

Privatizations, Partial Privatizations and Competition

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XII Mises Seminar, Sestri Levante

Privatizations as a *leading phenomenon*: politics, economics, public policy debate.

- Lots of considerations on efficiency gains from privatizations.
- Less about competition-related effects.

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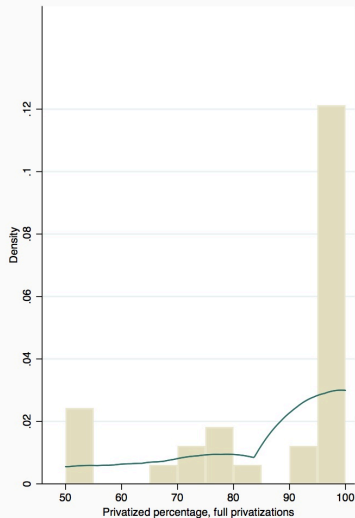
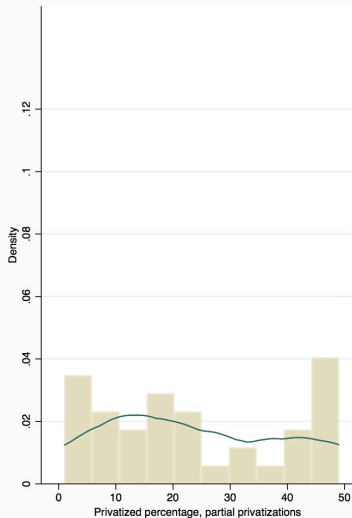
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What is the effect of partial and full privatizations on market openness?

Partial and full privatizations: Italy



- **Duopoly with a private and a privatized firm:**
Fershtman (1990); Matsumura (1998); Lee and Hwang (2003);
- **Partial ownership and welfare:**
Schmitz (2000); Bennett and Maw (2003); Ishibashi and Kaneko (2008)
- **Privatizations, efficiency and market failures:**
Shleifer (1998); Sheshinski (2003); Carter (2013)
- **Ownership structure and government's intervention:**
Sappington and Stiglitz (1987); Frydman et al. (1999); Kornai (2003)
- **Privatizations and welfare maximization:**
De Fraja and Delbono (1989); Davis et al. (2000)

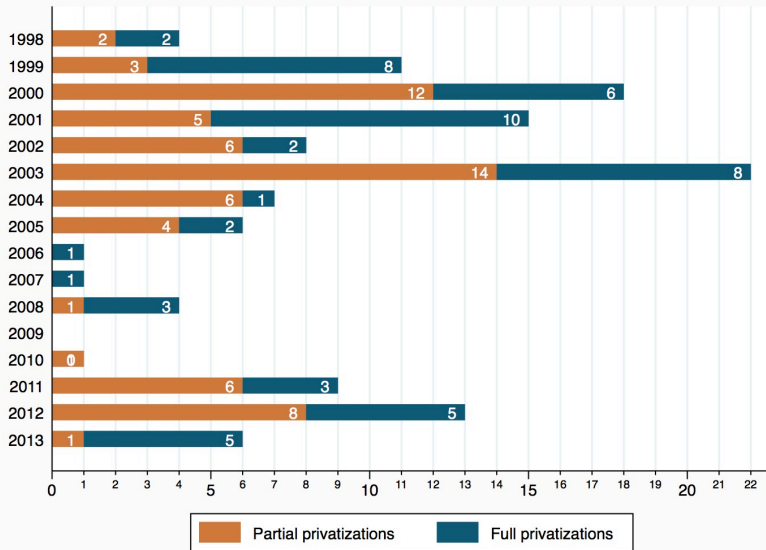
Privatizations: *Zephyr* M&A's database

- 1998 to 2013
- 57 full privatizations. Avg. 88.3%
- 69 partial privatizations. Avg. 24.2%
- Cleaned for “apparent” privatizations.

