INFORMATION, INCENTIVES AND MECHANISM DESIGN IN REGULATION:
A THEORETICAL ROAD-MAP

PART II

Franco Becchis
Fondazione per l'Ambiente
Saint John International University

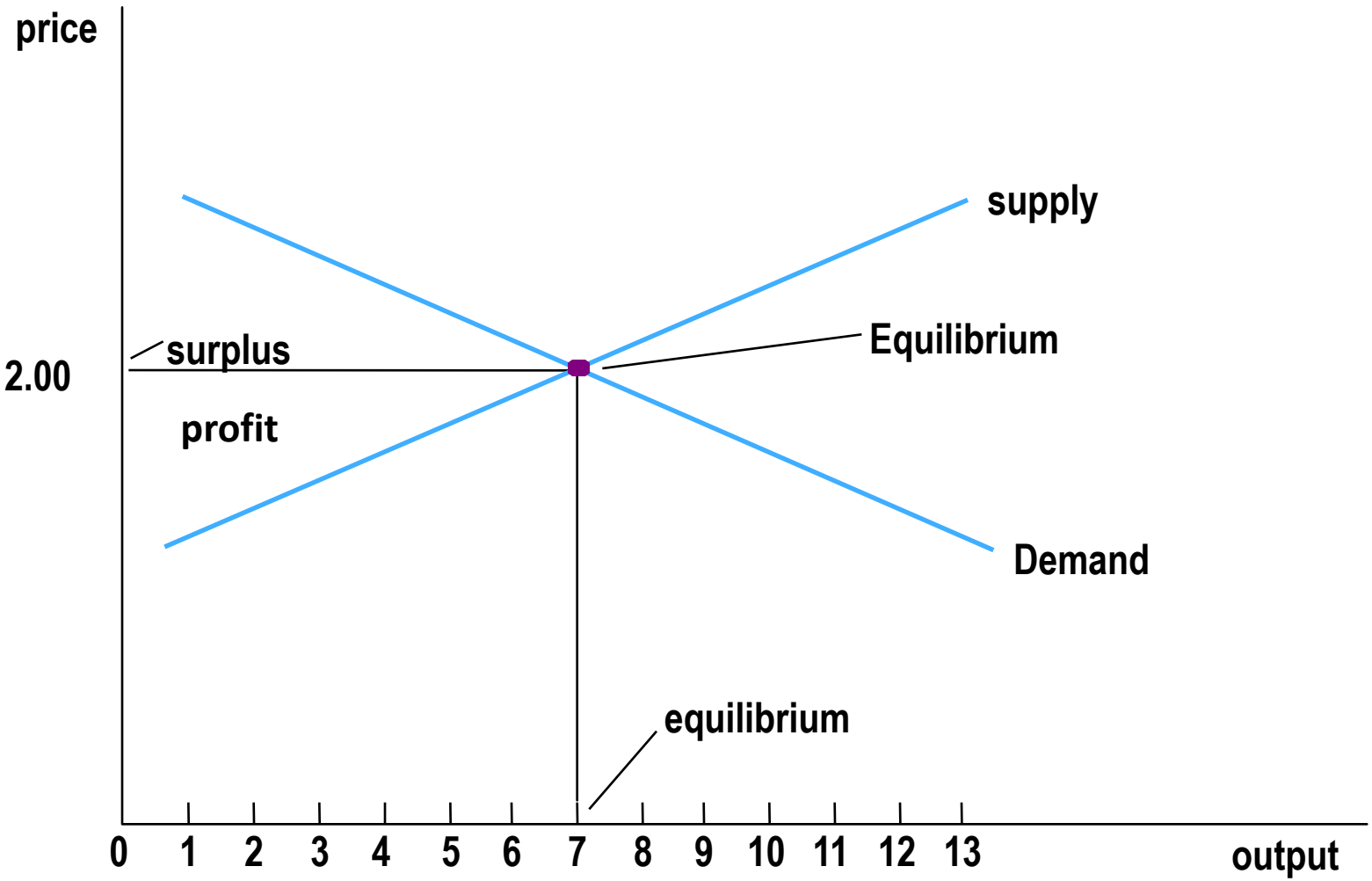
Historical notes on economic theory of regulation

