Questions about privatization: The focus of this presentation

- Firm-level outcomes
  - Performance (productivity, profitability, output)
  - Workers (employment, wages)
  - Creative destruction (job reallocation)

- Policy design / methods
  - Sale, voucher/mass, MEBO, foreign participation

- Cross- and within-country variation
  - Role of the state (support/hindrance)
  - Business environment substitutes/complements
Other questions related to privatization

- Focus: estimating the direct performance effects of changes in ownership (share transfers) for going concerns

- Not:
  - Land, housing, real estate (shop premises)
  - New entry
  - Sequencing, relationship to other policies
  - Political economy
“Theories” of privatization

- Shleifer & Vishny 1994, Boycko et al. 1996
  - State firms overstaffed because politicians like higher E and W (public sector rents)
  - Privatization raises cost to politician of higher E, W
    - increased productivity, π; lower E, W
- BET: scale effect may raise E, W
Early research on public vs. private and privatization

- Pre-transition: too little action and data
- Transition research in 1990s:
  - Small nobs; nonrandom surveys
  - Cross-section or short time series
  - Limited methods (x-sec or before-after)
  - No persuasive IVs or identification
More recently: Large nobs, long T, but caveats for estimation

- Within industry-year comparisons
- Firm fixed effects (FE) and trends (FE&FT)
- Universal data for HU, LT, RO, UA
- Limitations for Russia:
  - Only manufacturing industries
  - Small (<100 emp) private spin-offs partly excluded
  - No VA measure (no material cost info)
  - Limited ownership information (only: 100% private, mixed, state, foreign)
  - Data die after 2005 (but start 1985)
Data

- Comparable samples, variables for 5 countries.
- Sources: statistical offices, tax authorities, privatization agencies, private data providers.
- Cover nearly all “old” firms (existing <1990 or ever had any state ownership)
- Coverage from 1985 (RU), 1986 (HU), 1989 (UA), 1992 (RO), 1995 (LT) to 2005
- Total firm-year observations $\sim 600,000$. Average annual observations per firm = 14.
Evolution of privatization within the “old sector:” HU, LT, RO, RU, UA
### Estimated Effects of Privatization on Firm Performance

<table>
<thead>
<tr>
<th></th>
<th>Return On Sales</th>
<th>Labor Productivity</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>OLS (Ordinary Least Squares)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.063**</td>
<td>0.239**</td>
<td>0.237**</td>
<td></td>
</tr>
<tr>
<td>(0.005)</td>
<td>(0.012)</td>
<td>(0.025)</td>
<td></td>
</tr>
<tr>
<td><strong>FE (Firm Fixed Effects)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.052**</td>
<td>0.115**</td>
<td>0.095**</td>
<td></td>
</tr>
<tr>
<td>(0.005)</td>
<td>(0.008)</td>
<td>(0.012)</td>
<td></td>
</tr>
<tr>
<td><strong>FE&amp;FT (FE &amp; Firm-specific Trends)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.030**</td>
<td>0.075**</td>
<td>0.058**</td>
<td></td>
</tr>
<tr>
<td>(0.006)</td>
<td>(0.007)</td>
<td>(0.009)</td>
<td></td>
</tr>
</tbody>
</table>

N $\sim= 600,000$ firm-years
Estimated privatization effects: Domestic vs. foreign

![Graph showing estimated coefficients for ROS, LP, OUTPUT in domestic and foreign entities.](image-url)
Estimated privatization effects: Total (100%), majority, and minority
Estimated privatization effects: Sales, MEBO, Voucher, Foreign (HU and RO)
Estimated privatization effects: By country
Privatization and the business environment (EBRD avg score)

![Bar chart showing estimated coefficients for ROS, LP, and OUTPUT under different conditions: FE, FE&FT, and EBRD.](chart.png)
Russian anomalies

- Negative ($\approx 3-5\%$) performance effect
- Negative ($\approx 2-8\%$) wage effect
- Positive ($\approx 2-5\%$) employment effect

- None of these are large (far from zero), but in each case Russia is the outlier
Regional variation in estimated privatization in Russia
Russia: Domestic privatization effects by year
Russia: foreign privatization
Conclusions: Lessons about Privatization from CEE & Russia

