenting for DJAI Quantity Restrictions

- Twin determinants of trade policy: reserves and strategic policy preferences over firms-sectors
  - If objectives conflict, targeting may change?

	ΔAR_{fit}
$\Delta \ln(Reserves_t) \times \widehat{AR}_{fh}^{\text{H1-13}}$	0.064^{***}
	(0.014)
Half-year (t) FE	Yes
Firm-product (fi) FE	Yes
Observations	709,107
F-stat	16.8

- Consistent with govt. having ordering of which firms to target, going further down list to initially-favored firms when reserves scarce

Instrumenting for DJAI Quantity Restrictions

- Twin determinants of trade policy: reserves and strategic policy preferences over firms-sectors
  - If objectives conflict, targeting may change?

	ΔAR_{fit}
$\Delta \ln(Reserves_t) \times \widehat{AR}_{fh}^{\text{H1-13}}$	0.064^{***}
	(0.014)
Half-year (t) FE	Yes
Firm-product (fi) FE	Yes
Observations	709,107
F-stat	16.8

- Consistent with govt. having ordering of which firms to target, going further down list to initially-favored firms when reserves scarce

Did DJAI-Induced Quantity Restrictions Raise Prices?

$$\Delta \ln(p_{fit}) = \beta_0 + \beta \Delta \ln(q_{fit}) + \mu_{fi} + \gamma_t + e_{fit}$$

$$\text{1st Stage:} \quad \Delta \ln(q_{fit}) = \delta \Delta \ln(Reserves_t) \times \widehat{AR}_{fh}^{H1\text{-}13} + \mu_{fi} + \gamma_t + v_{fit}$$

Did DJAI-Induced Quantity Restrictions Raise Prices?

$$\Delta \ln(p_{fit}) = \beta_0 + \beta \Delta \ln(q_{fit}) + \mu_{fi} + \gamma_t + e_{fit}$$

$$\text{1st Stage:} \quad \Delta \ln(q_{fit}) = \delta \Delta \ln(Reserves_t) \times \widehat{AR}_{fh}^{\text{H1-13}} + \mu_{fi} + \gamma_t + v_{fit}$$

	(1) 1^{st}stage $\Delta \ln(q^I_{fit})$	(2) Red. form $\Delta \ln(p^I_{fit})$	(3) OLS $\Delta \ln(p^I_{fit})$	(4) 2^{nd} stage $\Delta \ln(p^I_{fit})$
$\Delta \ln(Res_t) \times \widehat{AR}_{fh}^{\text{H1-13}}$	0.223***	-0.167***		
	(0.054)	(0.041)		
$\Delta \ln(q^I_{fit})$			-0.269***	-0.749***
			(0.007)	(0.218)
Half-year (t) FE	Yes	Yes	Yes	Yes
Firm-product (fi) FE	Yes	Yes	Yes	Yes
Observations	709,107	709,107	709,107	709,107
K-P F-stat				16.8
C-D F-stat				31.0

Did DJAI-Induced Quantity Restrictions Raise Prices?

$$\Delta \ln(p_{fit}) = \beta_0 + \beta \Delta \ln(q_{fit}) + \mu_{fi} + \gamma_t + e_{fit}$$

$$\text{1st Stage:} \quad \Delta \ln(q_{fit}) = \delta \Delta \ln(Reserves_t) \times \widehat{AR}_{fh}^{H1\text{-}13} + \mu_{fi} + \gamma_t + v_{fit}$$

	(1) 1^{st}stage $\Delta \ln(q^I_{fit})$	(2) Red. form $\Delta \ln(p^I_{fit})$	(3) OLS $\Delta \ln(p^I_{fit})$	(4) 2^{nd} stage $\Delta \ln(p^I_{fit})$
$\Delta \ln(Res_t) \times \widehat{AR}_{fh}^{H1\text{-}13}$	0.223***	-0.167***		
	(0.054)	(0.041)		
$\Delta \ln(q^I_{fit})$			-0.269***	-0.749***
			(0.007)	(0.218)
Half-year (t) FE	Yes	Yes	Yes	Yes
Firm-product (fi) FE	Yes	Yes	Yes	Yes
Observations	709,107	709,107	709,107	709,107
K-P F-stat				16.8
C-D F-stat				31.0

Robustness

- Identification: initially-favored firms/sectors not subsequently on different trends coinciding with macro shocks:
  - Types of firms with high approval rates are not affected more by macroeconomic instability outside DJAI period (placebo)
  - Between policy period analysis gives similar coefficient: bounds truth if initially favored firms on different trends
  - HS4-time or product-time fixed effects