Regulator’s goal

- Max $\alpha(R-C)+\varsigma$

The regulator’s goal is to max profit plus consumer surplus

Simplifying profits and consumer surplus



Regulator's goals

Preferences of the regulator ⟨

The dimension of parameter alfa reflect preferences of the regulators

(λ=0)

Baron e Myerson assumed no cost for public funds (λ=0)

For Laffond Tirole λ=0

Regulation and games

The regulatory process is modeled as a game of incomplete information.

The regulator:

- has no direct access to information about the monopolist's true production costs.
- **induces the regulated firm to employ its privileged information to further the broad interests of society, rather than to pursue its own interests?**
- trades off its objective to extract rents from the monopolist (revenue to the government) against its objective to encourage an efficient output level.

In addition, the monopolist must be given sufficient incentive to participate (i.e. to stay in the market).

Revelation principle, Baron and Myerson (1982) and Sappington (1982,1983).

Literature flow

Asurge in the literature on regulatory economics followed the Baron-Myerson and Sappington contributions:

“ alternative regulatory mechanisms, such as price caps versus cost-and profit-sharing schemes”.

Mechanisms and effects

- empirically estimation of the effect of regulation on firms' behavior (see Wolak, 1994).

- optimal time-consistent mechanisms: "ratchet effect," when information is gradually revealed over time, by Freixas, Guesnerie, and Tirole (1985) and Laffont and Tirole (1988)

- synthesis of theories of optimal auctions and of optimal regulation Laffont and Tirole (1987), McAfee and McMillan (1986) and Riordan and Sappington (1987)

- ex post audits of firms' costs Baron and Besanko (1984) and Laffont and Tirole (1986)

- collusion between the regulated firm, its auditor and even the regulatory agency Laffont and Tirole (1993).

Information types, optimal design

- Privileged information
- Inter-temporal commitment powers of the regulator
- Both influence the optimal design

Regulation theory: 5 principles

1)privileged information rent.

2)to help limit this rent design options that induce the firm to employ its superior industry knowledge to realize Pareto gains.

3)the options intentionally induce outcomes that differ from the outcomes the regulator would implement if he shared the firm's knowledge. These performance distortions serve to limit the firm's rent.

4)regulator is better able to limit the firm's rent when he is endowed with a broader set of regulatory instruments and more extensive commitment powers.

1)Limited commitment power suggest to limit regulator's access to information

Back to real world in 5 steps

1) information asymmetries can be difficult to outline precisely.

2) optimal regulatory policies cannot be outlined when info asymmetries are pronounced and multidimensional.

3) it’s impossible to specify completely firms and regulator’s constraints.

4) some instruments (transfers) optimal in theory are not available in practice.

5) goals of the regulator difficult to specify.

4 families of practical policies

Four dimensions with overlap:

1) the extent of pricing flexibility granted to the regulated firm

2) the manner in which regulatory policy is implemented and revised over time

3) the degree to which regulated prices are linked to realized costs

4) the discretion that regulators themselves have when they formulate policy.

PC - IRR comparison

Table 1: Price cap versus rate-of-return regulation

Firm's flexibility over relative prices	Yes	No
Regulatory lag	Long	Short
Sensitivity of prices to realized costs	Low	High
Regulatory discretion	Substantial	Limited
Incentives for efficient cost reduction	Strong	Limited
Incentives for durable sunk investment	Limited	Strong

PC - IRR comparison

If the priority is about efficiency on observed and not observed (managerial effort) costs choose PC.

If the priority is to ensure investments choose IRR.

