Mobile Roaming

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Mobile Roaming

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- Economic fundamentals
  - Network interconnection
  - Roaming
- What to do? What *not* to do?
- The Commission’s Proposed Regulation
- Comparisons to United States experience
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Introduction

- My history
  - Senior Consultant, WIK-Consult (Germany)
  - Senior Advisor for Internet Technology, FCC (USA)
  - Chief Technology Officer, GTE Internetworking (USA)
- Engineer by training
- My approach to these issues is primarily through economics rather than engineering.

Introduction

- Retail prices for mobile calls placed or received while traveling (roaming) are enormously in excess of real cost.
  - More than €1.00 per minute for calls *placed* while roaming.
  - About €0.50 per minute for calls *received* while roaming.
- Real usage-based marginal costs are variable, but surely *much* less.
- As with termination fees, this is a “broken” market where normal market forces are an inadequate check on the pricing behavior of service providers.
- Artificially high prices deter usage while roaming – arguably a deadweight loss of consumer welfare.
- Consumers have little visibility into prices, and do not base their choice of mobile operator on roaming prices.

	Public price	Average price
Orange France	1 € TTC / min (indivisible first minute then billing to the second)	1,15 € TTC / min
SFR	1 € TTC / min (indivisible first minute then billing to the second)	1,15 € TTC / min
Bouygues Telecom	1 € TTC / min (indivisible first minute then billing to 30 seconds)	1,24 € TTC / min

SOURCE: ARCEP, *The Market for International Roaming*, February 2006

Introduction

- Unfortunately, the market analysis procedure envisioned in the European regulatory framework does not address this problem.
  - The effects are independent of the size of the operator, just as is the case with termination fees.
  - The market is complex, and spans national boundaries.
  - The effects flow from market imperfections and from limited understanding by consumers of their spending patterns, but apparently not from conventional market power or collusion.
- With the proposed Regulation, the Commission is trying to solve the problem in another way.

The economics of interconnection – retail

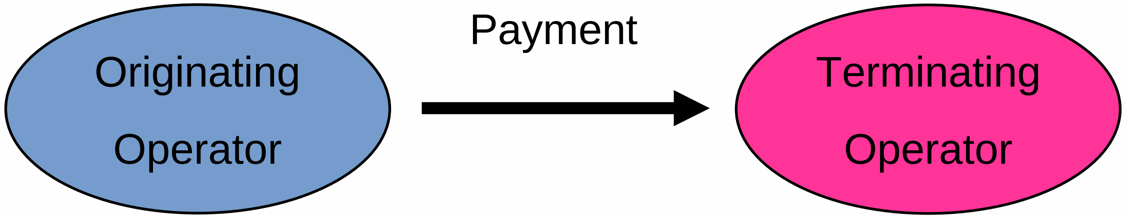
- Calling party pays (CPP): the party that initiates the call pays for the call, usually based on the duration of the call; generally, the party that receives (terminates) the call pays nothing.
- CPP arrangements reflect the historical perception that the caller is the primary beneficiary of the call, and also the main *cost-causer*.
- This concept has been challenged in recent years
  - Clearly, the receiver also benefits.
  - If the receiver saw no merit in the call, he or she could simply hang up; thus, after the first minute, caller and called party can be viewed as (equal) partners in the call. (Cf. Jeon et. al.)
  - In the world of the IP-based NGN, origination and termination are likely to become less relevant over time. (Cf. de Graba)

The economics of interconnection – retail

- Consumers tend to greatly prefer flat rate (or "buckets of minutes") plans over usage-based plans such as CPP (Cf. Odlyzko).
  - AT&T Wireless's offer of Digital One Rate (1998)
  - America Online's flat rate Internet access (1995)
- In the United States, flat rate / bucket plans are increasingly prevalent at all levels:
  - Mobile services
  - Fixed services, including long distance
  - Internet access

The economics of interconnection – wholesale

- Calling Party's Network Pays (CPNP): the calling party's network (the originating operator) makes a wholesale payment to the receiving party's network (the terminating operator). This is the prevailing pattern in Europe and in most of the world.



- "Bill and Keep": a U.S. term of art denoting the absence of any regulatory obligation for payments between the networks.

The economics of interconnection – wholesale

- In an unregulated CPNP system, carriers will tend to establish very high termination charge levels. Normal economic forces provide an inadequate “brake” on this practice, because the terminating operator is imposing the charges indirectly on *another carrier’s customer*. The terminating operator does not bear the full burden of suppressing demand through a price that is arguably too high.

- These high prices impact consumer welfare in a number of ways. This problem is general referred to as the *termination monopoly*.

