# Opportunistic Privatization

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## "Rigged privatisation"

- Privatisation as the lynchpin of transition in post-communist countries.

- Corruption risks: "[In some cases], a rigged privatization process was designed [solely] to maximize the amount government ministers could appropriate for themselves, and not the amount that would accrue to the government's treasury, let alone the overall efficiency of the economy" (Stiglitz, 2002, 58).

- Oligarchs: "Loans-for-shares" auctions in 1990s Russia, "designed to consolidate the bankers' support for Yeltzin's re-election campaign in 1996" (Guriev & Rachinsky, 2005: 138).

# This paper

- Relationship between privatisation and elections: how do elections affect the privatisation process and its outcomes?

- 'Opportunistic privatisation' – sales of assets motivated by politicians' self-interest during elections

- Extend Boycko et al. (1996) model of privatisation
- Test predictions using unique firm-level data from post-Milosevic Serbia (2001-2019)

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## Preview of the results

**Theoretical results:**

- After privatisation, politicians use subsidies to buy inefficiencies $\implies$ collusion.
- Under plausible assumptions, politicians have a strict preference for privatisation over state ownership before elections.

**Empirical results:**

- Privatisation *sales* and *revenues* increase significantly in pre-election periods.

- The firms privatised before elections are sold at a lower *price*, and exhibit higher *costs* after privatisation, than otherwise similar privatised firms.

- They have a higher probability of *bankruptcy*; conditional on surviving, they display lower *profitability*.

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# Previous literature

**1 Privatisation & corporate performance**

Megginson et al. (1994); Frydman et al. (1999); Djankov (1999); Megginson and Netter (2001); Brown et al. (2006); Boubakri et al. (2005); Estrin et al. (2009).

**2 Privatisation & corruption**

Kaufmann and Sigelbaum (1996); Clarke and Xu (2004); Koyuncu et al. (2010)

**3 Political business cycles**

Alesina et al. (1997); Block (2002); Levitt (2002); Akhmedov and Zhuravskaya (2004); Khemani (2004); Brender and Drazen (2005).

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# Model Set-up

- Players:
    1. Spending politician
    2. Manager of the firm
    3. Taxpayers/voters (passive)
- Firm ownership:
    - $\alpha = 0 \longrightarrow$ state ownership
    - $\alpha = 1 \longrightarrow$ private ownership
- Cost inefficiencies: $C \in \{0, \gamma\}$
- Politicians derive political benefits $q$, and face political costs $m$, from cost inefficiencies.
- The marginal political cost of transferring subsidy $T$ is $k$

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# Model set-up

The utilities of politician and manager are given by:

$$U_p(C, T) = qC - m(1 - \alpha)C - kT$$

$$U_m(C, T) = \alpha(\pi - C + T)$$

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# Analysis

1. State ownership ($\alpha = 0$) $\longrightarrow$ the politician strictly prefers $C = \gamma$ over $C = 0$

2. Privatisation ($\alpha = 1$)
   1. No collusion: $C = T = 0$
   2. Collusion: $C = \gamma$ and $T = \frac{1}{2}\left(\frac{q}{k} + 1\right)\gamma$