Potential Mechanisms

- Bargaining, risk/uncertainty, quality, downward slopping supply

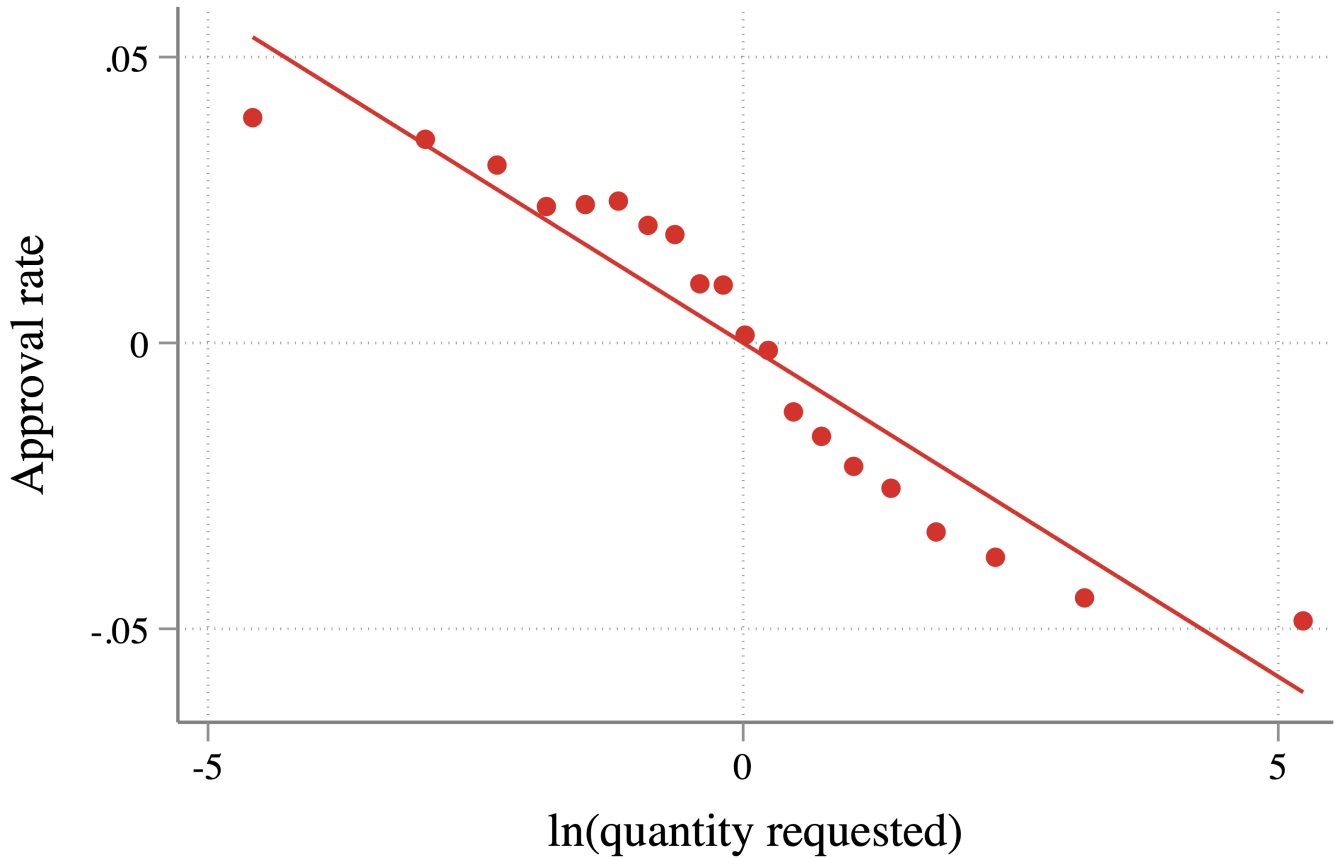
M_{fi} =	Buyer power	Rauch differentiability	Perishability (risk)
	(1)	(2)	(3)
	2SLS	2SLS	2SLS
	$\Delta \ln(p^I_{fit})$	$\Delta \ln(p^I_{fit})$	$\Delta \ln(p^I_{fit})$
$\Delta \ln(q^I_{fit})$	-1.305***	1.936	-0.792***
	(0.353)	(3.231)	(0.227)
$\Delta \ln(q^I_{fit}) \times M_{fi}$	1.443***	-3.081	8.779
	(0.424)	(3.786)	(48.558)
Half-year (t) FE	Yes	Yes	Yes
Firm-Product (fi) FE	Yes	Yes	Yes
Observations	677,957	1,011,145	1,011,145
K-P F-stat	6.9	0.3	0.0
C-D F-stat	14.7	2.6	2.7