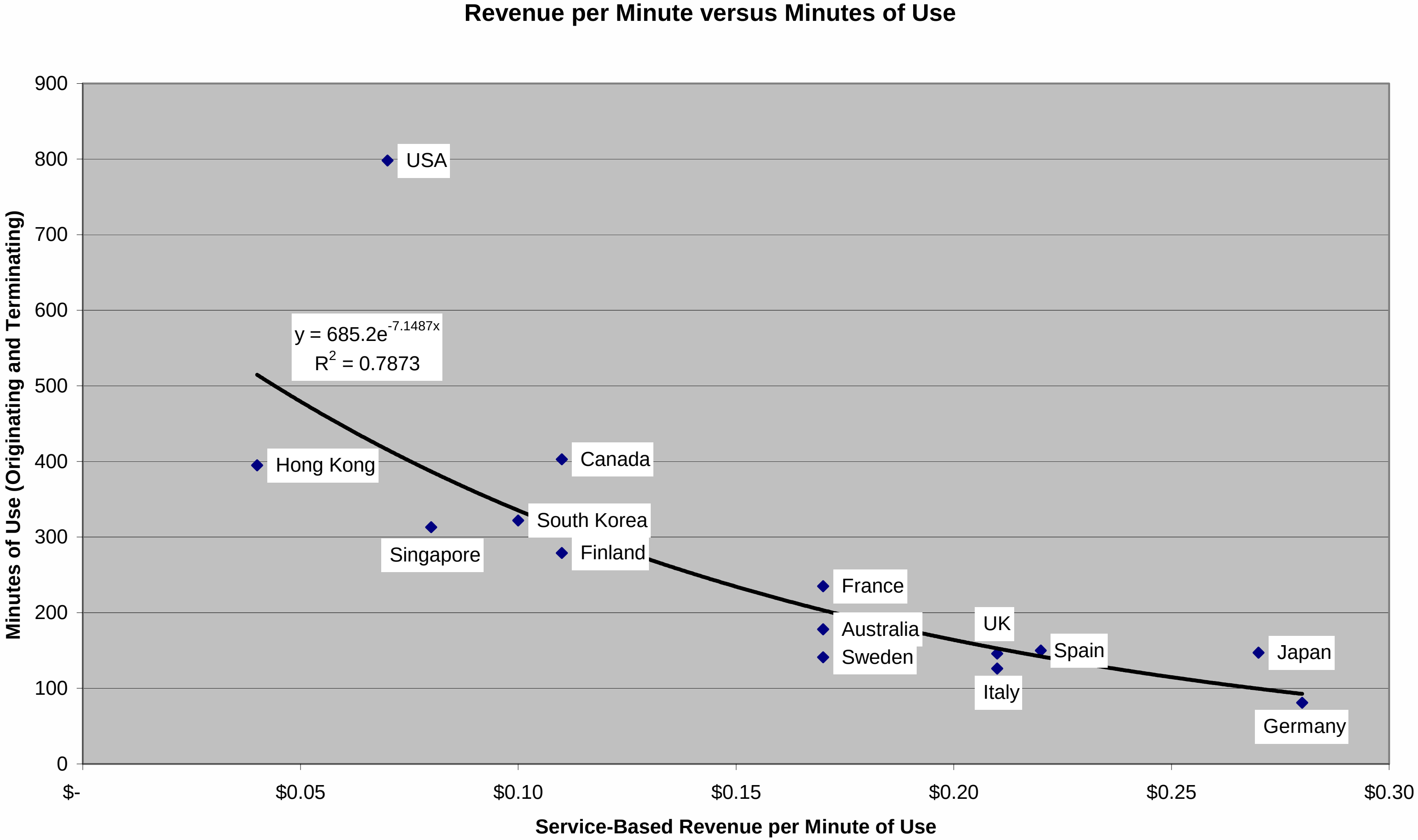
- Paradoxically, small operators will be motivated to set termination charges to even higher levels than will larger operators. (Cf. Laffont and Tirole (2001); Haucap and Dewenter)

- Regulatory asymmetries – for example, between regulated fixed operators and unregulated mobile operators – can exacerbate this problem.

