On the Economics of Mobile Telephony Markets

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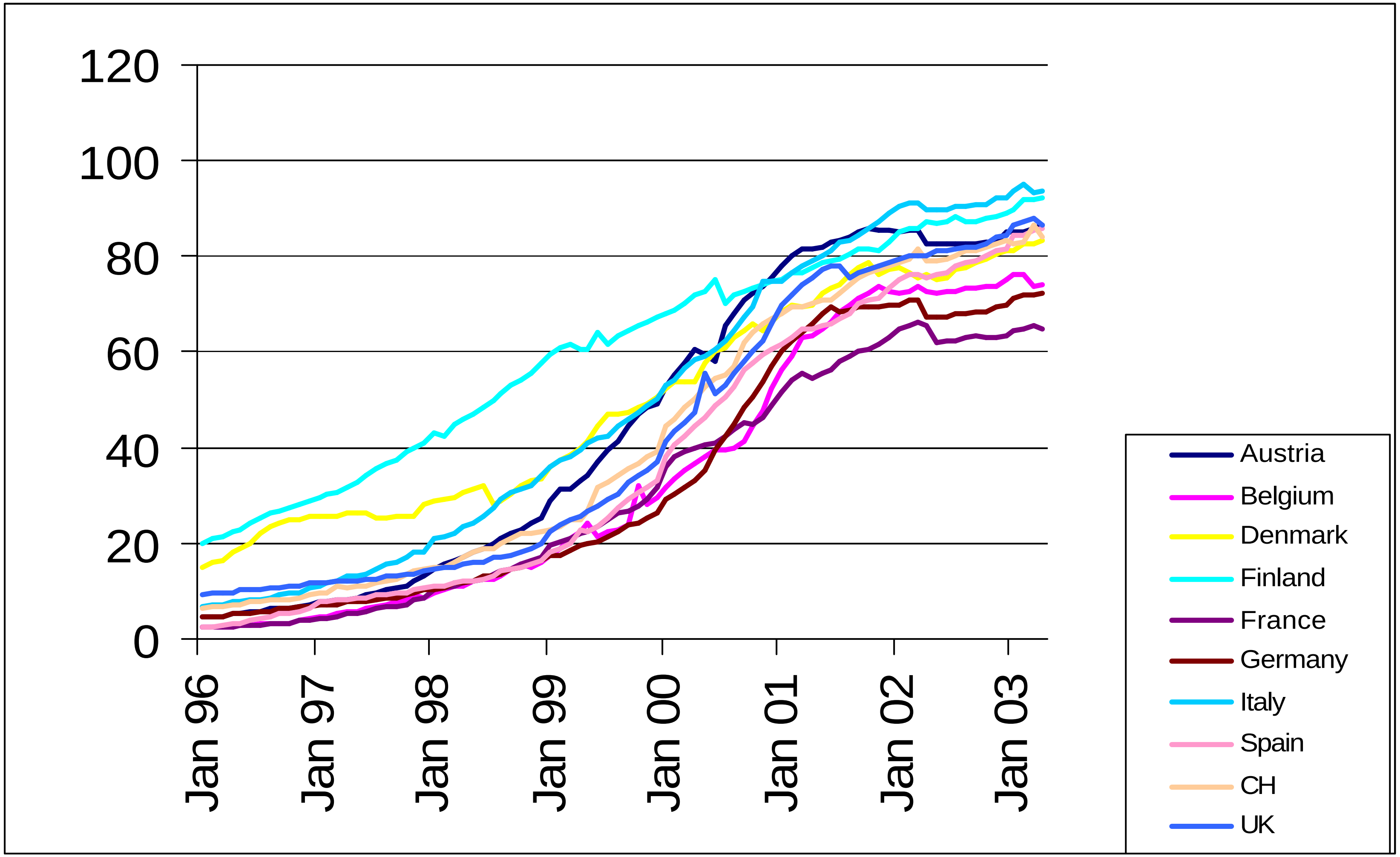
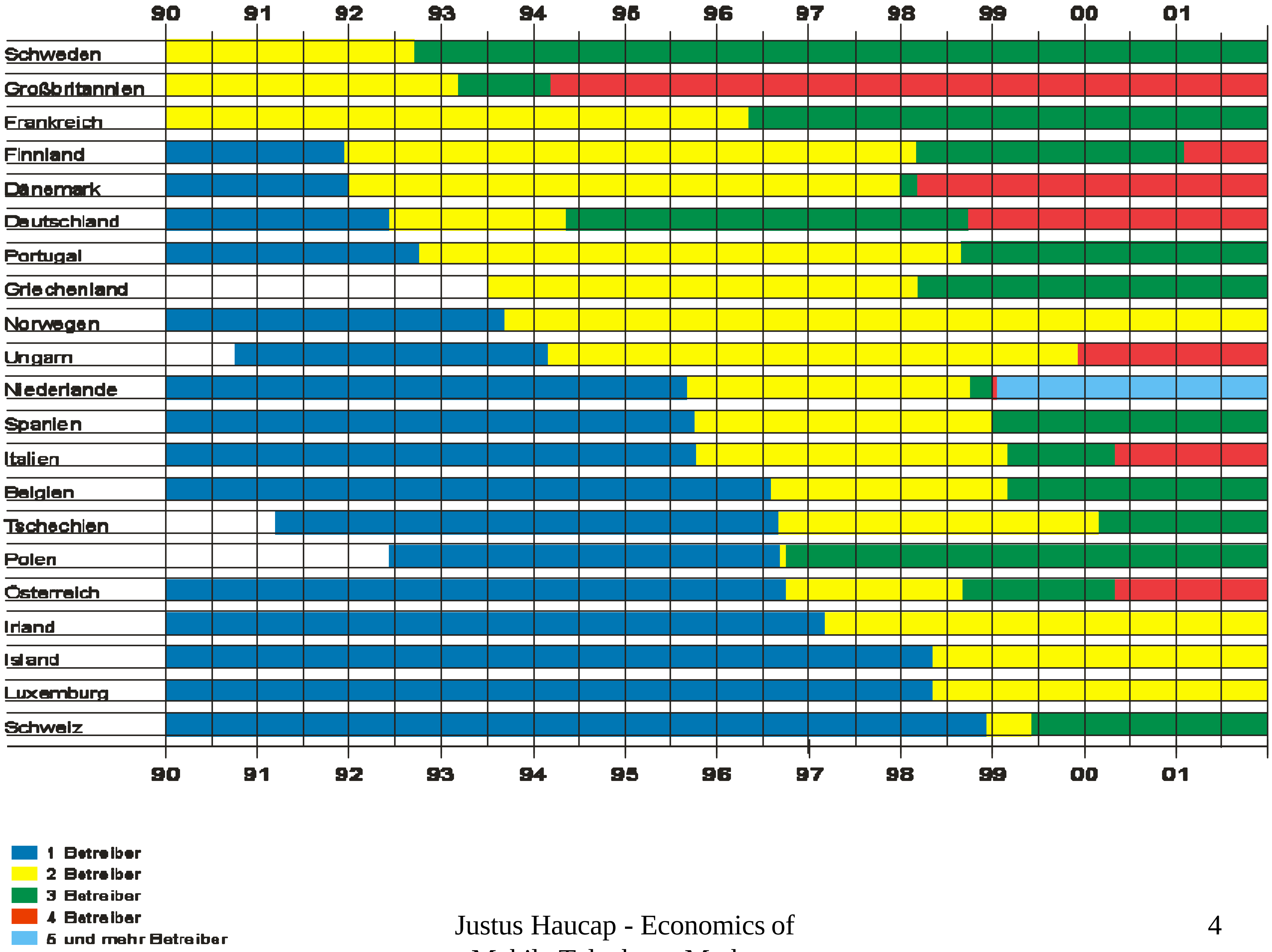
Mobile Telephony: A Success Story

