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A Firm-specific subsidy data

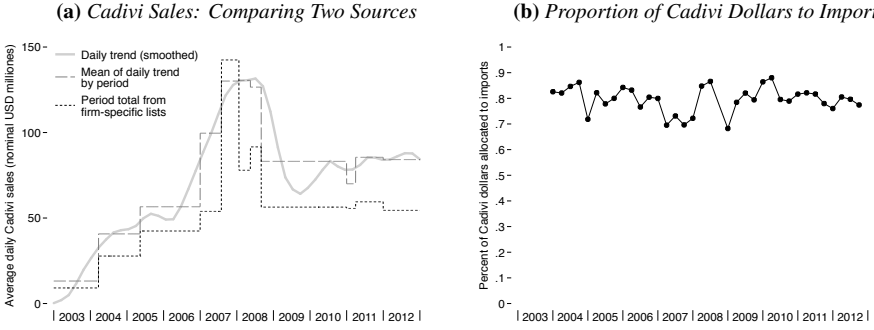
This appendix describes the construction, features, and limitations of our data on firm-specific subsidies. We use *firm* to refer to companies in the private sector as well as state enterprises and mixed public-private entities.

A.1 Obtaining and validating the data

Cadivi, the government agency charged with reviewing applications for purchasing currency at the official (discounted) rate, periodically published lists of the number of dollars each firm was approved to purchase at the official exchange rate. Firms are identified both by name and, as of 2004, by tax ID number, for which the Venezuelan acronym is RIF (the first two documents, published in 2003, list company name only). To view an example document, see here. We used these documents to construct a firm-level data set of cheap dollar allocations.

As a first step toward checking the quality of this information, we compare the total Cadivi dollars accounted for in the lists with a second source: disbursement microdata published by the Venezuelan Central Bank (BCV). For each disbursement approved by Cadivi, the BCV publishes the date of the transaction, amount of the transaction, and financial institution of the firm or individual purchasing the dollars (these data do not include the identity of the purchaser). We scraped these data for 2003–2012 period, summing across transactions to create a daily time trend of Cadivi disbursements.[1]

FIGURE A.1. *Data on Firm-Specific CADIVI Dollar Sales*



To facilitate comparison of the trend from these two sources, we aggregate the overall daily trend to the eleven time periods available in the firm-specific data; both are plotted in Figure A.1a. The approximate shape of the time trend in dollar sales is similar across the two sources. The level reported in the lists of firm-level allocations

1. The two sites from which we scraped these data are here and here.

is lower than that reported in the overall sales trend; this is likely due to the fact that the overall trend includes sales of foreign exchange for other purposes (such as travel and study abroad, see Table A.1). Figure A.1b plots the proportion of all Cadivi dollars allocated to imports over the same time period.

As a second step toward evaluating the quality of the Cadivi lists of firm-specific dollar allocations, we check for consistency across lists with overlapping dates. For example, if one list publishes allocations for January–June 2004, another list publishes allocations for July–December 2004, and a third list publishes allocations for all of 2004, we check whether the sum of each firm's allocations from the first two lists matches the firm's allocation in the third list. This exercise generally reveals a high degree of consistency across documents.

TABLE A.1. *Destination of CADIVI dollars, 2012*

Category	Amount (Billion USD)	Percent
Imports	24.1	77.5
Credit card purchases	2.8	9
Individual travel	1.8	5.8
Remittances	0.9	2.9
Students (tuition)	0.5	1.6
Other	1.2	3.9
Total	*31.1*	*100*

A.2 Use of Cadivi dollars by state enterprises

One limitation of our data is that we observe some, but not all, use of Cadivi dollars by state enterprises. Certain state enterprises do appear in the Cadivi lists (such as SIDOR, the steel corporation); others, such as the food importer CASA (Corporacion de Abastecimientos y Servicios Agrícolas) do not. However, CASA and many other state enterprises were only established during or after 2008—the period for which we have import microdata. We can therefore observe the total value of CASA imports (and imports from other state enterprises) for the post-2008 period; for these state enterprises, we use import values as a measure of Cadivi dollar allocations. In other words, we assume that all dollars for CASA imports were purchased at the official exchange rate.

A.3 Defining economic sectors

To group firms into economic sectors, we use a list of International Standard Industrial Classification of All Economic Activities (ISIC) codes provided privately by the Venezuelan tax agency, Seniat. We then group ISIC codes into 24 sectors, roughly

corresponding to the sectors for which Cadivi publishes sector-specific allocations. (Cadivi does not publish which companies fall into which sector; if we were to observe this classification, we would use it). Table A.2 lists the sectors in our final data set, the number of firms in each sector, and the number and proportion of Cadivi dollars allocated to each sector over the 2008–2012 period. ISIC codes are missing for 25 percent of firms that together purchase seven percent of Cadivi dollars; were we able to classify these firms, they might affect our sector-specific analysis.

