Mobile Termination and Mobile Penetration

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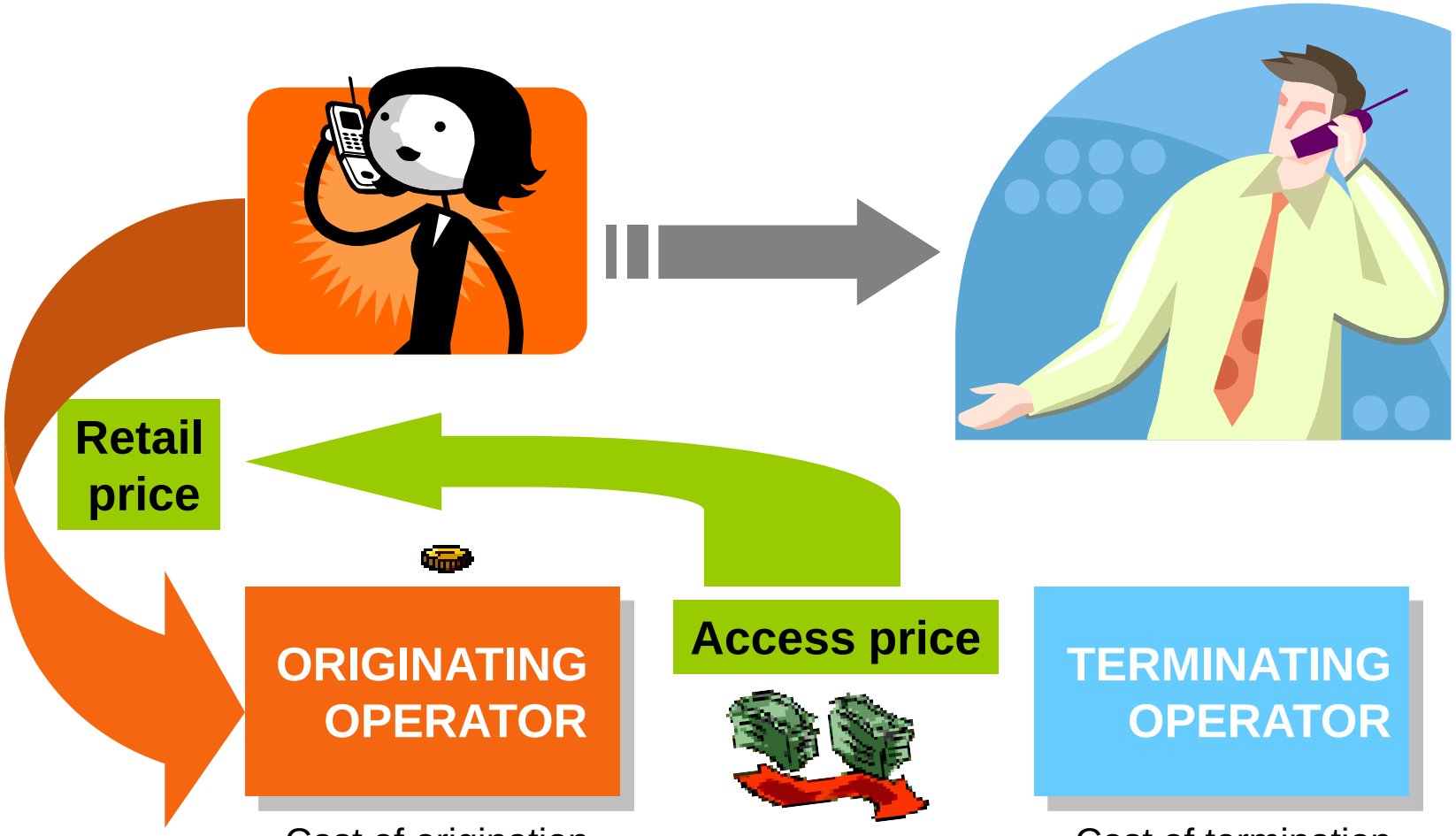
Network competition: (two-way) access pricing



The literature on two-way access

- Starters: Armstrong (1998) and Laffont-Rey-Tirole (LRT)(1998a,b)
- Study

(i) How does a given reciprocal access price affect competition among network operators and hence the retail tariffs?