- Mobile telephone markets have been left largely unregulated (with respect to pricing and competition issues)
- Development of mobile telephony has mostly been considered a success story, especially in Western Europe

Penetration Rates

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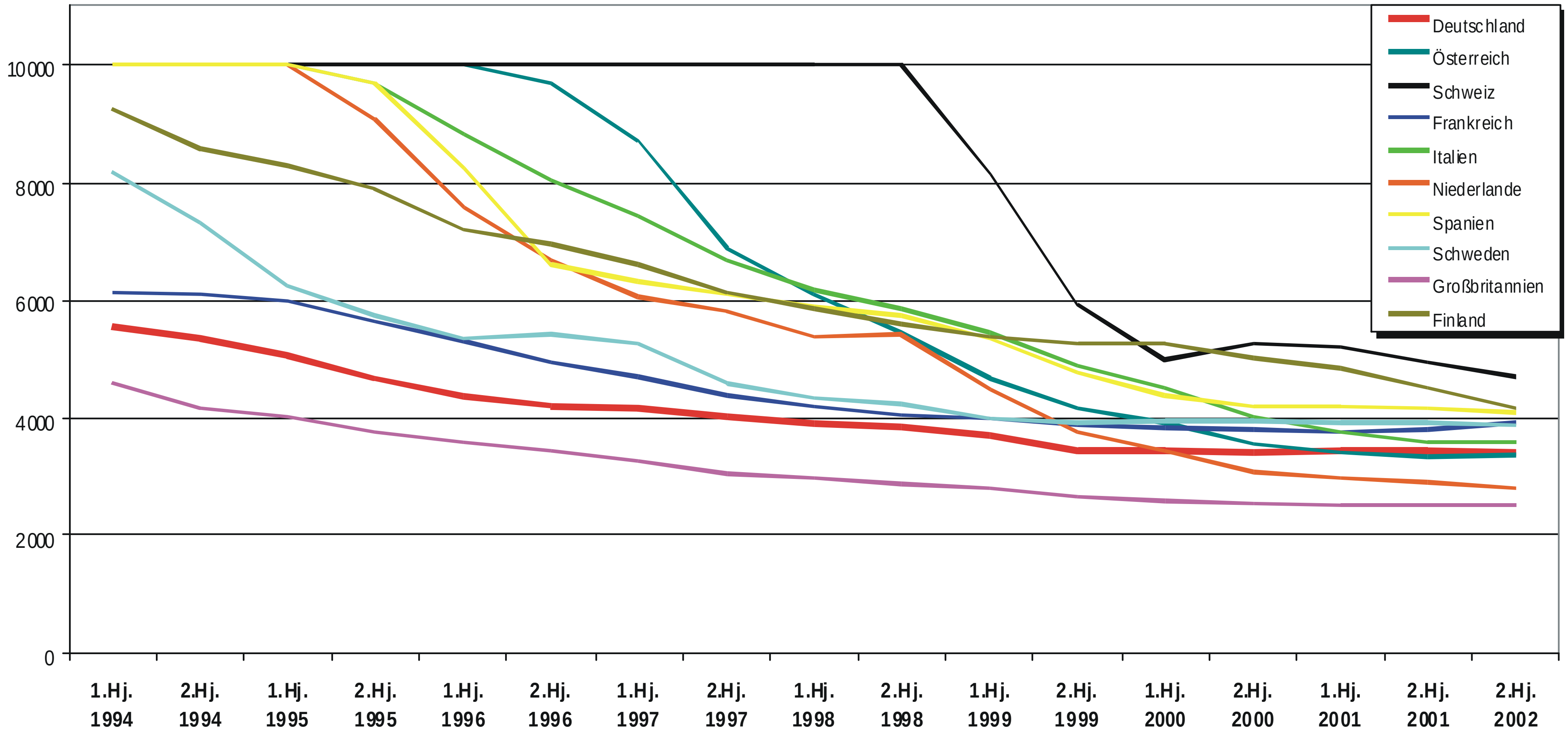
Schweden
Großbritannien
Frankreich
Finnland
Dänemark
Deutschland
Portugal
Griechenland
Norwegen
Ungarn
Niederlande
Spanien
Italien
Belgien
Tschechien
Polen
Österreich
Irland
Island
Luxemburg
Schweiz
1 Betreiber
2 Betreiber
3 Betreiber
4 Betreiber
5 und mehr Betreiber