TABLE A.2. *Sectors*

$ = billions of Cadivi dollars; % $ = percent of Cadivi dollars; N = number of firms; % N = percent of firms

Sector	$	% $	N	% N
General commerce	22.5	21.8%	7959	25.7%
Food and beverage	15.1	14.7%	1476	4.8%
Auto	13.3	12.9%	2716	8.8%
General services	10.1	9.8%	2818	9.1%
Agriculture	6.4	6.2%	448	1.4%
Health	6.2	6%	557	1.8%
Comm, media	4.7	4.6%	510	1.6%
Other	3.3	3.2%	878	2.8%
Rubber and plastic	2.4	2.3%	210	.7%
Chemical	1.8	1.8%	132	.4%
Electronics	1.7	1.7%	1060	3.4%
Construcion	1.4	1.3%	1107	3.6%
Clothing and shoes	1.3	1.2%	2804	9.1%
Paper and wood	1.2	1.1%	91	.3%
Metallurgy	1	1%	179	.6%
Textile	.7	.7%	212	.7%
Appliances	.6	.6%	15	0%
Machines	.5	.5%	152	.5%
Finance	.5	.5%	47	.2%
Electric	.5	.5%	67	.2%
Minerals (non-metal)	.4	.4%	60	.2%
Soap and toiletries	.3	.3%	38	.1%
Grafico	.3	.3%	82	.3%
Oil	.1	.1%	38	.1%
Furniture	.1	.1%	115	.4%
Telecom	0	0%	11	0%
Locomotive	0	0%	6	0%
Missing / unknown	6.8	6.6%	7174	23.2%

A.4 Descriptive statistics

Table A.3 describes the distribution of the number of Cadivi dollars (i.e., discounted dollars) purchased during 2008–2012 by each of the 32,024 firms in our analysis data set. Most firms purchase zero Cadivi dollars (i.e., have no access); the 90th percentile

firm purchases $1.1 million dollars, and the firms with the highest allocations purchase several billion dollars. General Motors purchases more dollars than any other firm; among the top twenty purchasers are other car companies (Ford, Chrysler, Toyota), Cargill, Procter & Gamble, and two Venezuelan telecom providers.

Table A.3 also describes the distribution of other quantities of interest in our analysis; these are discussed elsewhere in the text.

TABLE A.3. *Summary Statistics*

	N	mean	min	p01	p25	p50	p75	p99	max
Cadivi dollars (millions)	32,100	2.9	0.0	0.0	0.0	0.0	0.0	45.5	3614.1
Imports (millions)	32,100	6.5	0.0*	0.0	0.0	0.2	1.4	94.8	14987.8
Necessity score	32,100	-1.8	-6.4	-6.4	-3.1	-1.1	0.0	1.6	2.6
% price controlled	32,100	0.2	0.0	0.0	0.0	0.0	0.0	1.0	1.0
Elasticity (e_i)	30,962	1.5	0.0	0.3	0.9	1.1	1.5	8.4	150.1

* *No firm has zero imports, but the smallest firms have imports that round to* 0.0 *million dollars.*

B Derivation and extensions of the model

B.1 Derivation of the estimating equation

The government's objective function is:

$$\Omega = \alpha \underbrace{A(\cdot)}_{\substack{\text{Consumer} \\ \text{welfare}}} + \beta_1 \underbrace{\sum_{i=1}^{n} g_i(p_i - \hat{p}_i)}_{\substack{\text{Subsidy} \\ \text{externality}}} + \beta_2 \underbrace{\sum_{i=1}^{n} g_i(p_i)}_{\substack{\text{Consumption} \\ \text{externality}}} + (1 - \alpha - \beta_1 - \beta_2) \underbrace{\sum_{i=1}^{n} \pi_i(p_i, \hat{p}_i)}_{\substack{\text{Importer} \\ \text{profits}}}$$

where $A(\cdot) = 1 + \sum_{i=1}^{N} (\hat{p}_i - p_i^w) m_i(p_i) + \sum_{i=1}^{N} s_i(p_i)$

