

# **Centralizing Procurement: The Roles of Scale, Selection, and Variety**

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- ▶ 12% of global GDP is spent on public procurement (Bosio et al., 2022)

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  - ▶ Centralized: Intermediary aggregates demand and procures for public agencies
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  - Preference heterogeneity: centralized procurement may decrease variety
  - ▶ Sorting: potential adverse selection into centralized intermediary

# This paper

- ▶ Study the trade-offs of centralizing public procurement of drugs in Chile:
  - ▶ Well-defined products allow for clean comparisons
  - ▶ Voluntary intermediation useful for studying design of centralized procurement
  - ▶ Administrative data + policy variation in availability of intermediary and intermediation mandates

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## 1. Descriptive evidence:

- ▶ Scale effects and price dispersion in procurement
- ▶ Impacts of centralized procurement on prices and product choices
- ▶ Selection into centralized procurement

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    - ▶ Selection into centralized procurement
  2. Model of procurement channel and product choices:
    - ▶ Costs and benefits of mandating centralized procurement + mechanisms

# Literature

## 1. Procurement design:

- ▶ Centralization: Bandiera et al. (2009); Baldi and Vannoni (2017); Brugués (2020); Clark et al. (2021); Dubois et al. (2021); Ferraresi et al. (2021); Cao et al. (2023)
- ▶ Bureaucratic discretion: Pertold and Palguta (2017); Coville et al. (2018); Calvo et al. (2019); Decarolis et al. (2020); Kang and Miller (2021); Carril (2022); Bandiera et al. (2021); Bosio et al. (2022); Best et al. (2023); Gerardino et al. (2023); Szucs (2023)

## 2. Procurement in health care:

- ▶ Grennan (2013); Craig et al. (2021); Grennan and Swanson (2020); Dubois et al. (2021)

## 3. Intermediation and buyer size:

- ▶ Selection into intermediation: Gavazza (2016); Salz (2022)
- ▶ The role of buyer size: Chipty and Snyder (1999); Sorensen (2003); Gaudin (2018)

# Outline

1. Setting and data
2. Description of direct public procurement
3. The role of the public intermediary
4. Model
5. Counterfactuals
6. Discussion

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# Setting: Public procurement of drugs in Chile

- ▶ Procurement is based on scoring auctions at the drug level:
  - ▶ Auctions posted on online platform *Mercado Público*
  - ▶ Auction scoring rule and quantity are determined by the buyer

Platform

# Setting: Public procurement of drugs in Chile

- ▶ Procurement is based on scoring auctions at the drug level:
  - ▶ Auctions posted on online platform *Mercado Público*
  - ▶ Auction scoring rule and quantity are determined by the buyer
- ▶ Two procurement channels:
  1. Direct channel:
    - ▶ Buyers design individual auction
  2. Intermediation channel:
    - ▶ Every year, the intermediary offers to intermediate a subset of drugs (catalog)
    - ▶ Buyers submit drug-quantity requests to the intermediary
    - ▶ Intermediary runs auction to procure aggregated demand
    - ▶ Matchmaker: intermediary sets price, but payments and delivery direct from hospitals to seller

Platform

# Procurement channels: Direct procurement

Buyers of  $j$

$B_1$

$B_2$

$B_3$

$B_4$

$B_5$

Auctions

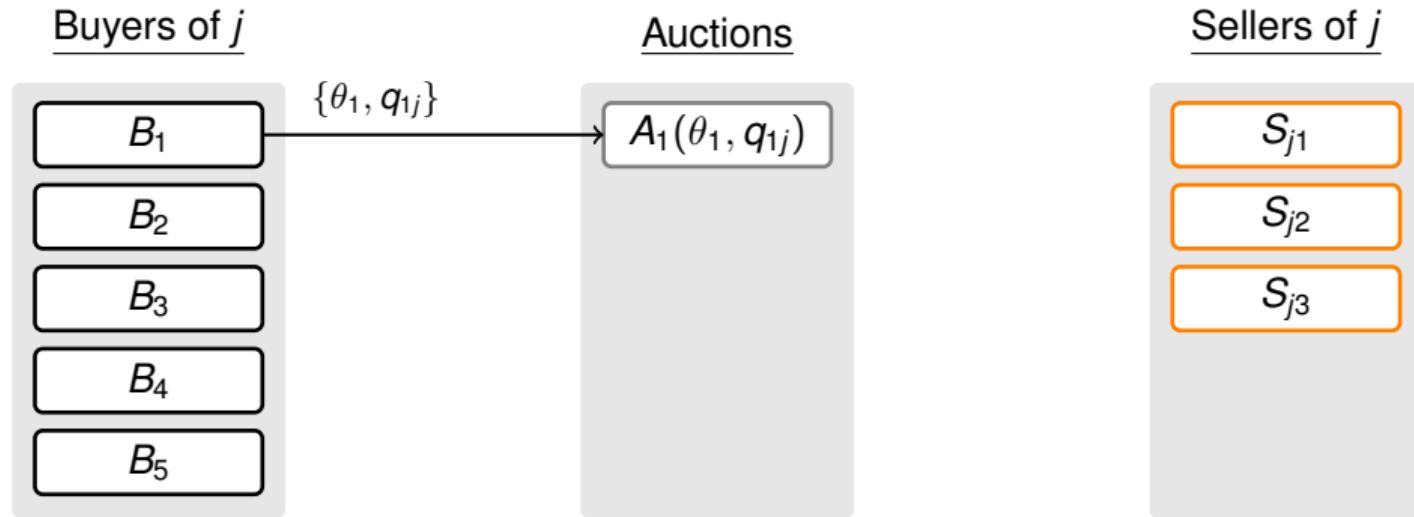
Sellers of  $j$

$S_{j1}$

$S_{j2}$

$S_{j3}$

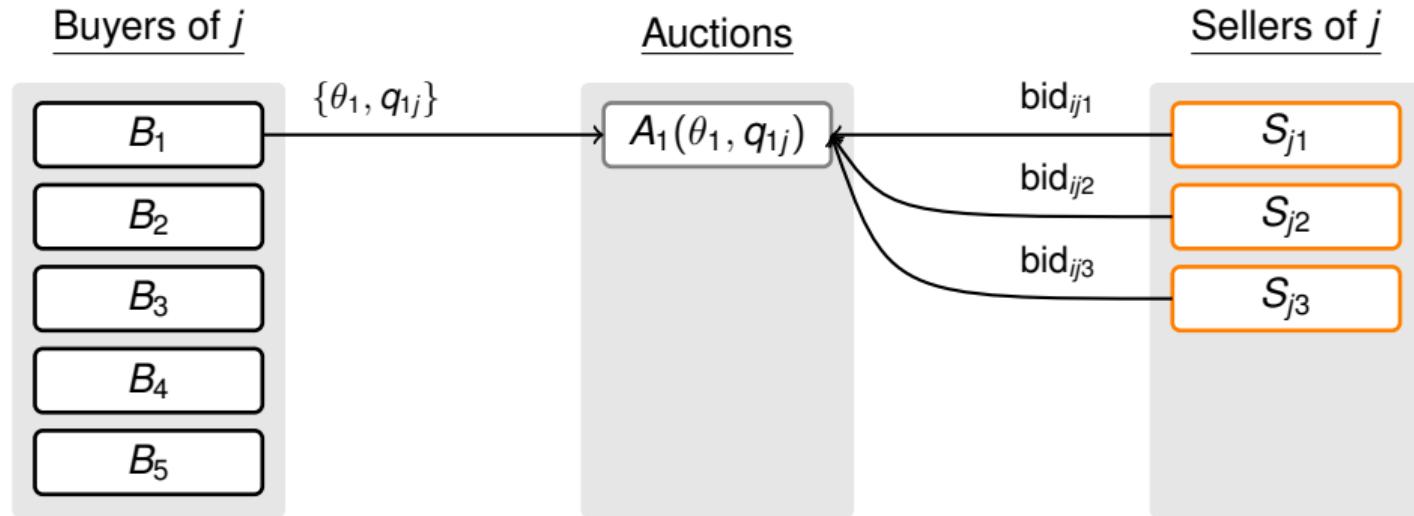
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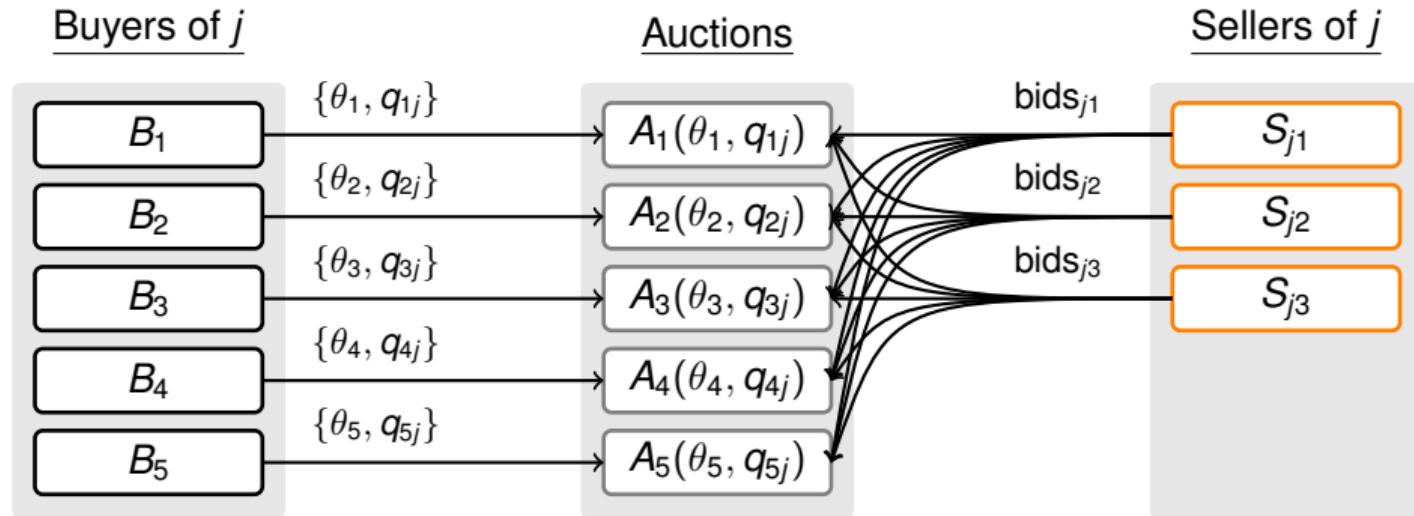
$\theta_i$ : preferences

