Budgetary tension and privatization

The effects on firm performance

Work in progress (joint with Jan Svejnar)

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A motivating story

Figure : Palac Kultury i Nauki

How this looked before the 2WW...

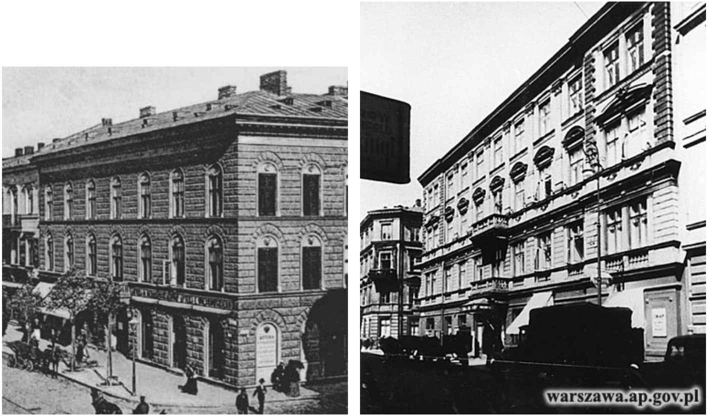


Figure : Surroundings

How this looked after the 2WW...

The starting point

1. Huge destruction after the war - need to rebuild the whole thing somehow
2. In addition to physical capital destruction - large casualties (lack of original owners!)
3. A government that does not necessarily think private property is the best thing

- Population shifted from East to West
- Industrialisation still ahead
- Huge push on urbanisation
- Huge role of politics

⇒ a country where private ownership is rarity - "Poland is a common good to all its citizens"

Differences and similarities with other countries of the region

- Similarities
  - Centralised system of goods allocations (no role for pricing mechanisms)
  - Constant shortages of everything (the price of misalocations)
  - An era of borrowing abroad (1970s in Poland)
- Differences
  - There is cooperative farming, but land ownership was not nationalised
  - It is allowed to operate *some* private economic activity (surges every once in a while)
  - State owned entreprises may purchase from private entreprises - no *de iure* monopoly

Come fifty years...

- Politically system collapses
  - "Planned shortages" cause people to riot
  - Huge need for democratisation (who knew what that was?) and freedom
  - Global economic and political factors
- Economically it was ill for about 30 years before
  - Wider and wider approval for private businesses: joint-ventures (since mid 1970s), economic liberalisation (since 1986)
  - Large emigration of people (from early 1980s) - people with experience and means
  - Huge consumption demand and people not used to having too little money

Where do we start from?

- Janusz Lewandowski in 1991: ,,privatisation is a sale of enterprises that no one owns, and whose value no one knows, to people who have no money"
- Lots of research around first years of transition (till mid 1990s)
- Wide consensus in policy dimension: privatise, privatise, privatise...
- Contention: privatisation helps economic performance at firm level
  - static pespective: better use of available resources (efficiency gain)
  - dynamic pespective: stronger incentives towards productivity growth (profit growth)
- Doubt 1: methodology
- Doubt 2: data
- Real doubt: barking at a wrong tree? (SOEs privatisation vs. newcomers)

How robust are these "consensus" findings?

Use all firms and addres selection and endogeneity issues to benchmark privatisation to firm creation in the context of transition.

Consensus in the literature?

- Firm performance after privatisation is better than before - Megginson et al. (1994) for UK; Lopez-de Silanes et al. (1997) for US; Harper (2002) for Czech Republic
- Performance of privatised firms is better than of the non-privatised - Anderson et al. (1997); Vining and Boardman (1992)
- But the timing and the mode of privatisation matter indeed...
  - Internal processes in firms forseeing privatisation Megginson and Netter (2001)
  - Profitability of the state-owned firms increases *before* privatisation DeWenter and Malatesta (2001), Gupta et al. (2008)
  - Link to FDI literature - privatisation through FDI tends to be associated with better performance
- So many analyses ⇒ meta-analyses

Meta-analyses

- Djankov and Murrell (2002):
  - over half of studies did not control for endogeneity
  - privatisation is more "profound" if through FDI ⇒ double selection
- Estrin et al. (2009): much better performance if through a foreign investor
  - not that much for the domestic investors (sometimes even worse)
  - majority shareholding sales improve firms performance ⇒ selection again
- Data - a big issue:
  - the reliability one (or many) countries micro-level "representative" survey datasetes
  - the power issue

Privatisation - a rare animal?