$m_i()$ denotes import volume, which in this case is equivalent to demand $d_i()$ as there is no domestic production; $\pi_i()$ denotes firm profits; $g_i()$ denotes the electoral returns to the *de jure* or *de facto* import subsidies; and $s_i()$ denotes consumer surplus, or:

$$s_i(p_i) = u(d_i(p_i)) - p_i(d_i(p_i))$$
$$\text{where } d_i(p_i) \equiv u_i'^{-1}(p_i)$$

Taking the derivative with respect to $\hat{p}_i$ yields:

$$\begin{aligned}
\frac{\partial \Omega}{\partial \hat{p}_i} = \; & \alpha \left[m_i(p_i) + (\hat{p}_i - p_i^w) \frac{\partial m_i(p_i)}{\partial p_i} \frac{\partial p_i}{\partial \hat{p}_i} + \frac{\partial s_i(p_i)}{\partial p_i} \frac{\partial p_i}{\partial \hat{p}_i} \right] \\
& + \beta_1 g_i'(p_i - \hat{p}_i) \left(\frac{\partial p_i}{\partial \hat{p}_i} - 1 \right) + \beta_2 g_i'(p_i) \frac{\partial p_i}{\partial \hat{p}_i} \\
& + (1 - \alpha - \beta_1 - \beta_2) \left(\frac{\partial \pi_i(p_i, \hat{p}_i)}{\partial \hat{p}_i} + \frac{\partial \pi_i(p_i, \hat{p}_i)}{\partial p_i} \frac{\partial p_i}{\partial \hat{p}_i} \right)
\end{aligned}$$

To evaluate this derivative, we leverage two assumptions about the economy. The first concerns the relationship between domestic demand and consumer surplus:

$$\begin{aligned}
\partial s_i(p_i)/\partial p_i &= u'(d_i(p_i)) d_i'(p_i)) - ((d_i(p_i)) + (p_i d_i'(p_i)) \\
&= u'(u_i'^{-1}(p_i)) d_i'(p_i)) - ((d_i(p_i)) + (p_i d_i'(p_i))) \\
&= p_i d_i'(p_i) - d_i(p_i) - p_i d_i'(p_i) \\
&= -d_i(p_i)
\end{aligned}$$

That is, consumers lose from higher prices exactly as much as they do not consume. The second assumption concerns the relationship between domestic demand and producer surplus:

$$\frac{\partial \pi_i(p_i, \hat{p}_i)}{\partial p_i} = m_i(p) = d_i(p_i)$$
$$\frac{\partial \pi_i(p_i, \hat{p}_i)}{\partial \hat{p}_i} = -m_i(p_i) = -d_i(p_i)$$

Which is to say, producers gain (lose) from higher retail (wholesale) prices, exactly as much as they import less (more).

With these assumptions, and denoting

$$k_i \equiv \frac{\partial p_i}{\partial \hat{p}_i} \text{ and } \frac{\partial m_i(p_i)}{\partial p_i} \equiv m'(p_i)$$

we can write the derivative as:

$$\begin{aligned}\partial\Omega/\partial\hat{p}_i = \; & \alpha\left[m_i(p_i) + (\hat{p}_i - p_i^w)m'(p_i)k_i - m_i(p_i)k_i\right] \\ & + \beta_1 g_i'(p_i - \hat{p}_i)[k_i - 1] + \beta_2 g_i'(p_i)k_i \\ & + (1 - \alpha - \beta_1 - \beta_2)\left(m_i(p_i)k_i - m(p_i)\right)\end{aligned}$$

Setting equal to zero and solving for the optimal subsidy yields:

$$\begin{aligned}-(\hat{p}_i - p_i^w) = \; & -\frac{\beta_1}{\alpha}\frac{g_i'(p_i - \hat{p}_i)}{m'(p_i)}\frac{1 - k_i}{k_i} + \frac{\beta_2}{\alpha}\frac{g_i'(p_i)}{m'(p_i)} \\ & + \left(1 - \frac{1 - \alpha - \beta_1 - \beta_2}{\alpha}\right)\frac{m_i}{m'(p_i)}\frac{1 - k_i}{k_i}\end{aligned}$$

To obtain our estimating equation from this first-order condition, we follow the literature in using two identities:

(1) The specific subsidy or tariff, $t_i^s = \hat{p}_i - p_i^w$ can be written as a function of the ad-valorem subsidy and the subsidized price, $\hat{p}_i$:

$$t_i^s = \hat{p}_i - p_i^w$$
$$t_i^s = \frac{t_i^A}{t_i^A + 1} \times \hat{p}_i$$

