Significant Market Power in Telecommunications: Theoretical and Practical Aspects

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Seminar Economic Dynamics in Newly Liberalized Telecommunications Markets in CEE Countries and Baltic States
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Overview

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2. Market Power
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   2.2 Specific Aspects of Dynamic Competition in Telecommunications
   2.3 Market Power as a Theoretical Concept
   2.4 Market Power: Dimensions of Power and Regulatory Policies
      2.4.1 Market Share and Size of the Firm
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3. Practical Aspects and Conclusions
Competitive Digital Social Market Economy: Efficiency & Equal Opportunity+ (Universal Services) in a Digitally Networked Society

Social Market Economy (in Country I and II)

- Social Security System in I
  - UNIVERSAL Services
  - Traditional Goods
  - Traditional Services
  - Digital Services
  - Infrastructure
  - Factor Markets: Capital, Labor, Human Capital, Software, Information
  - Tel. TV

- In I: Competition in Product Markets & Factor Markets

- In II: Competition in Product Markets & Factor Markets
  - Social Security System in II
  - UNIVERSAL Services
  - Traditional Goods
  - Traditional Services
  - Digital Services
  - Infrastructure
  - Factor Markets: Capital, Labor, Human Capital, Software, Information
Sustainable Functional Competition in Sector/Market i

- Offers a choice to users/consumers in $t_o, t_n$
- Stimulates process innovations (=cutting costs) and product innovations (=allowing to fetch higher prices in markets)
- Allows creating new firms
- Allows access of newcomers (potential comp.)
- Allows import competition
- Does not distort competition in j-markets
- Maximizes consumer welfare/economic welfare
Competition Rules

- WTO
- Supranational Framework Rules (EU)
- National Competition Laws and Regulation Rules
- EU Rules Focus on Competition
- EU Rules Focus on Intra-EU-Trade
Mobile Telecommunications is Overtaking Fixed Line Density (but more traffic on the fixed line network & cable TV); US not yet!
Economic Impact of Telecommunications Services

Telecommunications

- «Consumption »
- Input in production of goods and services
- Lifeline etc. services for people (Univ. services)
- Vehicel for exports of goods & services
- Diffusion of information = higher output
2. Market Power

- Markets evolve with technological and economic dynamics over time which requires adjustments on the side of producers (e.g. internal growth, M&As dismemberment, creation of new firms) + consumers

- Market power is a concept with a focus on
  - **Product/service** (what is the relevant market; which traits characterize the market(s)?)
  - **Geography** (where is the relevant market/markets for comparison)
  - **Time** (is market power sustainable phenomenon/problem?)
2.1 Telecommunications Markets

Access Market

Local Services
- Voice
- Value-added Services

Long Distance
- Voice
- Value-added Services

International
- Voice
- Value-added Services

Mobile versus fixed; and narrow-band vs broad-band
Telecommunication Sector

- Value-Added Services
- Voice Telephony
- Network Operation
- Telecommunications Equipment

- Competition necessary in provision of infrastructure AND in provision of services

R&D has fallen after 1998 (EU)
R&D increased
Economic Approach to Markets

- Polypolistic Competition: Many suppliers, many demanders in market for homogenous product or service: in equilibrium \( p = \text{marginal costs} k' \)
- Oligopoly: Few firms – which act interdependently; sometimes \( n-1 \) firms follow leader firm (various models, intricate price dynamics!)
- Monopoly: One firm only which maximizes profits according to marginal rev. \( R' = k'(p^M > p) \)

Monopolistic competition in the case of heterogenous products/product innovations!!
Reality in Telecommunications

- Post-1998 opening up of network operation and telecommunications services (voice..) in EU-15/25 - accession countries phasing in liberalization; UK liberalized in 1984
- Facilities-based competition vs. resale; requires investment(A!)
- Post-1998 partial or full privatization/going public; in the medium term we have new options for merging
- Post-1998 internationalization of EU markets; often incumbantes entering foreign markets as incumbants face themselves markets entries in national home market
- Post-1998 innovation wave: many product innovations (hence inhomogenious products) - = temporary monopoly - and process innovations, mainly in mobile telecommunications
Typical Characteristics of Telecommunications

