What Do We Know about Mobile Termination?

Comment on Tommaso Valletti and Stephen Littlechild

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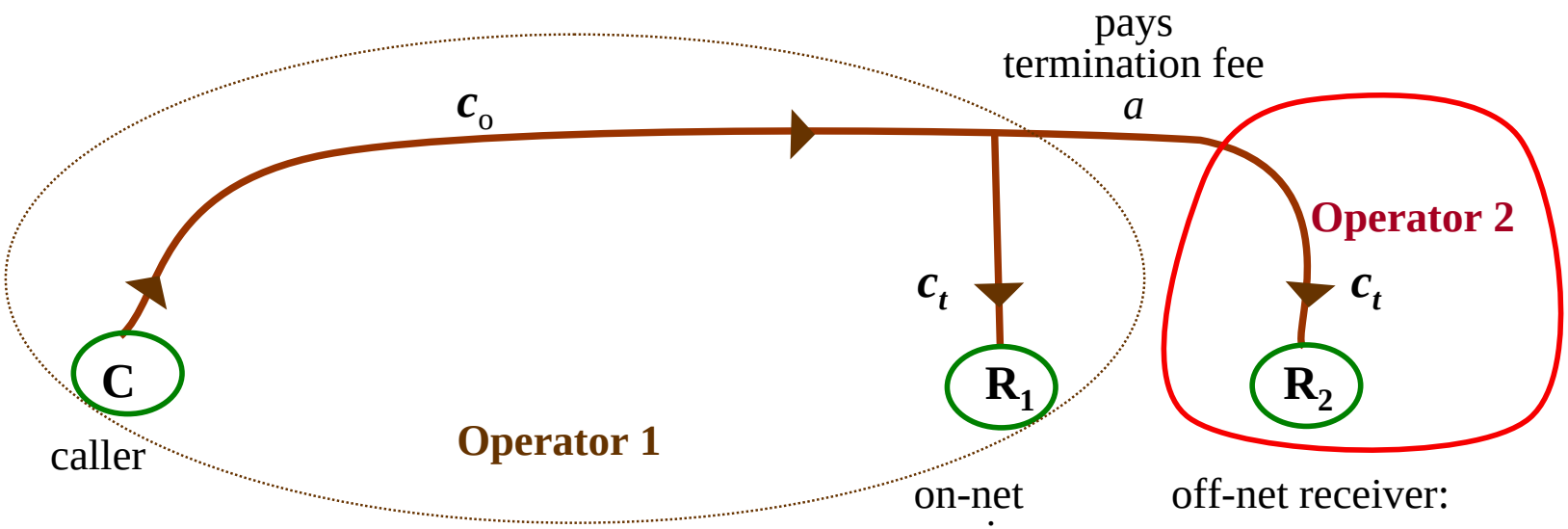
XIèmes entretiens de l'ARCEP "L'Economie des Mobiles",

26 mars 2007

I. WHAT DO WE KNOW ABOUT TWO-WAY ACCESS?



on-net receiver: operator 1's marginal cost = c

off-net receiver:

- ✓operator 1's marginal cost = $c + (a - c_t)$
- ✓operator 2's marginal cost = $c_t - a$