(2) The price elasticity of demand can be written as:

$$e_i = -\frac{m'(p_i)}{\frac{m_i}{\hat{p}_i}}$$
$$\text{Thus, } \hat{p}_i - p_i^w = -\frac{t_i^A}{t_i^A + 1} e_i \frac{m_i}{m'(p_i)}$$

Plugging this in to the first-order condition yields:

$$\frac{t_i^A}{(t_i^A + 1)} e_i = \frac{\beta_1}{\alpha}\frac{k_i - 1}{k_i}\frac{g_i'(\hat{p}_i)}{m_i(p_i)} + \frac{\beta_2}{\alpha}\frac{g_i'(p_i)}{m_i(p_i)} + \left(\frac{1 - \alpha - \beta_1 - \beta_2}{\alpha} - 1\right)\frac{k_i - 1}{k_i}$$

We operationalize the g_i' terms as the value-weighted sum of the necessity scores of all products imported by firm i; g_i'/m_i is thus the value-weighted mean of the

necessity scores of all products imported by firm i.[2] To simplify notation in the main text, we denote this G_i, and we let $K_i \equiv (k_i - 1)/k_i$. We also define

$$\gamma_1 = \frac{\beta_1}{\alpha} \qquad \gamma_2 = \frac{\beta_2}{\alpha} \qquad \gamma_3 = \left(\frac{1-\alpha-\beta_1-\beta_2}{\alpha} - 1\right)$$

Adding an error term, this gives us our estimating equation:

$$\frac{t_i^A}{(t_i^A+1)} e_i = \gamma_1 K_i G_i + \gamma_2 G_i + \gamma_3 K_i + \epsilon_i$$

B.2 Are t and k substitutes or complements?

The extent to which subsidizing importing firms lowers the retail price of imported goods is itself (partially) a choice made by the government: price controls, enforcement of restrictions on smuggling, and other regulations affect who benefits from the import subsidy. At the same time, the extent to which the import subsidy lowers retail prices affects the (government's) return to subsidizing imports.

In this section, we consider the conditions under which t, the import subsidy, acts as a strategic complement to k, the pass-through rate. For the purposes of this section, t is shorthand for $t_i^s = \hat{p}_i - p_i^w$.

In the literature on monotone comparative statics, two parameters are strategic complements so long as they have increasing differences (i.e., higher values of the first parameter increase the effects of the other). Formally, when the objective function Ω is twice continuously differentiable, then Ω has increasing differences in t and k so long as $\frac{\partial \Omega}{\partial k_i \partial t} > 0$. In our case,

$$\begin{aligned}\partial\Omega/\partial t_i = \alpha\,&[m_i(p_i) + tm'(p_i)k_i - m_i(p_i)k_i] \\ &+ \beta_1 g_i'(p_i - \hat{p}_i)[k_i - 1] + \beta_2 g_i'(p_i)k_i \\ &+ (1-\alpha-\beta_1-\beta_2)\,(m_i(p_i)k_i - m(p_i))\end{aligned}$$

and note that $\partial p_i/\partial k_i = -t$. Suppose either that $\beta_1 = \beta_2 = 0$ and there is no additional electoral advantage to subsidizing imports or that $g_i''() = 0$. Then the cross-partial derivative reduces to:

$$\begin{aligned}\partial\Omega/\partial k_i \partial t_i &= \alpha\,[-t_i m'(p_i) + t_i(-t_i k_i m''(p_i) + m'(p_i)) - (-t_i m'(p_i) + m(p_i))] \\ &\quad + (1-\alpha)\,[m(p_i) - t_i k_i m'(p_i) + t_i m'(p_i)] \\ &= \alpha\left[-t_i^2 k_i m''(p_i) + t_i m'(p) - m(p_i)\right] + (1-\alpha)\,[m(p_i) + (1-k_i)t_i m'(p_i)] \\ &= \alpha[-t_i^2 k_i m''(p_i)] + (1-2\alpha)m(p_i) + (1-k_i+\alpha k_i)t_i m'(p_i)\end{aligned}$$

2. In other words, if g_x' is the necessity score of product x, and firm i imports m_{xi} of good x, then $g_i' = \sum_x (g_x' \times m_{xi})$.

