

Competition Policy for Emerging Economies: When and How?

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Measuring the Economic Effects of Cartels in Emerging Countries

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The context

Is there an impact of competition law enforcement on economic growth in emerging countries?

- **Opposite views**

- Enforcement is too costly compared to benefits
- Competition law + free trade implies too much competition from outside firms
 - National champions must be protected
- Too much competition reduces profits, hence investments
- Market specifics and failures (scale economies, financial constraints) call for market intervention

The context

Is there an impact of competition law enforcement on economic growth in emerging countries?

- **Empirical evidence**

- Significant impact:

- Levenstein and Suslow (2004)

- Jenny (2006)

- An objective and global measure is still missing

- A global problem of spillover

- Cartels can use developing countries to avoid the prosecution in developed countries

Lessons from the empirical literature

- Impact of competition policy on the economic growth (including innovation and productivity) and welfare is not clear (Baker, 2003; Werden, 2003; Crandall and Winston, 2003, Buccirosi et al, 2009)
- No strong evidence on the overcharge estimates and prices in the case of horizontal cartels (Bolotova, Connor, Miller, 2008; Sproul 1993)
- Lack of evidence of competitive harm in the case of vertical restraints (Ornstein et Hanssens , 1987; Asker, 2004; Hortaczu et Syverston, 2007)
- **CONCLUSION**
 - To favor a case by case approach for evaluating antitrust effects

Our Research

- Sets a significant database on cartels in developing countries
- Uses an economically founded method to evaluate the impact of these cartels
- Extrapolates these measures on the macro level based on the weights of the observed cartels in the overall economy
- Obtains a lower bound on the effects of cartels

Research plan

Step	Description	Output
Step 1. Data collection	A questionnaire is sent to competition authorities	Basic micro and macro data, necessary for calibration
Step 2. Calibration and simulation	Recovering the market structural parameters (demand parameters, marginal costs, etc.) and simulation of the non-cartel equilibrium	Non-cartel (“but for/counterfactual”) prices and market shares: -> price overcharge -> losses in consumers’ welfare -> output effect
Step 3. Estimation of the impact on economic development	Extrapolate the measurements on the macro level	Estimation [min bound] of the aggregated economic effect of cartelization

Step 2.1 Calibration of demand and supply parameters

Differentiated product market with LOGIT demand and J firms with constant marginal costs forming the cartel

$$\text{Demand: } U_{ij} = \delta_j - \alpha p_j + \mathcal{I}_{ij}, \quad \forall i \in N, j \in \overline{0, J}$$

$$\text{Supply: } \Pi_j = (p_j - c_j)q_j - FC_j \quad \forall j = \overline{1, J}$$

Step 2.1 Calibration of demand and supply parameters

Recover from the data

$$① \quad \ln(s_j) - \ln(s_o) = \delta_j - \alpha p_j, \quad \forall j = \overline{1, J}$$

(Demand equation, Berry 1994)

$$② \quad p_j^{cartel} - c_j = \frac{1}{\alpha s_0}, \quad \forall j = \overline{1, J}$$

(Cartel's profit maximization problem)

$$③ \quad \varepsilon_d = -\alpha p^{cartel\ average} s_0$$

(LOGIT demand property)

We need 2 parameters to be set exogenously:

- Relative/brute cartel margin
- Share of the outside option

Under hypothesis:

$$p_j^{cartel} - c_j = const, \quad \forall j = \overline{1, J}$$

Step 2.1 Calibration of demand and supply parameters/Cross check

- Market/industry knowledge

- Control parameters
 - e.g. elasticity

- Additional model constraints:

- Positive marginal costs:

$$|\varepsilon_d| > \frac{p^{\text{cartel average}}}{\text{Min}\{p_i^{\text{cartel}}\}}, \quad \forall i = \overline{1, J} \quad \text{where } p^{\text{cartel average}} = \sum_{i=1}^J s_i * p_i^{\text{cartel}}$$

- Share of the alternative options <1: $\alpha > \frac{|\varepsilon_d|}{p^{\text{cartel average}}}$