Market Concentration



Issues to be Addressed

- In recent times, mobile telephony has become a focus of regulatory attention;
- Q: Shouldn‘t Mobile Telephony be More Closely Supervised or Even Regulated (like Fixed-line Telephony)?
- Q: What is a Good (Regulatory) Framework for Mobile Telephony Markets?
- Focus: What Can We Learn From Economics to Answer These Questions?

Further Structure of this Presentation

1. Economic foundations of competition in mobile telecommunications markets
2. Risk of collusion
3. First principles of good regulatory framework for mobile telephony

Competition in Mobile Telephony

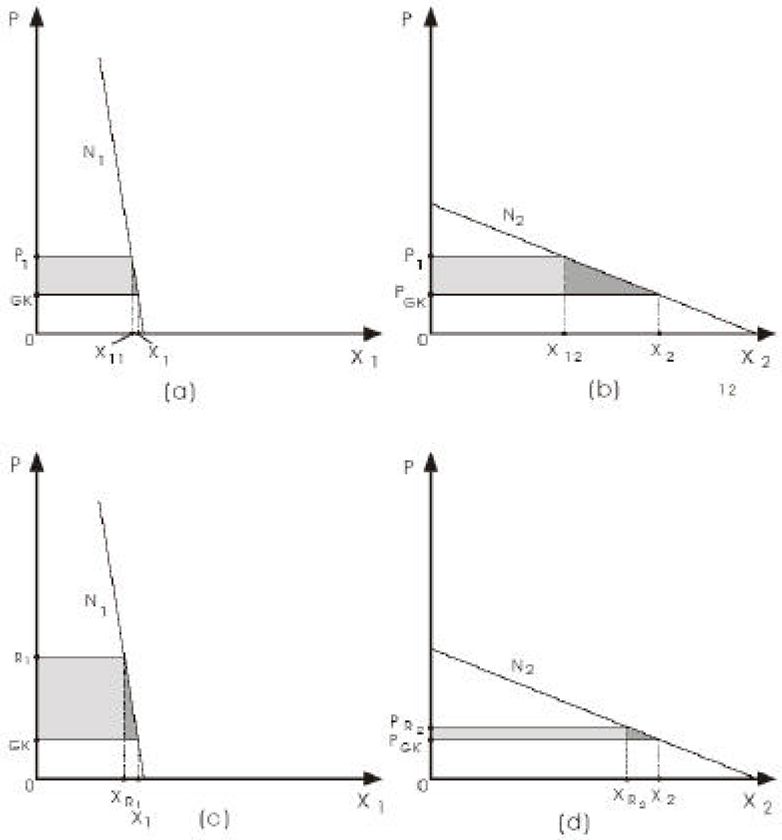
- Pricing with fixed and common costs:
  - Fixed and common costs are substantial;
  - Pricing at marginal cost or long run incremental cost (LRIC) does not allow to cover total costs;
  - Hence: mark ups are necessary;
- Question of:
  - efficient price *structure*; and
  - efficient price *level*.

Efficient Price Structure

- *Ramsey-Boiteux*-prices: Fix and common costs should be covered from services with relatively inelastic demand;

- This price *structure* results from simple profit maximisation without regulation if:
  - there are no externalities and
  - Firms‘ individual demand and market demand elasticities are the same.

Ramsey Pricing



Efficient Price Level

- Price *level* is determined by the intensity of competition in the market;
- Key are potential *barriers to market entry*;
- Possible barriers to entry:
  - – Spectrum limitations;
  - – Consumer switching costs;
  - – AND: Inappropriate regulation.