Recall that $m'(p_i)$ is negative. Rearranging and setting equal to 0, we find that $\partial\Omega/\partial k_i \partial t_i \geq 0$ if:

$$(1-2\alpha)m(p_i) > \alpha[m''(p_i)]k_i t_i^2 - (1-k_i+\alpha k_i)t_i m'(p_i)$$

Or:

$$k_i < \frac{(1-2\alpha)m(p_i) + m'(p_i)t_i}{(1-\alpha)m'(p_i)t_i + \alpha[m''(p_i)]t_i^2}$$

The direction of the inequality assumes that the denominator is positive, which would occur if $(1-\alpha)m'(p_i) < \alpha[m''(p_i)]t_i$. There are thus two conditions under which price controls and import subsidies are complements:

1. $(1-\alpha)m'(p_i) < \alpha[m''(p_i)]t_i$ and $k_i < \frac{(1-2\alpha)m(p_i)+m'(p_i)t_i}{(1-\alpha)m'(p_i)t_i+\alpha[m''(p_i)]t_i^2}$.

   With a high weight α on consumer welfare, imposing price controls on goods that are widely consumed (i.e.,have a high level of import demand m) produces electoral gains that outweigh the loss of importer contributions—making price controls a complement to subsidies.

2. $(1-\alpha)m'(p_i) > \alpha[m''(p_i)]t_i$ and $k_i > \frac{(1-2\alpha)m(p_i)+m'(p_i)t_i}{(1-\alpha)m'(p_i)t_i+\alpha[m''(p_i)]t_i^2}$.

   With a low weight α on consumer welfare, the electoral gain of imposing price controls can still outweigh the loss of importer contributions, making the two tools complements—as long as the price-controlled goods are not too widely consumed, i.e., as long as they have a low-enough level of demand m.

Otherwise, price controls ad import subsidies are strategic complements.

C Additional descriptive analysis

C.1 Validating assumptions about price controls

Table C.1 presents the correlation between monthly changes in the parallel exchange rate and monthly changes in (a) the average price of price-controlled goods in the food and beverage sector, and (b) the average price of other goods in the food and beverage sector, both before and after the imposition of price controls in February 2003.[3][4] Prior to the imposition of price controls, price changes in both groups of goods followed the exchange rate; after the imposition of price controls, controlled prices were much less sensitive to movement in the parallel rate.

TABLE C.1. *Correlation between* Δ *prices and* Δ *parallel exchange rate (monthly)*

	Pre 02/2003	Post 02/2003	Diff-in-diff
Price-controlled goods	0.100	0.120	
	(0.146)	(0.073)	
Other goods	0.130	0.390	
	(0.117)	(0.082)	
Difference	-0.040	-0.280	-0.240
	(0.058)	(0.075)	(0.095)

Goods in the food and beverage sector; standard errors in parentheses.

Second, while most goods are either subject to price control or not subject to price control throughout the 2003–2012 period, a few goods change status. Figure C.1a plots price indices for two cheeses: Parmesan, which is never subject to price control, and American cheese, on which price controls are imposed beginning in January of 2008. The prices increase at similar rates prior to the introduction of the American cheese price control and then sharply diverge afterward. Similarly, both wheat flour and corn flour were initially placed under price control; however, the price control on wheat flour was lifted in 2008, after which the price of wheat flour increased at nearly twice the rate of the price of corn flour. This suggests that price controls do affect the extent to which the import subsidy lowers consumer prices.

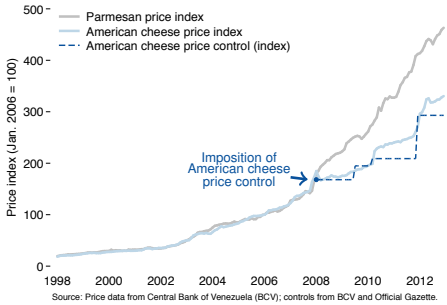
3. Price data and exchange-rate data were obtained from the Venezuelan Central Bank. The product-specific price indices are those used by the Bank for internal CPI calculations; they are constructed by canvassing a sample of retail outlets of various types (supermarkets, bodegas, etc.) and thus reflect *de facto* retail prices.

4. The differenced series are stationary.

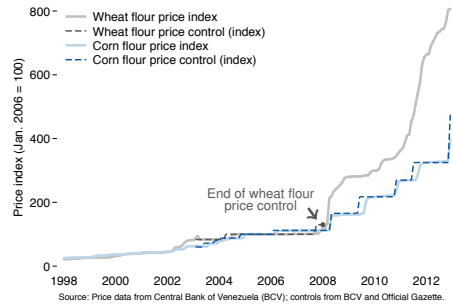
FIGURE C.1. *Evidence of Enforcement of Price Controls*

These figures plot the retail price indices of cheeses (a) and flours (b) alongside the corresponding price control indices. Price data were obtained from the Venezuelan Central Bank; price-control data were compiled from the Official Gazette.