Step 2.2 Simulation of the counterfactual (competitive) state

Competitive equilibrium:

$$① \frac{p_i - c_i}{p_i} = \frac{1}{|\varepsilon_i|} = \frac{1}{\alpha p_i (1 - s_i)}, \quad \forall i = \overline{1, J}$$

$$\longrightarrow p_i^{compet}, s_i^{compet} \quad \forall i = \overline{1, J}$$

$$② s_i = \frac{\exp(\delta_i - \alpha p_i)}{1 + \sum_{j=1}^J \exp(\delta_j - \alpha p_j)}, \quad \forall i = \overline{1, J}$$



- Price overcharge
- Output effect
- Consumers welfare losses

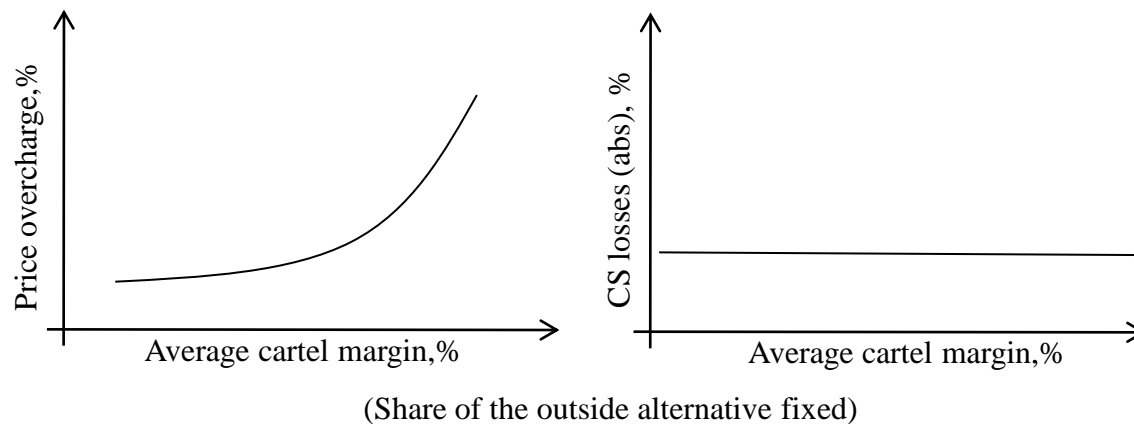
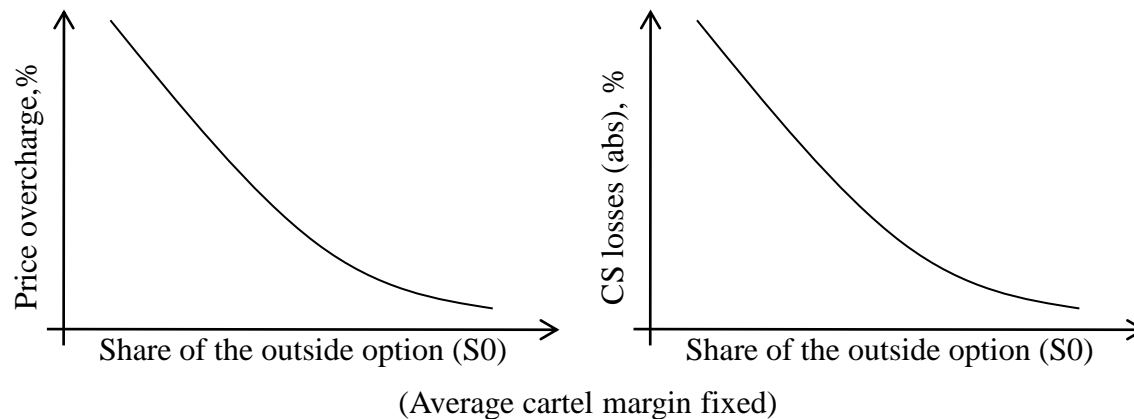
Illustration

Exogenous parameters:

- Average cartel margin (AM)

$$AM = \sum_1^J s_i^{cartel} \frac{(p_i^{cartel} - c_i)}{p_i^{cartel}}$$

- Share of the outside alternative (s_0)