The economics of interconnection

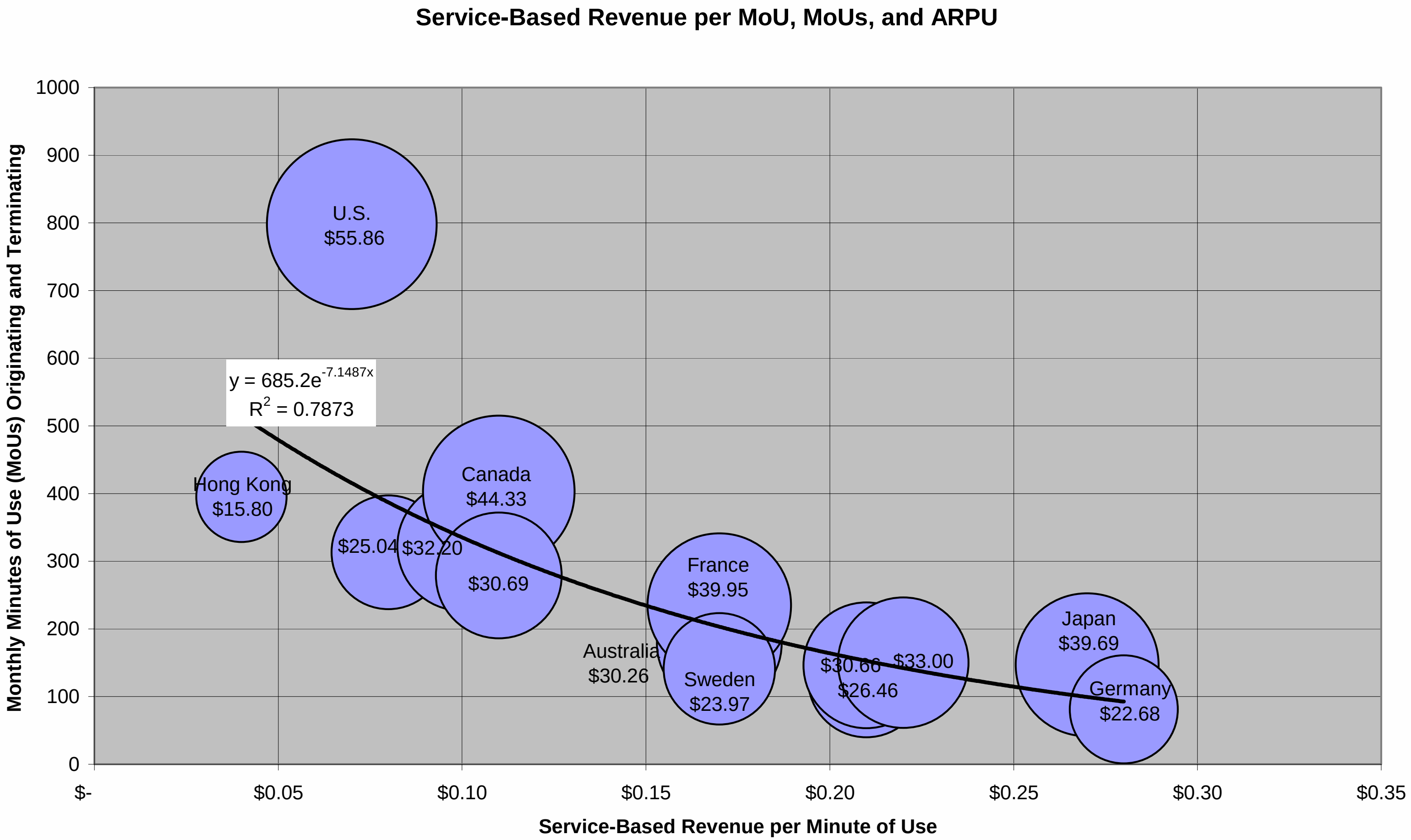
- Termination charges at the wholesale level interact with retail pricing arrangements.
  - The termination fee generally sets a floor on the retail price.
  - Where termination fees are high, they generally prevent flat rate or “buckets of minutes” plans from emerging.
- This is true even where payments between the operators are in rough balance, such that little money changes hands.
  - Each operator will tend to view the termination charge as a component of its marginal cost. (Cf. Laffont and Tirole 2001)
  - If an operator chooses to ignore this wholesale cost in the hope that the payments will balance anyway, that operator risks attracting customers who place disproportionately many calls to customers of other providers (“adverse selection”).

The economics of interconnection



Source of data: U.S. FCC, *11th[h] CMRS Report*, July 2005, Table 12, September 2006, based on *Global Wireless Matrix 4Q05*, Merrill Lynch.

The economics of interconnection



Source of data: U.S. FCC, *11thh CMRS Report*, July 2005, Table 12, September 2006, based on *Global Wireless Matrix 4Q05*, Merrill Lynch.