(a) *Parmesan vs. American cheese*



(b) *Wheat Flour vs. Corn Flour*



C.2 Coincidence of necessity scores and price controls

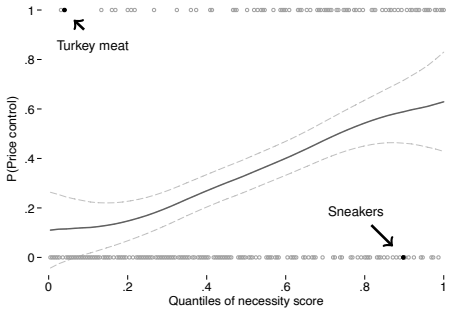
These two importer characteristics—whether a firm imports goods subject to price control, and whether a firm imports necessity goods (as opposed to luxury goods)—partially determine the allocation of import subsidies in our model. Here we establish that, while these two characteristics are indeed strongly related, they are not one and the same; there are price-controlled luxury goods, just as there are necessity goods not subject to price control.

Figure C.2 plots the relationship between price controls and quantiles of the necessity score defined earlier, both at the product level and at the firm level. While there is a strong positive relationship between the two, there are necessity goods that are not price-controlled and luxury goods that are price-controlled (Figure C.2a). The same is true of importers. One high-end rum distributor, for example, imports mostly products that are not price controlled; however, the company also distributes bottled water and other non-alcoholic drinks, which are price controlled (Figure C.2b). Likewise, a sportswear retailer imports clothing that has relatively high weight in the consumption of the poor and yet is not subject to price control.

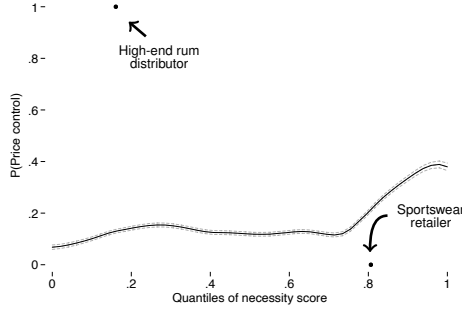
FIGURE C.2. *Necessity score imperfectly predicts price controls*

These figures plot the relationship between price controls and quantiles of necessity scores*; products with high necessity scores are those most disproportionately consumed by the poorest quartile of consumers (luxury goods have low values). In Figure (a), each circle represents a product; in Figure (b), each data point is a firm ($N \approx 32,000$ firms). In both figures, the lines show predictions with 95% confidence intervals from local linear regression, using an Epanechnikov kernel with the rule-of-thumb bandwidth proposed in Fan and Gijbels 1996, 110–113.*

(a) *Necessity score and price controls, Product level*



(b) *Necessity score and price controls, Firm level*

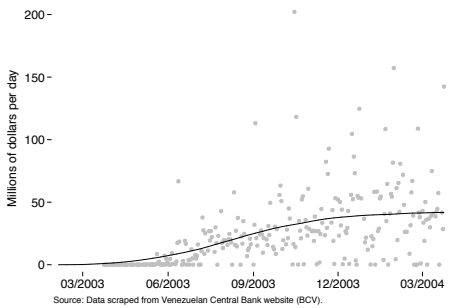


C.3 Additional tables and figures

FIGURE C.3. *Growth of Dollar Sales at the Official Exchange Rate*

Points mark daily disbursements of Cadivi dollars (in millions); the lines show predictions from local linear regression using an Epanechnikov kernel with the rule-of-thumb bandwidth proposed in Fan and Gijbels 1996, 110–113.

(a) *Slow Start on Cadivi Dollar Sales*



(b) *Cadivi Dollar Sales, 2003–2012*

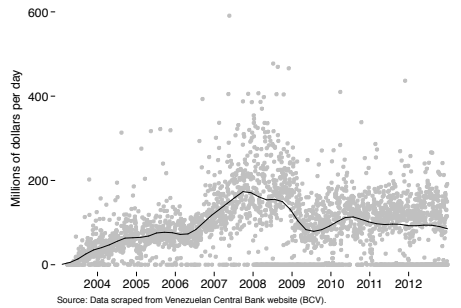


TABLE C.2. *The Official and Parallel Markets Compared*

Cadivi *refers to dollars purchased at the official (preferential) exchange rate.* Parallel *refers to dollars purchased at a floating rate on the private market, which was outlawed in 2010.* Sitme *refers to dollars purchased at an intermediate rate in a second government-run "market" opened in 2010.*