3. IF:
   1. $q < m$
   2. $k < m$
   3. Bargaining is feasible

   THEN:
   $U_p(\alpha = 1) > U_p(\alpha = 0)$

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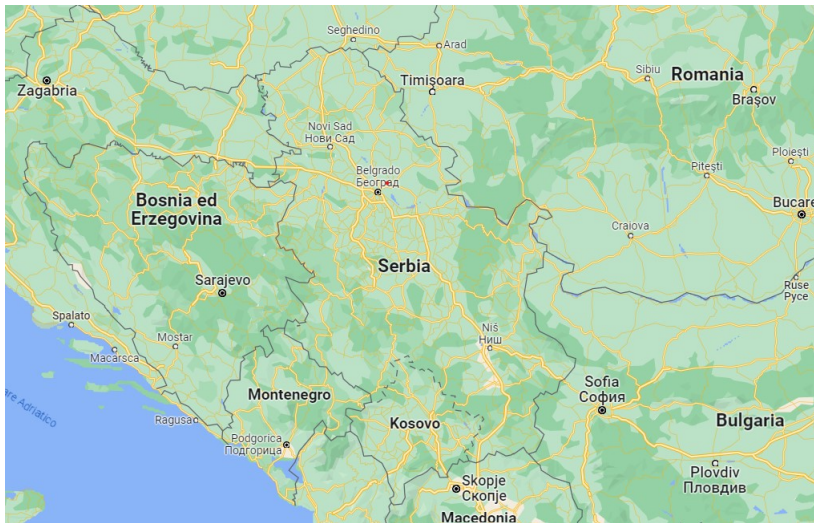
2. Privatisation ($\alpha = 1$)
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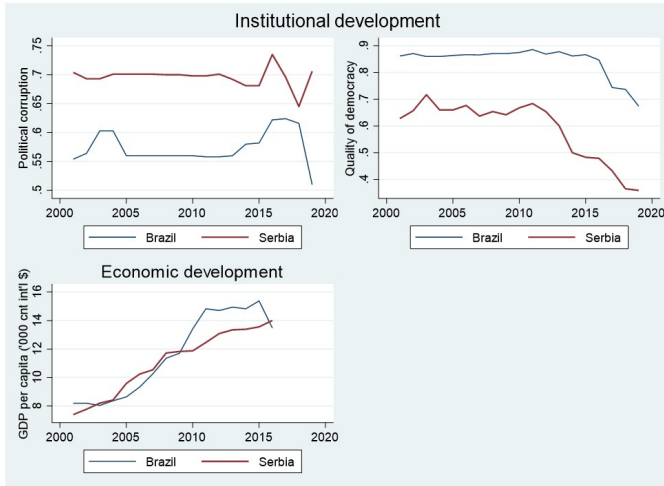   1. $q < m$
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# Serbia

# Serbia vs. Brazil



Source: Varieties of Democracy (V-Dem) project (Coppedge et al., 2020); World Bank

# Serbia's Political System

- 'Competitive authoritarian regimes' with 'high levels of [political] polarization' (Bieber, 2020)
- Clientelist link between ruling party membership and employment opportunities (Bieber, 2020)
- 'Presidentialisation' is a defining feature of politics in post-communist Serbia (Spasojević 2021)
- Seven presidential elections during 2001-2019
- Elections are called 3 months before the end of the incumbent's term (scheduled elections).
- Elections must be held within three months of the incumbent's resignation / impeachment.
- Elections are closely monitored by international actors (EU, OSCE, World Bank).

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# Privatization in Serbia

- Privatisation process only began in earnest after the fall of the Milošević regime in 2000
- Direct sales (open-bid, first-price auctions, and tenders).
  - 2203 SOEs sold by auction
  - 126 sold by tender
- The privatisation process enjoyed considerable elite support, but was generally distrusted by the public, and by the workers.
- The Privatisation Agency known to be highly politicized.
- The opening price was set by the PA based on an initial valuation carried out by external (local) consultants.

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Milica Ružičić, *Fear of losing a job*, 2021