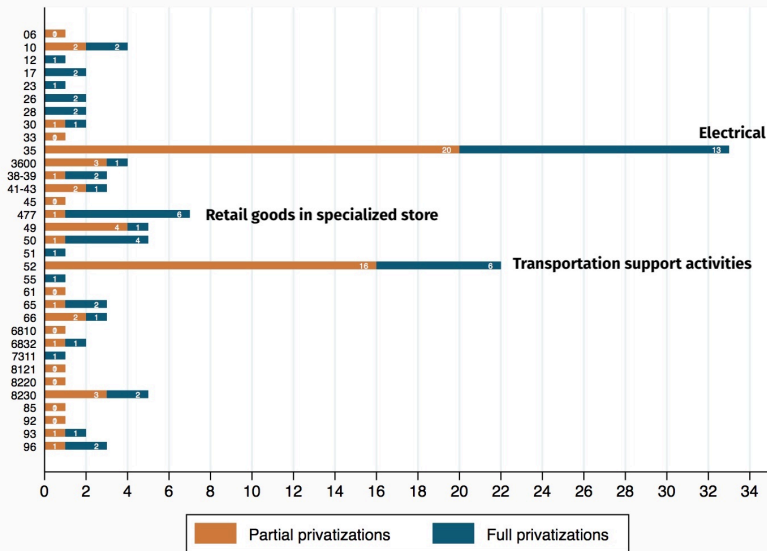
Market openness: *Eurostat*'s entry rate

- ratio between new companies born in the industry-year, and the active companies population

Italian privatizations by year (1998-2013)



Italian privatizations by industry (1998-2013)



Effect of past privatizations on market openness:

$$y_{it}^s = c + \sum_{j=1}^4 \alpha_j \text{Num.partial}_{t-j} + \sum_{j=1}^4 \beta_j \text{Num.full}_{t-j} + \gamma_i + \lambda_t + \varepsilon_{it}, \quad (1)$$

- $y_{it}^s = \frac{1}{s} \sum_{i=1}^s y_{t-s}$ for $s = 1, 2, 3$ is the measure of competition in terms of market openness.
 - **entry rate**: ratio between new firms in an year and active firms in that year, per industry
 - moving average to smooth the effect (measurement problem)
- γ_i and λ_t are industry and time FE, respectively.

Results for specification (1)

VARIABLES	(1) Entry rate	(2) 2y avg. entry rate	(3) 3y avg. entry rate
Partial in $t - 1$	-0.270 (0.286)	-0.512* (0.273)	-0.933*** (0.302)
Partial in $t - 2$	-0.369 (0.311)	-0.921*** (0.304)	-0.872*** (0.338)
Partial in $t - 3$	-0.462* (0.276)	-0.899*** (0.326)	-0.834*** (0.307)
Partial in $t - 4$	-0.873** (0.353)	-0.586*** (0.223)	-0.108 (0.166)
Full in $t - 1$	-0.689** (0.347)	-0.969*** (0.326)	-0.726 (0.498)
Full in $t - 2$	-0.232 (0.351)	-0.316 (0.271)	-0.346 (0.309)
Full in $t - 3$	0.0114 (0.283)	0.242 (0.268)	0.268 (0.312)
Full in $t - 4$	0.264 (0.375)	0.125 (0.302)	0.0291 (0.199)
Industry FE	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Observations	426	357	321
Number of ind	33	33	33
R_0^2	0.831	0.900	0.922

Robust standard errors in parentheses

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Accounting for a more **aggregated effect** (Djankov et al., 2002):

- sum of the privatizations in subsequent past years

$$\bar{y}_{it}^s = c + \alpha \sum_{j=1}^r \text{Num.partial}_{t-j} + \beta \sum_{j=1}^r \text{Num.full}_{t-j} + \gamma_i + \lambda_t + \varepsilon_{it} \quad (2)$$

for $s = 2, 3$; $r = 1, 2, 3$.