	Volume (Billions USD)				Proportion		
Year	Cadivi[a]	Parallel	Sitme	Total	Cadivi[a]	Parallel	Sitme
2004	14.82	6.89		21.71	0.68	0.32	
2005	18.35	12.96		31.31	0.59	0.41	
2006	22.08	9.47		31.56	0.70	0.30	
2007	40.99	21.11		62.10	0.66	0.34	
2008	48.24	20.36		68.60	0.70	0.30	
2009	26.15	30.38		56.53	0.46	0.54	
2010	30.26	6.90	5.08	42.24	0.72	0.16	0.12
2011	30.35	5.54	8.78	44.67	0.68	0.12	0.20
2012	31.32	6.03	9.44	46.79	0.67	0.13	0.20

Sources: Cadivi and Sitme, Venezuelan Central Bank (BCV); Parallel, Ecoanalítica.
[a] *This total includes dollars sold at the official rate for goods imported under the trade agreement ALADI (Latin American Integration Association).*

TABLE C.3. *Results by Import Elasticity Percentile*

Estimates at different percentiles of firm-level elasticity of import demand.

	All	< 10	< 25	< 50	< 75	< 90
α	0.44	0.47	0.47	0.47	0.46	0.46
	(0.002)	(0.001)	(0.001)	(0.0010)	(0.0009)	(0.0009)
β_1	0.01	0.01	0.01	0.01	0.01	0.01
	(0.0007)	(0.0004)	(0.0003)	(0.0003)	(0.0002)	(0.0003)
β_2	0.10	0.05	0.05	0.06	0.07	0.08
	(0.004)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
$\alpha + \beta_1 + \beta_2$	0.56	0.53	0.53	0.54	0.54	0.55
	(0.002)	(0.001)	(0.001)	(0.0010)	(0.0009)	(0.0009)
Obs.	30,962	3,097	7,741	15,481	23,222	27,866

We estimate descriptive regressions of the form:

$$t_i^A = \phi + \delta k_i + \psi G_i + \beta \left(G_i \times k_i\right) + \gamma X_i + u_i \tag{1}$$

TABLE C.4. *Descriptive analysis*

OLS estimates of Equation 1.

	(1)	(2)	(3)	(4)
Percentile of G (0 = Most luxury goods)	0.01 (0.005)	0.02 (0.009)	-0.004 (0.010)	-0.001 (0.006)
k (Price-controlled goods? 1 = Yes)	0.006 (0.007)	0.01 (0.008)	-0.02 (0.010)	-0.01 (0.008)
G × k	0.1 (0.01)	0.10 (0.02)	0.08 (0.01)	0.06 (0.01)
ln(Total imports in USD)			0.03 (0.002)	
Obs.	24512	24512	24512	24511
f (Total imports in USD)				✓
Sector fixed effects		✓	✓	✓

FIGURE C.4. *Luxury goods or necessity goods?*

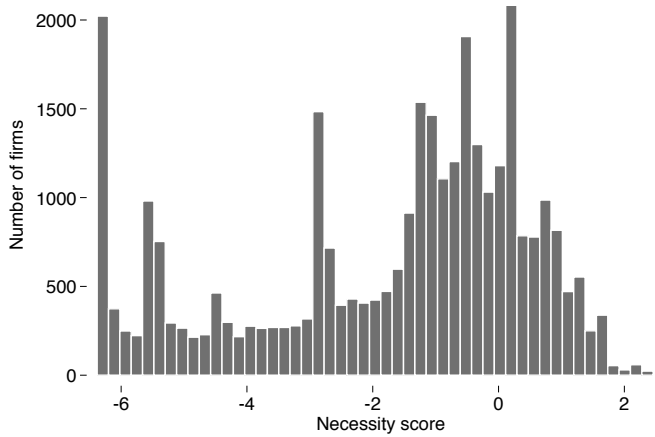
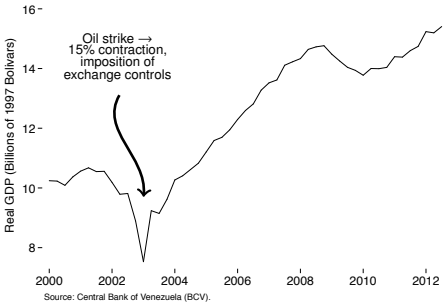


FIGURE C.5. *Exchange Controls Create a Parallel Market for Currency*

Figure (a) plots real GDP in Venezuela, highlighting the economy-wide strike that led to the imposition of exchange controls. Figure (b) plots Venezuela's official (that is, subsidized) exchange rate along side the (floating) parallel-market rate. After 2012, the end of the period we study, the parallel-market rate deteriorated quickly (http://www.venezuelaecon.com/).