Trade Framework

- Free entry into monopolistically competitive sector with outside good (Venables 87)
  - CES (ν) utility over differentiated sectors ω (HS4)
  - CES (σ) over differentiated varieties within ω
  - Domestic entry cost F_ω
  - Cobb-Douglas output in labor (μ) and a foreign input
  - Foreign suppliers: cost $\psi_\omega(q) = Z_\omega q^{1+\frac{1}{\eta}}$ of producing input q

- Timing
  - Domestic firms pay fixed cost, matches with foreign supplier
  - Pair makes (jointly efficient) import request to government
    - ★ Approved with probability: $\phi_{0\omega} q^{-\phi_{1\omega}}$
  - If approved, share β of profits accrues to domestic firms

Approval Rate Falls with Request Size



Import Quantity and Price

- Problem of an importer-exporter pair:

$$q_\omega^* = \arg\max_q \left(\phi_{0\omega} q^{-\phi_{1\omega}}\right) \underbrace{\left(R_\omega\left(q; P_\omega\right) - \psi_\omega\left(q\right)\right)}_{\equiv \Pi_\omega(q; P_\omega)}$$

- Rent sharing conditional on approval:

$$p_\omega^* = (1-\beta)\frac{R_\omega\left(q_\omega^*, P_\omega^*\right)}{q_\omega^*} + \beta\frac{\psi_\omega\left(q_\omega^*\right)}{q_\omega^*}$$

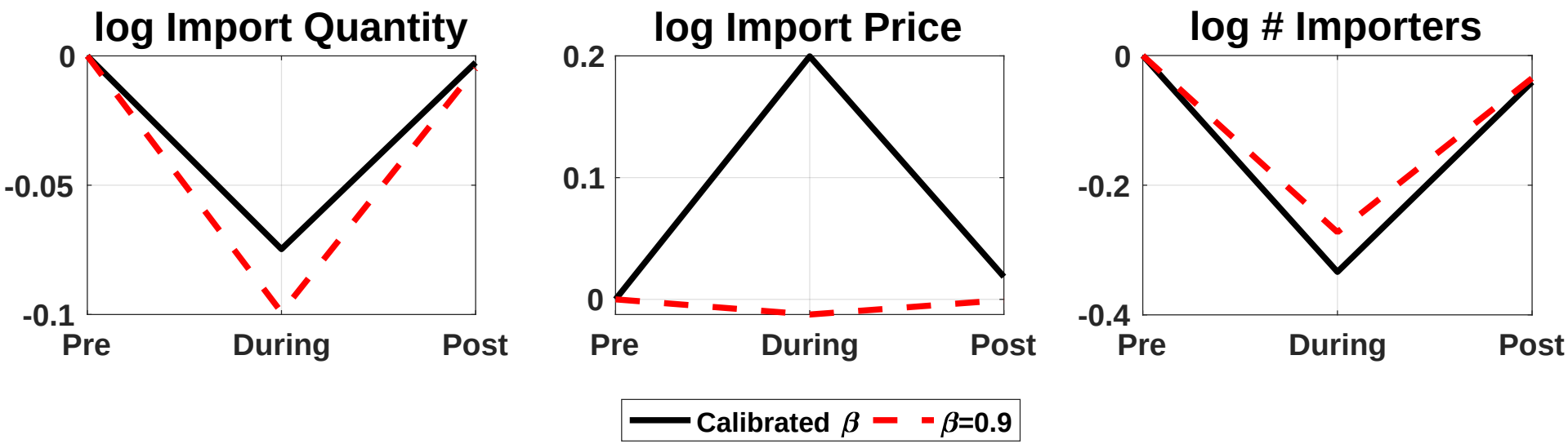
  - Low $\beta \rightarrow$ price moves along (downward sloping) average revenue
  - High $\beta \rightarrow$ price moves along (upward sloping) average cost curve

Quantitative Exercise

1. Estimate the policy parameters $\phi_{0\omega t}, \phi_{1\omega t}$ at sector-period level more
2. Calibrate (β, η, ν) to match IV estimates of effects of policy more
3. Perform counterfactuals to measure aggregate impacts of policy

Quantitative Exercise

1. Estimate the policy parameters $\phi_{0\omega t}, \phi_{1\omega t}$ at sector-period level more
2. Calibrate (β, η, ν) to match IV estimates of effects of policy more
3. Perform counterfactuals to measure aggregate impacts of policy



Higher domestic market power: prices fall with policy

Conclusion

- Goal: explore determinants and consequences of discretionary trade policy in middle-income country context
  - Uncover how Argentina's DJAI policy varied across firms, sectors, time
  - Surprising result: quantity restrictions lead to rising import prices
- Trade model with importer-exporter bargaining can rationalize evidence if domestic firms have low bargaining power
  - Identify bargaining power from empirical estimates, suggests limited in ability to use trade policy to manipulate ToT