(ii) What is the optimal access price?

- Many extensions
- Approach based on fixed per-minute access price

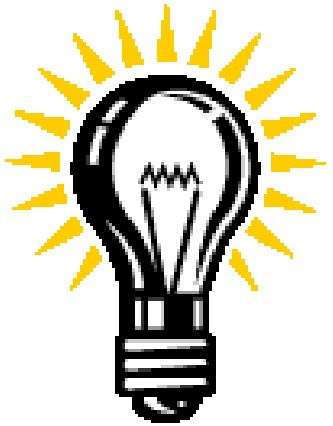
Motivation from one-way access

- ECPR (Efficient Component Pricing Rule) (Willig 1979, Baumol and Sidak 1994): The access charge depends on the retail price (p) of the incumbent:

$$a - c_0 = p - c$$

?

Make access price depend on retail price



Retail benchmarking approach to two-way access (Jeon-Hurkens, RAND 2008)

- We propose *a retail benchmarking approach to two-way access pricing*
- When networks use two-part tariffs, our approach achieves the static efficiency as well as the dynamic efficiency.

What we do in this paper

- Set up: elastic subscription demand, on-net and off-net price discrimination, three-part tariffs
- Standard approach: fixed (per-minute) and reciprocal termination charge

Q1: Which level of termination charge do the firms prefer?

Q2: Which level of termination charge does the regulator prefer?

- Retail benchmarking approach

Q3: Can we do better and how?

Elastic subscription demand: mobile penetration rates (source, ITU 2007)

Japan: 83.88

Korea: 90.20

USA: 86

Africa: 28.49 (mobile), 3.21 (fixed)

India: 19.98 (mobile), 3.93 (fixed)

Key result

- The retail benchmarking appoach allows to increase subscriptions without distorting marginal prices by intensifying competition in terms of fixed fees.

Outline

1. Logit Model with Rational expectations
2. Fixed Access Charges
3. Retail Benchmarking Rule
4. Policy implications

Model: cost

Costs:

