An application proposal of yardstick competition

to the regional markets of the French railway system

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The French monopoly problem

➢ The French railway services (freight, inter-city, regional):

	1938	1983	1994	2004
number of operators	1	1	1	1
operators	SNCF	SNCF	SNCF	SNCF

➢ The regional rail transport services (TER):

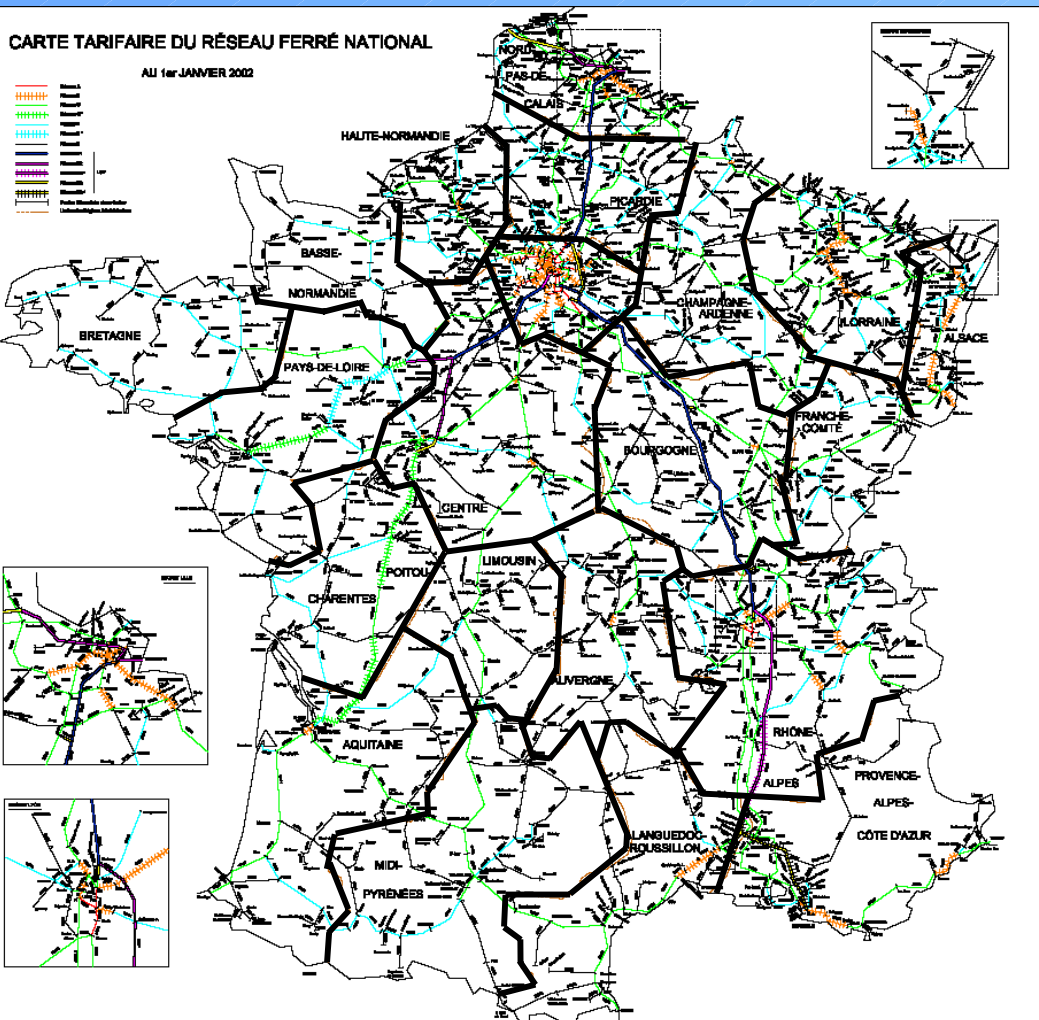- **suburban** trains

- **interurban** trains

- **rural** trains

Framework

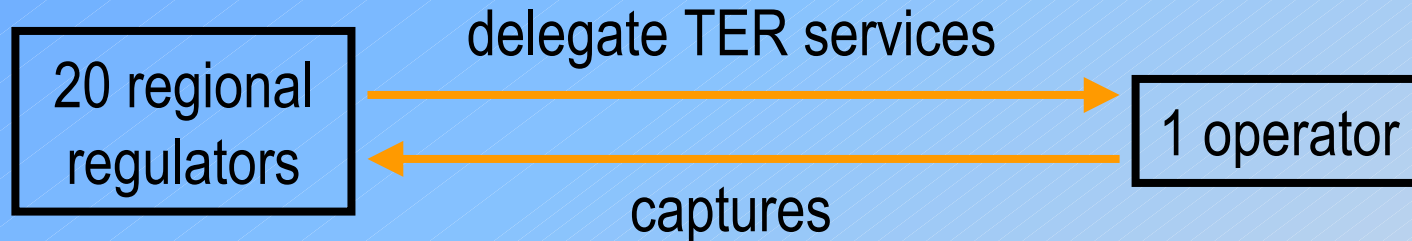## Current organization

Average regional network in 2002:

➤ 450 M P.K

➤ 7.1 M Tr.K

} 64 P/Tr

➤ 1157 km of lines

➤ 70.7 km/h

➤ traffic revenues = 40 % costs

➤ operating income: 100 M €

➤ operating result: 3.7 M €

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Which incentives?

delegate TER services

| 20 regional regulators | → | 1 operator |

captures

➢ Contracts (5-10 years) define PSO and subsidies:

• **quality** incentives: bonus/malus

• **traffic** incentives: SNCF bears the commercial risk

• **cost** incentives: "RPI" + 0!!!!!!!!!

➢ no call for tender ➡ <u>lack of competitive pressure on costs</u>

Economic principles

The yardstick competition mechanism

➢ **Shleifer**: Estimating what should be the best prices and subsidies, by comparing the performances of several similar, regulated firms:

$$\text{revenues of firm } i = \frac{\displaystyle\sum_{j \neq i} \text{costs of firm } j}{N - 1}$$

costs of the compared firms have to be homogenous!

Economic principles

The proposed scheme:

- ➢ **Comparing the performances of the 20 regional SNCF departments**

- ➢ Implementation by a **common agency of the regional regulators**

- ➢ Which **incentives**?
  - financial gains / penalties
  - reputation effect

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Economic principles

Benefits of the use of comparisons

➢ reduction of the **uncertainty** due to:

- prices increase

- changes in labour legislation

- national strikes

➢ reduction of the **informational rent** due to:

- spatial organization

- labour organization

Measure of efficiency

Correcting external heterogeneity

➢ **endogenous** heterogeneity: due to political decisions in defining PSO

Nash: customer = government,

output = level of service: Tr.K ($\neq$ number of P.K)

➢ **exogenous** heterogeneity: due to the environment (infrastructure, society)

introduction of environmental variables in the model

Measure of efficiency

The cost frontier model

➢ data issued from the regional **accounts of the SNCF** (1997 & 1998)

➢ **stochastic cost frontier**:

