

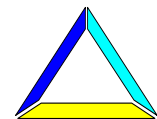
# ***Efficiency of Ukrainian Oblenergos***

***First results based on a DEA***

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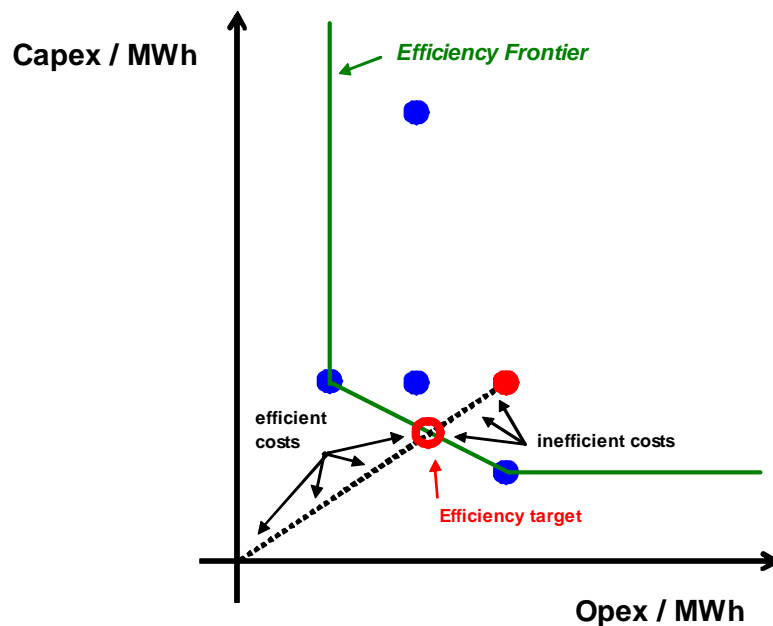
**German Advisory Group on Economic Reforms &  
Institute for Economic Research and Policy Consulting**

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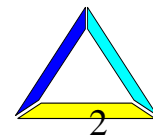


# 1. Methodology

- Non Parametric approach (DEA)
- Technical efficiency of firm i:
  - How many inputs  $x_i$  are necessary to produce a given set of outputs  $y_i$
  - Efficiency of firm i is estimated relative to control group I

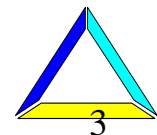


$$\begin{aligned} \min_{\theta, \lambda} \quad & \theta \\ \text{s.t.} \quad & -y_i + Y\lambda \geq 0 \\ & \theta x_i - X\lambda \geq 0 \\ & \lambda \geq 0 \end{aligned}$$



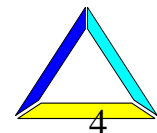
## 2. Data and Variables

- **Information on 27 Oblenergos in 2004, 2005 and 2006 (2 companies excluded as outliers)**
- **Variables**
  - **Output variables (supply requirements of an Oblenergo):**
    - Deliveries to customers (in GWh)
    - Number of customers
    - Inverse density index (km<sup>2</sup>/inhabitants)
  - **Input variables (cost drivers)**
    - Headcount (opex)
    - Gridlength (ths km, capex)