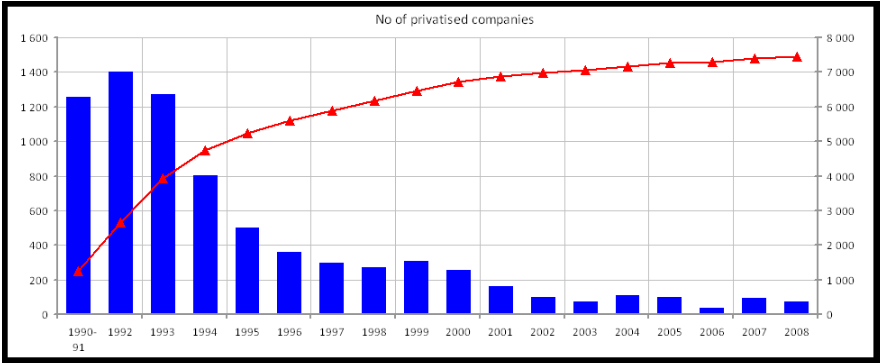
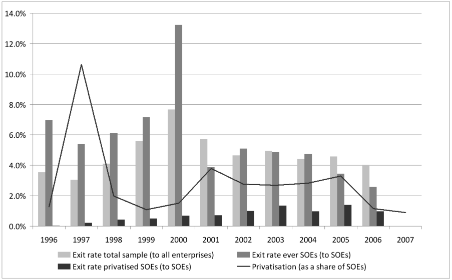


Figure : *Source:* State Treasury, annual reports

But in the data...

- We only start around 1995
- Even accumulated - it's just 1,303 such events in F01/02 data sets (39,069 observations for SOEs in total)
- 1,598 SOEs still in 2009
- About 1090 firms available between $t-2$ and $t+2$
- Exits have not been that large, compared to privatisation



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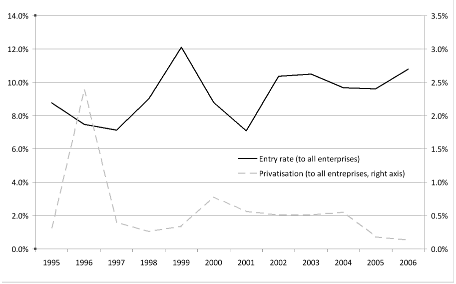


Our approach ...

1. Strategies to control for non-random selection of investors - both foreign and domestic
   - Methods: PSM, difference-in-difference, fixed effects + twists
   - References: treated and control group construction
   - Observe how the "privatisation story" really happened (measuring performance before and after)
2. Questions we (think we) answered so far:
   - When through FDI, privatised perform better than non-privatised, but with domestic investor not neccessarily (PSM)
   - PSM cannot compare privatised (incumbents) to private (newcomers) - too much heterogeneity
   - This paper: maybe difference-in-difference (in difference) can help with a twist?

Our approach ...

Specificity of the approach

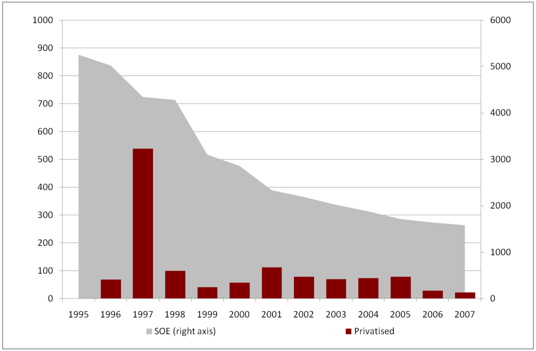
1. We use data on all enterprises with over 50 employees
2. We observe these enterprises both before and after privatisation
3. Compare them to private newcomers ⇒ direct causal effects on economy performance
4. Private have no time anchor ⇒ randomly allocate it (counterfactual reference events, Boockmann et al. (2012))
5. Instrument for the actual privatization - fiscal needs + time-and-industry specific indicators

Steps and interpretation

1. Take all firms, identify $t0$ for the SOEs and randomly allocate $t0$ to private firms
2. Take $t0 - 1$ and $t0 + 1$ annualised changes for all
3. Instrument for *true* privatisations using fiscal data
4. Run production function regression with instruments for privatisation
   - No "extra" effect whatsoever for $privatisation = 0$ firms
   - Significance of privatisation dummy signifies SOEs have a different production function from private newcomers
   - Instrumented significance signifies causal effect of privatisation on productivity

Counterfactual reference events

- randomly assign the "event" of privatisation (year of privatisation) to create "anchor" for the control group
- use the same probability distribution as for the actually privatised firms