$q_{ij}$ : quantity

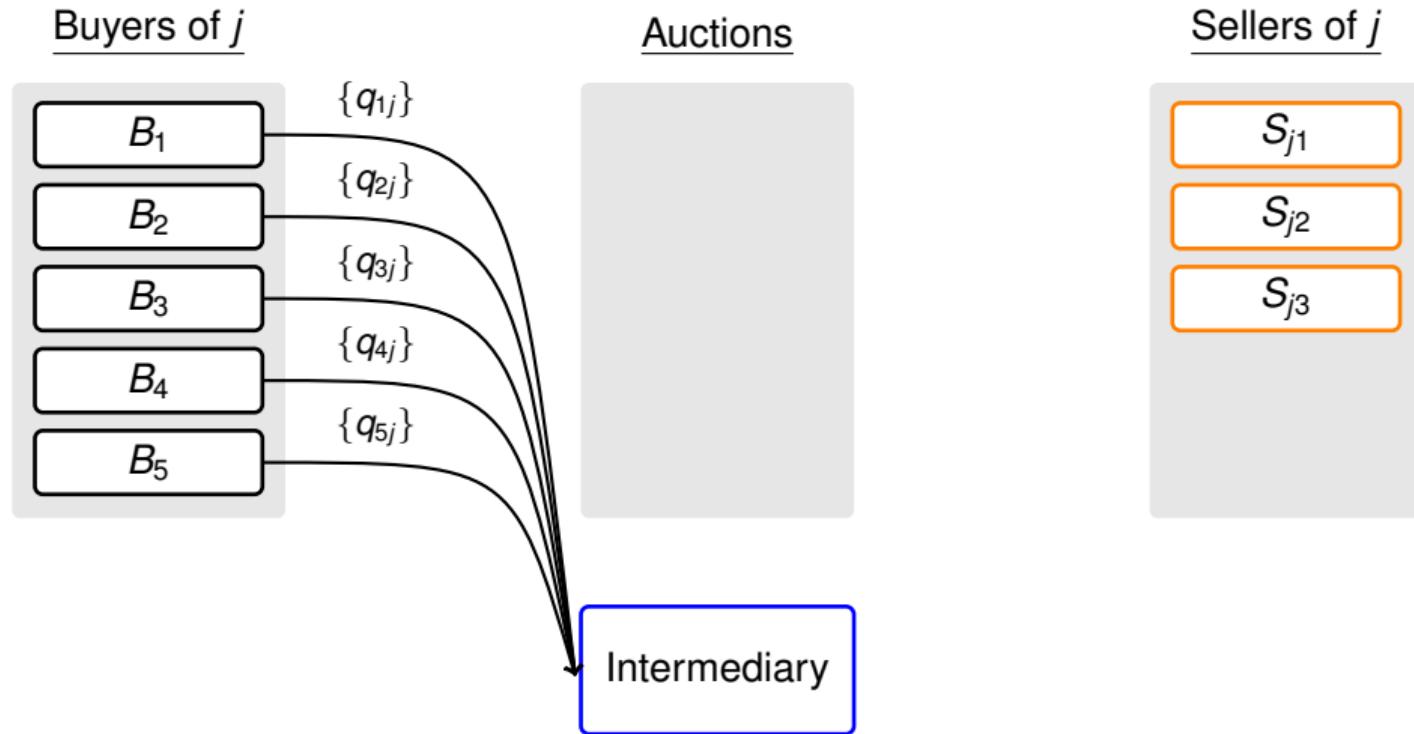
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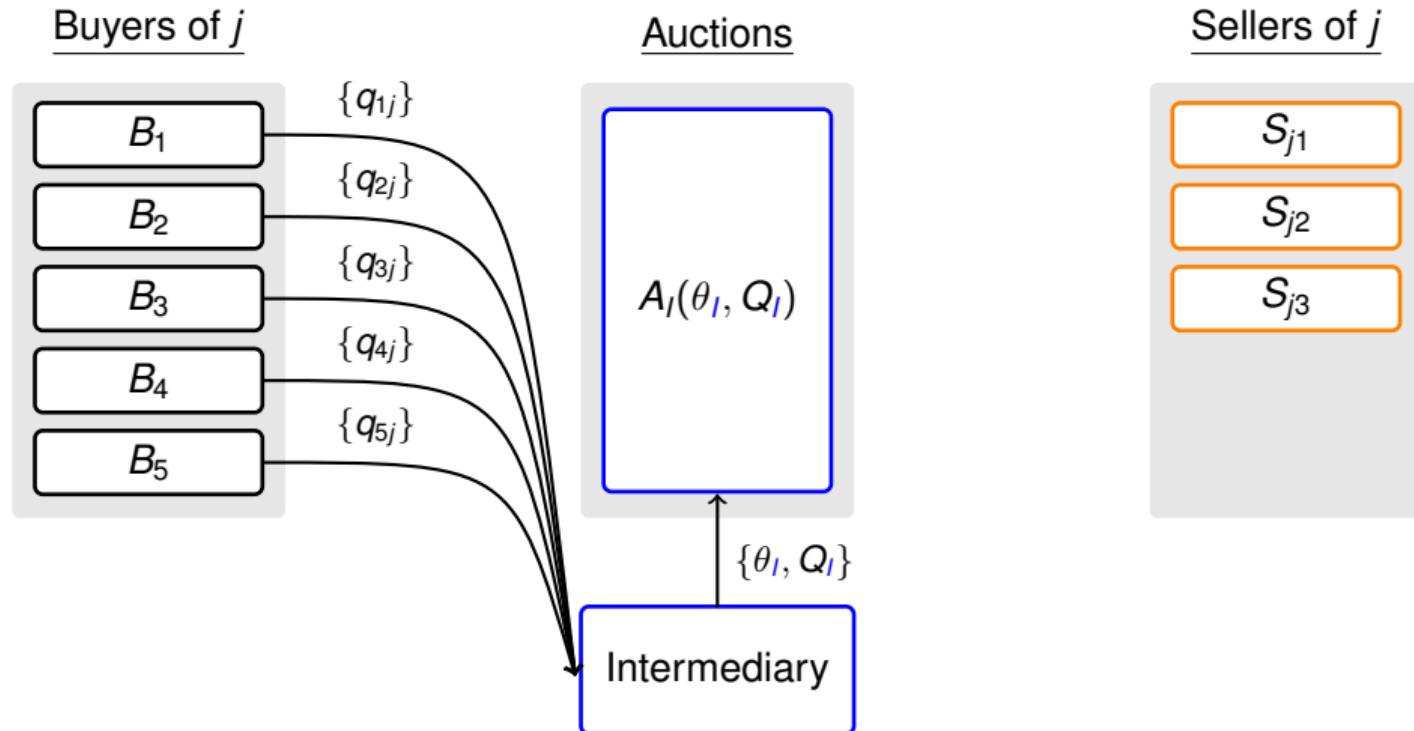
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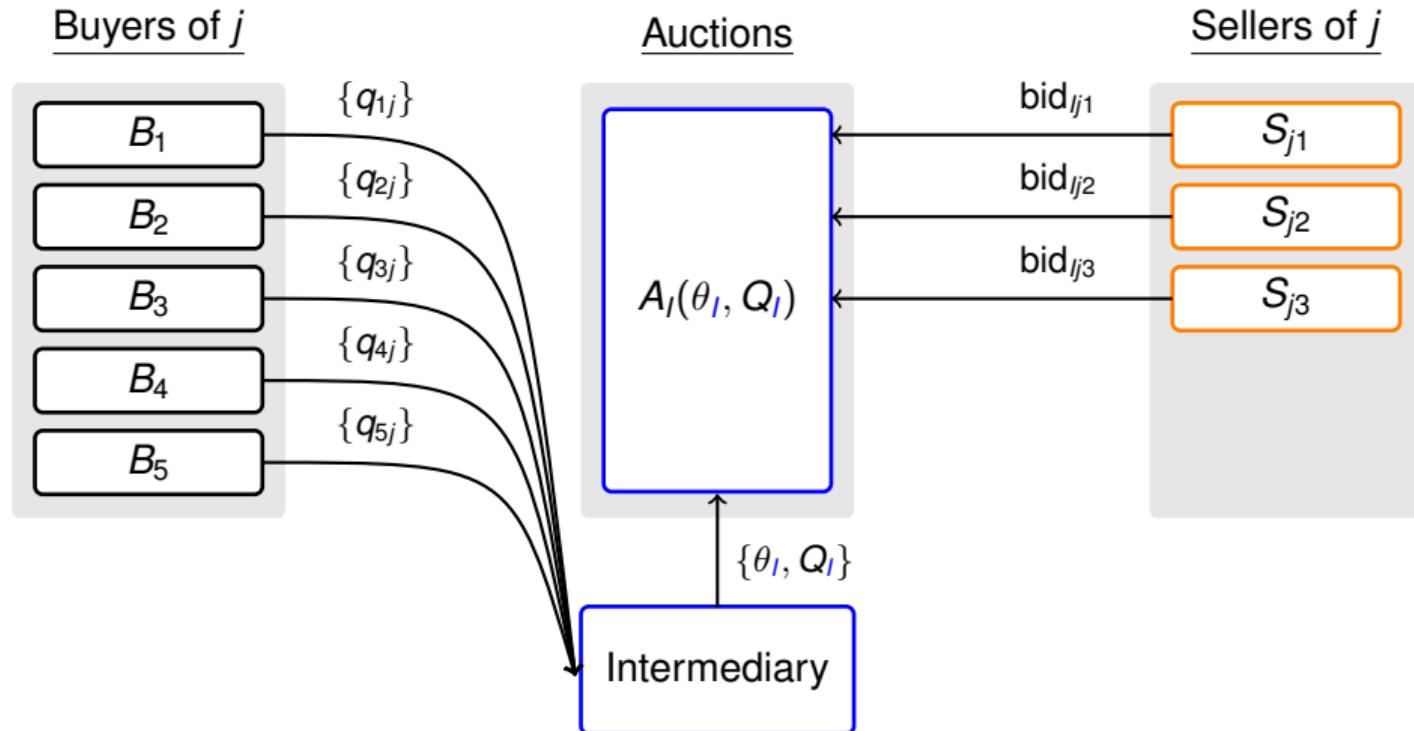
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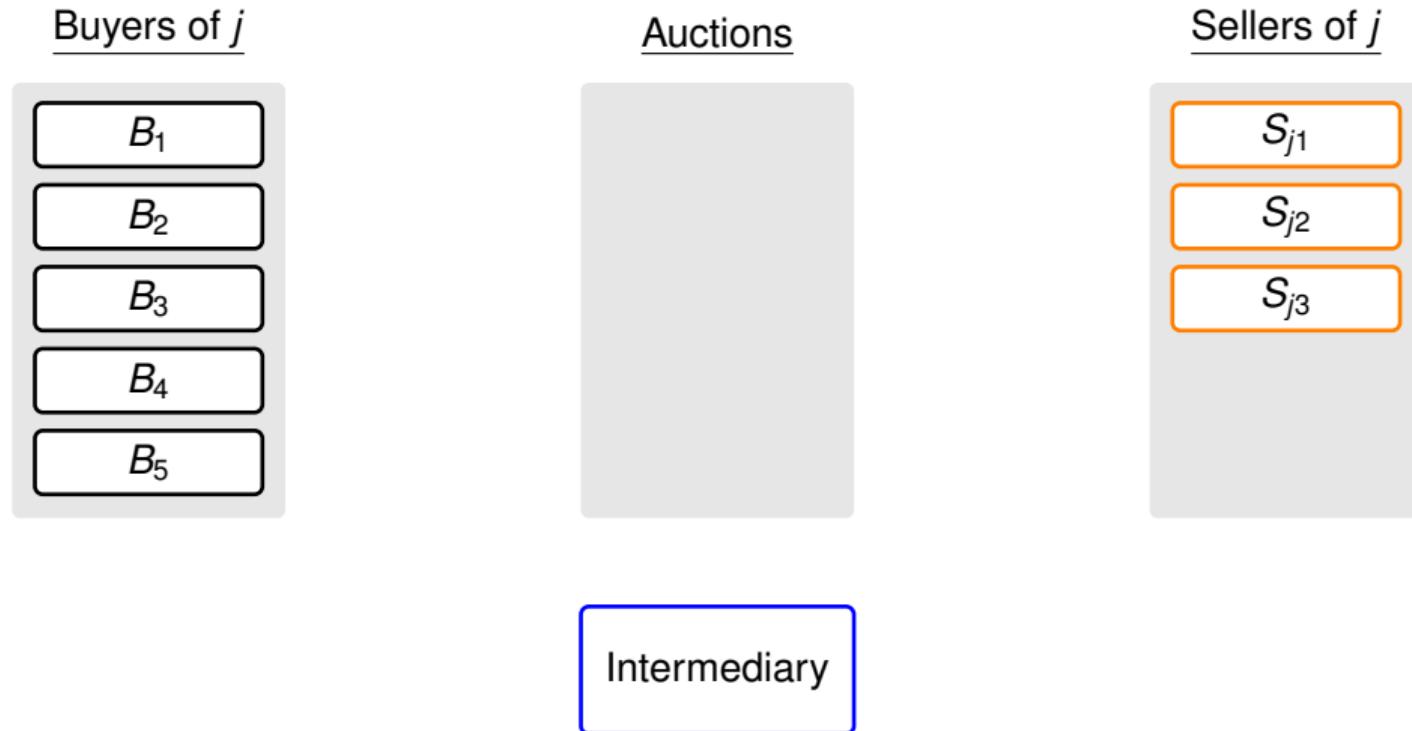
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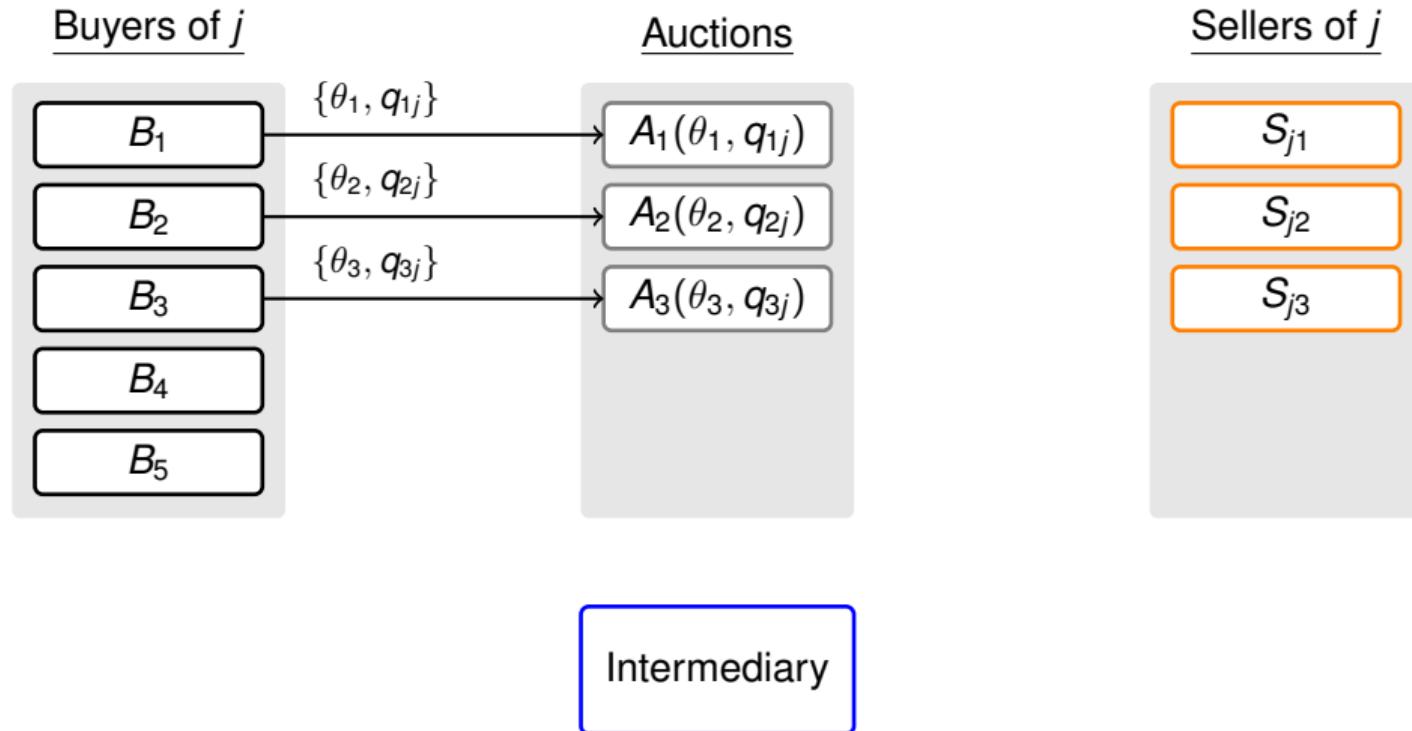
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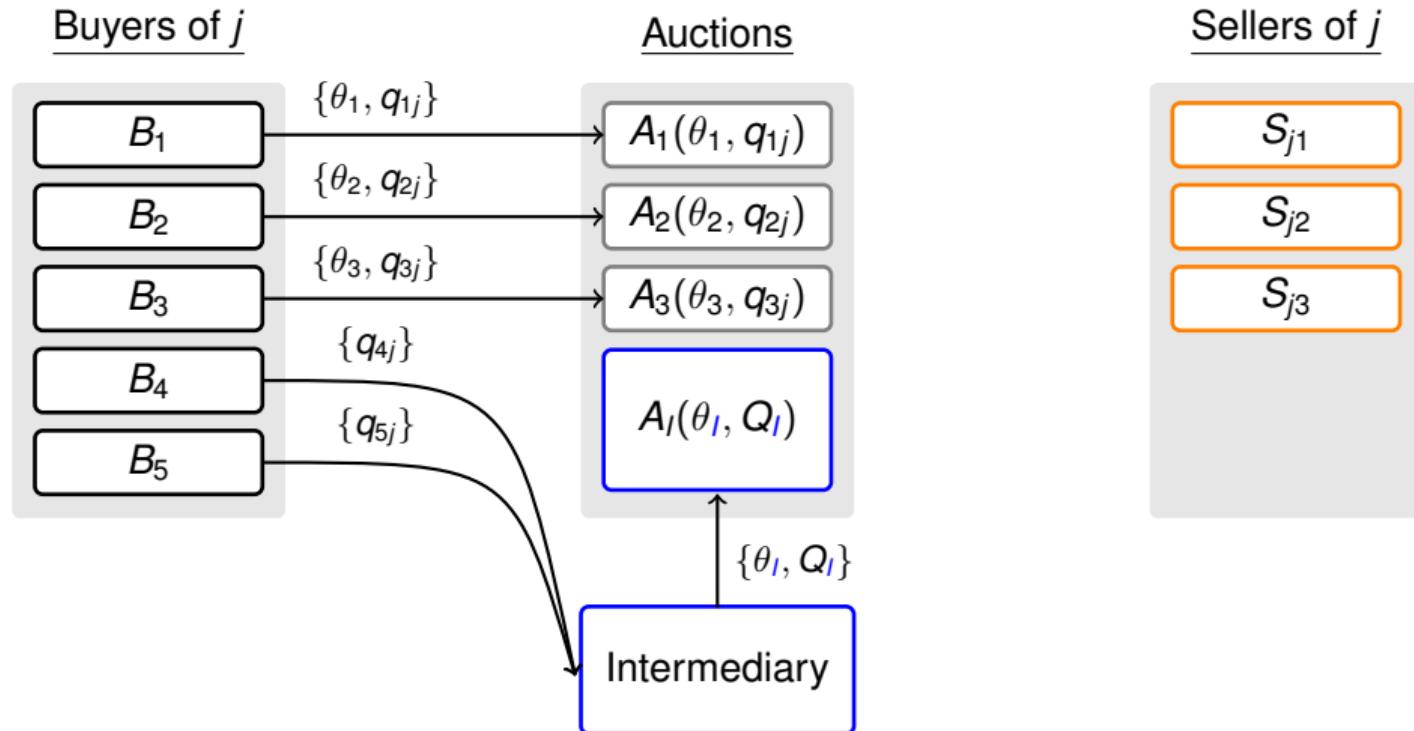
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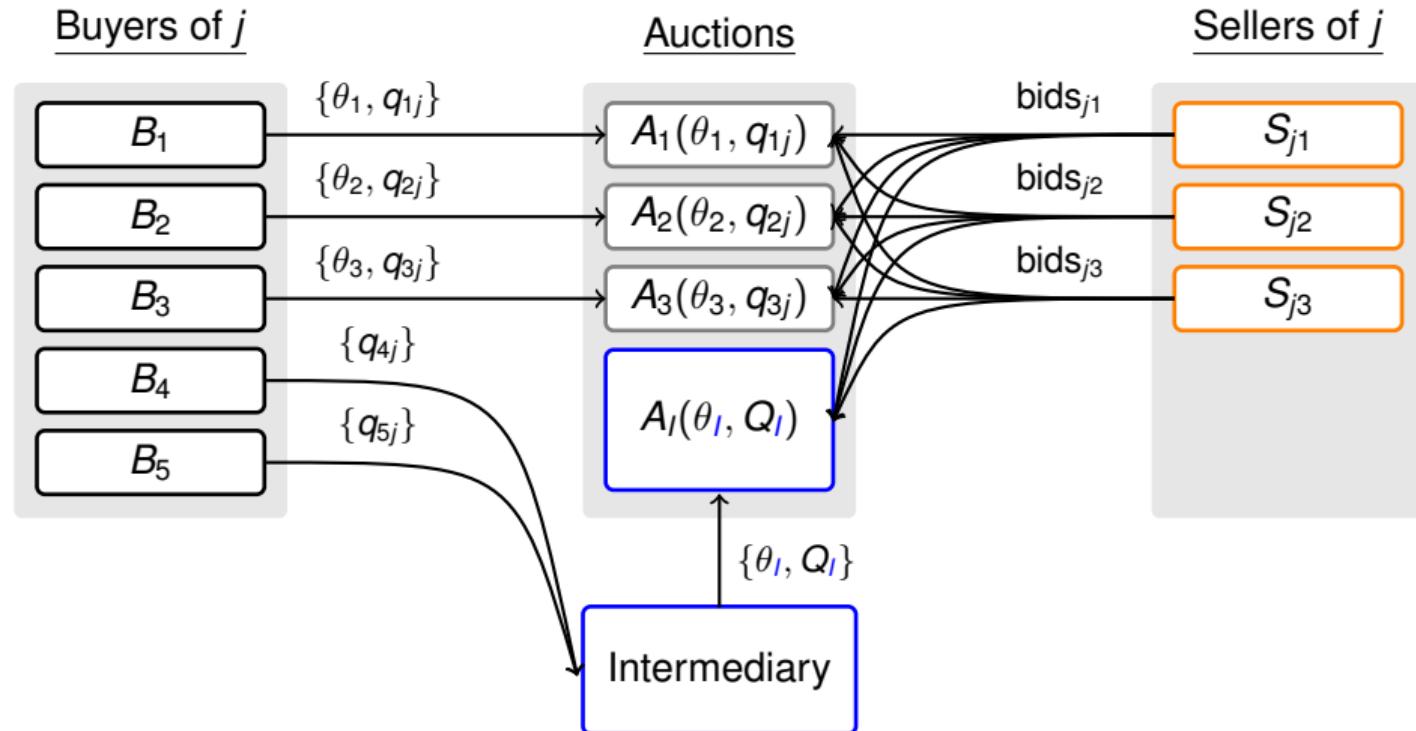
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# Procurement channels: Voluntary intermediation