TABLE 1: Descriptive Statistics: Firm-level dataset

| Variable description | Source | N | Mean | (s.d.) | Pre-election = 0 Mean($a$) | Pre-election = 1 Mean($b$) | [t-test] ($a - b$) |
|---|---|---|---|---|---|---|---|
| *PANEL A: Independent variables:* | | | | | | | |
| Pre-election privatization ($Q1_i$) | Contract | 2,330 | 0.16 | (0.37) | 0 | 1 | |
| Number of workers at privatization (#) | Firm website | 2,330 | 173 | (328) | 176 | 154 | [0.171] |
| Age of firm at privatization (years) | Firm website; BRA | 2,326 | 29 | (14) | 29 | 29 | [0.338] |
| Located in large city (dummy) | Firm website; BRA | 2,330 | 0.13 | (0.33) | 0.13 | 0.15 | [0.297] |
| Domestic (vs. foreign) buyer (dummy) | Contract; BRA | 2,330 | 0.89 | (0.31) | 0.89 | 0.90 | [0.614] |
| Buyer is physical (vs. legal) person (dummy) | Contract; BRA | 2,330 | 0.24 | (0.43) | 0.24 | 0.23 | [0.522] |
| Number of buyers (#) | Contract (appendix) | 2,330 | 4.7 | (31.9) | 4.7 | 4.0 | [0.689] |
| Investment requirement (constant mln dinars) | Contract | 2,330 | 56.4 | (361) | 48.8 | 95.5 | [0.162] |
| Privatized by auction (vs. tender) (dummy) | Contract | 2,330 | 0.95 | (0.23) | 0.94 | 0.96 | [0.120] |
| Auctioned unsuccessfully before sale (dummy) | PA auction reports | 2,283 | 0.14 | (0.35) | 0.15 | 0.11 | [0.022] |
| Revenues, 2018 (current mln dinars) | BRA | 1,482 | 0.37 | (1.91) | 0.316 | 0.651 | [0.158] |
| *PANEL B: Outcome variables:* | | | | | | | |
| Opening price (constant mln dinars) | PA auction reports | 2,330 | 18.7 | (40.2) | 19.8 | 12.7 | [0.000] |
| Sale price (constant mln dinars) | Contract; PA reports | 2,330 | 121 | (997) | 108 | 186 | [0.444] |
| Total costs, 2018 (current mln dinars) | BRA | 1,482 | 0.32 | (1.73) | 0.28 | 0.58 | [0.016] |
| Bankruptcy, 2021 (dummy) | BRA; BSA | 2,330 | 0.32 | (0.47) | 0.31 | 0.35 | [0.097] |
| Net income, 2018 (current mln dinars) | BRA | 1,482 | 0.12 | (2.42) | 0.13 | 0.05 | [0.331] |

Notes: the last column reports two-sample t-tests of the null hypothesis that the difference of the means is equal to zero. The population variances (pre-election=0 and pre-election=1) are assumed to be different. PA stands for Privatization Agency; BRA stands for Business Registration Agency; BSA stands for Bankruptcy Supervision Agency.

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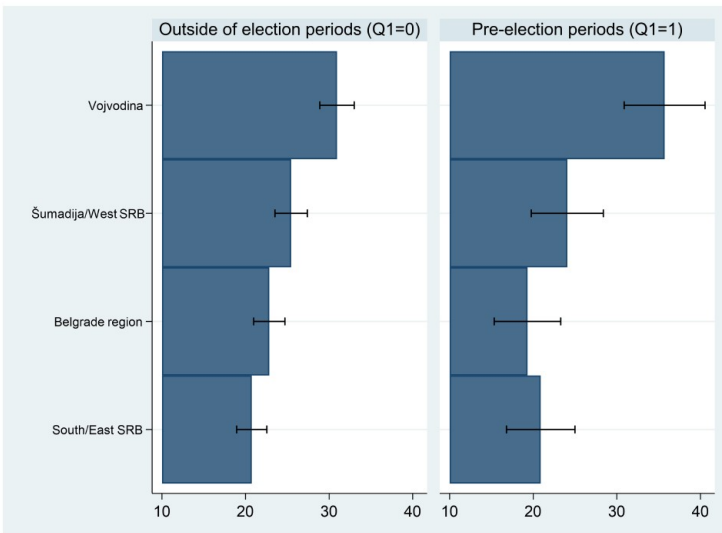○○○○○○○●○○○

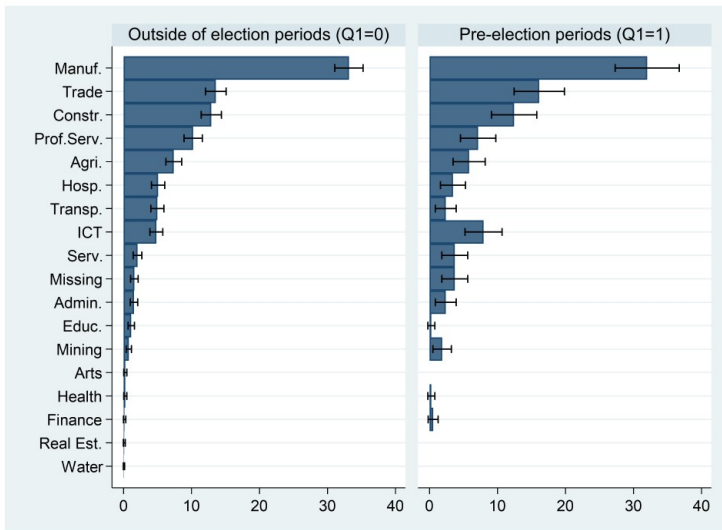Empirical results
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FIGURE 1 – Geographical distribution of former SOEs according to timing of privatisation