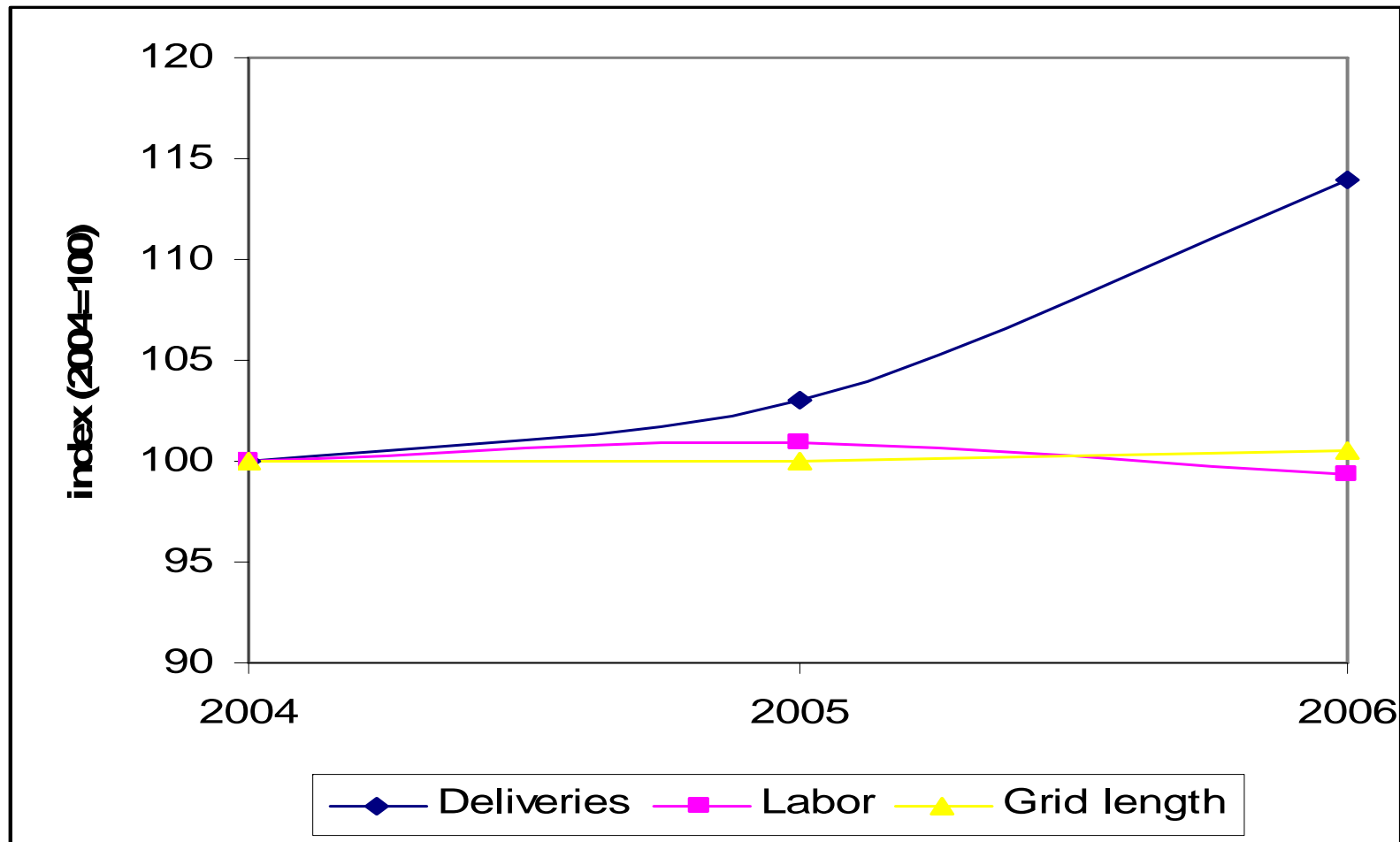


### 3. Descriptive statistics (a)

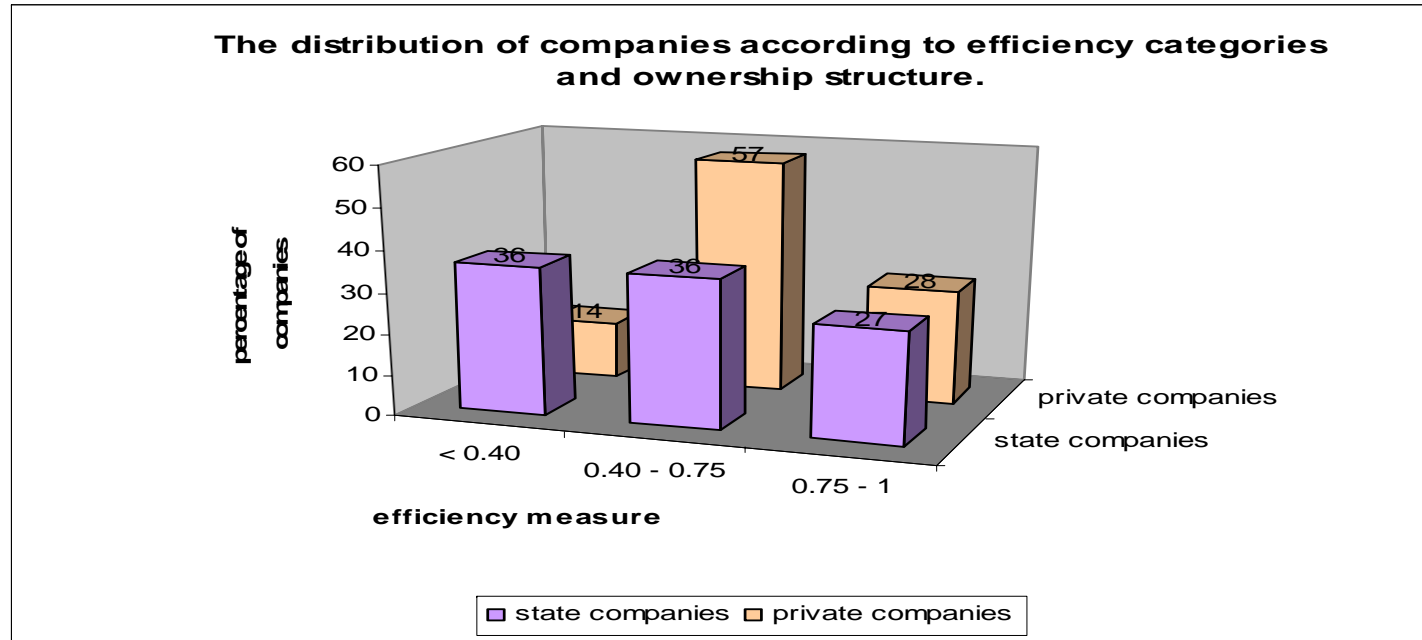
	<b>Deliveries (GWh)</b>	<b>Number of customers</b>	<b>Density (inhabitant per km2)</b>	<b>Headcount</b>	<b>Gridlength (ths. km)</b>
<b>Maximum (2004-06)</b>	9971	3790	422	11048	74
<b>Average (2004-06)</b>	2906	781	89	4394	35
<b>Minimum (2004-06)</b>	767	123	39	693	2