Countries chosen to participate in the Research

Active phase	Passive phase
Brazil Chili Mexico Mauritius	Argentina, Barbados, Belarus, Benin, Burkina Faso, Cameroon, China, Colombia, Costa Rica, Egypt, Fiji, Gabon, Hungary, Jamaica, Kazakhstan, Malawi, Mali, Mexico, Moldova, Morocco, Namibia, Pakistan, Peru, Russia, Senegal, South Africa, Suriname, Tanzania, Thailand, Tunisia, Turkey, Ukraine, Uzbekistan, Venezuela, Zambia, Zimbabwe.
Subtotal: 4	Subtotal: 36
Total: 40	

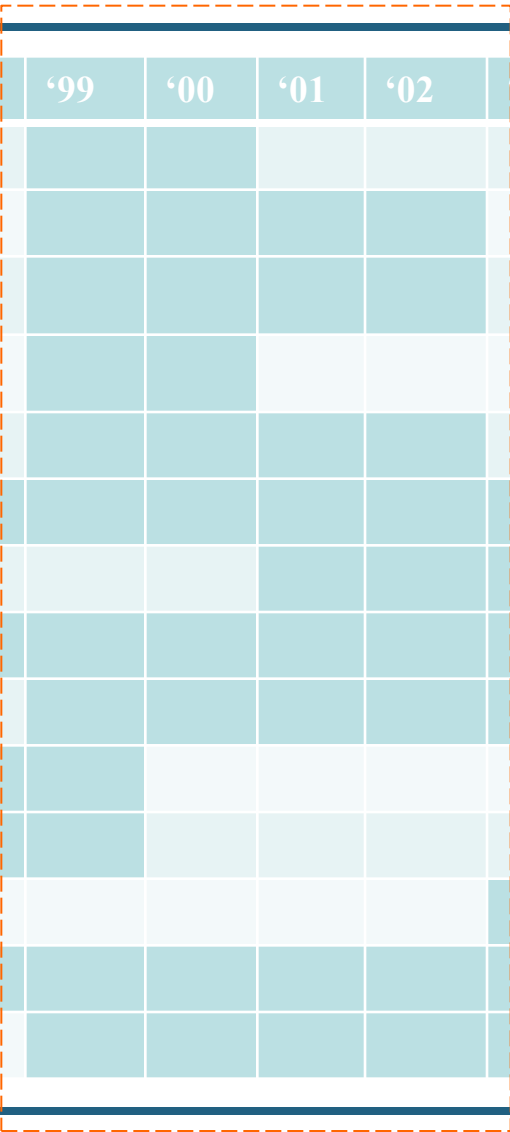
Step 1. Data collection

- **List of major cartels for the period 1995-2005** (basic final products; intermediary products and services; government procurement of public good)
- **Detailed data on each cartel** (members and nationality, period of existence, date of discovery, date of entry of each company, data on prices and market shares)
- **Industry data** (companies, volumes and prices (before, during and after cartelization), possible substitutes and its' volumes)
- Other macro data

Questionnaire

Main hard core cartels in Brazil, 1995-2005

	'95	'96	'97	'98	'99	'00	'01	'02	'03	'04	'05
Civil airlines											
Retail fuel dealers (Goiania)											
Retail fuel dealers (Florianopolis)											
Retail fuel dealers (Belo Horizonte)											
Retail fuel dealers (Recife)											
Industrial gas											
Hermetic compressors											
Security guard services											
Crushed rock											
Steel											
Steel bars											
Air cargo											
Construction materials (sand)											
Maritime hose											



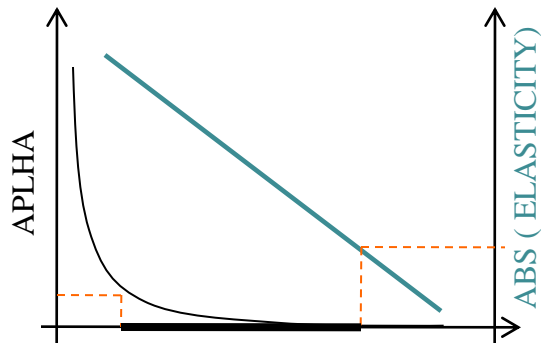
Example. Cartelization of the civil airlines in Brazil (1/4)