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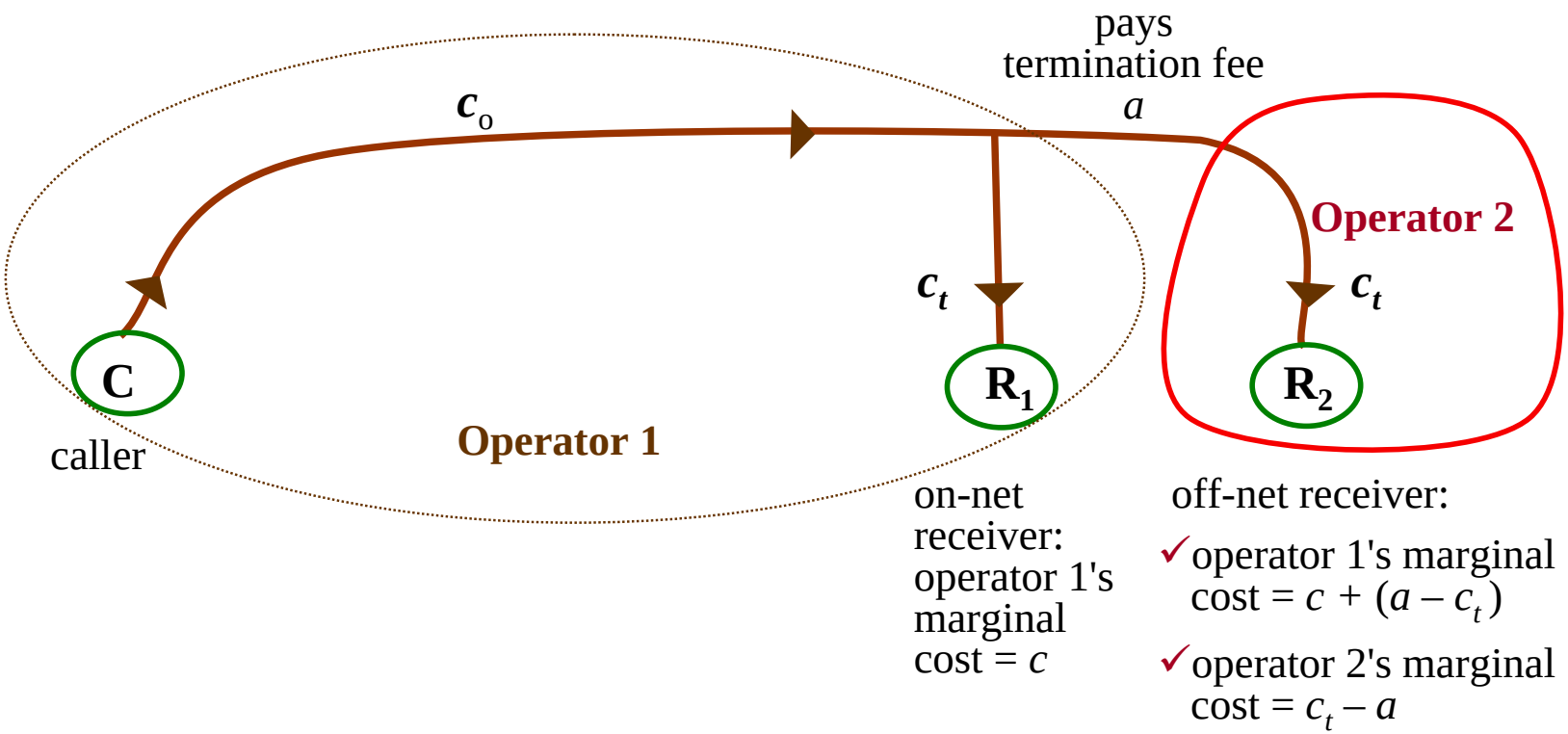

✓ Different ways of fixing a: (i) non-cooperative determination; (ii) negotiation; (iii) negotiation under a regulatory requirement of reciprocal charges; (iv) regulation of termination charges.

Example: MTM

- ✓ French operators: moved away from bill-and-keep ($a = 0$) in 2004
- ✓ by contrast, Ofcom (2003) concerned about excessive termination charges. [Also European Regulators Group, European Commission, ARCEP now, etc.]

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✓ *Foreclosure*: incumbent may make it hard for an entrant to enter.

