

***Lectures on
Regulatory Problems in Network Industries***

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Lecture No. 3:

***Regulation of
Local Termination in Mobile Telephony***

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The mobile termination problem is...

- **trivial, because it concerns competitive markets that need no regulation**
- **counterproductive, because it has helped mobile telephony to grow at fantastic rates and generate competition against the stale fixed line monopoly**
- **an enormous competitive distortion that disadvantages fixed against mobile telephony**

Overview



- **Introduction: Mobile Telephony, the Termination Problem and the EU Regulatory Framework**
- **Definition of the Relevant Market**
- **Assessment of Market Power**
- **Appropriate Regulatory Remedies**
- **Evaluation and Conclusions**

Characteristics of Mobile Telephone Markets

- **Dependency on radio spectrum**
- **No prime candidate for regulation of market power**
 - **Limited scale economies**
 - **Number of competitors determined by spectrum assignment**
 - **Oligopoly with entry barriers: No spectrum trading in Germany**
 - **Market power of early entrants**
 - **Path dependence: UK vs. Germany**
 - **Incumbency in fixed telephone market**
- **Emerging inter-modal competition with fixed network**

The Termination Problem

- **Interconnection**
 - One-way access vs. two-way access
 - Origination
 - Transit
 - Termination
 - Monopolistic bottleneck
 - Competitive bottleneck
- **CPP vs. RPP**

The EU Regulatory Framework for Telecommunications

Main characteristics

- **Symmetric regulation for universal service purposes (network externalities)**
- **Asymmetric regulation/deregulation based on competition law principles (market power)**
- **Preference of bottleneck regulation over end-user regulation**
- **Technologically neutral regulation**

Objectives

- **Promote competition**
- **Contribute to the development of the internal market**
- **Promote interests of citizens of the EU**

The EU Procedures for asymmetric regulation (by NRAs with veto power of EC)

(1) Determine markets appropriate for regulation

- **Market definition according to competition law practices**
- **Fulfilment of three additional criteria**
 - **High and non-transitory entry barriers**
 - **Dynamic state of competitiveness behind entry barriers**
 - **Sufficiency of competition law (absent ex ante regulation)**
- **18 markets “recommended” by EU**

(2) Market analysis

- **Establish effective competition**
- **Find firm (or group of firms) with significant market power**

(3) Remedies

- **Design appropriate remedy based on competitive problem(s) identified**

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Methods of Market Definition

- Demand substitution
- Supply substitution
- Structural factors
- Influence of end-user markets
- Hypothetical monopolist (SSNIP test)
 - Could a hypothetical monopolist exercise market power?
 - SSNIP (“Small but Significant and Non-Transitory Increase in Price” [relative to competitive price])