Results for specifications from (2)

VARIABLES	(1) 2y avg. entry rate	(2) 3y avg. entry rate	(3) 2y avg. entry rate	(4) 3y avg. entry rate	(5) 2y avg. entry rate	(6) 3y avg. entry rate
Partial in $t - 1$	-0.593 (0.435)	-0.736** (0.346)				
Full in $t - 1$	-0.114 (0.173)	0.0530 (0.171)				
Partial in $t - 1, t - 2$			-0.628** (0.268)	-0.864** (0.401)		
Full in $t - 1, t - 2$			-0.0562 (0.148)	0.115 (0.163)		
Partial in $t - 1, t - 2, t - 3$					-0.683*** (0.250)	-0.891** (0.409)
Full in $t - 1, t - 2, t - 3$					-0.0653 (0.165)	0.0939 (0.226)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	456	420	423	387	390	354
Number of ind	33	33	33	33	33	33
R_0^2	0.837	0.873	0.859	0.895	0.880	0.909

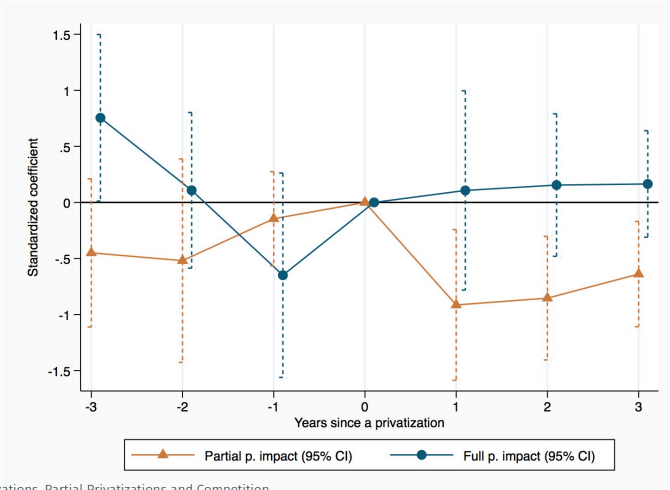
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Reverse causality?

Event study accounting for *multiple events* as in Sandler and Sandler (2014):

$$y_{it} = \sum_j^{J_i} \sum_{d=-D}^D \mathbb{1}(t - \text{privatization}_i^j = d) \beta_d + \gamma_i + \lambda_t + \varepsilon_{it}$$



Partial privatization

- Competitor may prefer to challenge for the minority stake
- Revenue participation of a partially privatized (but still govt.-controlled) firm, rather than enter the market

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Full privatization

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The mechanism could be explained by the **mix of advantages** a that a government-owned firm can rely on: know-how, government’s financial help, favorable regulation, possibility to bypass bureaucratic requirements

Baseline model

If $\theta < \frac{1}{2}$: each investor prefers to compete for θ , rather than in the market.

- Govt.'s control is expected to assure some advantages for the firm.
- The firm remains in **monopoly** while controlled by the government: the entrepreneur losing the auction prefers not to enter the market.
- **Strategic component.**

If $\theta > \frac{1}{2}$: competitor indifferent to whether compete immediately in the auction, or in the market later.

- The auction loser enters the market with his own firm: **oligopoly**.

$$W_m = (1 - \beta)[w - p_m] + \beta \left[(1 - \theta)\gamma_m + \theta\pi_m - \frac{\lambda}{2}\theta^2 \right] \quad \text{for } 0 \leq \theta < \frac{1}{2}$$

$$W_o = (1 - \beta)[(w - p_o)] + \beta [(1 - \theta)\gamma_o + \theta\pi_o - r] \quad \text{for } \frac{1}{2} < \theta \leq 1$$

Proposition 1

Given that the firm is partially privatized, i.e. $\theta < \frac{1}{2}$, the optimum amount of sold shares is

$$\theta_m^* = \frac{\pi_m - \gamma_m}{\lambda} \quad \text{for } \theta < \frac{1}{2}$$

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Direct from assumptions, still insightful

What if θ can affect the private effort in the sold firm?