- High fixed costs; high sunk costs in fixed line communications (investment in networks; R&D – less important after 1998)
- Falling marginal and average costs (in certain activities=Nat. M)
- Vertical integration
- High technological dynamics/innovation dynamics
- In Europe equipment makers in relatively strong position in the mobile market (in Japan mobile network operator dominates!)
- Incumbant operator in post-1998 EU countries has near monopoly in fixed network access market in many countries; exception=those countries with strong Cable TV (not FRG!)
- In Eastern Europe mobile communications>fixed line
2.2 Specific Aspects of Dynamic Competition in Telecommunications (define telecommunications services...)

- Starting points
  - We have regulation in most countries in the world
  - In most OECD countries incumbent operator has enormous market share in the access market and in part of telecommunications/internet/mobile telephony
  - Experiences with regulatory impact on competition has been favorable in EU (post-1998)
  - Degree of privatization differs across EU-15/EU-25
  - Definition of universal services differ internationally
Asymmetric Regulation in the EU: EU Framework + National Regulations

- Asymmetric regulation – mainly incumbent in fixed line telephony; RPI minus X pricing rule for baskets of services: should stimulate static and dynamic efficiency gains

- In mobile telecommunications (GSM/UMTS) licences awarded under various procedures in member countries; lack of EU framework = no secondary licence market = future challenge for EU policy

- Regulation of termination fees in some countries
Competition Policy: Maintain Competition for the Sake of Efficiency, Freedom of Choice, Innovation Dynamics...

- Laws against anti-competitive agreements concern
  - Anti-competitive agreements between firms (bidd rigging, price fixing, market divisions – agreements among firms not to compete in each other markets – and group boycotts (refusing to do business with specific supplier, competitor, customer)
  - Restrict or prohibit mergers & acquisitions which could have – considerable – negative impact on competition
  - Abuse of dominant position = significant market power A)
2.3 Market Power as a Theoretical Concept

- Towards a broader concept
  - Identify normal markets with full competition
  - Identify specifics of telecommunications markets
  - Define market power with respect to the sectoral traits of this sector
  - The higher the degree of substitution on the demand side (and the supply side), the lower market power of firm F/the largest firm
Abuse of Dominant Position

- Refusal to deal/essential facilities doctrine: essential facility = facility supplied on a monopoly basis + required by competitors + cannot be reasonable duplicated by competitors for economic/technical reasons
- Predatory pricing = (dominant) operator charges prices below a normal cost standard + evidence that this is not sporadic or reactive price-cutting
- Cross subsidization: dominant firm uses revenues from a market in which it is dominant to cross-subsidize the price of a service or product it provides in other markets - thus impairing competitors and keeping out newcomers
- Tied Sales/Bundling: Service 1 sold only if service 2,3,...n are also bought - this is anti-competitive if firm has a dominant position in one of these markets
- Excessive pricing: price above the level under competition
Consumer Rent and Producer Rent
(case \(k' > 0\); \(k'\) is the marginal cost curve=supply curve); \(k' = \frac{dcost}{dq}\)

Rational economic policy-making should maximize (under constraints) consumer welfare=consumer surplus or overall economic welfare in the respective sector: which is the sum of consumer surplus and residual profit=producer surplus

Under competition: revenue is area \(p_0E_q_0O\), cost of producing \(q_0\) is Equal to the area \(OFE_q_0\); hence triangle \(p_0EF\) is profit (as a residual!). All consumers buy at uniform price \(p_0\), many would have been willing to pay more: area \(AEP_0\) is „consumer surplus“
Links Between Sub-markets

Access: price elasticity is very low (firms!! and households)

- International calls: High price elasticity
- Local calls: low price elasticity
- National calls: Medium price elasticity
Elasticity of Demand: The Flatter (see DD$_1$ vs. DD$_0$) the Curve is, the Higher Elasticity. In i-Market: With New Substitutes (i,j) Becoming Available Curve Is Flattening!