# Data

## 1. Auction data:

- ▶ Universe of 700,000 auctions for 2012–2020 from all agencies, including intermediary
- ▶ For each auction: date, buyer, drug, quantity, bids
- ▶ For each bid: bidder identity, product, bids

## 2. Intermediary data:

- ▶ All transactions between the intermediary and all buyers

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## 2. Intermediary data:

- ▶ All transactions between the intermediary and all buyers
- ▶ Market and product definition:
  - ▶ Drug (market) ≡ Active principle-dosage-form combination
    - e.g., “Ibuprofen Oral Suspension 100 MG per 5 ML”
  - ▶ Product ≡ SKUs within a drug
    - e.g., Ibuflam (branded), Dolorac (branded), Ibuprofen by Laboratorio Chile (generic)

Top drugs

Example

# Basic descriptive statistics

- ▶ Focus on procurement by health-related agencies in 2012–2020
  - ▶ 226 buyers purchasing 413 different (off-patent) drugs
  - ▶ 203 sellers: 104 manufacturing labs, 99 intermediaries

Top vendors

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  - ▶ Linear in bid attributes, roughly constant within buyer
  - ▶ Average weights: 0.45 for price, 0.37 for technical, 0.12 for delivery

Top vendors

Details

# Basic descriptive statistics

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- ▶ Scoring rules chosen by buyers:
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  - ▶ Average weights: 0.45 for price, 0.37 for technical, 0.12 for delivery
- ▶ Summary statistics:
  - ▶ Overall expenditure of \$276 MM per year, average buyer spends \$1.2 MM per year
  - ▶ Median auction receives 5 bids, with p25 and p75 of 3 and 7
  - ▶ Intermediary is cheaper than 87% of the buyer-product-months
  - ▶ Intermediation share is 24% on average, grew from 17% to 44% over sample period

Top vendors

Details

Price ratio

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# Measuring scale effects and price dispersion

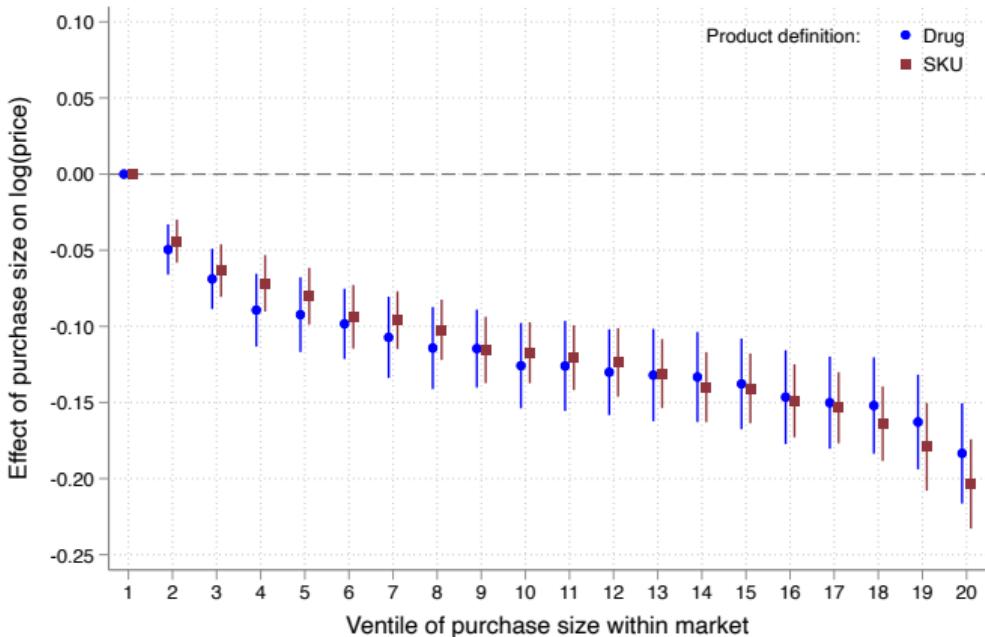
- ▶ Use transaction-level data on direct procurement channel to estimate:

$$\log p_{ijt} = f(q_{ijt}; \beta) + \eta_i + \mu_{jt} + \varepsilon_{ijt}$$

where:

- ▶  $p_{ijt}$  is the price that buyer  $i$  paid for drug  $j$  in quarter  $t$
- ▶  $f(q_{ijt}; \beta)$  captures flexibly role of purchase size  $q_{ijt}$
- ▶  $\eta_i$  measures average differences across buyers
- ▶  $\mu_{jt}$  controls for price variation across drugs (or products) and time, common across buyers
- ▶ Estimate only for drugs not offered by intermediary to minimize selection concerns
- ▶ Repeat with  $j$  being SKU instead of drug.