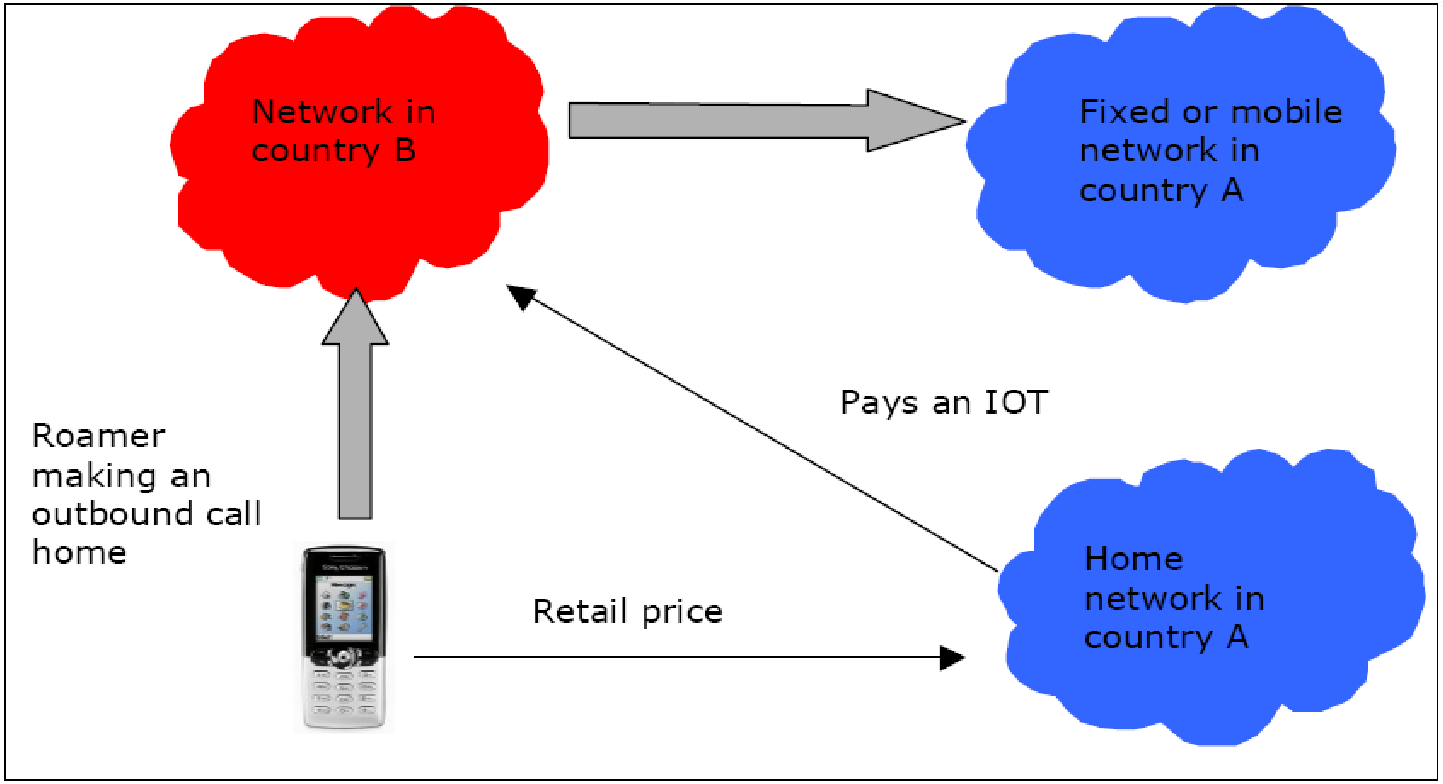
The economics of interconnection: Mobile Roaming

- Roaming is a “broken” market with some similarities to termination.
  - Consumers have limited visibility into the charges that they must pay.
  - Consumers have few alternatives.
  - Normal demand elasticity does little to constrain the operators.
  - Absent regulatory intervention, prices will tend to be well in excess of the predicted monopoly price.
- Some noteworthy changes in recent years.
  - Emergence of a truly transnational operator (Vodafone).
  - Emergence of carrier alliances.
  - Emergence of the SIM application toolkit to implement over-the-air programming of SIMs, which for the first time enables the home operator to direct its customers to the lowest cost network.

The economics of interconnection: Mobile Roaming: Definitions

- Visited network operator: mobile operator in the country where the subscriber is travelling.
- Home network operator: mobile operator in the home country to which the consumer subscribes.
- Wholesale roaming services: the services a visited mobile operator offers to mobile operators licensed in other countries, allowing the subscribers of the latter to use the visited mobile operator's network.
- Inter-Operator Tariff (IOT): a tariff between mobile network operators, charged by the visited network operator to the home network operator for the use of the visited network.