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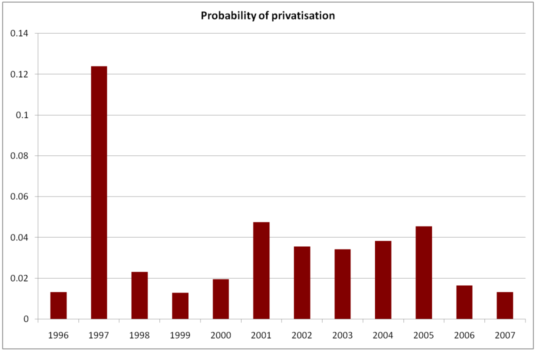
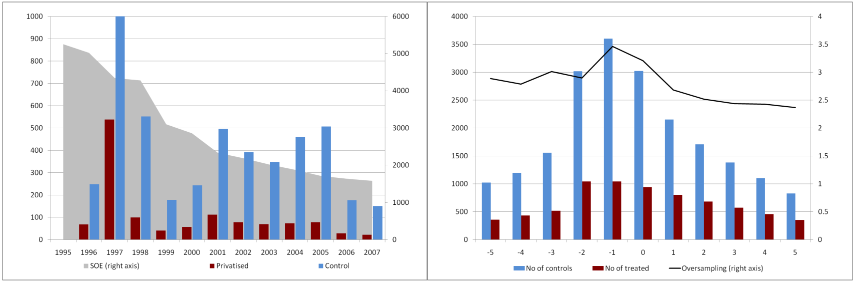
- 

Summary of the control group design

- largest sample that we know of (largest CEEC, all 50+ firms) and still we have for analysis roughly only 1300 cases of privatisation (left panel)
- oversampling of roughly 2.5-3.5 (right panel) if we use private incumbents and randomly allocate probability of "fake" privatisation



Instruments

- Fiscal needs - exogenous but cyclical (which affects firms too)
- Actual instrument: percentage of budget deficit realisation in June each year (between 13% and 98% with a mean of 58%).
- Industry specific and time-variant indicators (3-digit NACE, 160 sectors)
  - FDI intensity in a sector k at time t - "demand" from the foreign investors to establish any production in Poland ($\bar{x} = 0.04$, $min = 0$ and $max = 0.5$)
  - number of SOEs in a sector in each year - "supply" measure ($\bar{x} = 597$, $min = 1$ and $max = 3281$)
  - value added in sector k at time t - account for business cycle (our instrument may still be sensitive...)

$$
\begin{aligned}
\Delta \ln(VA)_i &= \beta_0 + \beta_1 \Delta \ln(K)_i + \beta_2 \Delta \ln(L)_i + \delta_3 \hat{priv}_i + \epsilon_i \\
priv_{i,t} &= \gamma_0 + \gamma_1 Fiscal_t + \gamma_2 FDI_{k,t} + \gamma_3 SOE_{k,t} + \varepsilon_{i,t},
\end{aligned}
$$

All enterprises 50+

- All enterprises from the manufacturing and service sector (sections C to K)
- Identifiable panel for 1996-2007: over 200 000 observations, roughly 40% of total employment,
- Profit statements + balance sheets + characteristics (employment, industry, form of ownership)
- Problems with data
  - sometimes "bad" values (e.g. under 50 employment, negative assets)
  - pivatizations that are in fact exits and re-entries not a big issue

Preliminary look

Table : Descriptive statistics - sample means

	Privatized SOEs	Private Incumbents	p-value
No of firms	1278	6184	
FDI intensity	5.73%	3.99%	0.00***
K/L ratio (PLN/worker)	112.36	46.58	0.00***
ROA	-2.47%	3.54%	0.00***
Before-after changes (in %)			
Output (value added)	15.39%	19.66%	0.03***
K	12.32%	20.96%	0.00***
L	-24.27%	-4.80%	0.00***

Preliminary look

- Following Harper (2002), we perform Wilcoxon test of equality of medians...
- ... comparing them *before* and *after* the event of privatisation.

	$t_{privatisation} - 2$			$t_{privatisation}$			$t_{privatisation} + 2$		
Variable	Priv	SOEs	*z-stat*	Private	SOEs	*z-stat*	Private	Privatised	*z-stat*
Tech. eff.	-0.17	-0.22	0.9	-0.20	-0.21	0.2	-0.21	-0.19	-0.15
Export %	0.04	0.01	5.2*	0.03	0.02	3.0*	0.04	0.03	3.1*
Sales eff.	106.2	94.3	2.7*	121.1	78.9	15.0*	139.1	106.8	7.8*
Leverage	0.16	0.10	3.8*	0.16	0.12	3.6*	0.18	0.16	0.8

- Difference in export share and sales efficiency persistent (despite considerable increase)
- Access to capital difference disappears - many others too