# Scale effects in procurement

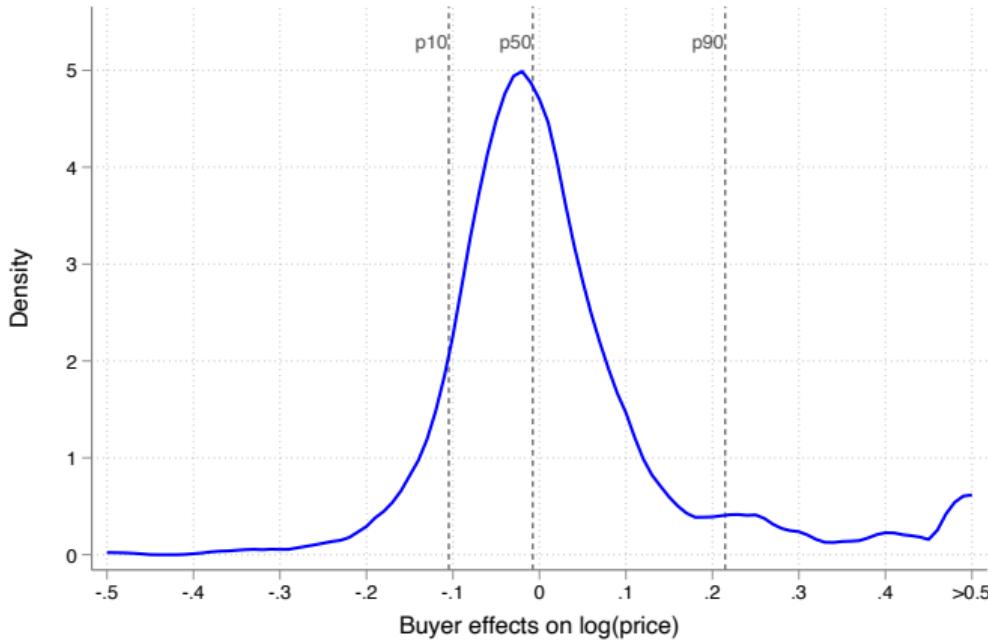


- ▶ Price falls strongly with scale, both at drug and product level

# Scale effects and other drivers of procurement prices

	(1)	(2)	(3)	(4)	(5)	(6)
Dep. var.: Log price						
Log quantity	-0.084*** (0.001)	-0.079*** (0.001)	-0.079*** (0.001)	-0.080*** (0.001)	-0.083*** (0.001)	-0.109*** (0.002)
Log number of bidders		-0.227*** (0.004)	-0.227*** (0.004)	-0.226*** (0.004)	-0.230*** (0.004)	-0.222*** (0.004)
Log distance to winner			0.001 (0.002)	0.002 (0.002)	0.001 (0.002)	-0.004* (0.002)
Weight price				-0.200*** (0.014)	-0.324*** (0.019)	-0.162*** (0.020)
Observations	74,384	74,384	74,384	74,384	74,381	74,327
R-squared	0.965	0.966	0.966	0.966	0.968	0.977
Buyer FE	Y	Y	Y	Y	N	N
Drug-year FE	Y	Y	Y	Y	Y	Y
Buyer-year FE	N	N	N	N	Y	Y
Buyer-drug FE	N	N	N	N	N	Y

# Substantial price dispersion across buyers



- ▶ Fixed effects in price regression show substantial dispersion
- ▶ This is conditional on drug (or product) fixed effects and purchased quantity

# What drives price dispersion across buyers?

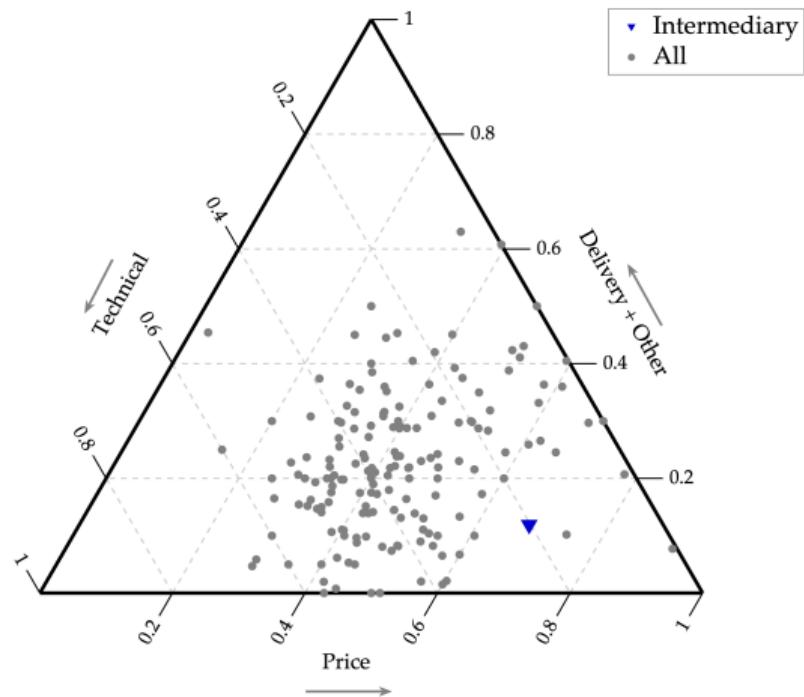
## 1. Preferences:

- ▶ Scoring rule partly reflective of preferences

# What drives price dispersion across buyers?

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- ▶ Intermediary places high weight on price
- ▶ Other buyers focus more on quality/delivery

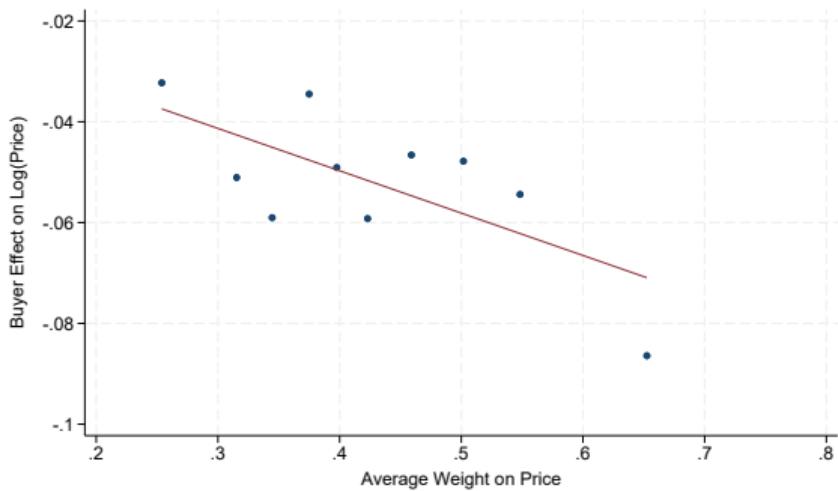


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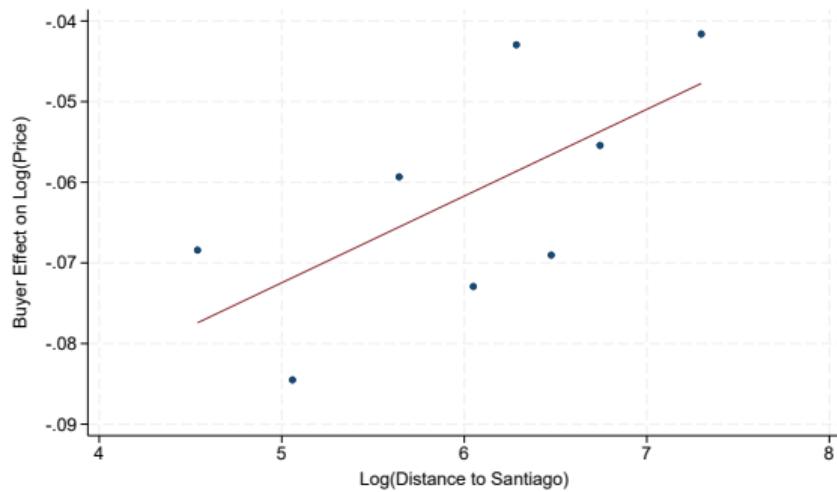
→ Buyer effects in line with price weights



# What drives price dispersion across buyers?

## 2. Costs:

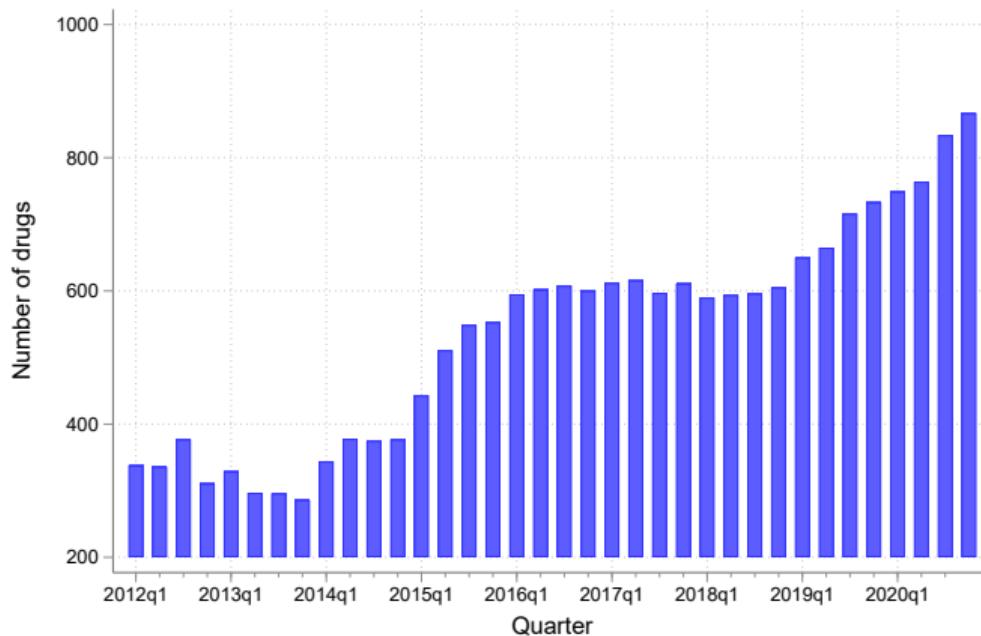
- ▶ Buyers differ in location, payment delays
  - ▶ Sellers observe this information
- Buyer effects in line with cost proxies



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# Expansion of the catalog of drugs available for intermediation



- Expansion of intermediary catalog motivates event study

Drug entry / exit

# The effects of intermediation on procurement outcomes

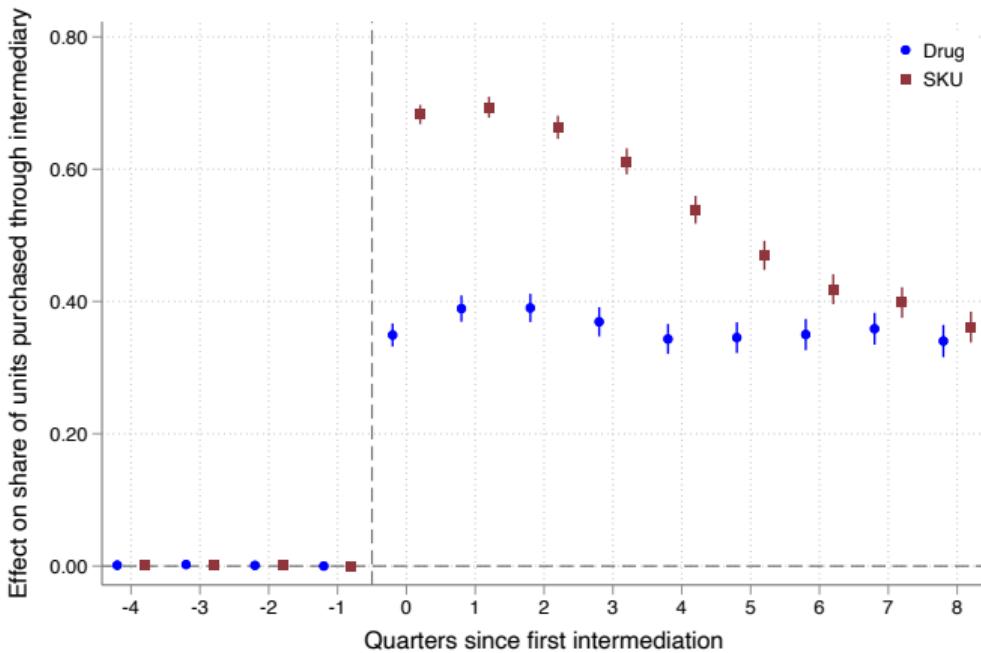
- ▶ Event study specification:

$$y_{jt} = \sum_{k=-4}^{k=8} \delta_k \cdot \mathbb{1}[t - E_j = k] + \mu_j + \lambda_t + \varepsilon_{jt}$$

where:

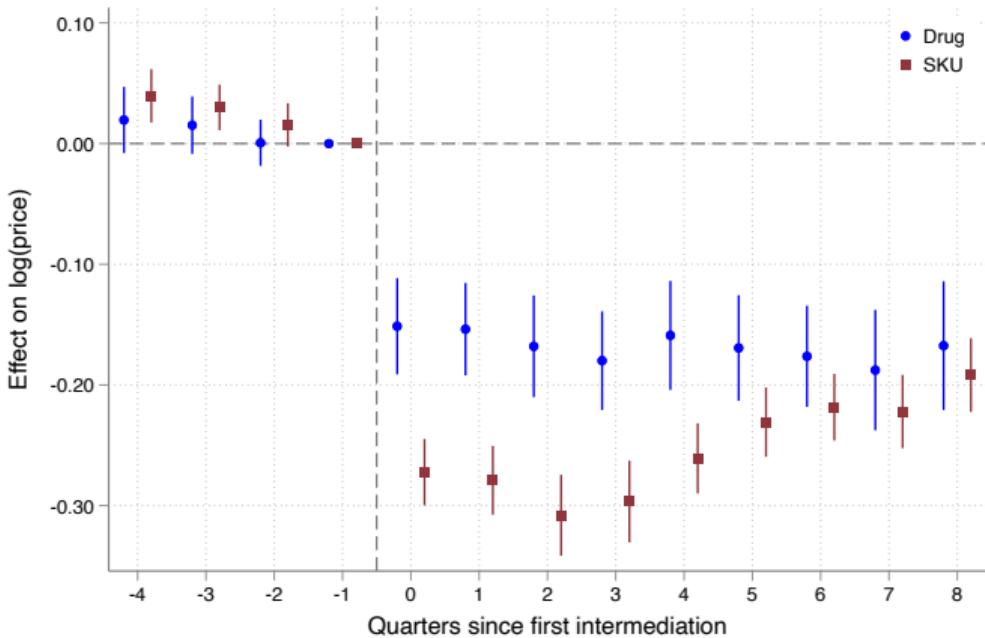
- ▶  $y_{jt}$  is outcome for drug  $j$  in period  $t$ , including share intermediated, prices, quantities
- ▶  $E_j$  is first period in which drug (or product)  $j$  is offered by the intermediary
- ▶  $\mu_j$  and  $\lambda_t$  are drug and time fixed effects
- ▶ Coefficients of interest are  $\delta_k$ , which capture the dynamic effects of intermediation on  $y_{jt}$