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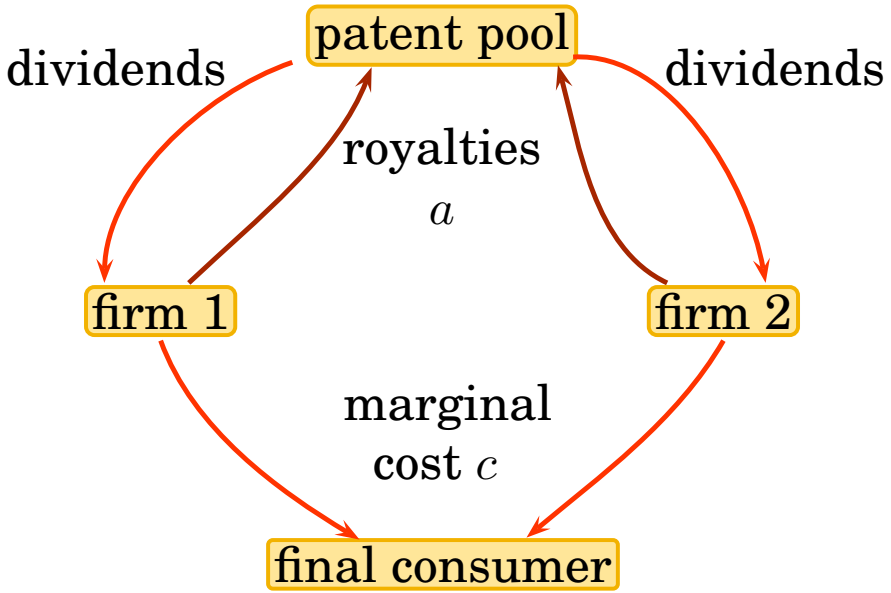
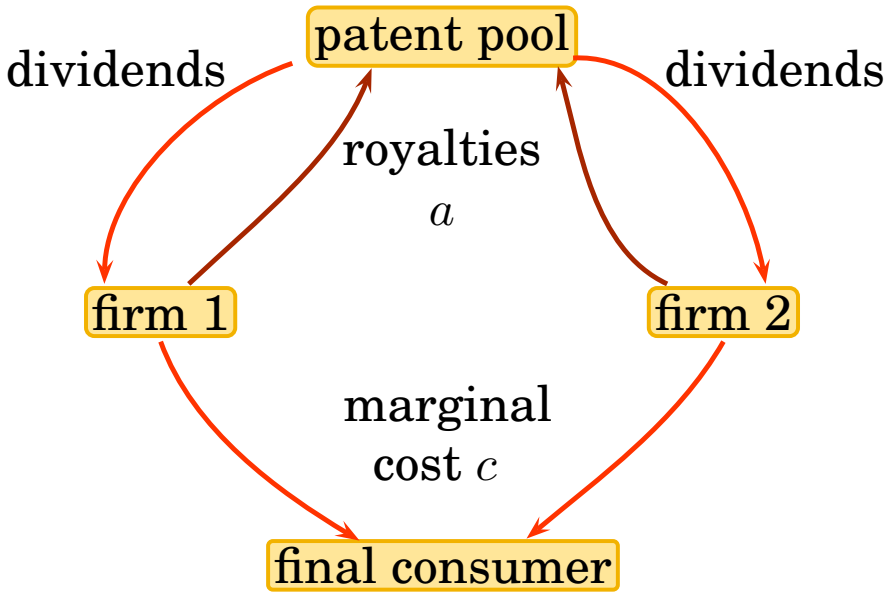
- ✓ Formation of patent pool (transfer patents to pool).


patent pool
dividends
dividends
royalties
a
firm 1
firm 2
marginal
cost c
final consumer



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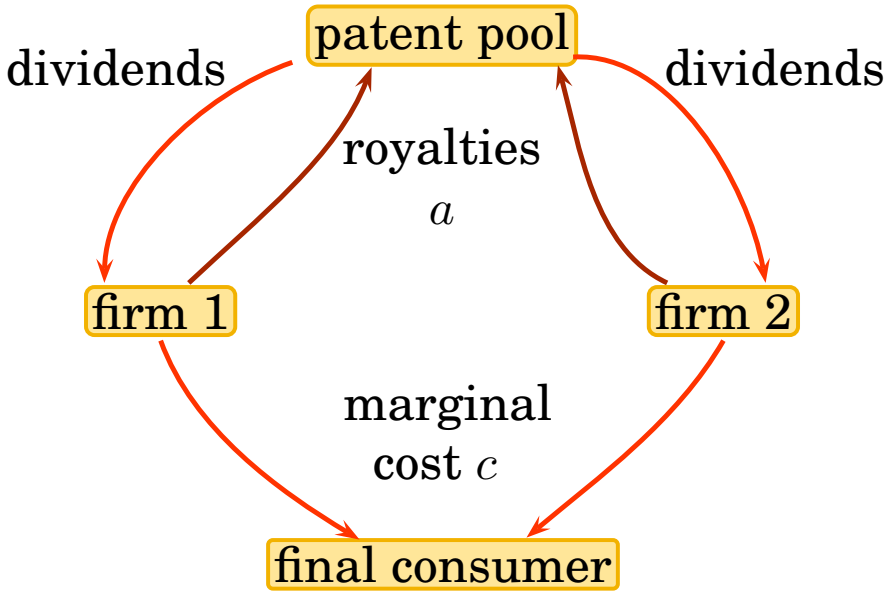
$\Longrightarrow$ can induce monopoly price downstream despite perfect competition (a such that $p^{\text{monopoly}} = c + \dfrac{a}{2}$).