In the case DD1: price reduction brings large increase in equilibrium output (q$_2$>q$_1$) if price falls from level p$_0$ to p$_1$! High elasticity in the presence of many good substitutes.

Alternatively, price elasticity could be defined as $(dq/q)/(dp/p)$ along a given demand curve. Note that in ln p-ln q space the slope of the tangent at a point of the demand curve is equal to the point elasticity!
Important Problems in Regulation of Telecommunications

Key Problem in Telecommunications

- Customer Access / Local Loop = Monopolistic Bottleneck (?)
- Interconnection
- Network Effects: Markets Should Be Assessed Long Term
- Bundling of Products
Simple case of monopoly under constant marginal costs $k'$: compare C to the case of competition=E

Welfare loss from monopolization is equal to triangle CDE, redistribution of consumer welfare to producer surplus is the rectangle PmCDPc.

If 100% FDI = national welfare loss = CDE + PmCDPc.

Potential benefit of regulation in access markets if this helps to reduce price below $p^M$ (monopoly). Under competition output would be $q_c$ instead of $q_m$.

Selling at a price much above marginal costs $k'$ is inconsistent with competition; as would be selling below $k'$: this would be dumping/predatory pricing! Not acceptable.

Dumping!
Natural monopoly in market i; falling MC & AC; average costs = AC; marginal costs = MC, E is optimal but would require subsidy; and D, B?

Telecommunications (narrowly def.) is natural monopoly!

Endogenous incentive for maximum merger within industry = emerging monopoly; compare B and D/E which implies enormous impact of competition if the service considered is an immediate input in sector j; under competition j could be information intensive (not under monopoly in i). Information intensity is a key to success in knowledge based economy.
Network Effects (endogenous growth of demand) and Natural Monopoly

Network effect = endogenous outward rotation of demand curve: has to be anticipated by investor - easy for monopolist, more difficult in case of many firms!; large difference monopoly outut vs. competition. Regulator could fix price according to point H! Two-part tariffs possible approach...

Initial demand curve is DD₀/marginal revenue curve is R'₀; network effect = shift to DD₁
Benefits of Competition

- Static efficiency in the long run (price = long run marginal/average costs)
- Dynamic efficiency: stimulation of process innovations (and product innovations)
Network Effect (DD1 instead of DDo) and Induced Cost-Saving Progress (k′₁ instead of k′₀): Initial Monopoply (see point C); competition long run: G

Enormous increase in long run output, downward shift of marginal cost curve; network effect can alternatively be displayed as parallel shift of DD
What Competition Normally Means

- **Price will equal marginal costs** unless marginal and average costs are falling - however, **in the case in telecommunications we have falling cost**

- **Law of one price is holding** = all customers within one country/one relevant market can buy at the same price; in reality than can be secondary price discrimination (those which buy large quantities get a discount) and other effects; also internationally...

- Law of one price **holds internationally**: a call from A to B will cost the same as from B to A - this naturally convincing idea is not always true/adequate!
Big international price differences (price relative to average income) (2003)

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Why International Law of One Price Could Not Hold in World Economy with Countries I, II,...

- If all costs are fixed costs then welfare maximizing price setting rule is based on inverse elasticity (RAMSEY rule):
  - On service with low elasticity a high share of fixed costs should be allocated
  - On service with high elasticity a low share of fixed costs should be allocated

IFF costs structures in country I and II are identical while I has low elasticity for international calls and II has high elasticity the price I-II should be higher than II-I; assumption that this indicates significant market power in I and nonsignificant market power in II is not necessarily true.
Link Between Access (Low Elasticity) and Telecommunication Services (High Elasticity)

- Ramsey pricing rule generally would suggest to allocate fixed costs on that submarket which is less price elastic:
  - Access market in general
  - Business customers (in competitive telecommunications world with large powerful corporate customers this is almost impossible)
Cost-oriented Pricing vs. Cross-Subsidization (C’D’E’F’ \sim \text{BCGF}); K^F \text{ is average fixed costs in the access market a); b) is long distance services}

If access is subsidized (PA_0 while costs are K^F) price PL_0 must exceed costs K_L in b)!