# First stage: adoption of public intermediary



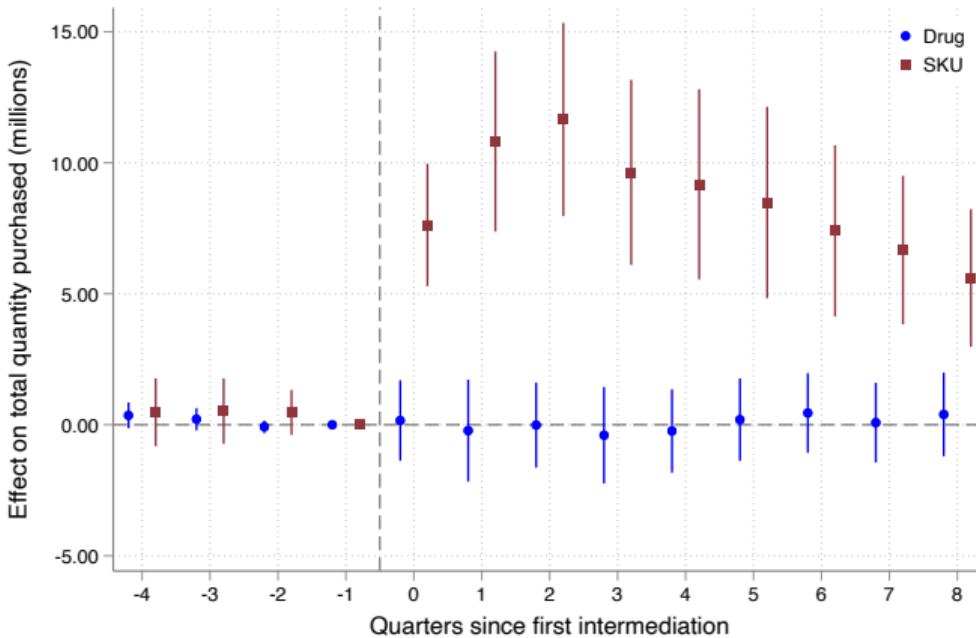
- Stronger effect at product level suggests a role for preferences

# Intermediary availability reduces prices



- Average paid prices fall 15% for a drug and 25% for a product.

# Intermediation induces substitution within drugs



- Demand for *products* that enter intermediation increases substantially
- No effects at the *drug* level, consistent with inelastic drug demand

# Which buyers adopt the public intermediary?

	(1)	(2)	(3)	(4)
Share intermediated				
Log spending volume	-0.072*** (0.005)			-0.043*** (0.005)
Located in urban area		-0.602*** (0.038)		-0.390*** (0.044)
Log distance to Santiago			0.034*** (0.004)	0.007* (0.004)
Year FE	Y	Y	Y	Y
Observations (buyer-year)	1,086	1,086	1,086	1,086

- Smaller and more remote (i.e., facing higher transportation costs) buyers intermediate more

# Taking stock of the descriptive evidence

- ▶ Summary of facts and results:
  1. Relevant scale effects in procurement
  2. Large differences in paid prices across buyers
  3. Adoption of intermediation associated with costs proxies
  4. Centralized procurement is associated with low prices, but also substitution across products

# Taking stock of the descriptive evidence

- ▶ Summary of facts and results:
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  4. Centralized procurement is associated with low prices, but also substitution across products
- ▶ What is the optimal level of centralization? We use a model to:
  - ▶ Measure impacts of public intermediary
  - ▶ Study counterfactual levels of centralization mandates
  - ▶ Quantify different mechanisms at play

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# Trade-offs and model primitives

- ▶ Are (partial) mandates of centralized procurement desirable? Four main mechanisms:
  - ▶ Scale effects (+)
  - ▶ Adverse selection (+)
  - ▶ Preference heterogeneity (-)
  - ▶ Transaction costs (?)
- ▶ To capture these trade-offs, we develop a model with the following ingredients:
  - ▶ Supplier marginal costs decreasing with quantity [scale effects]
  - ▶ Heterogeneous cost of providing a drug across buyers [selection]
  - ▶ Heterogeneous preferences across buyers [preference heterogeneity]
  - ▶ Net cost of dealing with intermediary [transaction costs]

# Model structure

- ▶ Timing and players:
  - ▶ Intermediary auctions determine timing as intermediation cycles  $t$  in market  $j$
  - ▶ Buyers  $i$  require exogenous quantity  $q_{ijt}$
  - ▶ Sellers  $k \in \mathcal{K}_{ijt}$  bid in auctions

Steps:

1. Channel choice: Each cycle  $t$ , buyers decide between direct and intermediation channel
2. Bidding: Sellers  $k$  submit bids according to buyers' preferences
3. Product choice: Bids are revealed, buyers choose product  $k$

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- ▶ Estimation:

- ▶ 20 top-buyers + intermediary and 100 top-drugs, pre-mandate (8,100 auctions)

Buyers sample

## Step 3: Product choice

- Utility per unit of variety  $k$  of drug  $j$  for buyer  $i$  is:

$$U_{ijkt} = x'_{ijk} \beta_i - \alpha_i \cdot \log p_{ijkt} + \varepsilon_{ijkt}, \quad \varepsilon_{ijkt} \sim EV(1)$$

where:

- $x_{ijk}$  includes scores for non-price attributes: technical, delivery, and other
- $\beta_i$  and  $\alpha_i$  allow for rich preference heterogeneity, approximate scoring rule weights

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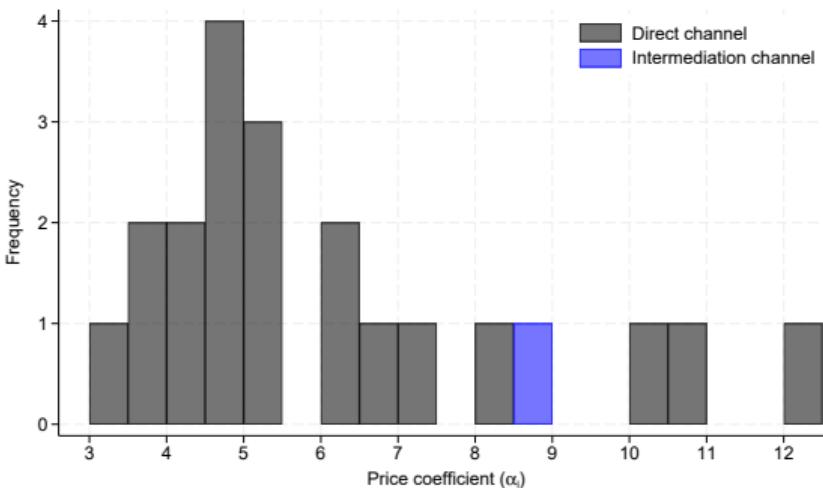
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- ▶  $\beta_i$  and  $\alpha_i$  allow for rich preference heterogeneity, approximate scoring rule weights
- ▶ Prices and selected product depend on channel choice:
  - ▶ If buyer  $i$  runs an auction,  $\mathcal{K}_{ijt}$  bidders submit bids and buyer determines winner
  - ▶ If buyer  $i$  intermediates,  $I$  runs auction,  $\mathcal{K}_{ijt}$  bidders submit bids and  $I$  determines winner  
→ Alignment of preferences between buyer and intermediary matters for channel choice

# Step 3: Product Choice

- ▶ Estimation via MLE:
  - ▶ Data on all auction bids and winners
- ▶ Estimates are consistent with scoring rules
- ▶ Intermediary has a high price sensitivity ( $\alpha$ )
  - ▶ Average price elasticities:
    - ▶ -7.2 for intermediary
    - ▶ -2.7 for buyers



Score ↔ Demand

## Step 2: Bidding

- Bidder costs with adverse selection and scale effects:

$$\log(c_{ijkt}) = \kappa_j + \rho \cdot \text{Lab}_j + \omega_i - \tau \cdot \log(1 + q_{ijt}) + \nu_{ijkt}$$

$$\log(c_{ljkt}) = \kappa_j + \rho \cdot \text{Lab}_j + \log(\mathbb{E}[e^{\omega_i} | \mathcal{I}_{jt}]) - \tau \cdot \log(1 + Q_{ljt}(\mathcal{I}_{jt})) + \nu_{ljkt}, \quad \nu_{ijkt} \sim N(0, \sigma_\nu)$$

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- Auction structure:

- Only price bid is strategic, non-price attributes  $x_{ijk}$  are fixed
- Bidder information:
  - Own costs  $c_{ijkt}$
  - Rivals' non-price attributes and distribution of costs
  - Buyer preferences, up to a taste shock
- Take the set of bidders from data, and keep fixed in counterfactuals [work in progress]

## Step 2: Bidding

- ▶ Estimation:
  1. Invert optimal bidding FOC given demand parameters (Guerre et al., 2000; Buchholz et al., 2020)
  2. Projection on observables

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  1. Invert optimal bidding FOC given demand parameters (Guerre et al., 2000; Buchholz et al., 2020)
  2. Projection on observables
- ▶ Buyer effects ( $\omega$ ):
  - ▶ Standard deviation 0.1
  - ▶ Consistent with descriptive evidence on price dispersion across buyers
- ▶ Scale effect ( $\tau$ ):
  - ▶ Scale elasticity of  $-0.04$
  - ▶ Slightly smaller than price estimates (on different data)
- ▶ Costs asymmetry ( $\rho$ ):
  - ▶ Labs have a 6 p.p. lower costs

## Step 1: Channel choice

- The expected utility of each channel is:

$$V_{ij}^D \equiv \mathbb{E}[u_{ijk} | u_{ijk} \geq u_{ijk'} \quad \forall k' \in \mathcal{K}_{ij}]$$

$$V_{ij}^I \equiv \mathbb{E}[u_{ijk} | u_{ijk} \geq u_{\textcolor{blue}{I}jk'} \quad \forall k' \in \mathcal{K}_{\textcolor{blue}{I}j}]$$

where  $\mathbb{E}$  is over  $\varepsilon_{ijkt}$  and  $\nu_{ijkt}$ , preferences and cost shocks

- Selection into buying through the intermediary:

$$\mathcal{I}_j = \{i : V_{ij}^I \cdot (1 - \gamma_{ij}) \geq V_{ij}^D\}$$

where  $\gamma_{ij}$  is the relative utility discount of dealing with intermediary, with  $\gamma_{ij} \sim N(\gamma_i, \sigma)$

- Equilibrium is a fixed point on intermediation choices  $\mathcal{I}_j$  and expected auction outcomes
- Estimation: Probit, via MLE

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# Counterfactuals

1. Quantify the impact of the public intermediary (with voluntary intermediation):
  - ▶ Shut down intermediation channel
2. Adding minimum intermediation mandates:
  - ▶ Agencies must intermediate at least  $x\%$  of their expenditure
  - ▶ Intermediation decision becomes a portfolio problem
  - ▶ Each intermediation cycle, buyer  $i$  chooses  $\lambda_{ij} \in \{0, 1\}$  for each drug to maximize

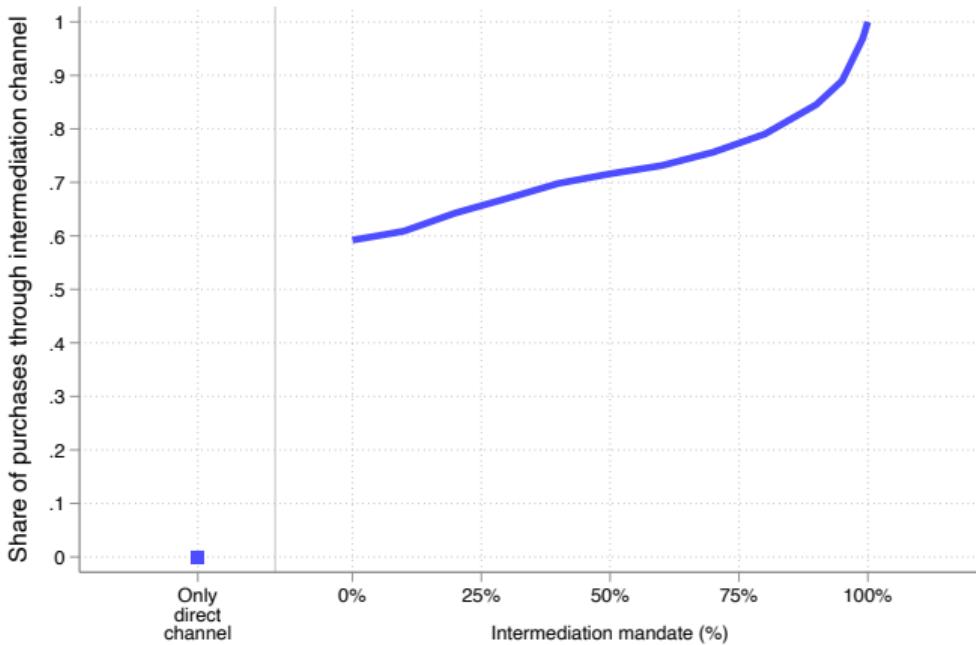
$$U_i = \sum_j \lambda_{ij} (V_{ij}^I - \gamma_{ij}) + (1 - \lambda_{ij}) V_{ij}^D$$

s.t.

$$\frac{\sum_j \lambda_{ij} P_{lj}^* q_{ij}}{\sum_j \lambda_{ij} P_{lj}^* q_{ij} + (1 - \lambda_{ij}) P_{lj}^* q_{ij}} \geq x$$

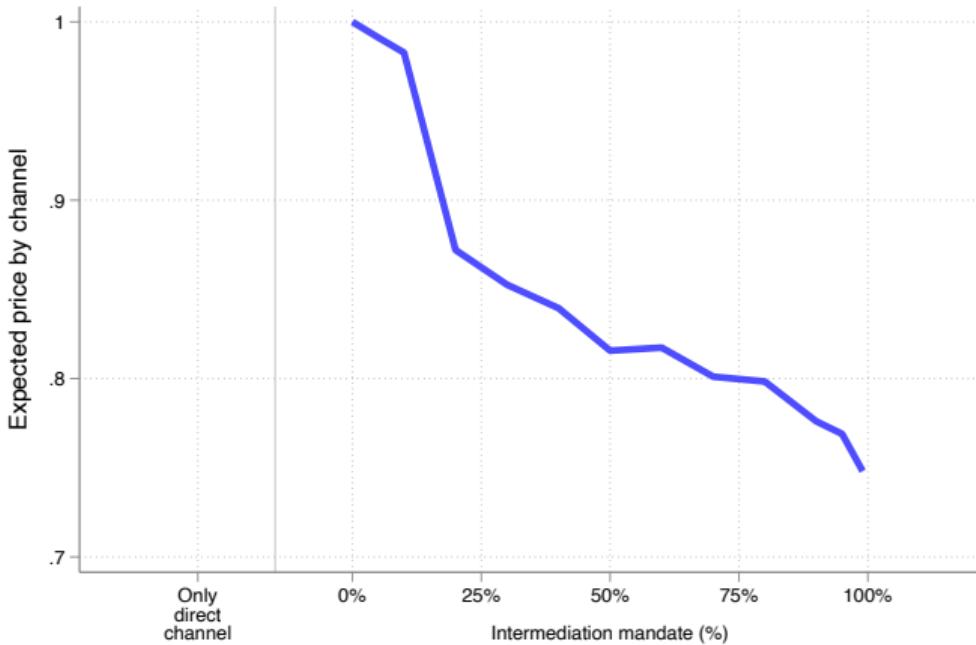
- ▶ Simulate outcomes for range of  $x$  from no mandate ( $x = 0$ ) to full mandate ( $x = 1$ ).