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Four-stages game (Bennett and Maw, 2003), solved by backward induction:

1. Government decision to partially or fully privatized its firm, producing a single public good.
2. Competitive auction.
3. Firms decision on the amount of effort to undertake: only one depends on θ . Amount of effort e not observable by the government.
4. Cournot duopoly competition, given the effort decision and the amount of privatized stake.

$$W_o = (1 - \beta)U_c + \beta \{ \mathbb{E} [\Pi_o(e_o) - e_o] - r \} \quad \text{for } \frac{1}{2} < \theta \leq 1.$$

In equilibrium, effort is chosen by the entrepreneur who bought the privatized firm to maximize the profit.

Proposition 3

Comparative statics for equilibrium's effort is given by

$$\frac{de_o}{d\theta} = \frac{[1 - c(e_o)]c'(e_o)}{\{c'(e)^2 - [1 - c(e_o)]c''(e_o)\}\theta} > 0, \quad \text{for } \theta \geq \tilde{\theta}$$

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- effort, when profitable, increasing in the privatized amount of shares
- the more the autonomy in the firm, the larger the amount of private effort

Proposition 4

Given that the firm is fully privatized, i.e. $\frac{1}{2} < \theta \leq 1$, the optimal amount of sold shares is given by

$$\theta_o^* = \min \left\{ \tilde{\theta}, 1 \right\}$$

where

$$\tilde{\theta} = \frac{3 - \beta}{4\beta}.$$

Proposition 4

Given that the firm is fully privatized, i.e. $\frac{1}{2} < \theta \leq 1$, the optimal amount of sold shares is given by

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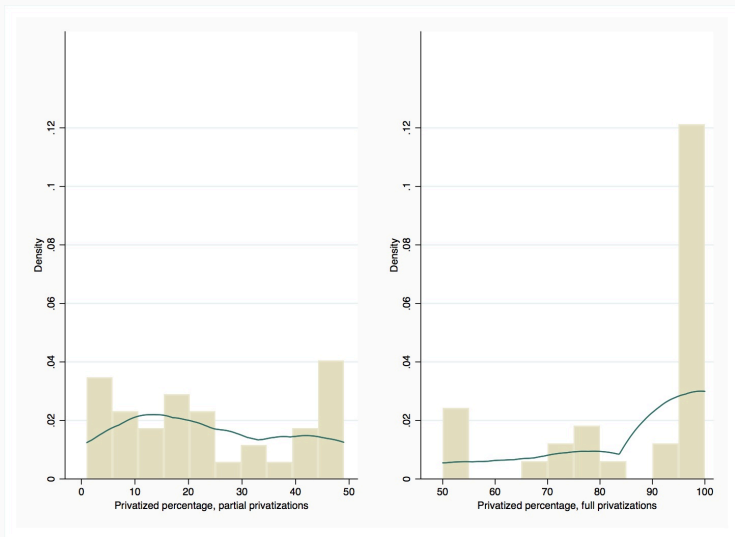
where

$$\tilde{\theta} = \frac{3 - \beta}{4\beta}.$$

- Greater relative weight on government's revenue in the swf means *more* government ownership
- Effects of competition reduce the profit of the former SOE!

Partial vs. full: privatized percentage of the stake

Strong attention on consumers or need for immediate short-term revenues?



Empirical evidence

- Significant negative effect of partial privatizations on competition (at least lower bound)
- Not-significant positive effect of full privatizations

Policy implications

- Privatization extent not supposed to affect the behavior of the private buyer: government's choice is independent on the weights on the swf:
 - Only depends on sale's margin size and the "strategic cost" suffered for losing influence while maintaining control
 - Full privatization as a corner solution
- Competition effects when endogeneizing private effort
- The more the government cares about consumers, the more it privatizes

- Implementation of a **structural IO model** with entry barriers
- Dataset **extension**
- Effects on **innovation?**

Thank you (and fully privatize it)!