Δ in value added as predicted variable

	OLS	
$\Delta \ln(capital)$	0.137***	0.0972***
	(0.0179)	(0.0194)
$\Delta \ln(employment)$	0.467***	0.642***
	(0.0445)	(0.0548)
Privatization	0.0520***	0.0620***
	(0.0194)	(0.0195)
$\Delta ln(VA)(k, t)$		0.0994***
		(0.0197)
Observations	4.461	3.484
R^2	0.206	0.200

Δ in value added as predicted variable

	OLS	IV			
Sample	All	All	All	All	Exporters
$\Delta\ln(K)$	0.0972***	0.137***	0.101***	0.0902***	0.0436*
$\Delta\ln(L)$	0.642***	0.456***	0.610***	0.704***	0.771***
$\Delta ln(VA)(k,t)$	0.0994***		0.0994***	0.0994***	0.102***
Privatization	0.0620***	-0.0142	-0.0248	0.027	0.441***
Fiscal (t)		0.0048***	0.0034***	0.00107**	0.00121*
% FDI (k,t)		0.799***	0.813***	0.790***	0.265*
# SOEs (k,t)		-0.00006***	-0.00007***	-0.00008***	-0.0001***
# SOEs (t)				0.2645***	0.461***
Observations	3,484	4,461	3,484	3,484	1,746
R^2	0.200	0.204	0.195	0.181	0.407
$Pr(\sim D\|-)$		79.80%	79.80%	79.91%	73.13%
$Pr(D\|+)$		68.42%	68.42%	65.71%	54.67%

One possible refinement

- Recall that most of the privatisation events occured in 1997 and in 2001/2002
- Both happen to be election years (+ some political economy behind such "rush" privatisations)

	Inefficient IV	
$\Delta \ln(capital)$	0.088***	0.0856***
$\Delta \ln(employment)$	0.657***	0.665***
$\Delta \ln(VA)(k,t)$	0.061***	0.058***
$\widehat{privatisation}$	-0.360***	-0.434**
$\widehat{privatisation} * 1997$	0.672***	0.491***
$\widehat{privatisation} * 2001$	-0.213***	-0.165*
Pool of SOEs		0.227***
Constant	0.176***	-1.984***
Observations	3,477	3,477
R^2	0.223	0.230

Summary of these preliminary findings

- Privatisation does not seem to be a magic stick:
  - Weak (or no) universal effect
  - Strong selection issues
  - It takes two to tango
- What do we plan?
  - Finish what we already have on the plate :)
  - Something systematic about NOT getting privatised - "survival" as SOE
  - Political economy dimension deeper - does it matter WHEN privatisation happens?
  - Look closer into job destruction and job creation

Thank you for your attention!

Any questions?

Anderson, R. E., Claessens, S., Djankov, S. and Pohl, G.: 1997, Privatization Effects in Central and Eastern Europe, *MOCT-MOST: Economic Policy in Transitional Economies* **7**, 137–162.

Boockmann, B., Thomsen, S. L. and Walter, T.: 2012, Intensifying the use of benefit sanctions: An effective tool to shorten welfare receipt and speed up transitions to employment?, *ZEW Discussion Papers 09-072 (updated version)*, ZEW.

DeWenter, K. L. and Malatesta, P. H.: 2001, State-Owned and Privately Owned Firms: An Empirical Analysis of Profitability, Leverage, and Labor Intensity, *American Economic Review* **91**(1), 320–334.

Djankov, S. and Murrell, P.: 2002, Enterprise Restructuring in Transition: A Quantitative Survey, *Journal of Economic Literature* **40**(3), 739–792.

Estrin, S., Hanousek, J., Kocenda, E. and Svejnar, J.: 2009, The Effects of Privatization and Ownership in Transition Economies, *Journal of Economic Literature* **47**, 699–728.

Gupta, N., Ham, J. C. and Svejnar, J.: 2008, Priorities and Sequencing in Privatization: Evidence from Czech Firm Panel Data, *European Economic Review* **52**(2), 183–208.

Harper, J. T.: 2002, The Performance of Privatized Firms in the Czech Republic, *Journal of Banking & Finance* **26**(4), 621–649.

Lopez-de Silanes, F., Shleifer, A. and Vishny, R.: 1997, Privatization in the United States, *RAND Journal of Economics* **28**, 447–471.

Megginson, W. L., Nash, R. C. and van Randenborgh, M.: 1994, The Financial and Operating Performance of Newly-Privatized Firms: An International Empirical Analysis, *Journal of Finance* pp. 403–452.

Megginson, W. L. and Netter, J. M.: 2001, From State to Market: A Survey of Empirical Studies on Privatization, *Journal of Economic Literature* **39**(2), 321–389.

Vining, A. R. and Boardman, A. E.: 1992, Ownership versus Competition: Efficiency in Public Enterprise, *Public Choice* **73**(2), 205–39.