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**

\[ \sum w_i \Delta P_i \leq \Delta CPI - X \]
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

Efficient Component Pricing

- What is Covered?
- What is not Covered?

Agenda

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

19-24
ECPR, Covered

- Incremental Cost plus
- Opportunity Cost

ECPR, Not Covered

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

X-in 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

Incentive Regulation / Price Caps

- Contestability
  - Foundation of Theory
  - Challenge to Theory

Benchmark Model

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


**Agenda**

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

**Theoretical Framework**

\[ Q = q_0 + q_1 + q_2 \]

\[ k = \text{fixed cost (access deficit)} \]

\[ c_0, c_1, c_2: \text{average incremental costs} \]

Prices:

- \( a: \text{access} \)
- \( p_0: \text{exchange} \)
- \( p_1: \text{incumbents toll} \)
- \( p_2: \text{competitive toll} \)

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

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):**

\[ a = c_0 \]

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Theoretical Framework

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

\[
\begin{align*}
p^0 &= c_0 + (k/Q) \\
p^1 &= c_0 + (k/Q) + c_1 \\
p^2 &= c_0 + (k/Q) + c_2 \\
a &= c_0 + (k/Q)
\end{align*}
\]

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Theoretical Framework

**Objections to FDC**

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

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Theoretical Framework

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

\[
\begin{align*}
\pi_0 &= (p^0 - c_0)q_0 \\
\pi_1 &= (p^1 - c_0 - c_1)q_1 \\
\pi_2 &= (a - c_0)q_2, \text{ (profit from entrant)} \\
a &= c_0 + (k/q_1)[\pi_1/(\pi_0 + \pi_1 + \pi_2)]
\end{align*}
\]

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Theoretical Framework

**Efficient Component Pricing Rule (California & New Zealand):**

\[ a = (p_1 - c_1) = c_0 + (p_1 - c_0 - c_1) \]

\[ \text{incremental + opportunity costs} \]

Access price \( a \) depends on \( p_1 \).
How is \( p_1 \) set?

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Theoretical Framework

**Optimal Regulation (Ramsey-Boiteux):**

\[
\begin{align*}
\frac{p^0 - c_0}{p^0} &= \left[ \frac{\lambda}{(1 + \lambda)} \right] (1/\eta_0) \\
\frac{p^1 - c_0 - c_1}{p^1} &= \left[ \frac{\lambda}{(1 + \lambda)} \right] (1/\eta_1) \\
\frac{p^2 - c_0 - c_2}{p^2} &= \left[ \frac{\lambda}{(1 + \lambda)} \right] (1/\eta_2)
\end{align*}
\]

\( \lambda \): shadow price of the budget constraint

\( \eta_i \): the "superelasticities"
Theoretical Framework

Optimal Regulation (continued):

\[ a = p^2 - c_2, \text{ by assumption,} \]
implies

\[ a = c_0 + \left[ \frac{\lambda}{(1 + \lambda)} \right] \frac{(p^2/\eta^2)}{\eta^2} \]

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