IRR is a kind of commitment to avoid opportunistic behaviour of the regulator (expropriation or very low mandatory prices).

Price flexibility

- If the regulated firms owns private information on costs and demand it is better to leave them to adjust price

- In other words, rent seeking by well informed firms can drive to social Pareto improvement.

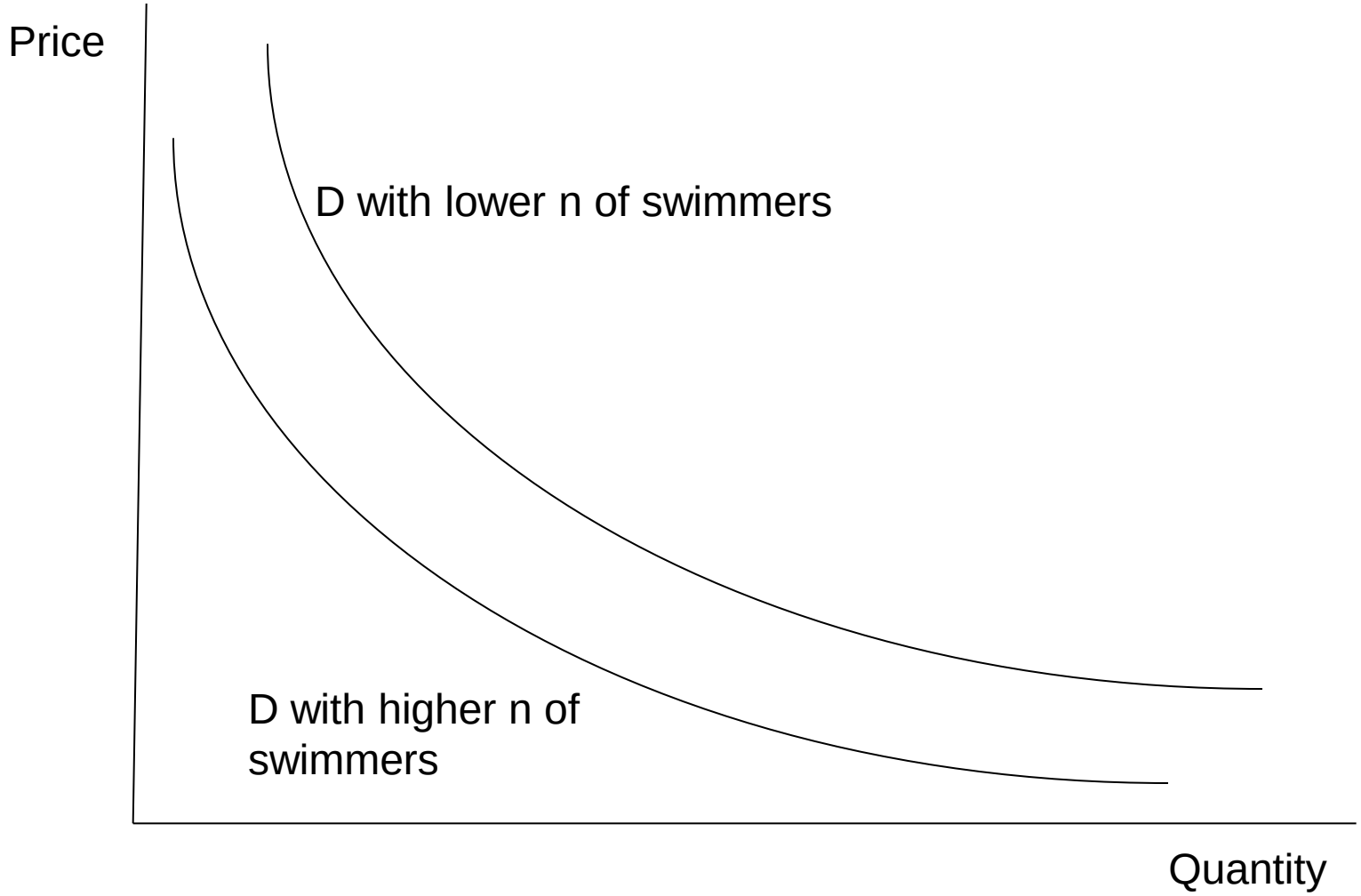
Price flexibility, rents, consumer surplus