(a) *Oil Strike Prompts Exchange Controls*



(b) *Market Value of B. Falls to Half of Official*

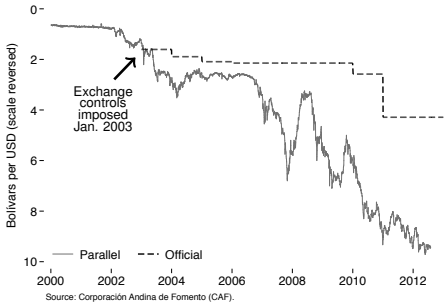
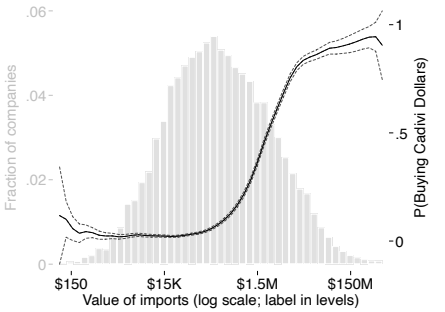


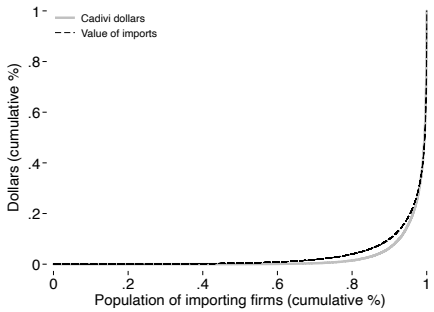
FIGURE C.6. *Cadivi: A Big Companies' Game*

Figure (a) shows, in grey, the distribution of importing firms by the cumulative value of their imports, 2008–2012. (The figure excludes the top and bottom one-tenth-of-one-percent of firms for visual clarity.) Figure (a) also plots, in black, the probability that a firm buys Cadivi dollars, as a function of import volume; this probability climbs steeply between the 70th and the 90th percentiles of importer size. Figure (b) plots Lorenz curves, both for Cadivi dollars and for value of imports, revealing that Cadivi dollars are slightly more *concentrated than imports themselves.*

(a) *Big Importers Get Cadivi Dollars*



(b) *Lorenz Curves: Imports & Cadivi Dollars*



D Sensitivity of structural estimates

The structural parameters α, β_1, and β_2 have no meaning outside of our theoretical framework, but we can evaluate the sensitivity of the estimates to our theoretical assumptions by comparing estimates of the coefficients $\boldsymbol{\gamma} = \gamma_1, \gamma_2, \gamma_3$ across various specifications of Eqn. 6.

In Table D.1, Column (1) presents our baseline estimates of $\boldsymbol{\gamma}$; it is this set of estimates that we use to calculate the structural parameters in Table 1. (Note, of course, that the γs are not the structural parameters themselves.) Column (2) allows a non-zero constant, which considerably shrinks the estimate of γ_2. Allowing sector fixed effects has similar consequences. Including the (log of) total imports as a regressor further shrinks the estimate of γ_2.

TABLE D.1. *Gammas*
Estimates of Equation 6 in the main text.

	(1)	(2)	(3)	(4)
γ_1	0.02	0.01	0.01	0.01
	(0.002)	(0.004)	(0.004)	(0.003)
γ_2	0.24	0.15	0.13	0.08
	(0.02)	(0.03)	(0.03)	(0.03)
γ_3	-0.01	-0.00	-0.00	-0.00
	(0.0010)	(0.002)	(0.002)	(0.002)
Total imports (ln)				0.03
				(0.002)
Constant		0.06	0.07	-0.38
		(0.01)	(0.02)	(0.03)
Obs.	23788	23788	23788	23788
Sector F.E.s			✓	✓

One way to think about these results is to note that the estimating equation derived from our model, Equation 6, is a constrained version of the descriptive Equation 1. Equation 1 fits two linear approximations: the first between the subsidy and necessity scores for companies importing price-controlled goods; the second between the subsidy and necessity scores for companies not importing price-controlled goods. Equation 6 does the same, but, following our theory, constrains the relationship between the intercepts of the two fit lines, and between the slopes. Comparing Table 1 with Table D.1 suggests that, in our case, the benefit of the model—structurally interpretable estimates—comes at the cost of lower predictive fit.

Date received: MMMM DD, YYYY; Date accepted: MMMM DD, YYYY.

Dummy dates; please ignore.