### 3. Descriptive statistics (b)

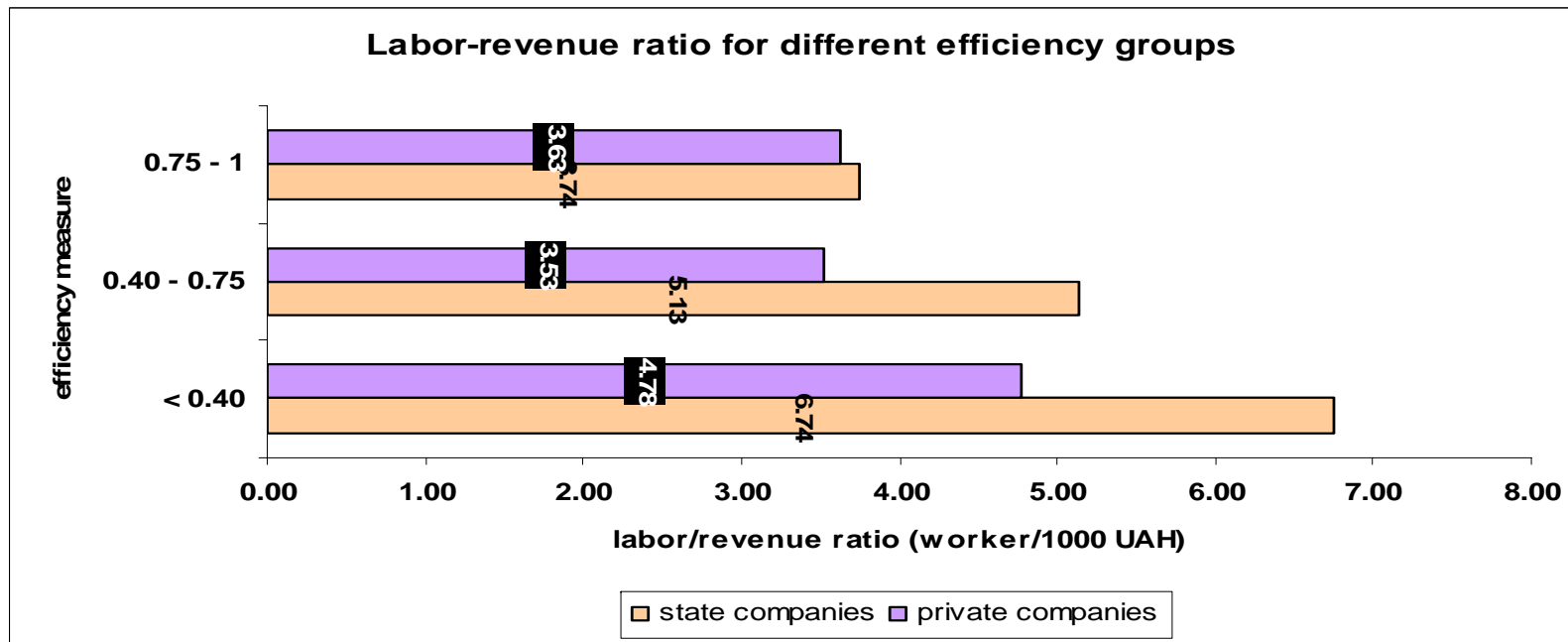


## 4. Selected results (a)



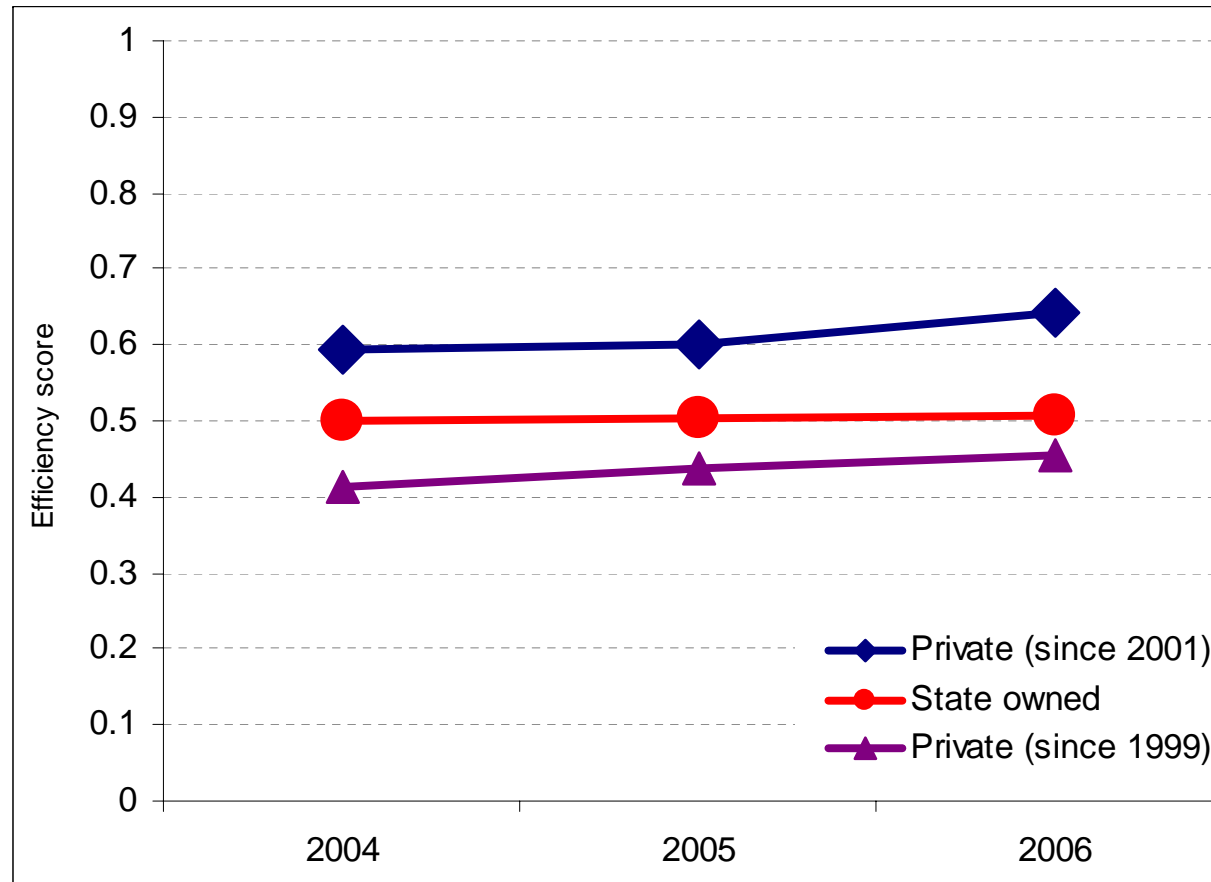
- Share of inefficient firms ( $<0.4$ ) is higher for state-owned than for private firms
- Share of mid-efficient firms ( $0.4-0.75$ ) is higher for private firms
- Share of very efficient firms ( $>0.75$ ) is equal for private and state-owned firms

## 4. Selected results (b)

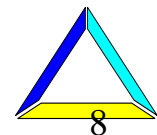


- Labor input (opex) seem to be most important for explaining the observed differences in efficiency

## 4. Selected results (c)



- **Oblenergos privatized in 2001 show strongest performance**
- **All privatized Oblenergos have improved their efficiency**



# 5. Conclusions

- **Simple DEA already reveals significant differences in efficiency of Oblenergos**
- **Cost reduction potential of more than 50% for some Oblenergos**
- **Analysis should be conducted based on cost date for enterprises to form basis for future regulation of network access fees**

