Reforming Without a Map: on the Political Economy of Liberalisation and Restructuring of Railways

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Motivation: privatisation

1. Privatisation of the UK railways has been reverted
   - 1947 – nationalisation of Britain’s railway system
   - 1994 – re-privatisation of British Rail to establish private Railtrack PLS (listed in the LSE)
   - 2002 – re-nationalisation and asset transfer to a state-controlled non-profit company Network Rail (private company limited by guarantee without share capital)

2. Partial privatisation of Russian railways is challenged
   - 2006 - privatised car fleet is often rented back to RZD – the infrastructure monopolist
   - 2011-2014 - First Freight, Federal Freight, and some private operators’ wagons were operated by RZD
Motivation: liberalisation

The speed and sequencing of infrastructure reforms varies significantly across countries:

- Argentina (see Rosenblatt, 2016),
- Russia (Dementiev, 2006)
- Australia and New Zealand (see Abbott & Cohen, 2016)
- European countries (see van de Velde, 2015 and Finger, 2014): certain railway reform steps have been delayed, postponed or even reversed
Policy issues

- **Fiscal constraints** force the governments to adhere to **privatisation** schemes that shape the industry structure.
- **Selling off ‘profits’** looks absurd while **selling off ‘losses’** given the industry structure is virtually impossible.

Liberalisation of an infrastructure industry via **vertical divestiture** is common in practice and is viewed as:
- **Structural policy** to benefit from tougher competition
- **Fiscal policy** for cashless government to raise budget revenues from privatisation in the downstream market

Politically feasible divestiture accounts for both factors.
Literature

- **Vickers & Yarrow (1988):** deregulation and privatisation in the downstream market in the vertically related infrastructure industry may be socially desirable.

- **Newberry (2002):** liberalisation of the downstream market is prone to regulatory risks due to possible ex post intervention thus privatisation may credibly signal about irreversibility of the industry structure.

- **Wen & Yuan (2010):** fiscal concerns shape the optimal privatisation that assumes complete fragmentation of both upstream and downstream markets.

- **Matsumura & Ogawa (2012):** mixed duopoly with the socially concerned firm.
Research question

- We have found a set of initial structural reform measures *(the scope of privatisation)* that can make the liberalisation process irreversible and, ideally, welfare improving.
- We treat separately structural and ownership change.
- Social welfare function with redistributive concerns and the shadow cost of public funds ($\lambda$) is borrowed from Armstrong & Sappington (2007) and is close to what is employed in Gagnepain & Ivaldi (2016)

$$W = CS - (1 + \lambda)T + \alpha \pi$$

- where $T$ is a net transfer from the budget which includes proceeds from privatisation.
Partial privatisation downstream

**An open access model**
- An entrant pays regulated access charge $a$
- Final price is deregulated

VIP’s downstream capacities (operations)

VIP’s essential facility in the regulated upstream market (infrastructure)

VIP affiliate

VIP’s essential facility in the regulated upstream market (infrastructure)

Private $\beta$
Timing

Regulat’n
• The initially regulated public monopoly chooses the socially optimal level of output $Q^*$ downstream which determines the size of the rolling stock $K$

Privat’n
• A share $\beta$ of $K$ is subject to privatisation
• This $K$ serves as a capacity constraint $Q < K$ at the further stages of reform

Compet’n
• Mixed duopoly in the deregulated downstream market à la Cournot with constrained capacities
• Access charge remains regulated
Structural vs. ownership separation

- The remaining vertical links between the downstream affiliate and the upstream infrastructure service provider can be completely broken (i.e. structural separation) with or without privatisation.