$$\ln C_{it} = \beta_0 + \beta_1 \ln Tr.K_{it} + \beta_2 \ln L.L_{it} + \sum_{k>2} \beta_k \ln w_{k,it} + v_{it} + u_{it}$$
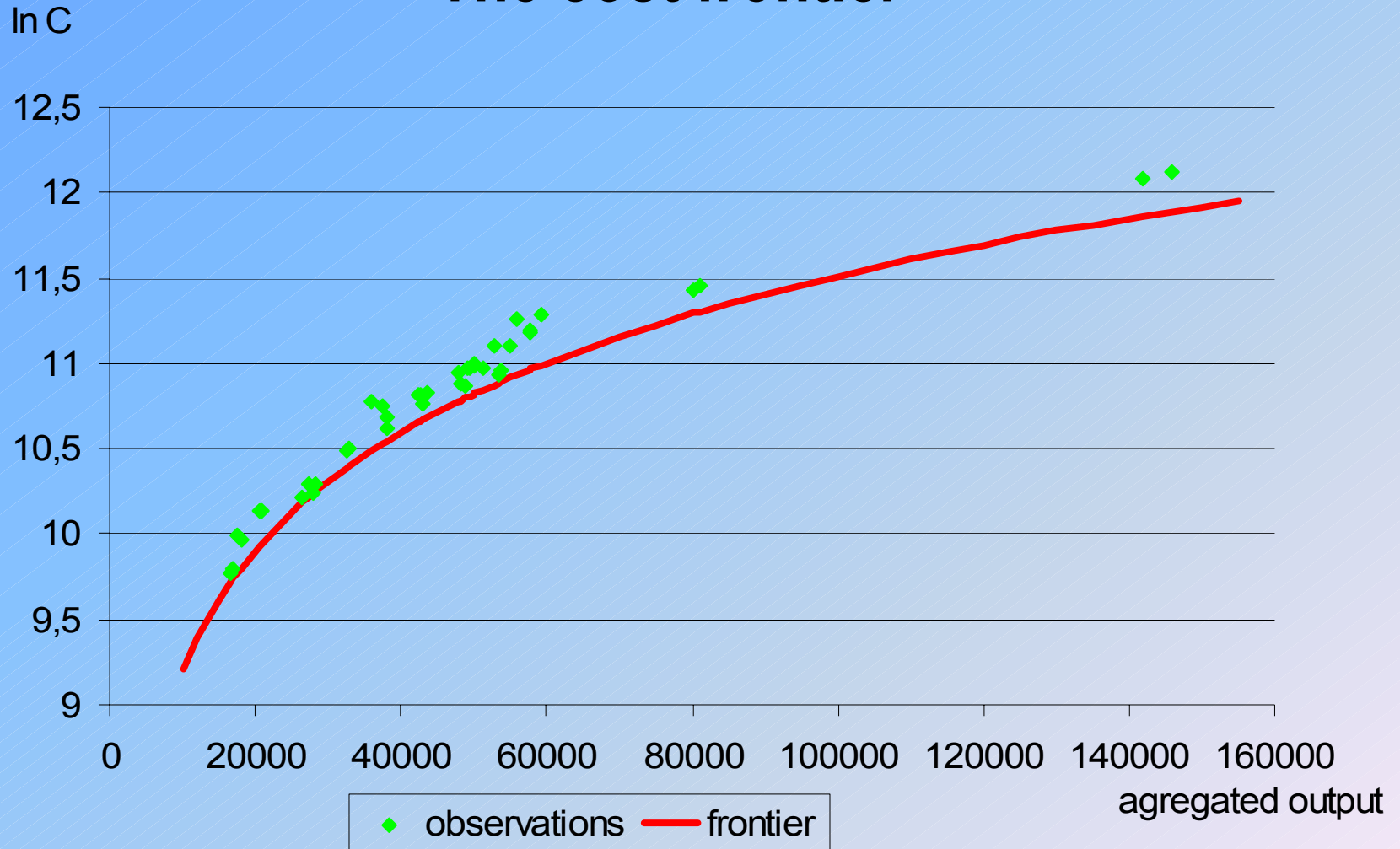
➢ **control of the external heterogeneity**:

$$u_{it} = \delta_0 + \sum_{k\geq 1} \delta_k Z_{k,it} + \varepsilon_{it}$$

Measure of efficiency

Estimation results

	Dependent variable: ln C – Observations: 40					
	1st model		2nd model		3rd model	
Variables	Coefficient	t-test	Coefficient	t-test	Coefficient	t-test
Constant	1.266	5.45	0.8948	62.1	2.460	12.4
ln Tr.K	1.177	35.0	1.226	78.2	1.033	39.0
ln L.L	- 0.08707	-1.88	-0.09949	-3.46	-0.08723	-2.01
Constant	0.05309	0.16	-0.05082	-1.07	-0.03764	-1.98
Delinq	2.088	2.02	2.555	3.41	3.584	4.91
Load	0.01014	5.39	0.005219	14.1		
P.K	- 0.8762^{E-3}	-2.63	-0.7097^{E-3}	-118		
Exp	- 0.06364	-1.04				
Speed	-0.005289	-1.50				
K	0.1998^{E-5}	0.23				
γ	0.966	19.8	0.999	688	0.999	237
Log-L	63.94		71.76		63.38	