FIGURE 2 – Sectoral distribution of former SOEs according to timing of privatisation

TABLE 2: Descriptive Statistics: Time-series data

| Variable description | Source | N | Mean | (s.d.) | Pre-election = 0 Mean(a) | Pre-election = 1 Mean(b) | [t-test] (a − b) |
|---|---|---|---|---|---|---|---|
| PANEL A: Independent variables: | | | | | | | |
| Pre-election quarter ($Q1_t$) | Rep. of Serbia | 216 | 0.10 | (0.30) | 0 | 1 | |
| Y-o-y rate of quarterly GDP growth (%) | NBS | 216 | 3.2 | (3.1) | 3.1 | 4.3 | [0.055] |
| NBS policy interest rate (%) | NBS | 216 | 7.8 | (2.7) | 7.8 | 8.3 | [0.214] |
| PANEL B: Outcome variables: | | | | | | | |
| Privatization revenues (constant bln dinars) | Contracts; PA reports | 216 | 1.3 | (4.4) | 1.1 | 3.6 | [0.325] |
| Privatization sales (#) | Contracts; PA reports | 216 | 11 | (19) | 9 | 24 | [0.035] |

Notes: the last column reports two-sample t-tests of the null hypothesis that the difference of the means is equal to zero. The population variances (pre-election=0 and pre-election=1) are assumed to be different. NBS stands for National Bank of Serbia

# 1. Election cycles in privatization

Estimating equations:

Privatization revenues, in logs (OLS):

$$\ln p\_rev_t = \beta_0 + \beta Q1_t + u_t$$
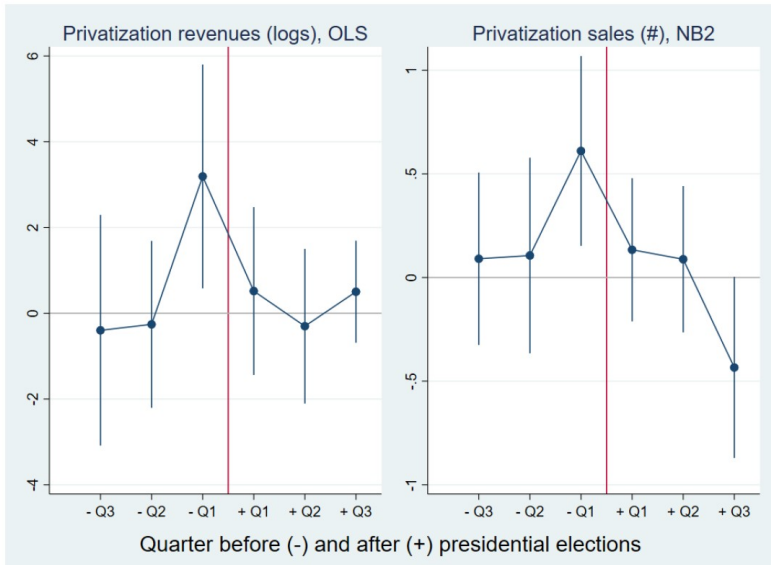
Number of privatization sales (NB2):

$$n\_sales_t = exp(\beta_0 + \beta Q1_t) \times u_t$$

$$Q1_t = \begin{cases} 1 & \text{if month } t \text{ is in last quarter before a presidential election} \\ 0 & \text{otherwise} \end{cases}$$