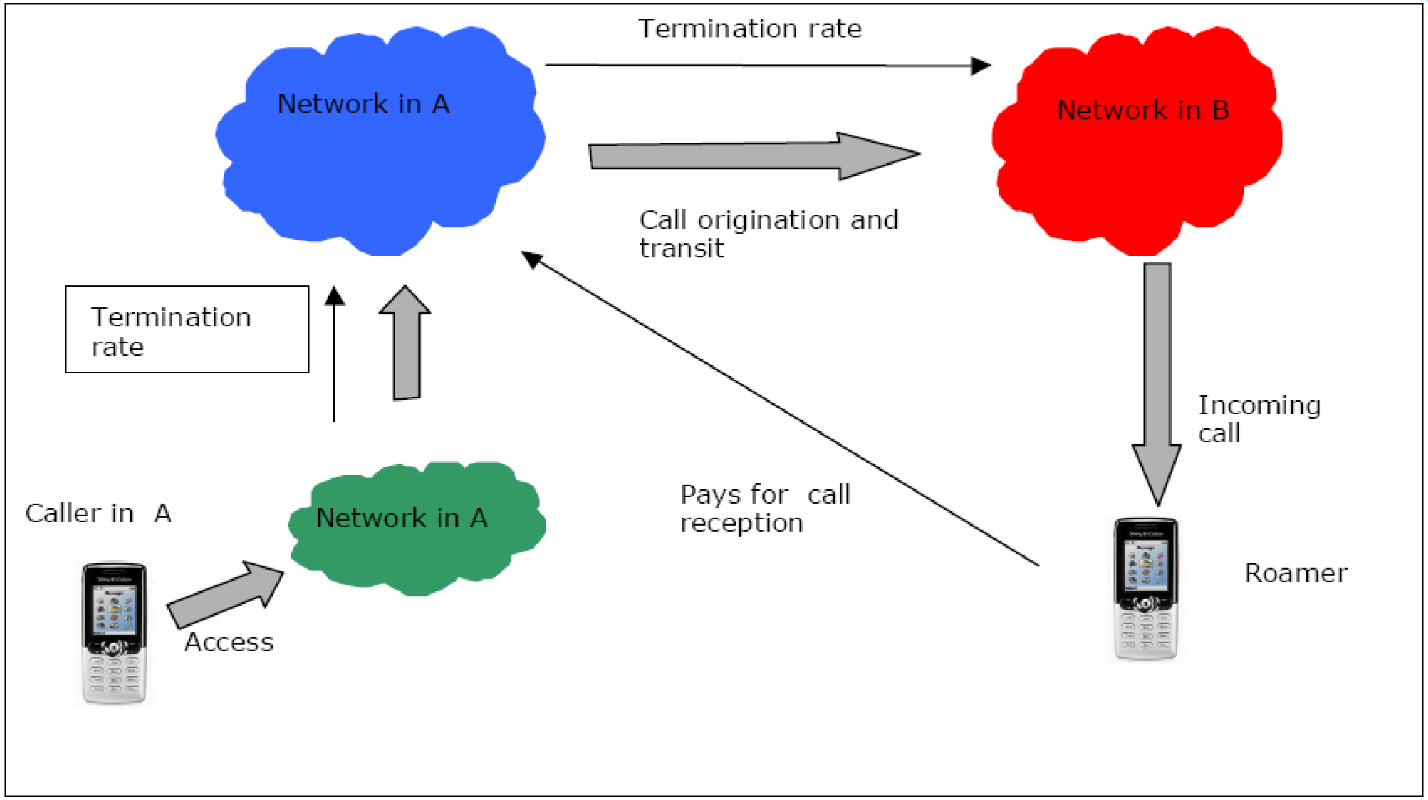
The economics of interconnection: Roaming-Out Payment Flows



Outbound (originating) call made towards the visited/home network : the roamer is billed a roaming tariff corresponding to this international call to country A. The roamer's home network pays an IOT to the network in country B. Network in B provides the whole call.

SOURCE: ARCEP, *The Market for International Roaming*, February 2006

The economics of interconnection: Roaming-In Payment Flows



Receiving an incoming (terminating) call from a caller in the home country : the home network of the roamer in country A perceives a termination charge from the caller's operator and bills the reception of the call to the called party. The called network charges no IOT.

SOURCE: ARCEP, *The Market for International Roaming*, February 2006

What to do? What *not* to do?

- Reducing wholesale roaming prices is clearly desirable, and it appears that only regulation or the threat of regulation can bring about change.
- There is no assurance at all that retail prices would fall proportionate to the decline in wholesale prices; consequently, controls (or at least monitoring) are essential.
- At the same time, retail price controls entail significant risk of introducing economic distortions.
- One should avoid needlessly limiting pricing flexibility of operators.
- It is vital to avoid capping retail prices at levels below true cost.
  - Inevitably leads to substantial distortions.
  - Significant risk that services will simply not be on offer.