# Counterfactual: Channel choice



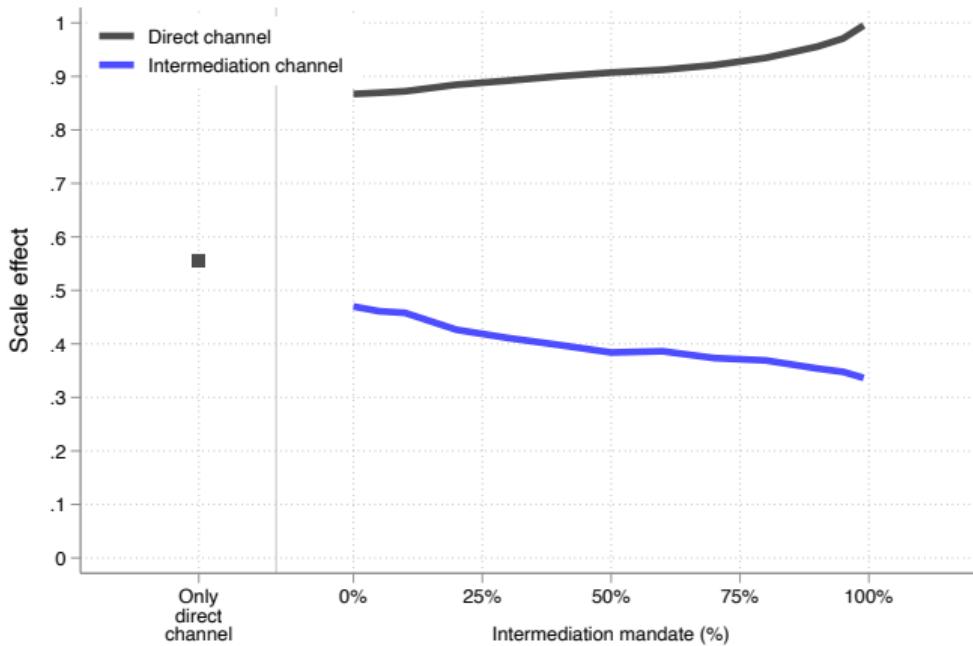
- ▶ Intermediation is only partial at baseline, hence mandates do have an impact

# Counterfactual: Expected prices in intermediation



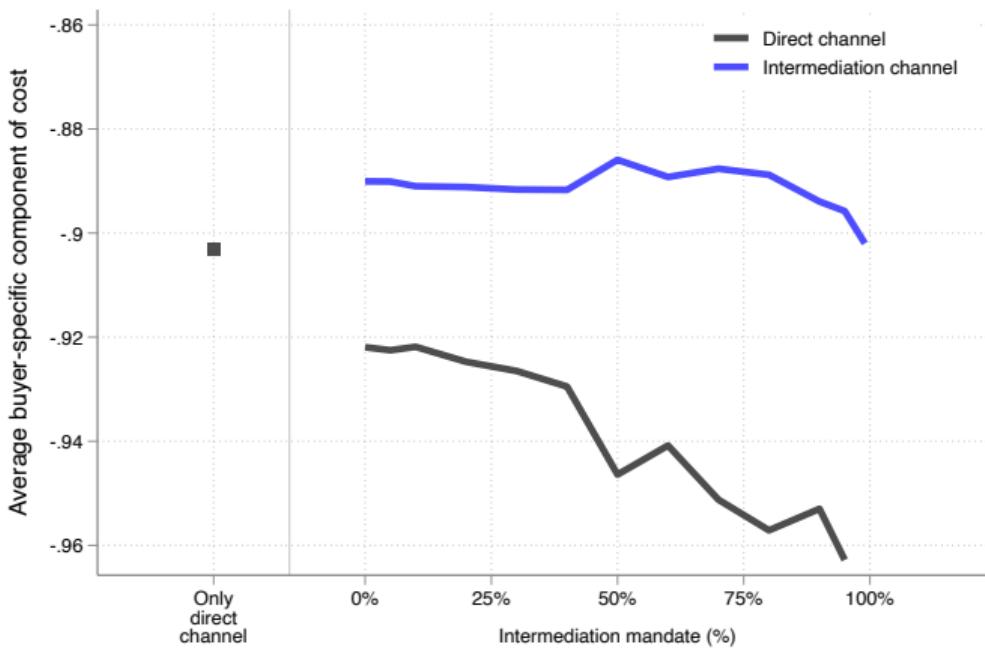
- Prices in intermediary decrease with mandate, due to selection and scale effects

# Counterfactual: Scale effects



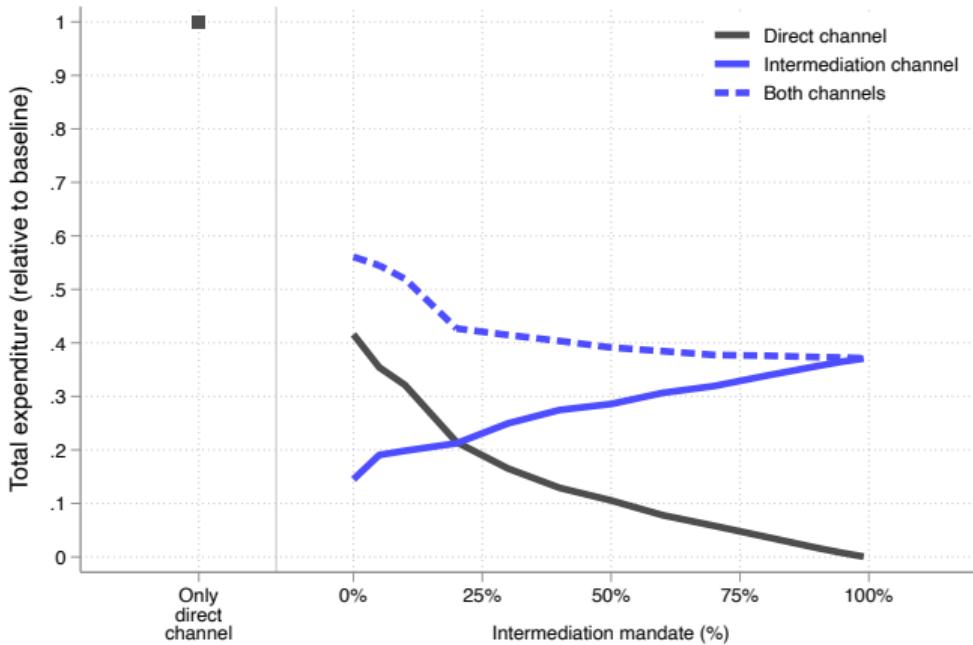
- ▶ Increase in intermediation with mandates leads to scale effects in intermediation channel
- ▶ Explains most of the price drop.

# Counterfactual: Selection



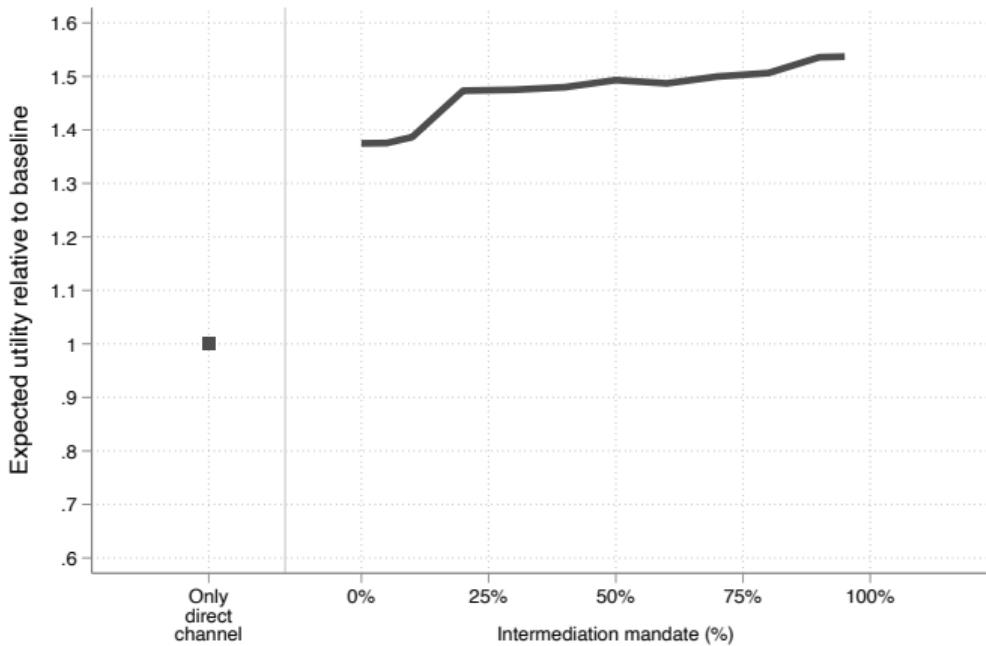
- ▶ Intermediation channel is adversely selected
- ▶ Marginal buyer that intermediates is relatively low cost, average  $\omega_i$  decreases with mandate

# Counterfactual: Total expenditure by buyers



- Centralized procurement reduces expenditure by 45%, full mandate by 62%
- Extrapolating to full sample, expenditure decreases by \$167 MM/year

# Counterfactual: Buyer welfare [preliminary!]



- ▶ Introducing intermediary increases welfare
- ▶ Mandate further increases welfare

# Outline

1. Setting and data
2. Description of direct public procurement
3. The role of the public intermediary
4. Model
5. Counterfactuals
6. Discussion

# Discussion

- ▶ The design of centralized procurement depends on complex trade-offs:
  - ▶ Advantage stems from scale effects that may lower prices
  - ▶ Disadvantages associated to preference heterogeneity
  - ▶ Adverse selection into intermediation may lead to inefficient intermediation, motivate mandates
- ▶ This paper:
  - ▶ Descriptive evidence on the performance of public intermediary and the effects of mandates
  - ▶ Empirical model to quantify trade-offs and study optimal intermediation mandates
- ▶ Next steps:
  - ▶ Welfare analysis and optimal mandate
  - ▶ Multi-award auctions to better manage scale/variety trade-off?
  - ▶ Cost-adjustment by intermediary to deal with adverse selection?