TABLE 3: Election cycles in privatization (times series regressions, 2002-2019)

| | Baseline (1) | Season. (2) | Year FE (3) | Dynamics (4) | Controls (5) | All (6) |
|---|---|---|---|---|---|---|
| *PANEL A - Dependent variable: privatization revenues (logs), OLS* | | | | | | |
| ln(privatization revenues), 4 lags | | | | 0.886*** [0.038] | | 0.070 [0.173] |
| Pre-election quarter ($Q1_t$) | 6.374** (2.607) | 6.045** (2.616) | 3.715** (1.563) | 3.189** (1.306) | 3.789** (1.735) | 2.642* (1.606) |
| Adjusted R-squared | 0.03 | 0.01 | 0.67 | 0.64 | 0.27 | 0.71 |
| *PANEL B - Dependent variable: privatization sales (#), NB2* | | | | | | |
| ln(privatization sales), 4 lags | | | | 0.840*** [0.047] | | 0.415*** [0.139] |
| Pre-election quarter ($Q1_t$) | 0.931*** (0.288) | 0.817*** (0.265) | 0.943** (0.455) | 0.641*** (0.236) | 0.532* (0.275) | 0.116 (0.218) |
| $\lambda$ | 4.6 | 4.4 | 0.7 | 0.7 | 3.2 | 0.3 |
| (s.e. of $\lambda$) | (0.5) | (0.5) | (0.1) | (0.1) | (0.4) | (0.1) |
| AIC | 1229 | 1245 | 992 | 983 | 1175 | 987 |
| BIC | 1239 | 1292 | 1060 | 1006 | 1191 | 1041 |
| Seasonality dummies | No | YES | No | No | No | YES |
| Year FE | No | No | YES | No | No | YES |
| 4 lags of the dependent variable | No | No | No | YES | No | YES |
| Control variables | No | No | No | No | YES | YES |
| Observations (months) | 216 | 216 | 216 | 212 | 216 | 212 |

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FIGURE 3 – Election cycle in privatization activity (2002-2019)

## 2. Privatization prices & Firm costs

- Evidence of price discounts and excess costs in the SOEs sold before elections suggests that pre-election increase in privatization activity driven by opportunistic bargaining.
- Politicians prefer privatization to state-ownership if the subsidy paid to managers is less costly politically than excess spending in state-owned firms ($k < m$).

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## 2a. Privatization prices

Estimating equation (OLS):

$$\ln price_i = \beta_0 + \beta Q1_i + \theta X_i + \epsilon_i$$

$price_i$: opening (asking) price OR final sale price of firm $i$

$$Q1_i = \begin{cases} 1 & \text{if firm } i \text{ privatized in last pre-election quarter} \\ 0 & \text{otherwise} \end{cases}$$

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## TABLE 4: Privatization prices (OLS regressions)

|  | Uncondi-tional | Year FE | Controls | All |
|---|---|---|---|---|
|  | (1) | (2) | (3) | (4) |
| *PANEL A - Dependent variable: opening price (logs)* | | | | |
| Pre-election privatization ($Q1_i$) | −0.703*** | −0.731*** | −0.987*** | −0.604*** |
|  | (0.206) | (0.197) | (0.118) | (0.113) |
| Adjusted R-squared | 0.01 | 0.14 | 0.51 | 0.55 |
| *PANEL B - Dependent variable: sale price (logs)* | | | | |
| Pre-election privatization ($Q1_i$) | −0.348** | −0.301* | −0.351*** | −0.167* |
|  | (0.165) | (0.172) | (0.082) | (0.097) |
| Adjusted R-squared | 0.00 | 0.06 | 0.40 | 0.44 |
| Year of privatization FE | No | YES | No | YES |
| Control variables | No | No | YES | YES |
| Observations (firms) | 2,330 | 2,330 | 2,279 | 2,279 |

# 2b. Firm costs

- Cross-section of privatized firms, 2018
- Stochastic frontier analysis (Stevenson, 1980; Kumbhakar et al., 1991)

Cost function (frontier):

$$\ln C_i = \eta \ln Q_i + \sigma_i + \lambda_i + (v_i + u_i)$$

Inefficiency equation:

$$E(u_i) = \beta_0 + \beta Q1_i + \theta X_i$$

$$Q1_t = \begin{cases} 1 & \text{if month } t \text{ is in last quarter before a presidential election} \\ 0 & \text{otherwise} \end{cases}$$

