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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

- **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 (λ) is borrowed from Armstrong & Sappington (2007) and is close to what is employed in Gagnepain & Ivaldi (2016)

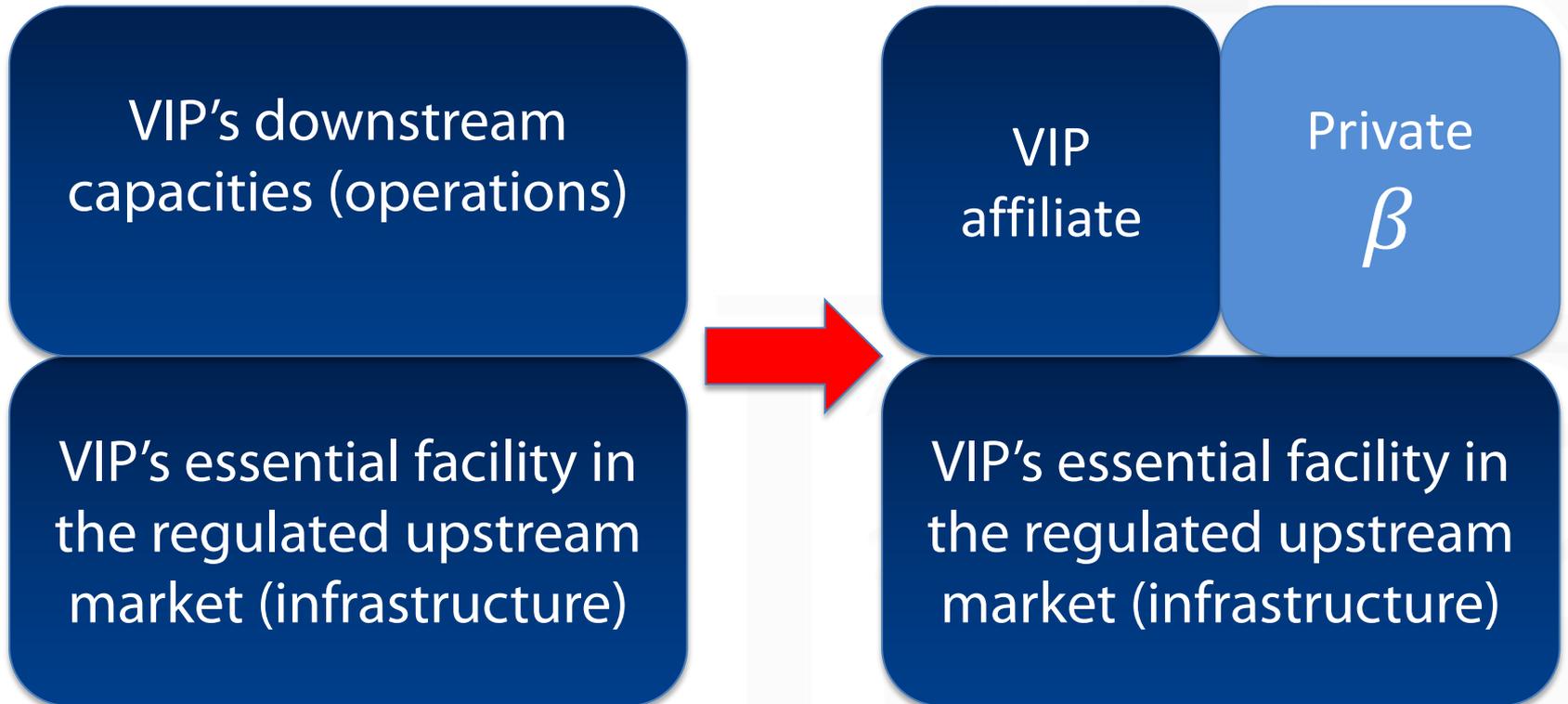
$$W = CS - (1 + \lambda)T + \alpha\pi$$

- 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



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 β 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

Reform uncertainty

Public contracting flexibility

- Political pressure and public finance concerns may change the weights λ and α 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 1.

	Cournot		Stackelberg	
Private VIP profit-maximizer			$q_p = \frac{2K^* - 1 + c_u - c_d^H}{4}$	$q_{VIP} = \frac{1 - c_u + c_d^H}{2}$
			if $\frac{2K^* - 1 + c_u - c_d^H}{4K^*} \leq \beta \leq \frac{2K^* - 1 + c_u - c_d^H}{2K^*}$	
	$q_p = \frac{\beta K^*}{2}$	$q_{VIP} = (1 - \beta)K^*$	$q_p = \frac{\beta K^*}{2}$	$q_{VIP} = (1 - \beta)K^*$
	if $\beta \geq \frac{4}{3} \left(1 - \frac{1 - c_u - c_d}{K^*}\right)$		if $\beta \geq \frac{2K^* - 1 + c_u - c_d^H}{2K^*}$	
	$q_p = \beta K^*$	$q_{VIP} = \frac{1 - \beta K^* - c_u - c_d}{2}$	$q_p = \beta K^*$	$q_{VIP} = \frac{1 - c_d - c_u - \beta K^*}{2}$
if $\beta \leq \frac{2}{3} - \frac{1 - c_u - c_d}{3K^*}$		if $\beta \leq \frac{2K^* - 1 + c_d + c_u}{3K^*}$		
Public VIP Socially concerned			$q_p = \frac{(1 - \alpha)K^* + \alpha(\delta - 2c_d)}{1 - 2\alpha}$	$q_{VIP} = \frac{-K^* - 2\alpha(\delta - 2c_d)}{1 - 2\alpha}$
			if $\frac{(1 - \alpha)K^* + \alpha(\delta - 2c_d)}{K^*(1 - 2\alpha)} \leq \beta \leq 2 \frac{(1 - \alpha)K^* + \alpha(\delta - 2c_d)}{K^*(1 - 2\alpha)}$	
	$q_p = \frac{\beta K^*}{2}$	$q_{VIP} = (1 - \beta)K^*$	$q_p = \frac{\beta K^*}{2}$	$q_{VIP} = (1 - \beta)K^*$
		for any β		
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