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✓ Is this a good analogy?

Analysis: assume (for the moment)

- reciprocal termination fee a,
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✓ Collusion intuition [Armstrong 1998, Laffont-Rey-Tirole 1998a]

- If half of the calls are off net, operators' marginal cost per call is $c + \frac{a - c_t}{2}$.
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Note: in equilibrium no transfer between operators.
"Termination charges do not matter if no or small inter-operator transfers" is a fallacy.

- Yet analogy and standard regulatory concerns need to be revisited [Laffont-Rey-Tirole 1998a.]
  (a) *Instability of competition* (if $a \gg c_t$/close substitutes) unlike in case of patent pool, can avoid paying tax to rival (capture market).

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  - (a) *Instability of competition* (if $a \gg c_t$/close substitutes) unlike in case of patent pool, can avoid paying tax to rival (capture market).
  - (b) *Displacement of competitive locus*
    - Highly profitable consumers $\Longrightarrow$ competition intense in other dimensions (monthly subscription charges or connection fees, handset subsidies). Neutrality result. True even for pre-paid customers (large, regular handset subsidies).
    - Same argument for the waterbed effect for FTM termination. (Armstrong-Wright 2007 add FTM termination revenues to LRT: neutrality still: 100% waterbed effect).
    - *Profit neutrality result does not rely on cutthroat competition* [actually LRT assume sufficiently imperfect competition in view of (a) above.]

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Increase in a: little (big) incentive to attract callers (receivers). LRT profit neutrality result generalizes, with more sophisticated nonlinear pricing tariffs [Dessein 2003, Hahn 2004].

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(e) *Ability to affect price level depends on CPP* (see below discussion of RPP: Intuitively, when a increases, the reduction in the net cost of termination, $c_t - a$, leads to a reduction in reception charges under RPP. Termination charge then cannot affect the total price of communication).

Concerns about foreclosure are also weaker (under reciprocal access charges)

- Intuitively, if each consumer has calling volume V, N_1 and N_2 are the number of operator 1 and 2's customers, then net off-net revenue =

$$\left(N_1 N_2 V - N_2 N_1 V\right)\left(a - c_t\right) = 0.$$

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- Of course volumes/types of customers are endogenous, (and may be asymmetric), but this reasoning sets a benchmark. [Carter-Wright (2003)].

II. ON/OFF NET PRICE DISCRIMINATION

[Laffont-Rey-Tirole 1998b, Armstrong-Wright 2007]

Price p_i for on net calls [UK 2003: MTM 5.9 pence]