## **Additional slides**

# Top drugs in the market

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## ► Top Drugs:

- ▶ Furosemide (Diuretics)
- ▶ Metformin (Drugs used in diabetes)
- ▶ Omeprazole (Drugs for acid related disorders)
- ▶ Hydrocortisone (Corticosteroids for systemic use)
- ▶ Paracetamol (Analgesics)
- ▶ Gentamicin (Antibacterials for systemic use)
- ▶ Fluoxetine (Psychoanaleptics)
- ▶ Metoclopramide (Drugs for functional gastrointestinal disorders)

# Top vendors in the market

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- Top Vendors (by \$):

- Roche (Switzerland)
- Opko (U.S.)
- Pfizer (U.S)
- Laboratio Chile (Chile)
- Ascend Labs (India)
- Sanofi-Aventis (France)
- Novartis (Switzerland)
- Recalcine (Chile)
- Recben (Chile)

# Descriptive statistics of auction scoring rules

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- Weight distribution over bid attributes:

Bid attribute	Mean	SD
Price	0.45	0.15
Technical	0.37	0.19
Delivery	0.12	0.11
Other	0.06	0.1

# Example bid evaluation

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Clasificación ONU: 51101542

Cantidad: 12000

Nombre: Ciprofloxacina

Especificaciones del Comprador: CIPROFLOXACINO 500 MG CM 2130034

Proveedor	Nombre de la Oferta	Especificaciones del Proveedor	Cantidad Ofertada	Precio Unitario	Monto	Precio Minimo	Puntaje Precio 40%	Puntaje Calidad 50%	Plazo de Entrega	Puntaje Plazo de Entrega 10%	Puntaje total	Adjudicacion
LABORATORIO CHILE S.A.	ANTIBIOTICOS MARZO-MAYO	CIPROFLOXACINO 500MG 6CR NF 120-10-79030 VENCIMIENTO FEBRERO 2016 DESPACHO 48 HRS. BIOEQUIVALENTE	12.000	\$ 60	\$ 720.000	\$ 21	34,17	100	2	100	73,7	ADJUDICADA
FARMACEUTICA SANTIAGO LIMITADA	OFERTA MEDICAMENTOS FARMACEUTICA SANTIAGO LTDA	905092 CIPROFLOXACINO 500 MG X 1000 COMP N° REGISTRO ISP-F-14779/10 VENCIMIENTO 30/06/2014 OPKO	12.000	\$ 26	\$ 306.000	\$ 21	80,39	60	3	90	71,2	
INVERSIONES PHARMAVISAN S.A.	PHVR	CIPROFLOXACINO 500 MGX6 T-A FN BIO DESPACHO 2- 3 DIAS HABILES	12.000	\$ 97	\$ 1.164.000	\$ 21	21,13	70	3	90	52,5	
Droguería Antofagasta	DROGUERIA ANTOFAGASTA LIMITADA CRP	Ciprofloxacin 500mg x 600 cmp Euromed v.01/2016	12.000	\$ 28	\$ 336.000	\$ 21	73,21	70	3	90	73,3	
OPKO CHILE S.A.	GABRIEL ROBLES A. OPKO CHILE S.A. 86289689	PT000043 CIPROFLOXACINO 500MG X 1000 COMP. REG. ISP-F-14779 BIOEQUIVALENTE vENC.31/08/2015	12.000	\$ 34	\$ 408.000	\$ 21	60,29	70	3	90	68,1	
ETHON PHARMACEUTICALS LTD.	ETHON FERNANDA	CIPROFLOXACINO 500MG 600 COMP VOLTA	12.000	\$ 22	\$ 264.000	\$ 21	93,18	50	2	100	72,3	
Caribbean Pharma Ltda	VALE636-87	CIPROFLOXACINO 500 MG X 600 COMPRIMIDOS GENERICO EUROMED	12.000	\$ 21	\$ 246.000	\$ 21	100,00	45	2	100	72,5	

- Auction by Hospital Juan Noé (Arica) for Ciprofloxacin (antibiotic) 500 MG tablets.
  - Bids evaluated on price, technical and delivery, weighted 40%, 50% and 10%
  - Among the 7 offers received, Laboratorio Chile received highest score and won the auction

# Index stats

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	N	Mean	SD	Min	Max	p10	p25	p50	p75	p90
Delivery Index	278689	0.80	0.32	0.00	1.00	0.30	0.60	1.00	1.00	1.00
Technical Index	333417	0.70	0.36	0.00	1.00	0.00	0.50	0.86	1.00	1.00
Price Index	372140	0.70	0.26	0.00	1.00	0.30	0.52	0.74	0.95	1.00
Other Index	108617	0.69	0.36	0.00	1.00	0.00	0.50	0.83	1.00	1.00

- ▶ Average scores fluctuate between 0.7 and 0.8
- ▶ Technical and Other Indexes show higher dispersion than other indexes

# Technical index

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- ▶ Index is obtained based on compliance with (a subset of) the following:
  - ▶ Product originality or bioequivalence standards
  - ▶ Good manufacturing practice (GMP) certification of the active ingredient (or drug) manuf. site
  - ▶ Published clinical studies demonstrating effectiveness and safety
  - ▶ ISO 9000 standards
  - ▶ Pharmacovigilance (drug safety) program.
  - ▶ Transportation requirements (temperature)
- ▶ Technical score correlate with observables Observables

# Technical index

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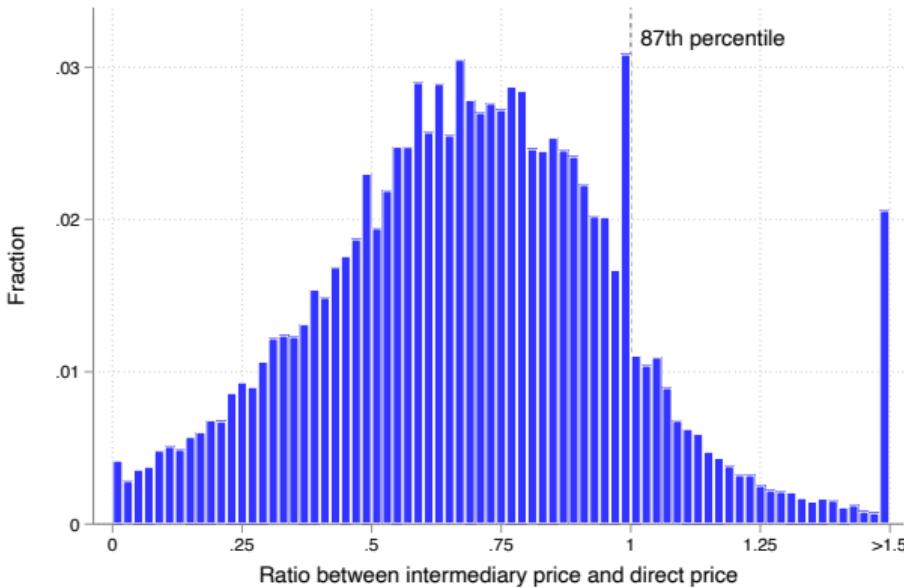
	Technical Index			
	(1)	(2)	(3)	(4)
Vendor is Lab	0.092*** (0.003)			0.088*** (0.003)
Branded Product		0.088*** (0.004)		0.080*** (0.004)
Certified Bioequivalent Product			0.125*** (0.006)	0.119*** (0.006)
Number of Observations	45476	45476	45476	45476

Every observation is a bid. Each regression includes Drug and Buyer fixed effects

- Technical Index correlates with product and vendor observable characteristics

# The intermediary often offers lower prices

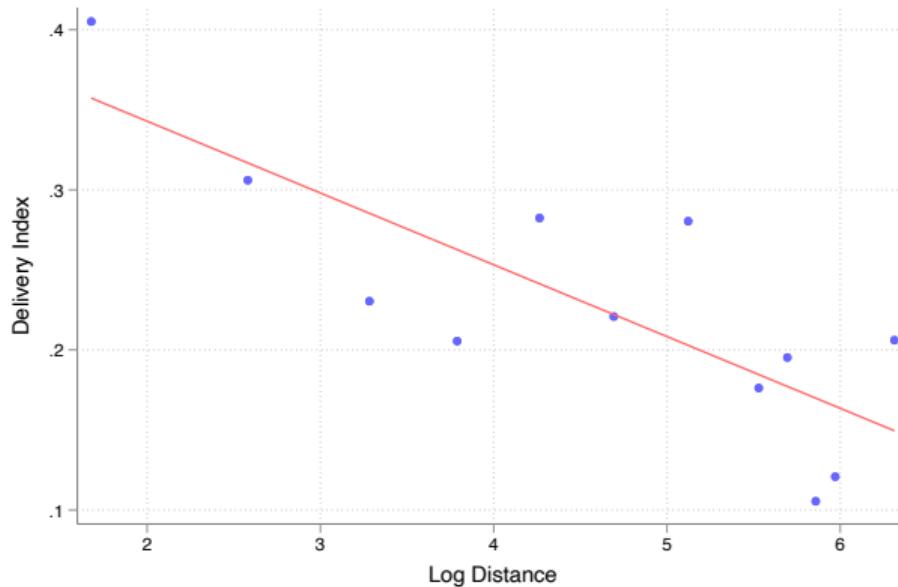
[Back](#)



- ▶ Intermediary offers a lower price than the direct channel in 87% of buyer-product-months.

# Delivery index

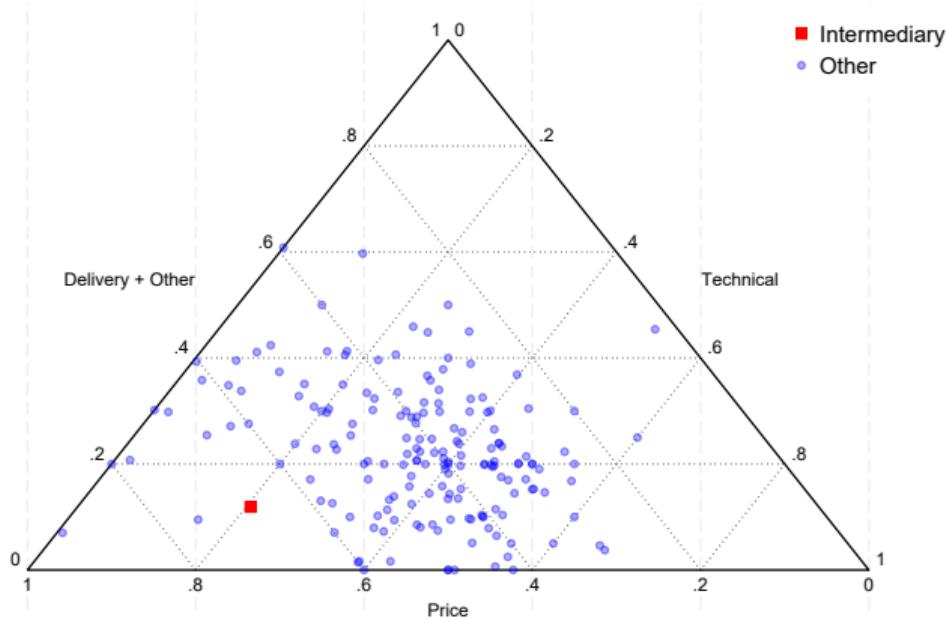
[Back](#)



- ▶ Delivery index correlates with proximity

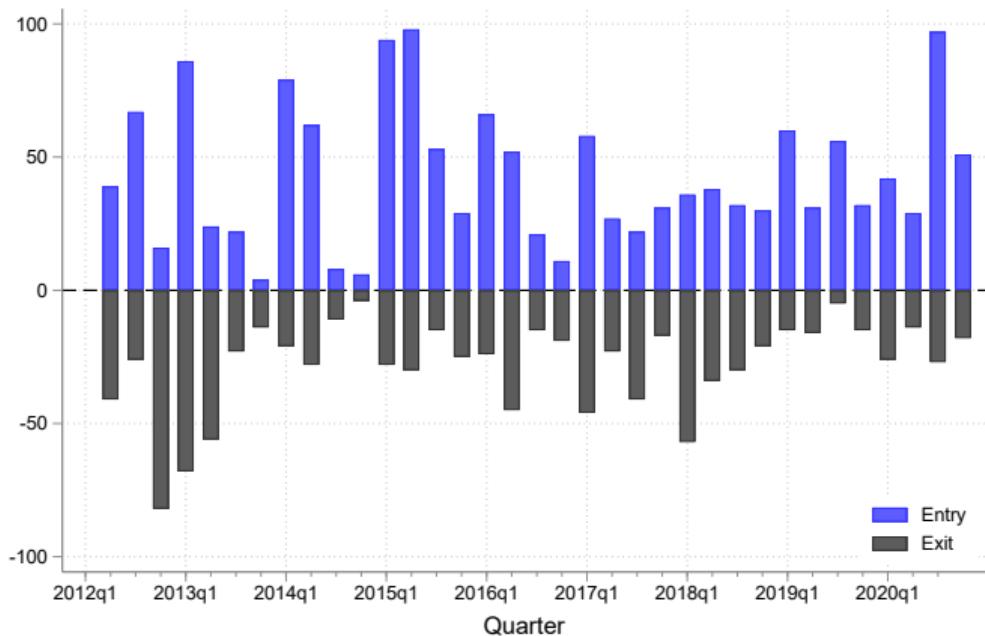
# Scoring rule weights

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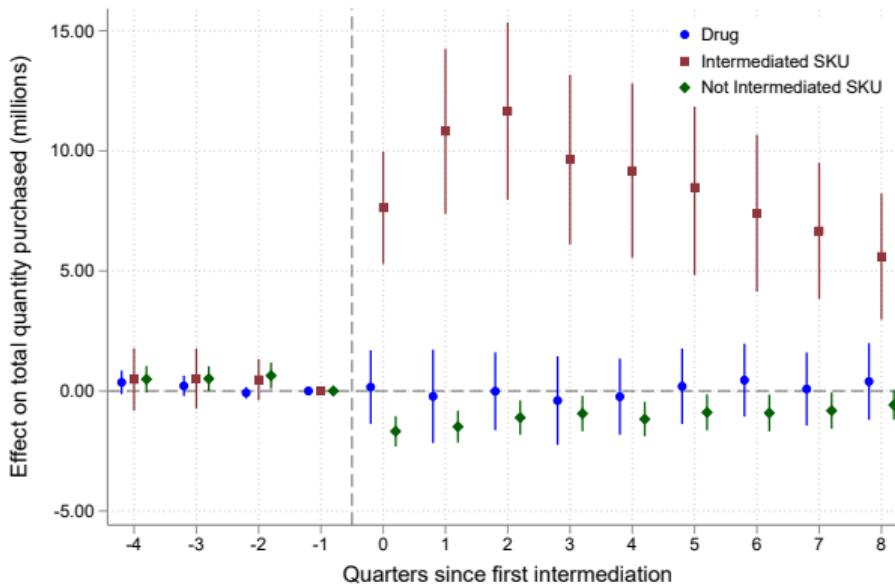
- The intermediary over-weights price

# Availability of products at the intermediary



- Note: Every column counts the number of drugs that enter (blue) or exit (black) the intermediation catalog in each quarter

# Intermediation induces substitution within drugs



- Demand for *products* that enter intermediation increases substantially
- Non-intermediated *products* demand decrease, no aggregate effects at the *drug* level

## Resumen de Participación en Canasta Esencial de Medicamentos (CEM)

Información actualizada a marzo de 2023

CENABAST

Tipo de resultado  
Resultado SICEM

Año  
2023

Mes  
Marzo

Servicio de Salud  
S.S. VALPARAISO SAN

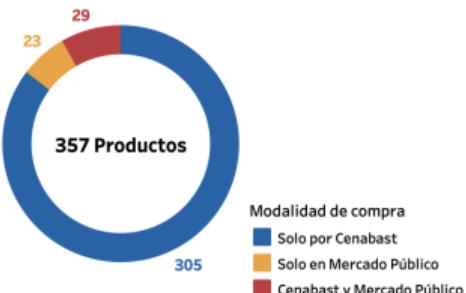
Establecimiento  
HOSPITAL CARLOS VAN BUREN

Tipo establecimiento  
EAR

[Clic para descargar  
"Manual del Usuario"](#)

### Número de productos CEM comprados

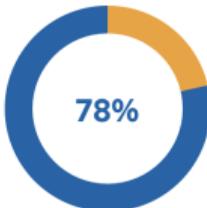
Según modalidad de compra



Del total de productos CEM, **334** son programados a Cenabast.