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TABLE 5: Firm costs (stochastic frontier analysis)

| Dependent variable: ln(total costs), 2018 | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *PANEL A - Inefficiency equation (distance to frontier):* | | | | |
| Pre-election privatization $(Q1_i)$ | 0.054 | 0.627*** | 0.215** | 1.949*** |
| | (0.036) | (0.226) | (0.096) | (0.298) |
| {Average marginal effects} | {0.010} | {0.041} | {0.045} | {0.052} |
| *PANEL B - Cost frontier:* | | | | |
| ln(revenues), 2018 | 1.053*** | 1.057*** | 1.067*** | 1.059*** |
| | (0.006) | (0.006) | (0.008) | (0.007) |
| Sector FE | YES | YES | YES | YES |
| Joint test [$p$-value] | [0.000] | [0.000] | [0.000] | [0.000] |
| Region FE | YES | YES | YES | No |
| Joint test [$p$-value] | [0.001] | [0.002] | [0.000] | |
| Located in large city (dummy) | −0.096*** | −0.101*** | −0.098*** | |
| | (0.032) | (0.031) | (0.029) | |
| Additional controls in inefficiency e. | No | YES | YES | YES |
| Additional controls in cost function | No | No | YES | No |
| $\sigma_u$ | 0.01 | 0.20*** | 0.05 | 0.55*** |
| $\sigma_v$ | 0.43*** | 0.43*** | 0.42*** | 0.43*** |
| Observations (firms) | 954 | 922 | 922 | 922 |

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## 3a. Firm performance outcomes: survival

Logistic regression for the probability of bankruptcy (2021)

$$Bankruptcy_i = \Lambda(\beta_0 + \beta Q1_i + \theta X_i) + \epsilon_i$$

| Dependent variable: | Control group: all firms | | Control group: active firms | |
|---|---|---|---|---|
| Bankruptcy (dummy), 2021 | (1) | (2) | (3) | (4) |
| Pre-election privatization ($Q1_i$) | 0.045** | 0.044** | 0.056** | 0.049** |
| | (0.022) | (0.018) | (0.023) | (0.021) |
| Pseudo R-squared | 0.00 | 0.09 | 0.00 | 0.11 |
| Control variables | No | YES | No | YES |
| Observations (firms) | 2,330 | 2,278 | 1,960 | 1,908 |

# 3b. Firm performance outcomes: profitability

| Dependent variable: ln(net income), 2018 | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| *PANEL A - Inefficiency equation (distance to frontier):* | | | | |
| Pre-election privatization ($Q1_i$) | 0.773** | 0.357** | 0.366** | 0.363* |
| | (0.391) | (0.181) | (0.184) | (0.201) |
| {Average marginal effects} | {0.383} | {0.353} | {0.359} | {0.358} |
| *PANEL B - Profit frontier:* | | | | |
| Sector FE | YES | YES | YES | YES |
| Joint test [*p*-value] | [0.000] | [0.000] | [0.000] | [0.000] |
| Region FE | YES | YES | YES | NO |
| Joint test [*p*-value] | [0.033] | [0.029] | [0.088] | |
| Located in large city (dummy) | 0.390** | 0.342* | 0.291 | |
| | (0.184) | (0.200) | (0.286) | |
| Additional controls in inefficiency e. | No | YES | YES | YES |
| Additional controls in profit function | No | No | YES | No |
| $\sigma_u$ | 2.40*** | 2.08*** | 2.06*** | 2.10*** |
| $\sigma_v$ | 1.69*** | 1.10*** | 0.38 | 0.00*** |
| Observations (firms) | 1,108 | 1,074 | 1,074 | 1,074 |

# Conclusions

1. Increase in privatization activity before elections (by a factor of 2-3).
   - Politicians prefer private ownership before elections

2. Firms privatised before elections are sold at a discount ($\approx 20\%$), AND are ($4 - 5\%$) less cost-efficient post-privatisation
   - Collusive bargaining between politicians and managers