“Best estimates” of initial productivity effects (domestic):

<table>
<thead>
<tr>
<th>RO</th>
<th>HU</th>
<th>LT</th>
<th>UA</th>
<th>RU</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.15</td>
<td>0.08</td>
<td>0.06</td>
<td>.02</td>
<td>-0.03</td>
</tr>
</tbody>
</table>

- Foreign effects stronger: 0.21 - 0.35 in all countries
- Method matters:
  - Sales effect > MEBO > Voucher/mass
  - 100% > majority > minority
  - Trade-offs with speed, politics
- Employment & wage effects are usually small
- RU average masks large regional variation; effect becomes positive after 2002
- Privatization and business environment are complements
Supplementary slides

- Sources
- More outcomes: ROS, emp, wage
- Dynamics and specification checks
- Functional form and selection bias
- Creative destruction
- Policy dimensions
- Tax avoidance
- Heterogeneity
Principal sources
(with David Brown, Álmos Telegdy, Scott Gehlbach)

Performance effects of privatization: estimates for all available industries

<table>
<thead>
<tr>
<th></th>
<th>Financial efficiency</th>
<th>Operating efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Return On Sales</td>
<td>Return On Assets</td>
</tr>
<tr>
<td>Domestic Private</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>0.020*</td>
<td>0.043**</td>
</tr>
<tr>
<td>Lithuania</td>
<td>0.043*</td>
<td>0.012</td>
</tr>
<tr>
<td>Romania</td>
<td>0.052**</td>
<td>0.052**</td>
</tr>
<tr>
<td>Russia</td>
<td>-0.015*</td>
<td>-0.060**</td>
</tr>
<tr>
<td>Ukraine</td>
<td>0.006</td>
<td>-0.068**</td>
</tr>
<tr>
<td>Foreign Private</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hungary</td>
<td>-0.004</td>
<td>0.054**</td>
</tr>
<tr>
<td>Lithuania</td>
<td>-0.020</td>
<td>-0.024</td>
</tr>
<tr>
<td>Romania</td>
<td>0.027</td>
<td>0.046**</td>
</tr>
<tr>
<td>Russia</td>
<td>-0.012</td>
<td>0.000</td>
</tr>
<tr>
<td>Ukraine</td>
<td>0.005</td>
<td>-0.055</td>
</tr>
</tbody>
</table>
Dynamics of the productivity effect: foreign privatization in Romania
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Dynamics of the productivity effect: foreign privatization in Romania
Dynamics of the productivity effect: foreign privatization in Romania
Dynamics of the productivity effect: foreign privatization in Romania
Dynamics of the productivity effect: domestic privatization in Romania

![Graph showing the dynamics of productivity effect with lines for OLS, FE, and FE&FT models. The graph plots productivity effect against time, with lines illustrating the trend over different models.]
Dynamics of the productivity effect: domestic privatization in Romania
Dynamics of the productivity effect: domestic privatization in Romania
Dynamics of the productivity effect: foreign privatization in Russia
Dynamics of the productivity effect: foreign privatization in Russia
Dynamics of the productivity effect: foreign privatization in Russia
Dynamics of the productivity effect: domestic privatization in Russia
Dynamics of the productivity effect: domestic privatization in Russia
Dynamics of the productivity effect: domestic privatization in Russia
Estimating Productivity Effects: Functional Form vs. Selection Bias

- Many ways to estimate productivity
  - CD, TL, OP, LP, factor shares....
  - We tried them all
- Does it matter?
- Rather than estimate, use “assumed production functions”: CRS CD with $0 \leq \alpha \leq 1$
Estimates of the Productivity Effect of Privatization Assuming Alternative Production Functions Hungary
Estimates of the Productivity Effect of Privatization Assuming Alternative Production Functions Romania

- OLS
- FE
- FE&FT

Assumed Alpha
Estimated Effect of Privatization

Assumed Alpha
Estimates of the Productivity Effect of Privatization Assuming Alternative Production Functions

Russia

Assumed Alpha

Estimated Effect of Privatization

OLS
FE
FE&FT
Estimates of the Productivity Effect of Privatization Assuming Alternative Production Functions