The Commission's Proposed Regulation

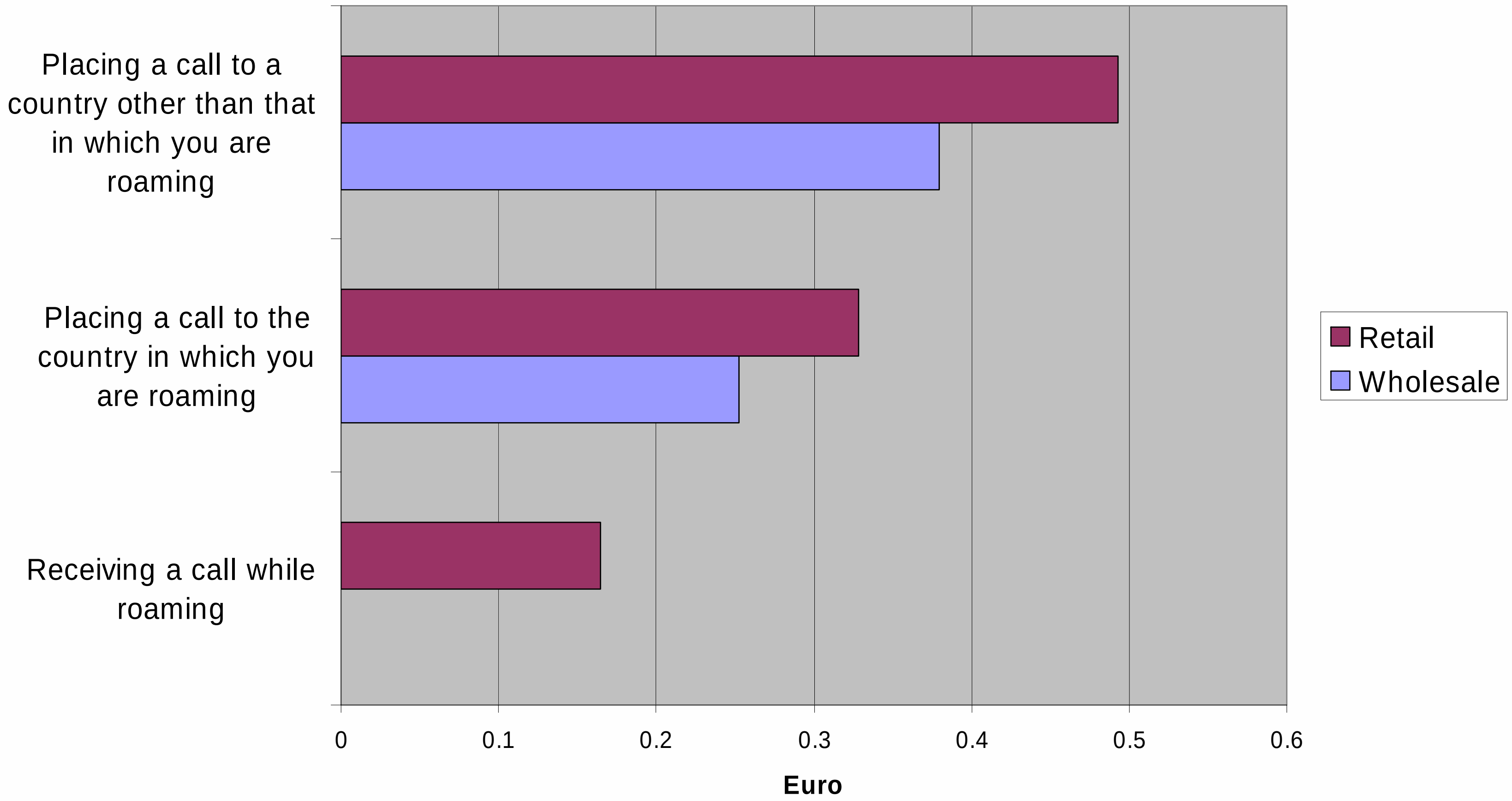
- As easy as "1- 2 - 3"
  - Wholesale IOT for placing a call to the country in which you are roaming: capped at 2 x MTR.
  - Wholesale IOT for placing a call to your home country, or to a third country: capped at 3 x MTR.
- Retail charges for calls placed while roaming internationally are capped at 130% of IOT, consistent with industry practice of pricing at 110% to 130% of IOT.
- But where is "1"?
  - For calls received while roaming, there is in general no IOT.
  - Retail charges are capped at 130% of 1 x MTR.
- The European average MTR for SMP operators today is about €0.126, per the *11th Implementation Report*.