3. Firm sold before elections underperform other firms after privatisation (35% less profitable)

*Policy implications*: need for increased monitoring of privatization process before elections

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# Falsification tests

| Dependent variable: | Time-series regressions | | Privatization prices & firm costs | | | Firm performance | |
|---|---|---|---|---|---|---|---|
| | ln(revenues) (1) | N. of sales (2) | Opening price (3) | Sale price (4) | ln(costs) (5) | Bankruptcy (6) | ln(net income) (7) |
| *PANEL A - Election dates spuriously shifted forward by 1 year* | | | | | | | |
| Pre-election quarter ($Q1_t$) | 0.681 (0.538) | 0.049 (0.160) | | | | | |
| Pre-election privatization ($Q1_i$) | | | −0.074 (0.207) | -0.119 (0.146) | -0.109 (0.226) | -0.009 (0.019) | 0.196 (0.208) |
| {Average marginal effects} | | | | | {-0.017} | | {0.194} |
| Observations | 212 | 212 | 2,330 | 2,330 | 922 | 2,278 | 1,074 |
| *PANEL B - Election dates spuriously shifted forward by 2 years* | | | | | | | |
| Pre-election quarter ($Q1_t$) | -0.820 (1.111) | -0.056 (0.168) | | | | | |
| Pre-election privatization ($Q1_i$) | | | -0.272 (0.269) | 0.115 (0.179) | -0.070 (0.332) | -0.043 (0.028) | -0.298* (0.169) |
| {Average marginal effects} | | | | | {-0.010} | | {-0.295} |
| Observations | 212 | 212 | 2,330 | 2,330 | 922 | 2,278 | 1,074 |

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# Alternative definitions of "pre-election period"

| Dependent variable: | Time-series regressions | | Privatization prices & firm costs | | | Firm performance | |
|---|---|---|---|---|---|---|---|
| | ln(revenues) (1) | N. of sales (2) | Opening price (3) | Sale price (4) | ln(costs) (5) | Bankruptcy (6) | ln(net income) (7) |
| *PANEL A - Pre-election period: 4 months before presidential elections* | | | | | | | |
| Pre-election period ($Q1_t$) | 1.938* (1.008) | 0.521** (0.212) | | | | | |
| Pre-election privatization ($Q1_i$) | | | −0.533*** (0.159) | −0.318** (0.139) | 0.257** (0.110) | 0.059*** (0.019) | 0.187 (0.151) |
| {Average marginal effects} | | | | | {0.021} | | {0.185} |
| Observations | 212 | 212 | 2,330 | 2,330 | 922 | 2,278 | 1,074 |
| *PANEL B - Pre-election period: 5 months before presidential elections* | | | | | | | |
| Pre-election period ($Q1_t$) | 1.822** (0.916) | 0.502*** (0.188) | | | | | |
| Pre-election privatization ($Q1_i$) | | | −0.599*** (0.160) | −0.250* (0.143) | 1.227* (0.627) | 0.049*** (0.016) | 0.180 (0.124) |
| {Average marginal effects} | | | | | {0.039} | | {0.178} |
| Observations | 212 | 212 | 2,330 | 2,330 | 922 | 2,278 | 1,074 |

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# Parliamentary (instead of presidential) elections

| Dependent variable: | Time-series regressions | | Privatization prices & firm costs | | | Firm performance | |
|---|---|---|---|---|---|---|---|
| | ln(revenues) | N. of sales | Opening price | Sale price | ln(costs) | Bankruptcy | ln(net income) |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
| Pre-election quarter ($Q1_t$) | −0.842 | −0.174 | | | | | |
| | (1.606) | (0.216) | | | | | |
| Pre-election privatization ($Q1_i$) | | | 0.118 | 0.080 | 0.059 | 0.007 | 0.173 |
| | | | (0.172) | (0.139) | (0.118) | (0.024) | (0.199) |
| {Average marginal effects} | | | | | {0.008} | | {0.170} |
| Observations | 212 | 212 | 2,330 | 2,330 | 922 | 2,278 | 1,074 |