Subsidization of access (P_{A_0} < K_F) can pay off if there are network effects in services (DL_1 > DL_0) or scale effects

**Should one separate network operation/access from provision of services?!!**

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EU Competition Policy

- Principle of open markets: internationally = WTO; EU = EU member countries
- Avoid abuse of dominant market power in the relevant market
  - Market power= e.g. measured as market share
  - Market power= e.g. measured by import competition
  - Market power= e.g. measured through barriers to entry
  - Market power= e.g. absence of countervailing power
- Merger Control (National and Supranational)
- Prohibit monopolization;
- Regulatory policy in EU member countries: encourages newcomers by limiting market power of incumbent which could deny interconnection, impose price discrimination, pursue discriminatory pricing, threat ...
If Regulation Really Works

- Regulation can
  - Encourage resale which helps to reduce market power of incumbent in the medium term
  - Stimulate technological progress
  - Create higher market transparency which in turn can encourage investors to support investment in telecommunications sector!
  - Stimulate facilities-based competition through domestic and foreign newcomers; no long term monopoly, rather oligopolistic situation...
Modified Hitch-Sweezy Approach in Oligopoly (WELFENS, 2004a)

Rise in market power = higher ability of leader (firm 1) to make other firms follow: see rotation of BA' to segment BA!

Asymmetrical interdependency under oligopoly: if there is price reduction of supplier 1 the other firms will follow which makes the effective demand curve less price elastic (steeper than a normal demand curve). If firm 1 raises the price other firms will not follow so that the effective demand curve is more elastic above point B: see the segment BA'. If the oligopoly is widening in asymmetric way - with firm 1 as „leading leader“ - some firms could follow the leader (firm 1) so that demand curve becomes steeper above point B: see segment BA; temporary pricing according to marginal costs implies reduced quantity, higher price!// Not big difference q0 vs. q1!
2.4 Market Power: Dimensions of Power and Regulatory Policy

- **Market share of firm F1** (if it exceeds 33%, 50%, x% ..)
- Market share differential F1/F2 or F3 (duopoly special problem)
- Conglomerate power which includes financial power *(deep pocket)*
- Barriers to entry in single sector firm which are represented in **sunk costs** = those costs which cannot be recovered and thus will be ignored in strategic price fights – the higher sunk costs (R&D costs, marketing) the larger the temporary price cutting incentive for the incumbent to fend off new entrants
  - Note: R&D of network operators fell in fixed line after 1998, rose for equipment producers: = more competition in fixed line telephony
  - Note: tendency to bundling (sector i products and j products) raises barriers to entry since required investment/entry costs rise for newcomers
2.4.1 Market Share and the Size of Firms

- Dominant large firm could impose leadership on newcomers, at the same time newcomers will undermine monopoly price – provided that they can survive.

- Key issue is ability of newcomers to be profitable in the long run – they must be innovative and able to finance investment.
Assymetric competition: one incumbent, several newcomers; *Welfens 2004*

The larger the share of newcomers is, the lower is the market price!!