Ukraine
Decomposition of the Employment Effect into Scale and Productivity Effects

<table>
<thead>
<tr>
<th></th>
<th>Domestic</th>
<th>Foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hungary</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Romania</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Russia</td>
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<tr>
<td>Ukraine</td>
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</tbody>
</table>

Percent: Employment, Output, Labor Productivity
Decomposition of the Wage Effect into Cost and Productivity Effects

Wage | Unit Labor Cost | Labor Productivity
---|----------------|-------------------
Hungary |                |                  
Romania |                |                  
Russia |                |                  
Ukraine |                |                  
Hungary |                |                  
Romania |                |                  
Russia |                |                  
Ukraine |                |                  

Legend:
- Wage
- Unit Labor Cost
- Labor Productivity
### Privatization and Creative Destruction (Job Reallocation)

<table>
<thead>
<tr>
<th>Country</th>
<th>Domestic</th>
<th>Foreign</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hungary</td>
<td>0.014*</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Lithuania</td>
<td>0.040*</td>
<td>0.060</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Romania</td>
<td>0.024**</td>
<td>0.061**</td>
</tr>
<tr>
<td></td>
<td>(0.005)</td>
<td>(0.021)</td>
</tr>
<tr>
<td>Russia</td>
<td>-0.020**</td>
<td>-0.011</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.014)</td>
</tr>
<tr>
<td>Ukraine</td>
<td>0.004</td>
<td>-0.015</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.015)</td>
</tr>
</tbody>
</table>
## Effects of privatization method

<table>
<thead>
<tr>
<th></th>
<th>Return On Sales</th>
<th>Labor Productivity</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Hungary</td>
<td>Romania</td>
<td>Hungary</td>
</tr>
<tr>
<td>MEBO method</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>own</td>
<td>0.022**</td>
<td>0.069**</td>
<td>0.078**</td>
</tr>
<tr>
<td>MEBO method</td>
<td>0.007</td>
<td>0.055**</td>
<td>0.095*</td>
</tr>
<tr>
<td>Voucher</td>
<td>N.A.</td>
<td>0.039**</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

* indicates significance at the 0.05 level; ** indicates significance at the 0.01 level.
Cross-country differences: genuine or measurement?

- The tax avoidance hypothesis: Russian privatized firms are more likely to avoid taxes relative to SOEs (e.g., Zhuravskaya, JEL)
- World Bank BEEPS data:

  "What percentage of the sales of a typical firm in your area of activity would you estimate is reported to the tax authorities, bearing in mind difficulties with complying with taxes and other regulations?"
Estimation of relative tax avoidance

\[ \text{TaxAvoid} = f(\text{Own} \times C, C, E, I, E \times I) \]

- **Own**: Privatized, New Private (Reference: State)
- **C**: Country
- **E**: Employment
- **I**: Industry
Tax avoidance: How much more in privatized relative to state firms?

- Hungary: 7%
- Lithuania: 7%
- Romania: 1.3%
- Russia: 3.7%
- Ukraine: 0%
## Effect of total and partial privatization

<table>
<thead>
<tr>
<th></th>
<th>Return On Sales</th>
<th>Labor Productivity</th>
<th>Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Control</td>
<td>Revenue</td>
</tr>
<tr>
<td>Hungary</td>
<td>0.030**</td>
<td>0.031**</td>
<td>0.017</td>
</tr>
<tr>
<td>Lithuania</td>
<td>0.045*</td>
<td>0.041</td>
<td>-0.037</td>
</tr>
<tr>
<td>Romania</td>
<td>0.048**</td>
<td>0.036**</td>
<td>-0.024**</td>
</tr>
<tr>
<td>Russia</td>
<td>-0.001</td>
<td>-0.018</td>
<td>N.A.</td>
</tr>
<tr>
<td>Ukraine</td>
<td>0.043</td>
<td>0.022</td>
<td>-0.051</td>
</tr>
</tbody>
</table>
Potential explanations for variation in productivity effects

- Policy design / owner selection
- Macro context
- Firm quality
- Competition
- Business environment / institutions
  - Link to EBRD, BEEPS data (by firm type)
  - “Better” institutions -> higher privzn effect
- State support
  - Bureaucracy related to RU regional variation