### Participación CEM en Monto

Porcentaje del monto total en CEM comprado a través de CENABAST



De un total de **\$ 520.684.574** pesos comprados en productos CEM,  
**\$ 408.546.711** pesos se compraron a través de Cenabast.

### Participación CEM en Cantidad

Porcentaje de la cantidad total en CEM comprado a través de Cenabast



De un total de **1.198.748** unidades compradas en productos CEM,  
**1.158.544** unidades se compraron a través de Cenabast.

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# Data example

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Licitación ID: 2126-146-LP12

Responsable de esta licitación: SERVICIO DE SALUD COQUIMBO HOSPITAL DE COQUIMBO,  
Hospital Coquimbo

63	Clasificación ONU : 51201804 Especificaciones del Comprador : Cantidad : 24	Sargamostim 216-0190 AGALSIDA:	Monto Unitario Oferta	Cantidad Adjudicada	Total Neto Adjudicado	Estado
76.051.550-7 LABORATORIO GENZYME CHILE LIMITADA	[FABRAZIME®. Comercializado por: Genzyme Chile; vial o Frasco ampolla de 35 mg; Via Administración: ISP; B-2063/08; Plazo Entrega: Dentro de 48 hrs. er Compra antes de las 12 hrs de lunes a jueves; Unid	\$ 2623574	1	2623574	Adjudicada	
Total Línea						\$ 2.623.574

a) Public - Direct Purchase (Mercado Público)  
[Price per unit: \$2.623.574]



LISTA DE PRECIOS GRUPO SANOFI

Vigencia: 01-08-2021



Precios Neto (No incluyen IVA)

Marca	Empresa	Área	Descripción	Presentación	Precio Lista
Aldurazyme	Sanofi	SpecialtyCare	ALDURAZYME	Unidad	503.585
Amaryl	Sanofi	Genmed	AMARYL 2 MG X 30 COMP.	Caja x 30 Comp.	11.250
Amaryl	Sanofi	Genmed	AMARYL 4 MG X 30 COMP	Caja x 30 Comp.	21.930
Apidra	Sanofi	Genmed	APIDRA CARTRIDGE 1 X 3 ML	Unidad	6.188
Apidra	Sanofi	Genmed	APIDRA SOLOSTAR 100 UI/ML 3ML CL RT5	Unidad	6.188
Aprovasc	Sanofi	Genmed	APROVASC 150/5 ML 1X28	Caja x 28 Comp.	18.424
Estaroril	Sanofi	Genmed	ESTAROPROL 100MG X60 CAP.	Caja x 60 Compo.	36.180
Fabrazyme	Sanofi	SpecialtyCare	FABRAZIME INJ,35MG/7ML VIAL X 1	Unidad	1.489.777
Fabrazyme	Sanofi	SpecialtyCare	FABRAZIME INJ,5 MG/1 ML VIAL X 1	Unidad	212.825
Flagyl	Sanofi	Genmed	FLAGYL 125MG/4 SUSPENSION BT1 EC	Frasco	8.435

c) Private - Wholesale Lists (Laboratories)  
[Price per unit: \$1.489.774]

Compras de Cenabast en productos Ley Ricarte Soto  
Información actualizada al 04 octubre de 2022

CENABAST

Tipo precio unitario Precio neto CLP	Clase de compra Nacional	Mecanismo de compra Trato directo
Nombre producto genérico AGALSIDASA BETA 35 MG FAM	Nombre marca comercial FABRAZIME 35 MG LIQF	<a href="#">Clic para descargar "Manual del Usuario"</a>

Nombre marca comercial	Proveedor	Cantidad unitaria	Precio unitario
FABRAZIME 35 MG LIQF P/INF IV CAJ 1 FAM	SANOFI-AVENTIS DE CHILE S.A.	92	5.418 1.065.794,00

b) Public - Intermediation (Cenabast)  
[Price per unit: \$1.065.794]

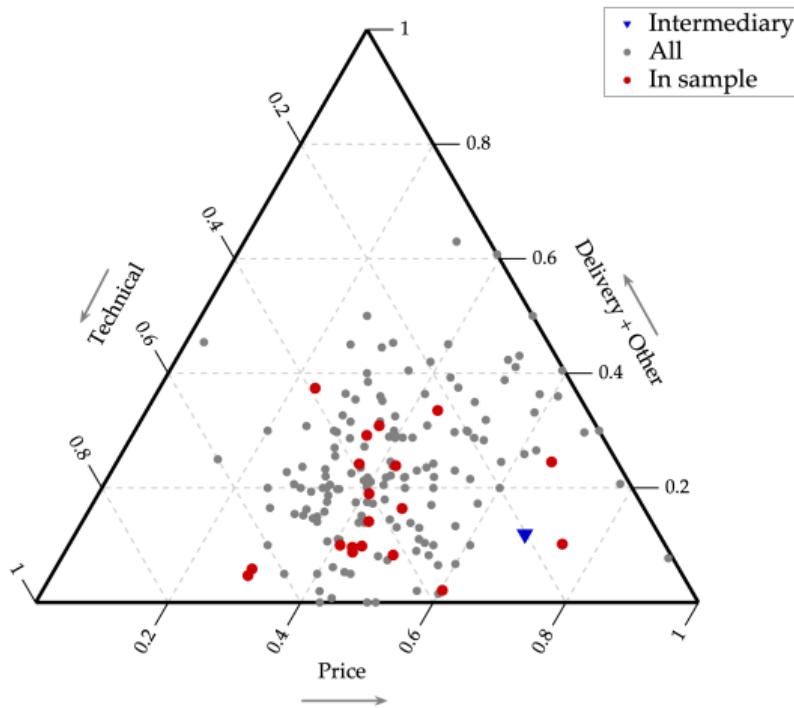
IQVIA

Código	Nombre	ephmra	Laboratorio	Precio
180802	ECTIEN XR MIC CAP LP 75MG X 30	N06A5	CHILE	-
180803	ECTIEN XR MIC CAP LP 150MG X 30	N06A5	CHILE	-
180901	FABRAZIME V.INF.LIOF 35MG X 1		GENZYME	1.876.982
180902	FABRAZIME V.INF.LIOF 5MG X 1	A16A0	GENZYME	-
181001	FERINJECT SOL INY FA 50MG/10ML X 1 (/ML)	B03A1	ANDROMACO	-
181101	GIOTRIF TABL RECUBIE 40MG X 28	L01H2	BOEHRINGER ING	-

d) Private - Retail IQVIA  
[Price per unit: \$1.876.982]

# Buyers in model sample

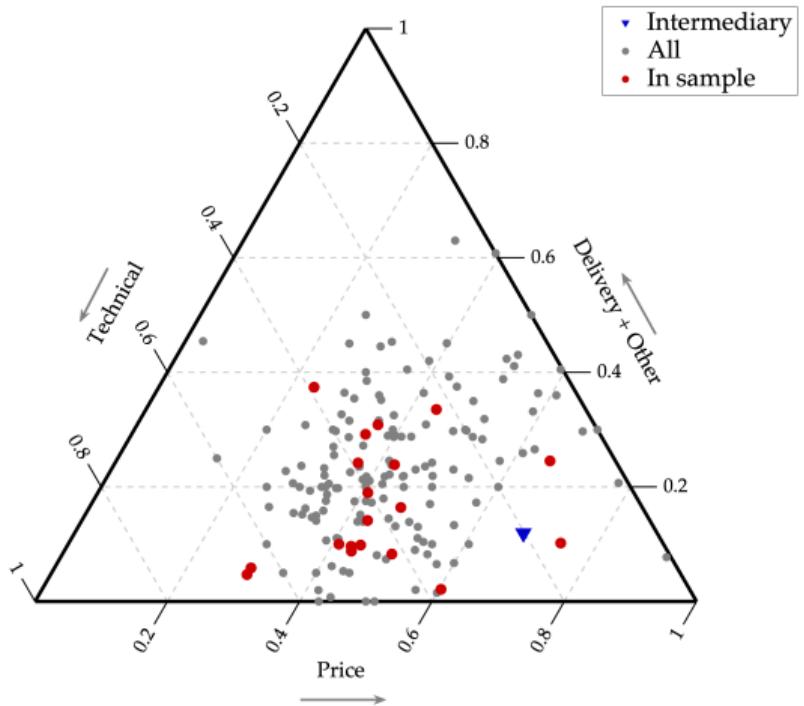
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- Scoring rules of buyers in model sample are representative of the universe

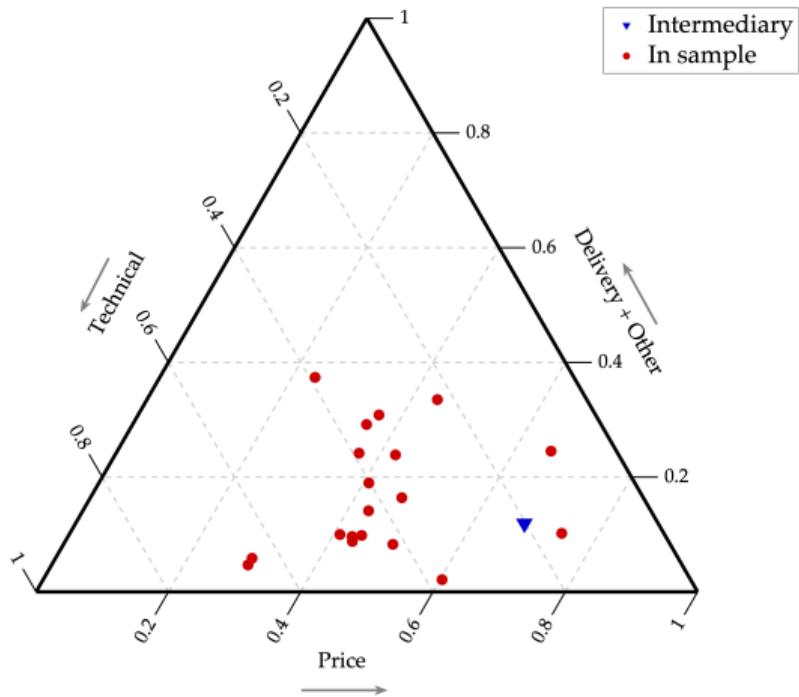
# Scoring Rule and Demand Parameters

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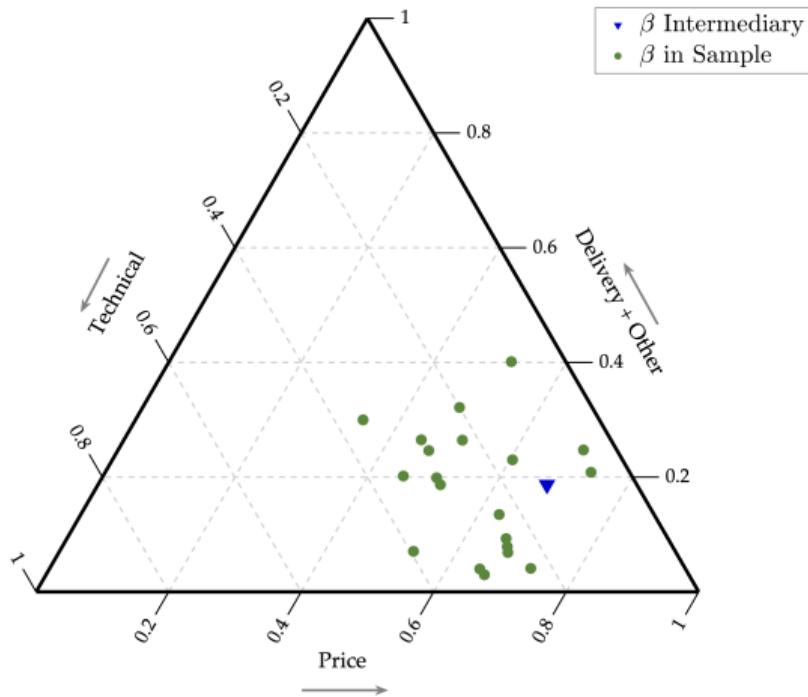
# Scoring Rule and Demand Parameters

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# Scoring Rule and Demand Parameters

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- Normalized demand coefficients relate to scoring design

