

Local Competition & Interconnection: A Survey

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Agenda

- Regulation
- Incentive Regulation
- Interconnection Pricing
- Efficient Component Pricing Rule
- Theoretical Model
- Summary/Recommendations

Agenda

- Regulation
 - ▶ Goals
 - ▶ Types/Solutions
 - ▶ Advantages/disadvantages

Regulatory Goals

- Correct Prices
 - ▶ Retail
 - ▶ Intermediate Goods
- Cost Minimization
- Rent Extraction (Monopoly)
- Universal Service

Regulatory Solutions

- Rate of Return Regulation (ROR)
- No Regulation
- Benchmark (Yardstick)
- Incentive Regulation

Regulatory Solutions

- ~~Rate of Return Regulation~~
 - ▶ Traditional, Many States
- Benchmark (Yardstick)
 - ▶ Singapore, Macau
- No Regulation
 - ▶ New Zealand

Regulatory Solutions

- ~~Rate of Return Regulation~~
- Benchmark (Yardstick)
- No Regulation
- Incentive / Price-caps Regulation
 - ▶ Most Countries
 - ▶ Many States in USA

Incentive / Price Caps Regulation

- Rationale
 - ▶ Rate of Return Regulation
 - ▶ Privatization
- Features
 - ▶ Prices Change with the CPI
 - ▶ Basket of Goods
 - ▶ Productivity Factor

Rationale

- Problems with ROR
 - ▶ Cost Plus Regulation
 - ▶ Lack of Incentives

Rationale

- Price Caps Improvements
 - ▶ Cost Savings Incentives
 - ▶ Reduced Administration

Agenda

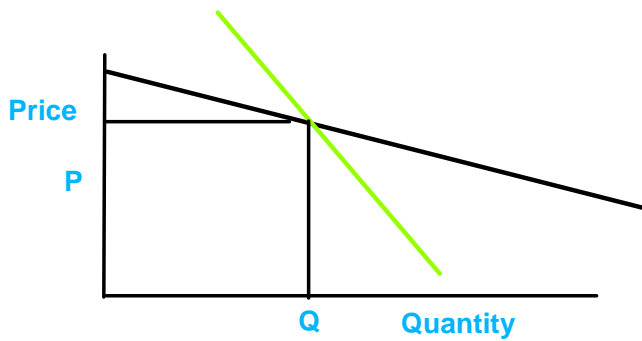
- Regulation
- Incentive Regulation
 - ▶ Features
 - ▶ Promotion of Competition
 - ▶ Why?

Incentive Regulation

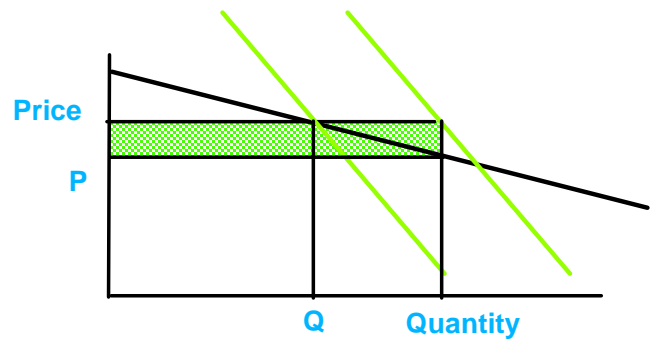
- Promotion of Competition
- Incumbent's Price Flexibility
- Price Caps & Productivity goal

$$\sum w_i \Delta P_i \leq \Delta \text{CPI} - X$$

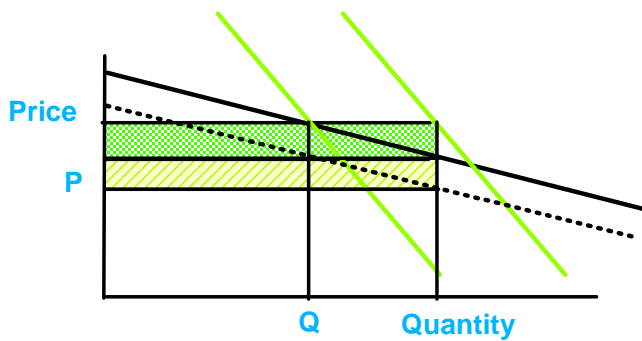
Incentive Regulation



Incentive Regulation



Incentive Regulation



Role of Competition

- Allocation of Resources
- Incentive for Efficiency
- Threat of Entry Discipline

Additional Motivation for Competition

- Product Differentiation
- Cost Differences
- Benchmark Competition (Yardstick)

Agenda

- Regulation
- Incentive Regulation
- Interconnection Pricing
 - ▶ Problem
 - ▶ Goals
 - ▶ Solution?

Intermediate Pricing Problem

- **Essential/Bottleneck Facility**
- **Natural Monopoly**
- **Input to Competitive Service**
=> **Interconnection Price Critical**

Intermediate Prices Goals

- **Encourage Entry:**
 - ▶ **Avoid Inefficient Bypass**
 - ▶ **Avoid Network Duplication**
 - ▶ **Incentive for Incumbent to Develop & Maintain Network**
 - ▶ **Promote Competitive Market Transition**

Prices Intermediate Goods

- **Efficient Component Pricing Rule:**
 - ▶ **ECPR**
 - ▶ **Baumol/Willig Rule**
 - ▶ **Parity Principle**
- **Incremental + Opportunity Cost**

Prices Intermediate Goods

Efficient Component Pricing Rule

An example:

Agenda

- **Regulation**
- **Interconnection Pricing**
- **Efficient Component Pricing Rule ECPR**
 - ▶ **Critique**
 - ▶ **Laffont/Tirole**
 - ▶ **Vickers/Armstrong/Doyle**