- **Relevant market:** transportation btw Rio de Janeiro (Santos Dumont) and San Paolo (Congonhas) / flight duration 1 hour.
- **Business/leisure trips rate:** 70%/30%
- **Period of cartel existence:** Jan 1999 - Dec 1999

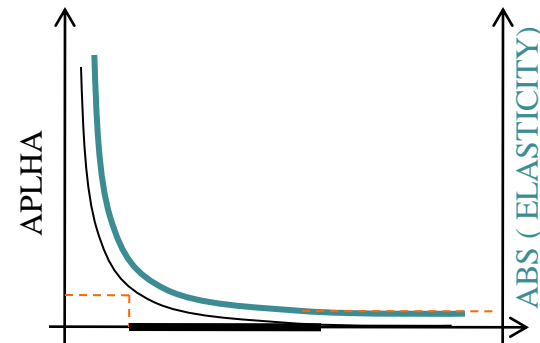
Airlines	Share cartel*	Price cartel, R\$*
VARIG	46.6%	129.32
TAM	41.5%	124.90
Transbrasil	6.5%	106.85
VASP	5.4%	108.03

*Price is given for a one way ticket, all data for July 1999

Example. Cartelization of the civil airlines in Brazil (2/4)



Share of the outside option (S0)



Average cartel margin (AM)

Airline	DELTA *	MC (R\$)*	Price overcharge *	Output loss*
VARIG	9.78	84.86	18.7%	5.2%
TAM	9.33	80.45	20.7%	7.4%
Transbrasil	6.12	62.39	36.8%	5.3%
VASP	6.03	63.57	36.7%	4.6%
* Cartel average margin is set to 25% and share of the outside market to 30%			Avg 21.7%	Sum 22.5%

Example. Cartelization of the civil airlines in Brazil (3/4)

Price overcharge	AM 5%	15%	25%	35%
\$0 5%	5.1%	17.1%	32.3%	52.2%
15%	4.7%	15.7%	29.2%	46.9%
30%	4.1%	12.7%	22.5%	35.2%
50%	3.8%	9.4%	17.5%	21.1%

Output loss	AM 5%	15%	25%	35%
\$0 5%	5%	5%	5%	5%
15%	15%	15%	15%	15%
30%	23.3%	22.7%	22.5%	22.5%
50%	15.6%	12.7%	13.3%	10.9%

Example. Cartelization of the civil airlines in Brazil (4/4)

Loss in consumers' welfare	AM 5%	15%	25%	35%
S0 5%	86.1%	86.1%	86.1%	86.2%
15%	72.3%	72.3%	72.4%	72.5%
30%	56.3%	55.1%	54.4%	54.5%
Loss in consumers' welfare related to GDP	AM 5%	15%	25%	35%
S0 5%	0.0006%	0.0017%	0.0028%	0.0040%
15%	0.0005%	0.0015%	0.0025%	0.0035%
30%	0.0004%	0.0011%	0.0017%	0.0024%
50%	0.0002%	0.0005%	0.0009%	0.0010%

Relative harm, caused by cartels in Brazil

Year	Estimated minimal price overcharge *, mln R\$	Minimal price overcharge* related to GDP, %	Minimal price overcharge related to CADE** budget, times
1999	843.2	0.08%	89
2000	632.1	0.05%	59
2001	604.9	0.05%	34
2002	689.2	0.05%	43

- **Minimal estimated price overcharge rate** varies among cartels from 3.3% to 7%, depending on the industry

* Does not include cases where data was not available (air cargo, construction materials, maritime hose)

** CADE (Conselho Administrativo de Defesa Economica) - Brazilian Competition Authority

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Webpage of the Project:

<http://www.unctad.org/Templates/Page.asp?intItemID=5527&lang=1>