The Commission's Proposed Regulation

	Wholesale	Retail
Receiving a call while roaming		€ 0.16
Placing a call to the country in which you are roaming	€ 0.25	€ 0.33
Placing a call to a country other than that in which you are roaming	€ 0.38	€ 0.49

- The proposed price levels reduce the retail price of roaming-out by at least a factor of 2, and roaming-in by at least a factor of 3.
- These price levels are still quite generous, and well in excess of costs.
- Wholesale price caps alone would not suffice. The wholesale price of roaming-in was already zero.

The Commission's Proposed Regulation



The Commission’s Proposed Regulation

- The provision of a roamed call to a foreign mobile operator’s subscriber is technically similar to providing a non-roamed call to a domestic subscriber; it requires little extra functionality other than the signalling between the visited and home network. Cost is not much different.

- The Commission’s proposed caps are reasonable and actionable.
  - The Mobile Termination Rate (MTR) provides a generous estimate of the cost of terminating (or originating) a call, and thus also of roaming. The real cost of a roamed call is not much different.
  - MTRs are on a *downward glide path* where they will over time more nearly approximate the cost of termination.
  - MTRs vary from country to country, and may legitimately be higher in some countries and in some areas than in others.
  - The Commission’s limits are very generous, to the point where it is extremely unlikely that any retail prices will be underwater.

The Commission's Proposed Regulation

- Retail price caps are always worrisome.
  - Limit the flexibility of service providers.
  - May enshrine inefficiencies.
  - Risk wholesale/retail distortions.
- In this case, they seem to be warranted.
  - The caps primarily mandate adherence to current industry practice, which (as I understand it) is to price at 110-130% above the IOT for roaming-out.
  - A wholesale cap would clearly have no impact on roaming-in – there is no IOT.
  - Mitigates the risk that operators would simply use the lower IOTs to increase their profit margins.

The Commission's Proposed Regulation

- The proposed regulation also provides for consumer information.
  - Information routinely provided to new customers, and to existing customers periodically, and also whenever if significant changes are initiated.
  - The customer can request, via phone or SMS, to receive information (free of charge) on the cost of each call, either in real time or else subsequently by SMS.
- Poor visibility into roaming prices has been a major factor in the current elevated prices.
- These measures seem positive, but would probably be of limited value in absence of price controls.

The Commission's Proposed Regulation

- Minor refinements to the Commission's proposal are still under discussion.
- Promising directions:
  - Facilitating the ability of providers to offer more innovative pricing plans (perhaps not linked to minutes of use), while ensuring that consumers can always choose the capped plans that the regulation mandates.
  - Anything that facilitates informed consumer choice, without leaving the consumer wide open to abuse.
- To be avoided:
  - Loosening the proposed caps. They are already extremely generous.