Measure of efficiency

The cost frontier

Measure of efficiency

Efficiency scores

Conclusion
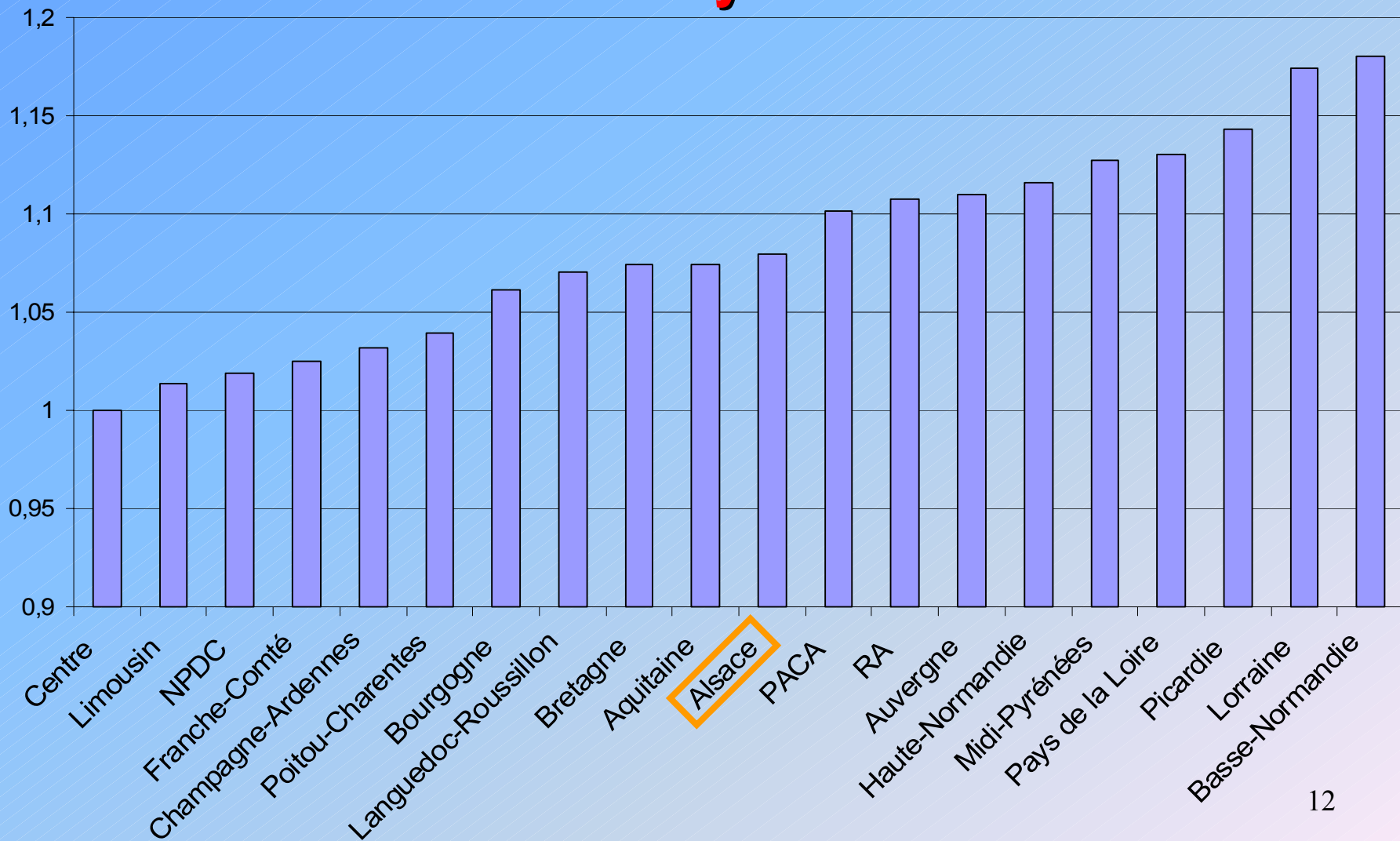
Towards a more incentive regulation scheme

> ➤ Yardstick competition could be implemented:

  - while maintaining the legal monopoly of the SNCF

  - external heterogeneity can be controlled

  - internal heterogeneity (inefficiency) is quite important

> ➤ Franchising should be introduced in addition

Conclusion

Thank you

for your attention