Example: premium price for swimmers from 18.00 to 20.00 (10 € instead of 5),

$R<\sigma$

G extra consumer surplus is higher than rents

Rents and consumer surplus with a service with congestion



Regulation in practice: conclusion

The practical policies provide insight about the gains that regulation can secure and further insight about how a regulator can employ any additional information;

Four important observations:

1)carefully designed regulatory policies often can induce the regulated firm to employ its superior information in the best interests of consumers.

2)the Pareto gains (definition?) are secured by delegating some discretion to the regulated firm. Discretion is the means by which it can employ its superior knowledge.

3)The extent of the discretion depend:

a) the congruity of the preferences (aligned incentives)

b) the nature and extent of the information asymmetry.

4) is not costless to induce the firm to employ its superior information.

a)the firm will command rent;

b)attempt to preclude all rents can eliminate large potential gains for consumers;

c)the regulator may further the interests of consumers by credibly promising not to usurp all of the firm’s rent.

5) the regulator’s ability to achieve his objectives is influenced significantly by the instruments at his disposal, regardless of how well informed he is.

Historia magistra vitae

1798: New York municipality privatizes water services franchising it to Manhattan Company, but due to absence of information and regulation, the incumbent establishes Chase Manhattan Bank!! …later the city will fail to tame a big fire but...

Relevance for regulation: it’s all about asymmetric information and information extraction as the New York case shows us…

…what is the link between JP Morgan, a big player of the financial crisis, and the LPS? JPM roots are also in the absence of LPS regulation!!!

References

POPULAR

INTERMEDIATE

- Ken Binmore (2007), Playing for real, Oxford University Press
- Hart, S. (2005), An interview with Robert Aumann.
- Hayek, F. (1945), “The use of knowledge in society”, American Economic Review 35, 519-530.

References

ADVANCED

Baron, D., Mayerson, R. (1982): “Regulating a Monopolist with Unknown Costs”, Econometrica, 50(4), 911—930.

Clarke, E.H. (1971): “Multipart pricing of public goods”, Public Choice 11:17—33.

Grantham, G. (1980): “The persistence of open-field farming in nineteenth century France”, Journal of Economic History 40, 515-531.

Green, J. and J.J. Laffont (1979): “Incentives in Public Decision Making”, North-Holland, Amsterdam.

Laffont, J.J., Tirole, J. (1986): “Using Cost Observation to Regulate Firms,” Journal of Political Economy, 94(3), 614—641.

Groves, T. (1973): “Incentives in teams”, Econometrica 41, 617-663.

Mailath, G. and A. Postlewaite (1990): “Asymmetric bargaining problems with many agents”, Review of Economic Studies 57, 351-367.

Myerson, R. (1981): “Optimal auction design”, Mathematics of Operations Research 6, 58-73.

Rosenthal, J.-L. (1992): “The Fruits of Revolution: Property Rights, Litigation, and French Agriculture, 1700-1860”, Cambridge University Press.

Samuelson, P. (1954): “The pure theory of public expenditure”, Review of Economics and Statistics 36, 387-389.

Viscusi, W. Kip.; Vernon, John Mitcham; Harrington,Joseph Emmett, Economics of Regulation and Antitrust, MIT Press, 1995

Wilson, R. (1985): “Incentive efficiency of double auctions”, Econometrica 53, 1101-1116.

Hurwicz, L. (1960): “Optimality and informational efficiency in resource allocation processes”, in Arrow, Karlin and Suppes (eds.), Mathematical Methods in the Social Sciences. Stanford University Press.