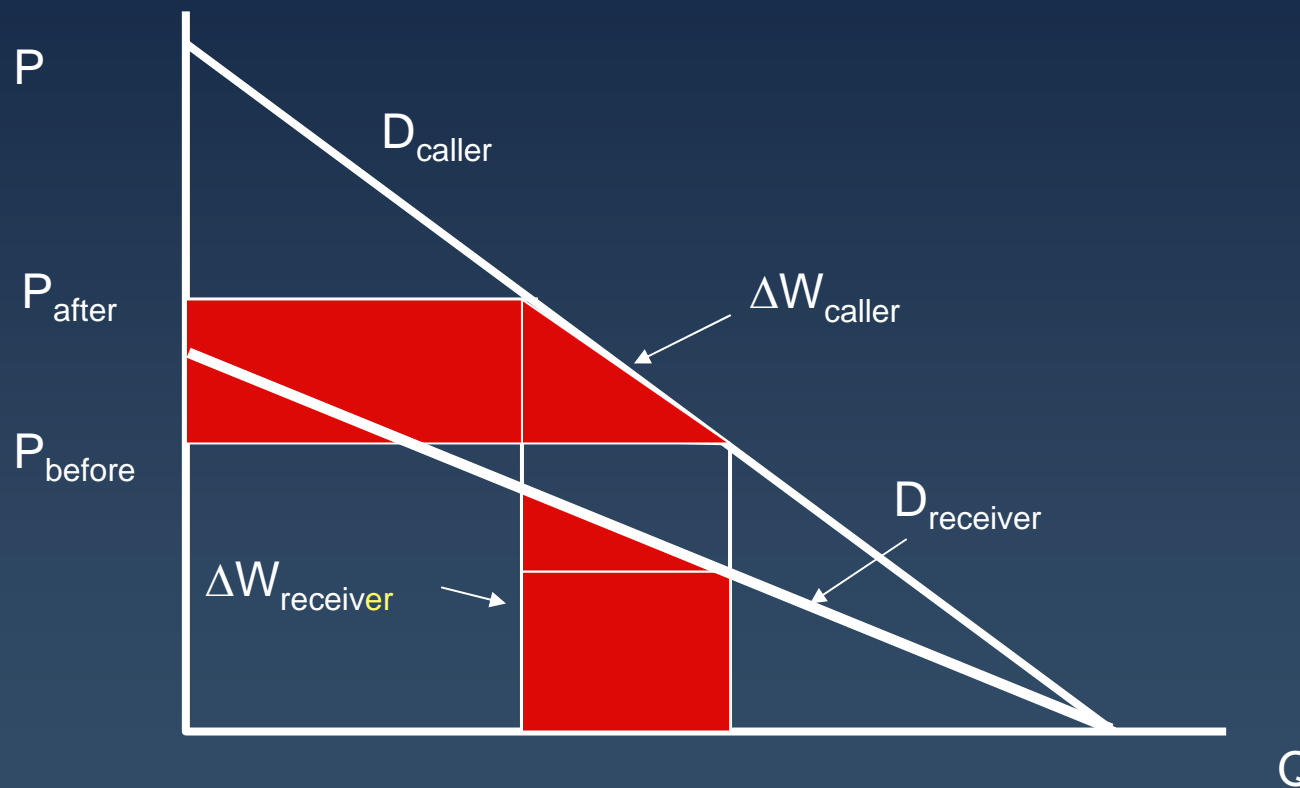
SSNIP Test

- **What prevents a hypothetical monopolist from increasing his price by 5-10% compared to a competitive price?**
 - **$(P - MC)/P = 1/\varepsilon \Rightarrow$ High firm-specific demand elasticity ($> 10-20$)**
 - **Demand substitution by existing competitors of alternative products**
 - **Supply substitution for the same product by existing producers of other products (not demand substitutes)**
 - **Separate from entry**
 - **Adding up of various factors**
 - **Start with smallest possible market: In case of termination it is the individual call**

Demand Substitution: Final Demand

- **Importance of end-user demand: Fixed proportions between calls and terminations**
- **Importance of CPP**
 - **Caller: Termination as derived demand from calling**
 - Pays, but has no influence on terminating carrier
 - Low demand elasticity (< 1)
 - Individual vs. “market” demand: All calling networks have to terminate to the same number
 - **Receiver: Termination as derived demand from being called**
 - Does not pay for the call, but can choose the terminating network: Subscription demand
 - Has low demand elasticity, even within closed user groups
 - Low ranking of the “price” of being reachable among variables explaining competition in mobile markets
 - Value of a customer explained by termination and other factors

Welfare effects of a price increase for caller and receiver



Demand assumption: Same ordering of value of calls for caller and receiver

Demand Substitution: Input Demand

- **Unilateral perspective**
 - Demand reaction along inelastic demand
 - Relevance of “market” demand for each terminating network (aggregated over all calling networks)
 - Receiver reaction shifts input demand
- **Bilateral perspective: reciprocal termination**
 - von Weizsäcker’s Argument on the irrelevance of reciprocal termination charges does not hold
 - Implications of regulated M2F terminations
 - M2M terminations
 - Collusion results (linear tariffs)
 - Independent behavior/raising rivals’ costs
 - Efficient outcome (indifference result, two-part tariffs)

Demand Substitution: Empirical Evidence

- **End-user demand (OfTel/WIK)**
 - **Caller ill-informed about prices and terminating networks**
 - **Terminating network controls all real substitutes for terminating calls into its particular network (VoIP as possible exception)**
 - **Ill-informed receivers**
 - **Low ranking of price of being called**
- **Input demand**
 - **No additional substitutes**
 - **Exception: GSM-Gateways in France (Hérissons, based on regulation and arbitrage)**

Supply substitutes and Common Pricing Constraints

- **No supply substitutes in sight**
- **Common pricing constraints**
 - **Role in market definition**
 - **Depends on ability to differentiate prices (transaction cost argument)**
 - **Separate market for each terminating network**
 - **Separate analysis for O2-Genion**
 - **Receiver can pay part of the call if outside home zone**

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***Monopoly* \Leftrightarrow *Market Power*?**

- **Market power does not imply monopoly**
 - Example of very low market demand elasticity (bulk electricity markets in US)
- **Monopoly does not imply market power**
 - Contestible markets
 - No good examples
 - Insufficient demand or ample substitutes
 - Example of US railroads
 - Countervailing buyer power