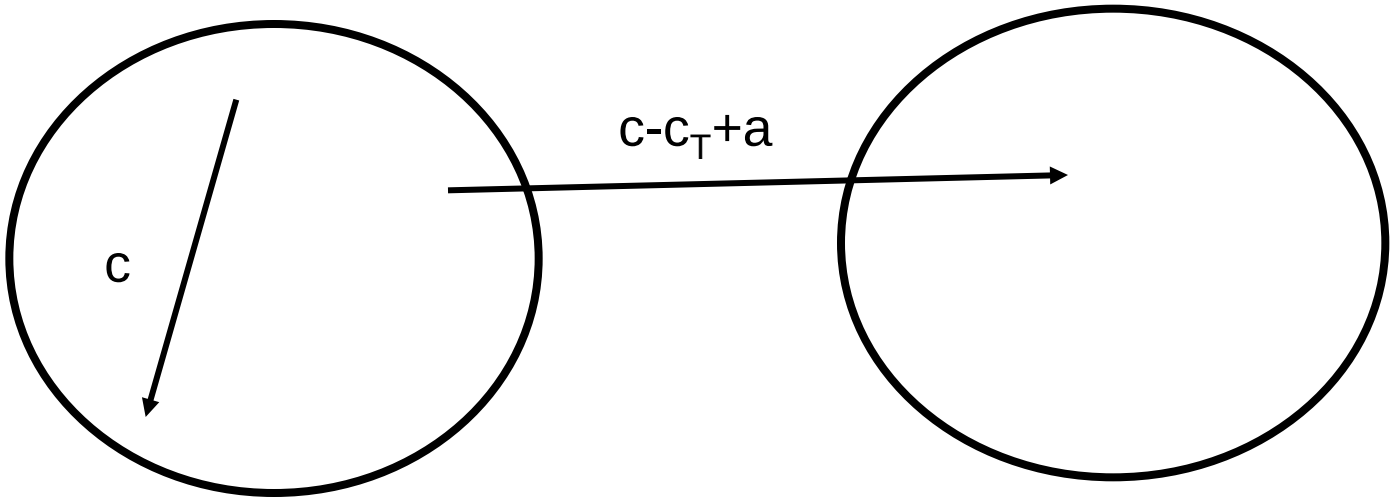
c the marginal cost of a call

c_T(<c) the marginal cost of terminating a call

On-net marginal cost: c

Off-net marginal cost: c- c_T +a

On-net vs off-net perceived marginal cost



Model: Demand and tarifs

- Mass 1 of consumers
- u(q): concave increasing utility from calls of length q
- Duopolists set

$$(F_i, p_i, \hat{p}_i)$$

Model: Demand for subscription

- Given tariffs, consumers form expectations about number of subscribers
- Rational expectations equilibrium in a Logit model

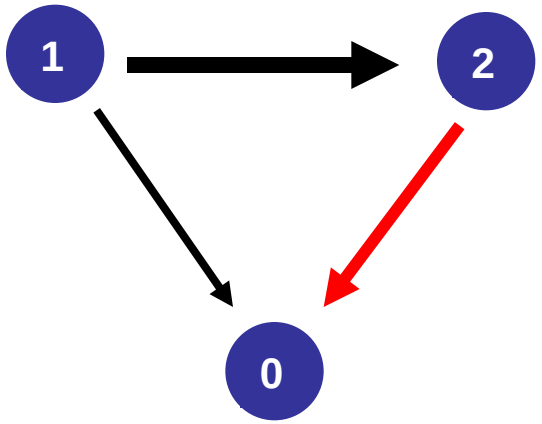
Fixed Access Charge a: perceived marginal cost pricing

Maximizing profit with respect to usage prices leads to perceived marginal cost pricing:

$$p_i = c, \hat{p}_i = c + a - c_T$$

Business stealing vs. network externality

An increase in F_1 has
an ambiguous effect on α_2
the number of subscribers on 2



$$\frac{\partial \alpha_2}{\partial F_1} > 0$$

Net Business Stealing

$$\frac{\partial \alpha_2}{\partial F_1} < 0$$

Net Network Externality

Fixed Access Charge a: General result

- Firms always want to have acess charge below c_T for different reasons
- Case 1 (net business stealing effect): in order to soften competition
- Case 2 (net network externality effect): in order to internalize better the network externality effect.

Retail Benchmarking Approach

- Information constraint of the regulator: the regulator
- Does not know the demand structure and the fixed cost
- Knows the marginal cost structure
- Observes the retail tariffs (as consumers do)

Retail Benchmarking Approach

Retail profit per customer

$$\pi_i(a)$$

Define access charge to be paid by network i to a rival network;

$$a_i = c_T + k\frac{\pi_i(a)}{q(\hat{p}_i)}$$

Retail Benchmarking Approach

We still have perceived marginal cost pricing. Furthermore,

$$\Pi_i = \alpha_i [F_i + \alpha_j R(\hat{c}) - f] - k\alpha_i \alpha_j [F_i - F_j]$$

Competition in fixed fee, fiercer for larger k>0 !

Retail Benchmarking Approach

Since fixed fee decreases in k, we can increase penetration without (further) distorting usage prices

Conclusion

Retail benchmarking approach works better than the standard approach:

- k(>0) increases competition in fixed fees and thus increases penetration without distorting usage prices

Policy Implications

- Australian Competition and Consumer Commission (2001) adopted a retail benchmarking approach
- But their rule was like the ECPR
- After the introduction of the approach, some mobile companies raised their retail prices and the commission abandoned the approach
- "Linking access charges to retail prices in a right way intensifies retail competition"