Efficient Component Pricing

- **What is Covered?**
- **What is not Covered?**

ECPR, Covered

- Incremental Cost plus
- Opportunity Cost

ECPR, Not Covered

- Monopoly Rents
- X - inefficiency
- Embedded Cross-Subsidies
- Universal Service Obligation
- Demand Expansion

X-inefficiency

- RBOC and GTE Down-sizing
- IXC's Down-sizing
- BT's Profit Improvement
- New Zealand's Down-sizing

ECPR, Other Constraints

- Contestable Market
- Fixed Production Coefficients
- No Bypass
- Homogeneous Products
- Linear Prices

Armstrong & Vickers, "The Access Pricing Problem," March 1995
Armstrong & Vickers, "Price Discrimination and, Competition and Regulation,"
The Journal of Industrial Economics, December, 1993

Incentive Regulation / Price Caps

- Contestability
 - ▶ Foundation of Theory
 - ▶ Challenge to Theory

Benchmark Model

- No Distortions
- No Bypass
- No Entry Costs
- No Entrant Market Power

J.-J. Laffont & J. Tirole, "Creating Competition through Interconnection:
Theory & Practice," ITS Workshop, Wellington, New Zealand,
April 10 - 12, 1995

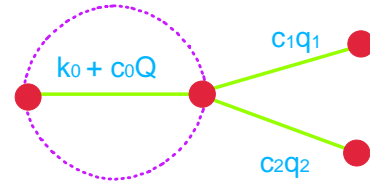
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- Regulation
- Interconnection Pricing
- Efficient Component Pricing Rule
- Theoretical Model
 - ▶ Benchmark Model
 - ▶ Regulatory Implementation
 - ▶ Global Price-caps

Theoretical Framework

q0: Incumbent's Bottleneck Service
q1: Incumbent's Competitive Services

q2: Entrant's Competitive Services

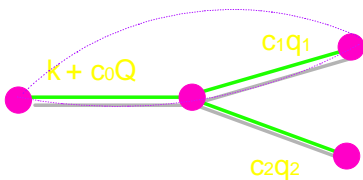


Theoretical Framework

$$Q = q_0 + q_1 + q_2$$

k = fixed cost (access deficit)

c₀, c₁, c₂: average incremental costs



Theoretical Framework

Prices:

a: access
p₀: exchange
p₁: incumbents toll
p₂: competitive toll

Theoretical Framework

First Best (all prices = marginal costs) :

$$p_0 = c_0$$

$$p_1 = c_0 + c_1$$

$$p_2 = c_0 + c_2$$

$$a = k$$

Access deficit recovered via state funds

Theoretical Framework

Note: An inefficient entrant is defined as one whose cost is $c_2 > c_1$, but entry occurs.

That is the entrant's cost is greater than the incumbent's.

Theoretical Framework

Long Run Incremental Costs (Australia):

$$a = c_0$$

Theoretical Framework

Full Distributed Costs (add mark-up to LRIC):

$$p_0 = c_0 + (k/Q)$$

$$p_1 = c_0 + (k/Q) + c_1$$

$$p_2 = c_0 + (k/Q) + c_2$$

$$a = c_0 + (k/Q)$$

Objections to FDC

- Incentives
 - ▶ Cost-plus like
- Lack of Discrimination
 - ▶ Inelastic segments favored
 - ▶ Non-linear prices not possible
- Inefficient Entry Possible

Theoretical Framework

OFTEL Rule ("tax" mark-up on profits):

$$\pi_0 = (p_0 - c_0)q_0$$

$$\pi_1 = (p_1 - c_0 - c_1)q_1$$

$$\pi_2 = (a - c_0)q_2, \text{ (profit from entrant)}$$

$$a = c_0 + (k/q_1)[\pi_1/(\pi_0 + \pi_1 + \pi_2)]$$

Theoretical Framework

Efficient Component Pricing Rule (California & New Zealand):

$$a = (p_1 - c_1) = c_0 + (p_1 - c_0 - c_1)$$

incremental + opportunity costs

Access price a depends on p_1 .
How is p_1 set?

Theoretical Framework

Optimal Regulation (Ramsey-Boiteux):

$$(p_0 - c_0)/p_0 = [\lambda/(1 + \lambda)](1/\eta_0)$$

$$(p_1 - c_0 - c_1)/p_1 = [\lambda/(1 + \lambda)](1/\eta_1)$$

$$(p_2 - c_0 - c_2)/p_2 = [\lambda/(1 + \lambda)](1/\eta_2)$$

λ : shadow price of the budget constraint

η_i : the "superelasticities"

Theoretical Framework

Optimal Regulation (continued):

$a = p_2 - c_2$, by assumption,

implies

$$a = c_0 + [\lambda / (1 + \lambda)](p_2 / \eta_2)$$

Global Price-caps

- Intermediate Good as Final Good
- Ramsey Optimal Rate Structure
- Partial Price-caps Distorting

Implementing Optimal Regulation

- Informationally Demanding
 - ▶ Marginal Costs
 - ▶ Demand Elasticities

Implementing Optimal Regulation

- Informationally Demanding
- Compounded by:
 - ▶ Informational asymmetries
 - ▶ Regulatory capture

Implementing Optimal Regulation

- Informationally Demanding
- Compounded by:
- Cost-based Price Incorrect
 - ▶ Usage must be considered

Summary / Recommendations

- Global Price-cap Preferred
- ECPR Useful with Global Price-caps
- Instruments Must Equal Goals
- Informationally Demanding
- No Simple Solution