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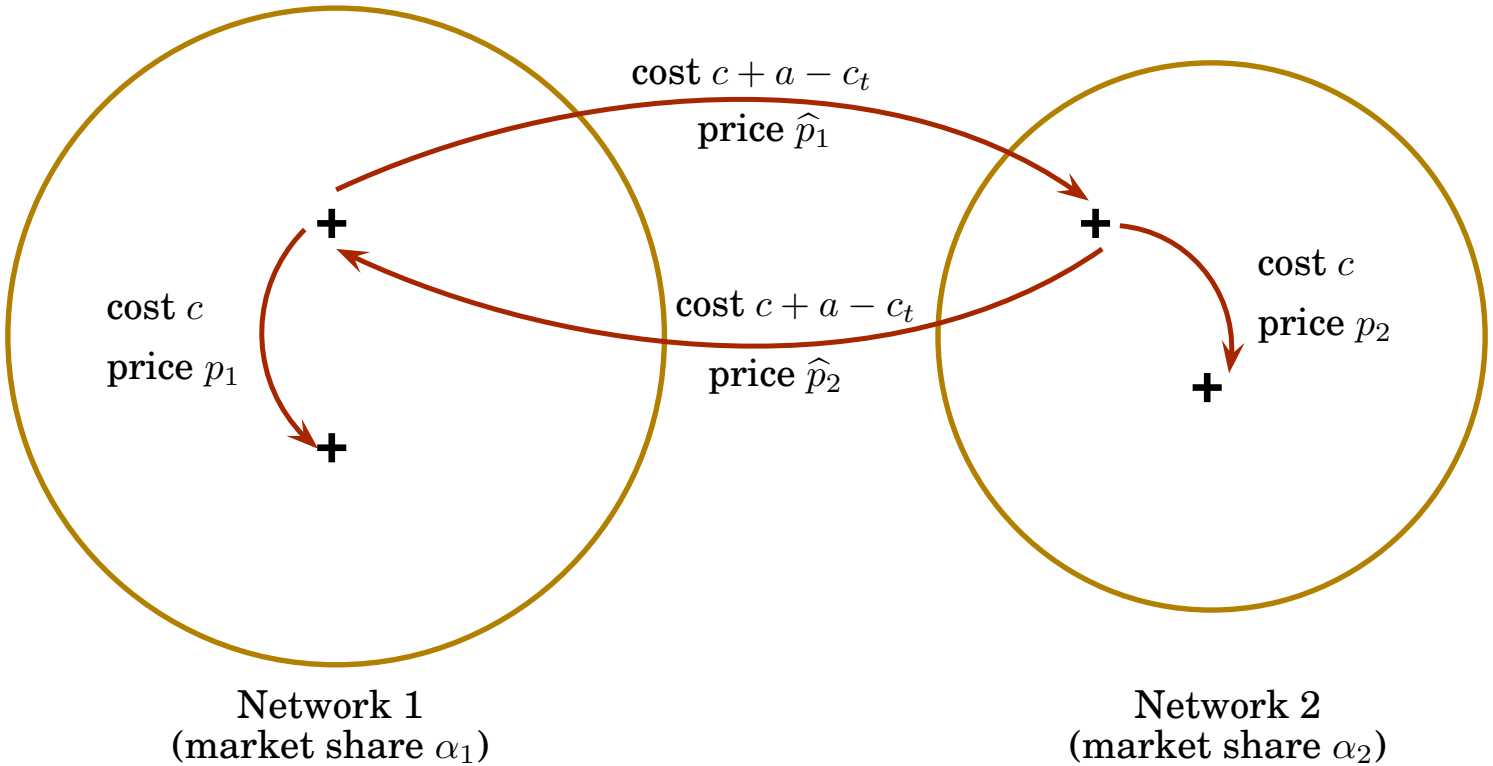

Much higher volume of on-net communications (UK, France).

* Average termination charge: 9ppm (4.7ppm in 2006).

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- ✓ [Gans-King 2001, Calzada-Valetti 2005]

  Cooperative determination of the termination fee: $a < c_t$ (discount). Then customers wish to belong to small network $\Longrightarrow$ price competition is muted.

  Bill and keep may be bad for consumers (high fixed charges), who prefer cost-based termination charges.

III. RECEIVER PAY PRINCIPLE

[Laffont-Marcus-Rey-Tirole 2003; Jeon-Laffont-Tirole 2004]

Suppose $\begin{cases} \text{caller's utility is } u(q) \ (q \text{ length of call}) \\ \text{receiver's utility is } \beta u(q). \end{cases}$

$p^C\left(p^R\right) =$ per minute caller (receiver) charge.

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✓ Social optimum (same for monopoly operator):

Samuelson rule for public goods: $p^C + p^R = c$

Efficient allocation between the two sides: $p^R = \beta p^C$

✓ Platform competition

- Off-net-cost pricing rule: in equilibrium, traffic is priced *as if* it were entirely off-net:

$$p^C = c + (a - c_t)$$
$$p^R = c_t - a$$

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- Impact of RPP on termination rates [Littlechild].

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High off-net caller prices hurt receivers on other networks. High off-net receiver prices hurt callers on other networks.

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$\Longrightarrow$ mobile can tax fixed link through FTM termination.

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- *Fixed-mobile convergence*
  XTM vs. XTF: mobile termination until new numbering appears.