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# Regulation of multi-product natural monopolies under political constraints

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# Presentation outline

- Objective of the paper
- Motivation
- The model
- Results
- Conclusions
- Remarks

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# Objective of the paper

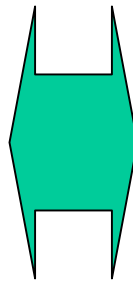
- To analyse the decision taken by the regulator about how to organise a two natural monopoly industry, integration versus decentralisation, under political economy constraints in the form of capture.

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# Motivation

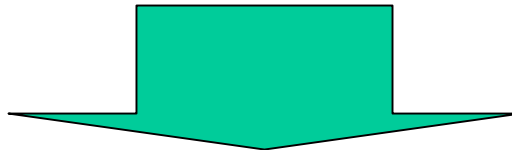
## Industry structure:

- Natural monopoly
- Privatisation
- Regulatory reform
- Introduction to competition



## Political economy

- Stakes of interest groups in industry design and regulation



## Examples:

UK Telecommunications, gas and electricity; USA, Electricity; Mexico gas and electricity.

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# The model

## Monopoly vs Duopoly

**James Dana**

**Mendoza and Rickman**

**Cost function:**  $C(\beta^i) = K + \beta^i q$

Independent except for the correlation of  $(\beta^i, \beta^j)$

**Game:** Regulator-Firm

Direct regulation

No possibility of strategic behaviour  
by the regulator

**Game:** Congress- Regulator -Firm

Possibility of strategic behaviour  
from the regulator

Stake of collusion: regulator-firms

*Due asymmetric information.*

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# The model

## **Auriol and Laffont:**

Under low correlation between types integration dominates decentralisation due to:

➤ Informational economies of scope  $>$  than yardstick competition.

➤ **Therefore:** Integration is welfare improving for low correlation.