Unilateral Countervailing Buyer Power

- **Credibility of buyer power**
 - Effectiveness of buyer power
 - Reduction of purchases
 - Boycott
 - Reciprocal threats
 - Call for intervention of regulator/court
 - Interest in exercising countervailing buyer power
- **F2M**
 - Fixed-to-mobile substitution affected by termination charges
 - Incumbent with large fixed market share (prevents free-riding)
 - Dependence of mobile networks on fixed interconnection
 - Regulation of M2F
 - Incumbent also large/largest mobile provider

Bilateral Countervailing Buyer Power

- **Irrelevant for F2M because of M2F regulation**
 - Fixed-to-mobile substitution increases incentives for mobile carriers to charge high termination fees
- **M2M**
 - Collusion among similar mobile operators
 - No interest in low termination charges from bilateral perspective (independent behavior)
- **Exclusion of weaker competitors**
 - Weak competitors have strong incentive to pay low termination charges
 - Weak competitors can often implement high termination charges (low market share in end-user market \Rightarrow low demand elasticity in termination market) [Theory: Armstrong, empirical data: Dewenter and Haucap]
 - Strong competitors willing to pay high termination charges if they receive high termination charges \Rightarrow insist on equal reciprocal charges

Market Power: Pricing Behavior

- Pricing behavior
 - Infer market power: Lerner index
 - Desirability of regulation
- Pricing benchmarks
 - LRAIC (lower bound)
 - LRAIC + “reasonable” common costs
 - Average stand-alone-costs (upper bound)
 - Ramsey markups
 - “High markups on cost of termination necessary to finance mobile networks”
 - Firm-specific demand elasticities only welfare-relevant if intensity of competition similar in all markets supplied by a firm
 - Intensity of competition differs for outputs of mobile carriers (calling, subscription, termination)


Ofitel termination cost data: LRAIC + reasonable common costs in cents/min.

	GSM 900/1800	GSM 1800
1993/4	19,5	24,0
1994/5	18,9	23,6
1995/6	16,6	21,1
1996/7	13,3	18,3
1997/8	11,7	13,2
1998/9	10,0	12,4
1999/0	9,0	11,2
2000/1	7,7	10,1
2001/2	8,0 (8,5)	10,0 (10,3)
2002/3	7,0 (7,8)	8,7 (9,4)
Price in Germany	14-15	17-18

Market Power: Empirical Evidence

- **Pricing behavior decisive for determining countervailing buyer power**
 - **Relevance of scale economies for small mobile networks?**
 - **Common costs to include sales and marketing efforts in end-user markets?**
 - **Foreign price benchmarks?**
 - **Germany not regulated**
 - **Prices about average in EU**

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Need for Regulation

- **EU criteria: Market power (no effective competition) plus**
 - Barriers to entry
 - No tendency towards effective competition
 - Inadequacy of general competition laws to solve the market power problems [§ 19, Section 4 No. 4 GWB not suitable]
- **Strictness of regulation depends on**
 - Amount of market power
 - Reason for market power
- **There was no regulation before →**
 - Move from soft to hard regulation or vice versa?
 - Least intrusive regulation called for

Types of Regulatory Remedies (TKG)

- Information disclosure
- Non-discrimination
- Obligation to interconnect
- Accounting separation
- Price regulation

No Direct Price Regulation

- **Information disclosure**
 - **Restricted to termination as an input**
 - **Standard offering of termination**
 - **Publication by regulated firm or regulator**
- **Non-discrimination**
 - **Between buyers: principle of competition law**
 - **Between buyers and internal use of input: Formally implemented by accounting separation but effectively requires ECPR**
- **Interconnection obligation**
 - **Very flexible instrument**

Price Regulation

- **Ex post regulation**
 - Regulates only if abuse of market power
 - International benchmarking only practical approach
- **Ex ante regulation**
 - **Cost-based termination prices**
 - Cost measurement
 - Common costs
 - Equal markups
 - Ramsey
 - Externalities
 - **Benchmarking**
 - **Price caps**
 - **Bill-and-Keep**
 - Barter justification
 - RPP

CPP vs. RPP

CPP: EU and most other countries

- Significant termination price problems

RPP: US

- No termination price problems

Switch from CPP to RPP easier than the reverse

RPP suggests bill-and-keep

- Value of incoming calls internalized
- No demand estimates for incoming calls exist
- Barter justification
- Low transaction and measurement costs
- Capacity costs vs. usage costs
- Incentives for cost minimization (but hot potato problem)

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Policy conclusions

- **Three policy options**
 - **Do nothing \Rightarrow competitive distortions**
 - **Between mobile services (subscription, on-net, off-net)**
 - **Between fixed and mobile networks**
 - **Regulate with increasing strictness**
 - **Low chance for deregulation in the foreseeable future**
 - **Switch to RPP**
 - **Bill-and-keep likely**
 - **Slowing down of mobile expansion?**