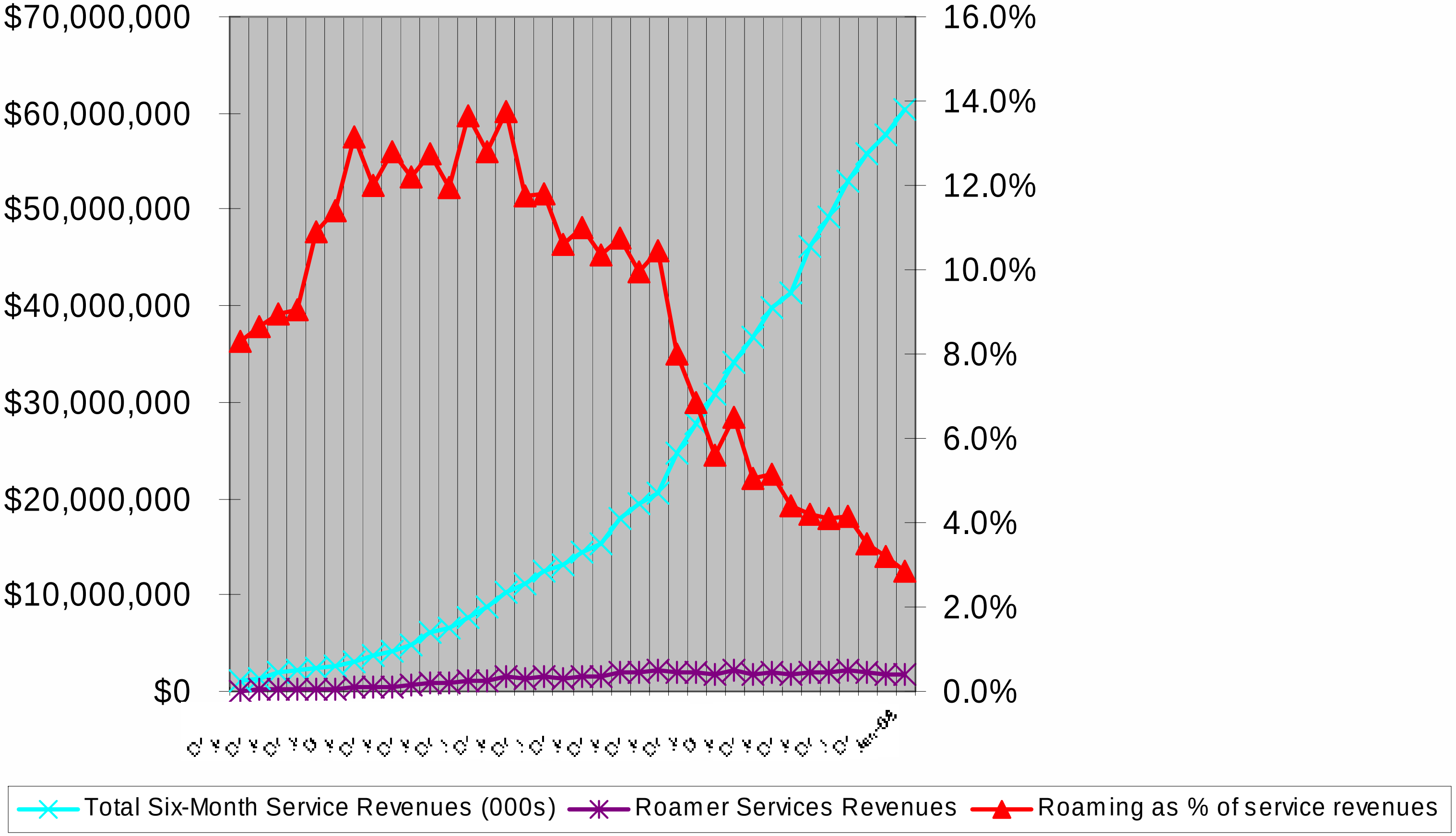
U.S. Experience

- Retail: largely flat rate plans, with a monthly fee and no per-minute fees. Mobile plans are effectively *banded* flat rate plans.
- Long distance – a historically important market – has in effect been lumped into the flat rate plans.
- Roaming within the United States was once a significant portion of the revenue structure. Domestic roaming has to a large degree also been subsumed into flat rates.
- The combined effects have been positive overall.
  - Low retail prices for mobile.
  - High usage of mobile phones (more than 800 minutes/month).
  - Slower take-up of mobile phones, but still respectable: About 70%, and growing 5-6 points per year.

U.S. Experience

- Introduction of Digital OneRate by AT&T Wireless in 1998 transformed the industry.
  - No per-minute charges, no long distance charges, and no roaming charges.
  - Led to a dramatic gain in AT&T Wireless market share.
  - AT&T Wireless already had a nationwide footprint. Competitors who did not were forced to make acquisitions or alliances.
- Domestic U.S. roaming – which is comparable in scope to roaming within Europe – has steadily declined in economic significance ever since.

U.S. Experience



Data Source: CTIA Annualized Wireless Industry Survey Results

Comparison to Roaming Evolution in Europe

- The U.S. has no impediments to U.S.-wide mobile operators.
- After introduction of Digital One Rate, providers who lacked national scale were effectively compelled to merge or form alliances.
- The most nearly comparable opportunity in Europe came with the merger between Vodafone and Mannesman.
  - The Commission had concerns about the ability of other mobile operators to compete.
  - The Commission required undertakings that constituted a nondiscrimination obligation for roaming for the merged firm.
  - Eliminated incentives to price competitively.
  - Significantly delayed industry progress toward a mobile operator with European scale.

Comparison to Roaming Evolution in Europe

Objective in Article 8(3) of the Framework Directive:

"The national regulatory authorities shall contribute to the development of the internal market by inter alia:

(a) removing remaining obstacles to the provision of electronic communications networks, associated facilities and services and electronic communications services at European level;

(b) encouraging the establishment and development of trans-European networks and the interoperability of pan-European services, and end-to-end connectivity; …"

Summary

- Mobile roaming is a market that suffers from real defects.
  - Competitive forces have had little impact on prices.
  - Alliances have had some effect on prices, but arguably not enough.
  - The European regulatory framework is not able to bring mobile roaming prices into reasonable alignment with costs.
- Retail price controls are an extreme remedy that should be applied with care. There is always risk of creating economic distortions.
- Nonetheless, the Commission’s proposed regulation strikes an appropriate balance overall.
- Fine tuning of some details may still be appropriate.

References

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