Potential Entry Barriers

- Spectrum limitations:
  - not necessarily, but sometimes limited (more available in some countries);
  - spectrum trading may facilitate further entry.
- Switching costs and First Mover Advantages:
  - mobile number portability;
  - churn rates - compare to other industries (banking, magazine subscriptions).
- Regulation:
  - Institutional barriers to entry
  - uncertainty induced by poor regulation.

Consequences

- Market entry will occur until a „zero profit condition“ is fulfilled;
- Mobile networks may constitute a natural oligopoly;
- Market conduct in oligopoly situations can be very different;
- NOTE: Oligopolies are usually NOT subject to ex ante regulation, but to ex post supervision by competition authorities

Collusion in Mobile Telephony Markets?

- Factors that affect the probability of collusion:
  - Number of firms (few);
  - Symmetry of operators (usually rather asymmetric);
  - Barriers to entry (moderate, but not negligible);
  - Fixed and sunk costs (high);
  - Elasticity of market demand (empirical question)
  - Product homogeneity and market transparency;
  - Switching costs/customer loyalty (moderate);
  - Technological progress (high);
  - Market uncertainty (high).
- Collusion relatively *unlikely (*but not impossible*)* if more than two operators

Framework for Mobile Telephony Markets

- Efficiency as evaluation criterion:
  - *Static* efficiency: Marginal cost pricing;
  - *Dynamic* efficiency also considers investment and innovation – deviation from marginal cost pricing;
- Trade-off between:
  - Facilities-based competition (focusing on investment and innovation incentives) and
  - Service-based competition (focus on price competition)

Good Regulatory Framework

- Good regulation:
  - protect consumers against abuse of market power;
  - protect investors against expropiation/hold-up.
- Regulation can be viewed as an implicit contract between consumers and providers, administered by a regulatory authority („third party“ – mediator).

No Nirvana Approach

- Regulating at LRIC is highly problematic because of sunk cost nature and investment risk (uncertainty);
- Pure LRIC-approach is based on contestable market theory, which is not useful for telecommunications markets, as it assumes no risk and no sunk costs;
- Sunk costs and investment under uncertainty are key and have to be considered;
- Ex post regulation is a Government hold-up, which may be efficient from a purely *static* perspective, but may have disastrous effects from a *dynamic* viewpoint.

Problems of LRIC Regulation

- Hypothetical example (e.g., *Irridium*, UMTS)
  - Specific investment of 10 Mio. Euro.
  - Consequence: Sunk costs
    - CAPEX 1 Mio Euro („sunk costs“),
    - OPEX 1 Mio Euro („avoidable costs“)
- Investors need reasonable certainty that regulatory framework does not change in unpredictable ways after investment has been undertaken

Example Cont‘d

- 50% chance to have 3.2 Mio Euros revenues: Success;
- 50% risk of revenues less than 1 Mio. Euros: Failure – close down operations;
- Ex ante: Investment is efficient!!
- Ex post: Cost-based regulation (setting price/revenues at 2 Mio Euros) in case of success leads to under-investment problems).
- Possible solution: „Access holidays“ similar to patents (exempt emerging markets from price regulation).

„Good“ Regulatory Framework

- Clear Objectives;
- Transparent Decisions and Processes;
- Regulatory Consistency over Time;
- Regulatory Consistency over (Converging) Industries;
- Regulatory Independence from Daily Politics and Lobbying;
- Adequate Formal Competencies and Information.

Appropriate Market Definition

- Take into account complementarities in demand;
- Most consumers are interested in service bundles;
- If two services are defined as separate markets, market are still interrelated due to demand complementarities;
- Regulation of one service will change prices and quantities of other services („waterbed effect“).

Conclusions

- Mobile networks require specific investments under uncertainty;
- Sunk costs *require* prices that exceed marginal costs or LRIC;
- Oligopoly situations do not automatically justify ex ante regulation;
- Ex post introduction of price regulation or the risk of it can reduce investment and innovation incentives;
- Costs of too strict price regulation for mobile telephony can be enormous.

Thank you

Additional Information/papers/material:

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