- When public ownership is retained the profit maximising private rival competes with the socially concerned firm that cares about the weighted sum of the consumer surplus, producer surplus and net budget revenues:

\[ W = CS - (1 + \lambda)T + \alpha \pi \]
Without a map

Structural alternatives

1. **the open access model**, when the vertically integrated publicly owned company competes downstream with the private non-integrated rival

2. **the mixed duopoly model**, when the vertically separated publicly owned company competes downstream with the private non-integrated rival

3. **the private duopoly model**, when the vertically divested private company competes downstream with its private counterpart
Public contracting flexibility

- Political pressure and public finance concerns may change the weights $\lambda$ and $\alpha$ in the welfare function.
- The inability to predict the future reform measures and properly assess the probabilities of potential policy reversals makes an entry decision especially risky.
- To deal with this environment the entrant is assumed to face a *malevolent nature* and apply a *minimax* criterion that implies minimisation of losses in the worst scenario.
## Results

<table>
<thead>
<tr>
<th>Table 1.</th>
<th>Cournot</th>
<th>Stackelberg</th>
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<tbody>
<tr>
<td><strong>Private VIP profit-maximizer</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( q_p = \frac{\beta K^*}{2} )</td>
<td>( q_{VIP} = (1 - \beta) K^* )</td>
<td>( q_p = \frac{\beta K^*}{2} )</td>
</tr>
<tr>
<td>if ( \beta \geq \frac{4}{3} \left(1 - \frac{1-c_u-c_d}{K^*}\right) )</td>
<td></td>
<td>if ( \beta \geq \frac{2K^* - 1 + c_u - c_d}{4K^<em>} ) ( \leq \beta \leq \frac{2K^</em> - 1 + c_u - c_d}{2K^*} )</td>
</tr>
<tr>
<td>( q_p = \beta K^* )</td>
<td>( q_{VIP} = \frac{1 - \beta K^* - c_u - c_d}{2} )</td>
<td>( q_p = \beta K^* )</td>
</tr>
<tr>
<td>if ( \beta \leq \frac{2}{3} - \frac{1-c_u-c_d}{3K^*} )</td>
<td></td>
<td>if ( \beta \leq \frac{2K^* - 1 + c_u - c_d}{3K^*} )</td>
</tr>
</tbody>
</table>

| **Public VIP Socially concerned** | | |
| \( q_p = \frac{\beta K^*}{2} \) | \( q_{VIP} = (1 - \beta) K^* \) | \( q_p = \frac{\beta K^*}{2} \) | \( q_{VIP} = (1 - \beta) K^* \) |
| | for any \( \beta \) | | |

| **Divested private affiliate profit-maximizer** | | |
| \( q_p = \frac{K^*}{3} \) | \( q_d = \frac{K^*}{3} \) | \( q_p = \frac{K^*}{4} \) | \( q_d = \frac{K^*}{2} \) |
| if \( \frac{1}{3} \leq \beta \leq \frac{2}{3} \) | | if \( \frac{1}{4} \leq \beta \leq \frac{1}{2} \) | |
| \( q_p = \frac{\beta K^*}{2} \) | \( q_d = (1 - \beta) K^* \) | \( q_p = \frac{\beta K^*}{2} \) | \( q_d = (1 - \beta) K^* \) |
| if \( \beta > \frac{2}{3} \) | | if \( \beta > \frac{1}{2} \) | |
| \( q_p = \beta K^* \) | \( q_d = \frac{(1 - \beta)K^*}{2} \) | \( q_p = \beta K^* \) | \( q_d = \frac{(1 - \beta)K^*}{2} \) |
| if \( \beta < \frac{1}{3} \) | | if \( \beta < \frac{1}{3} \) | |

| **Divested public affiliate Socially concerned** | | |
| \( q_p = \frac{\beta K^*}{2} \) | \( q_d = (1 - \beta) K^* \) | \( q_p = \frac{\beta K^*}{2} \) | \( q_d = (1 - \beta) K^* \) |
Conclusion

- Our results prove the existence of the minimum threshold level of the first stage asset divestiture (the scope of the downstream privatisation $\beta > \frac{2}{3} K$) that credibly signals about the guaranteed future profits of the entrant.

- We interpret our findings as a necessary precondition for successful liberalisation which makes privatisation decision irrelevant to further discretionary structural changes.

- Our methodological approach may fuel the debate over the optimal organisational and ownership structure of the liberalised railways worldwide.