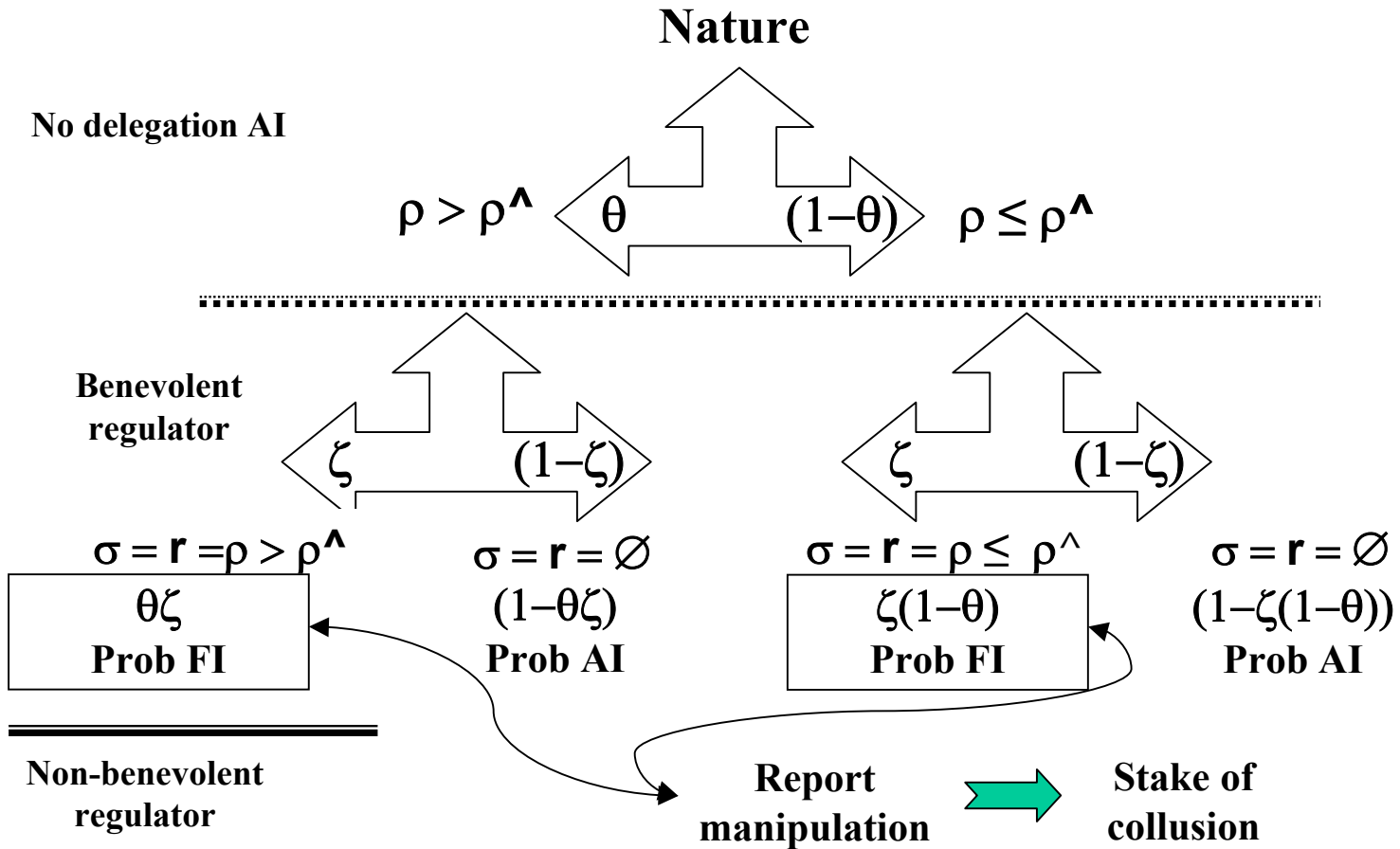
## **Mendoza and Rickman:**

❖ How does the possibility of capture affect the interaction between:

✓ Informational economies of scope.

✓ Yardstick competition.

# The model: a signalling game



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## Optimisation problem under integration

State of nature  $\rho > \rho^{\wedge}$

$$\begin{aligned} \max_{q_1, q_2, T} W^{nb} &= \zeta \theta W^{FI} + (1 - \zeta \theta) W^{AI} - \alpha \zeta \theta s = \\ &\quad \xi W^d + (1 - \xi) W^I - \alpha \zeta \theta s \end{aligned}$$

State of nature  $\rho \leq \rho^{\wedge}$

$$\begin{aligned} \max_{q_1, q_2, T} W^{nb} &= \zeta (1 - \theta) W^{FI} + (1 - \zeta (1 - \theta)) W^{AI} - \alpha \zeta (1 - \theta) s = \\ &\quad \psi W^I + (1 - \psi) W^d - \alpha \zeta (1 - \theta) s \end{aligned}$$

**Under IRC and ICC**



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# Solution: Pricing equations

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# Information and decision making

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# Conclusions

1) Delegation to a benevolent regulator increases welfare compared to asymmetric information.

2) Under a non-benevolent regulator there is a reduction in welfare compared with the benevolent regulator's case.

3) Reduction in welfare comes from three sources:

- Social cost of incentive payments.

- Reduction in consumer surplus.

- Reduction in producer surplus.

Consumers and firms suffer from capture.

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# Conclusions

4) It is not straight forward to derive analytical conclusions about the overall effect of capture over the informational economies of scope.

5) Constraints have to be imposed over the parameters, such that, under certain values of the parameters, political economy constraints strengthen Dana's findings that, for low levels of correlation, integration is the welfare dominant industry structure.

6) However, it seems that if the parameters do not comply the constraints, the inequalities could be reversed, so that the optimal solution imposes extra-costs for the society.

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# Remarks

Our model abstracts from a number of issues and, as such, rises several questions for future research:

- From the our results, a non-benevolent regulator could still be useful as long as he provides the right information for decision making.
- The possibility of the reversion of the inequalities provided by the optimal mechanism, opens questions regarding the optimal levels of capture in a given society.
- Our model take the transaction costs of capture as exogenous determined, therefore endogenising those transaction costs is one further step to follow.
- Finally, with the possibility to face integrated firms providing services like natural gas and electricity distribution, and/or electricity and telephone services, our model rises the issue of the right organisation in the face of political constraints.
- In which countries could be expected to see more integration between firms providing natural gas and electricity or telecommunications and electricity?