Model with dynamic limit pricing (here special case of demand curve with slope -1): dynamic limit-pricing implies that $\frac{1}{2}$ of the newcomer supply $x$ is equal to fall of price of incumbent ($p_L$); $p$ falls from initial monopoly price $p^M$
Incumbant Operator vs. Newcomers

- Incumbant operator is facing pressure from stock markets – after privatization – to come up with top rate of return
  - Incentive to exploit suppliers; and customers in the carrier market
  - Incentive to restore monopoly power in final product market(s)
Regulation is a Sector-Specific Competition Policy

- In the field of telecommunications according to EU:
  - EU framework regulation is relevant: National laws should be consistent with EU framework (in the new Telecommunications Law: not in FRG!)
  - National regulatory authority should be independent: This should mean functional independency and political independency – creates problems is president/vice-president can be dismissed relatively easily (e.g. Germany=problem)
  - Regulator should regulate wholesale market (if there is monopolistic bottleneck), not pricing of final products

- Regulation in accordance with competition law principles; ex ante regulation requires prior analysis

- MARKETS
  - for services provided to end users = retail market
  - for inputs necessary for operators to provide services and products to end users = wholesale market
Regulation: Identifying markets in accordance with competition law principles

- 1) presence of high and non-transitory barriers to entry (structural, legal or regulatory nature)
- 2) only those markets the structure of which does not tend towards effective competition within the relevant time horizon
- 3) competition law alone would not adequately address the market failure concerned: regulation ok
2.4.2 Substitution on the Demand Side

- Telecommunications is offered through various platforms; some of which are excellent substitutes from a user perspective: e.g. DSL, Cable, Powerline (broadband), possibly also Satellite

- Fixed line telephony and mobile are complementary (until we have fixed mobile integration/technological issue); in terms of internet services fixed line clearly better than mobile services (for the moment)
Different Markets, But There is Convergence! (Digitalization!)

Fixed Line Telephony: a) Narrow-band; b) DSL

Mobile Telephony

Satellite

Cable TV

Powerline

* Sudden fall of DSL price can kill powerline
2.4.3 Problems of Bundling

- If incumbent – with dominant position in i-market - offers a bundle of products (i+j) which then becomes a new standard in the digital services sector, newcomers which use to focus only on niche markets so far (say: i=long distance calls or international calls) will have to also to offer such bundled services = raising the necessary amounts for investment and marketing= higher barrier to entry for newcomers = reduced intensity of competition

- Restrict bundling; require accounting separation
Problems in Opening up Fixed Line Telecommunications to Competition

Dominant Firm (Abuse of dominant market position in the access market/issue of resale and unbundled access?)

Interconnection needs for other telec. firms; abuse of market power?

„special“ bundling of services of incumbent = +barriers to entry*

Newcomers can enter and survive (?)

*normal bundling as evolving under competition is not a problem! What is normal?
3. Practical Aspects and Conclusions

- Important for regulatory success:
  - Full independence of regulatory authority
  - National laws and procedures should be consistent with EU framework regulations
  - Full privatization of former incumbent important
  - Develop clear regulatory approach and practice by communicating goods reasons for strategies adopted and measures taken
  - Consider broad options: unbundling, accounting separation, divestiture, line-of-business restrictions
National Regulators Can Contribute to Progress

- Establish international benchmarking with appropriate comparisons (small countries vs. large countries)
- Try to reduce ex-ante regulation over time wherever appropriate, but carefully watch incumbent/companies with significant market power
- Stimulate facilities-based competition to some extent since investment in infrastructure is crucial, particularly in EU accession countries
- Anticipate changes in technology and in scope of relevant markets
Price Observation and Communications with Firms

- Price observation is crucial in wholesale market: sudden strong fall of prices - after the initial stage of phasing-in competition - is strange and could stand for predatory pricing
- Bundling strategies of incumbent should be carefully observed since those can easily undermine the way to more competition
- Establish links with scientific community to get critical reflections on market dynamics and policy options
- Establish international cooperation with fellow regulators (with ITU being a moderator for this)
Final Word on Universal Services and FDI

- The definition of universal services – and the way of financing such services – can reinforce the incumbent or strengthen the newcomers; the latter is normally desirable if the incumbent is a dominant operator.

- The definition of universal services should be broadened to include broadband services and internet/VOIP telephone (WELFENS, 2004b).

- FDI can lead to indirect monopolization (e.g. in international telecommunications/EU-US).
Many thanks for your kind attention

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