Significant Market Power in Telecommunications: Theoretical and Practical Aspects

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Overview

- 1. Introduction: Efficiency Gains and Innovations in a Competitive Social Market Economy

- 2. Market Power
- 2.1 Telecommunications Markets
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- 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
- 2.4.2 Substitution Opportunities on the Demand Side
- 2.4.3 Problem of Bundling
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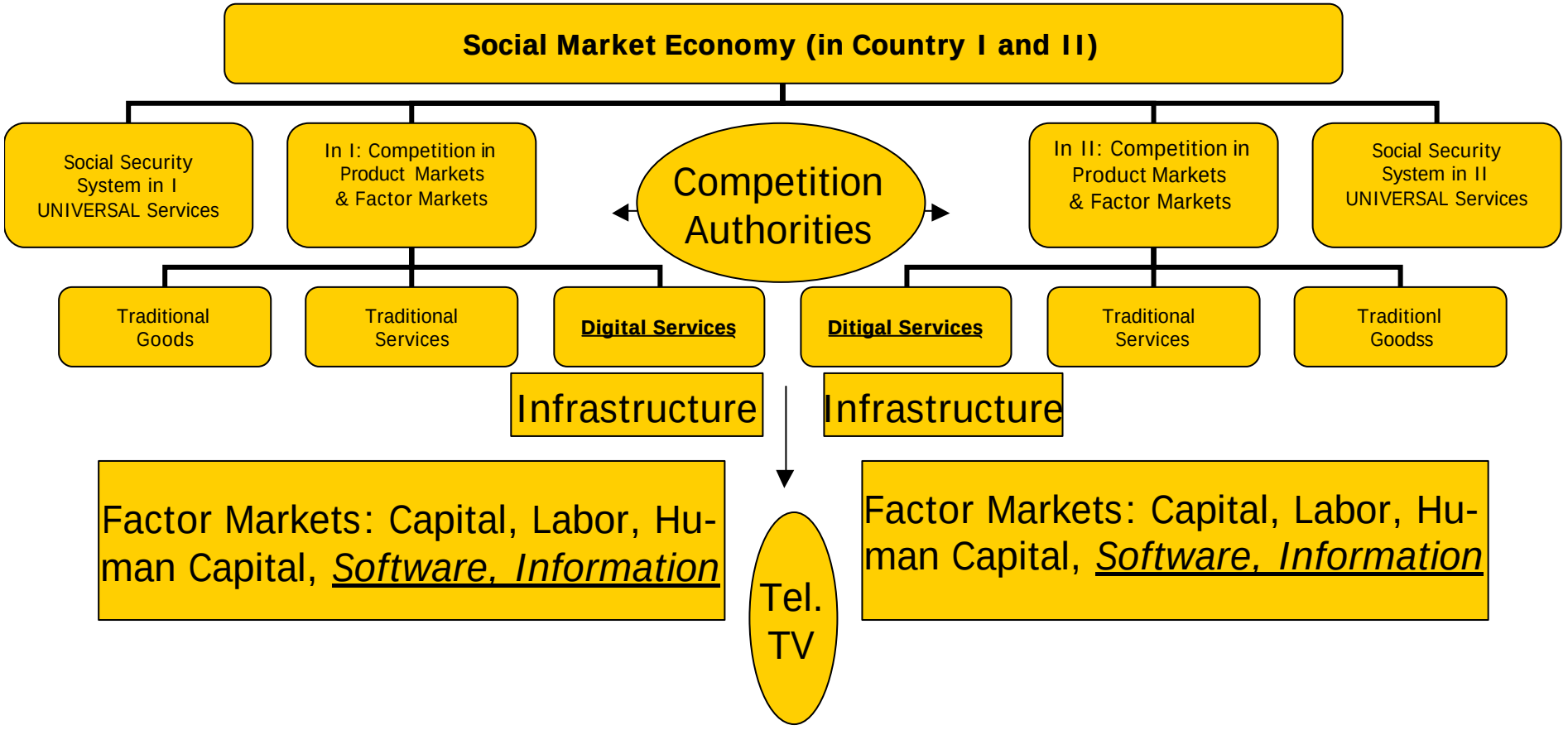
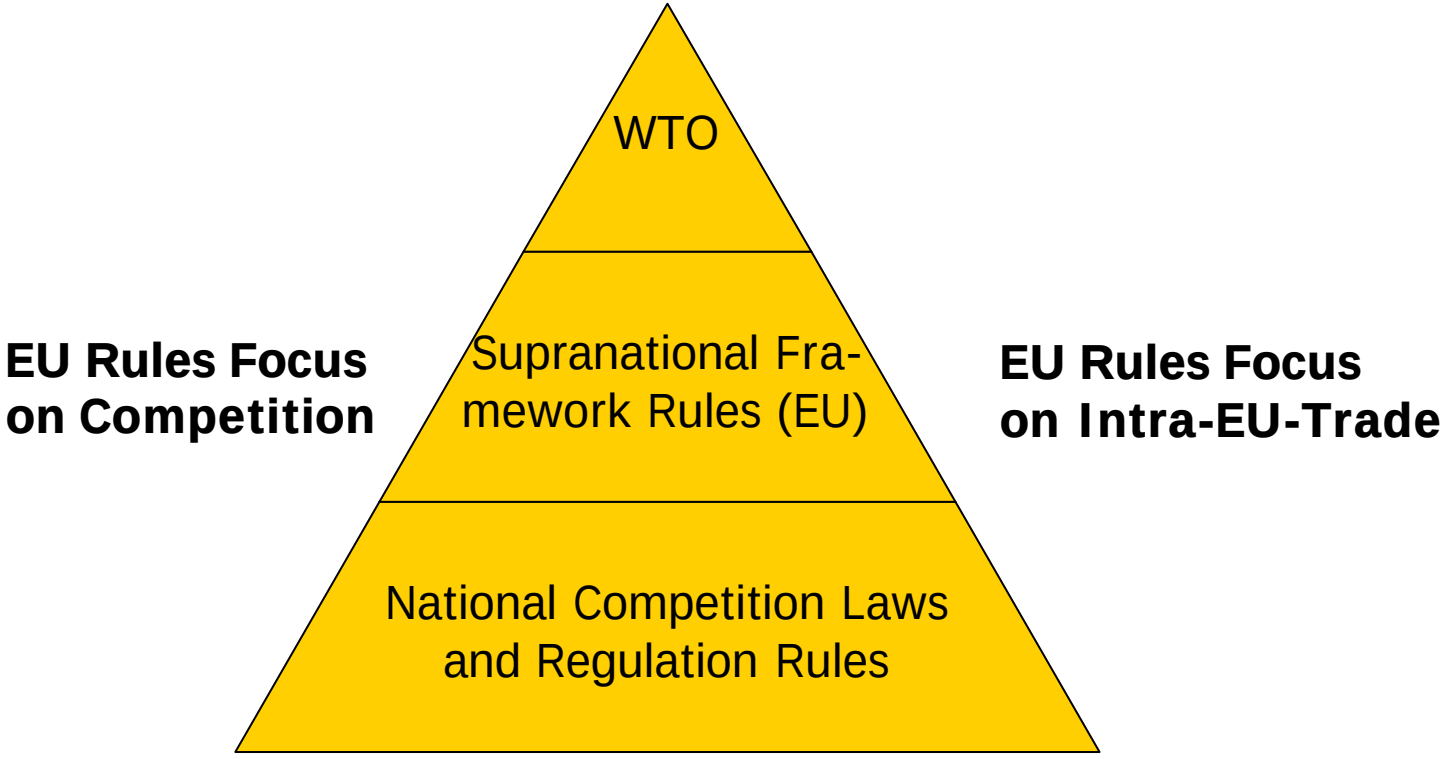
Competitive Digital Social Market Economy: Efficiency & Equal Opportunity+ (Universal Services) in a Digitally Networked Society



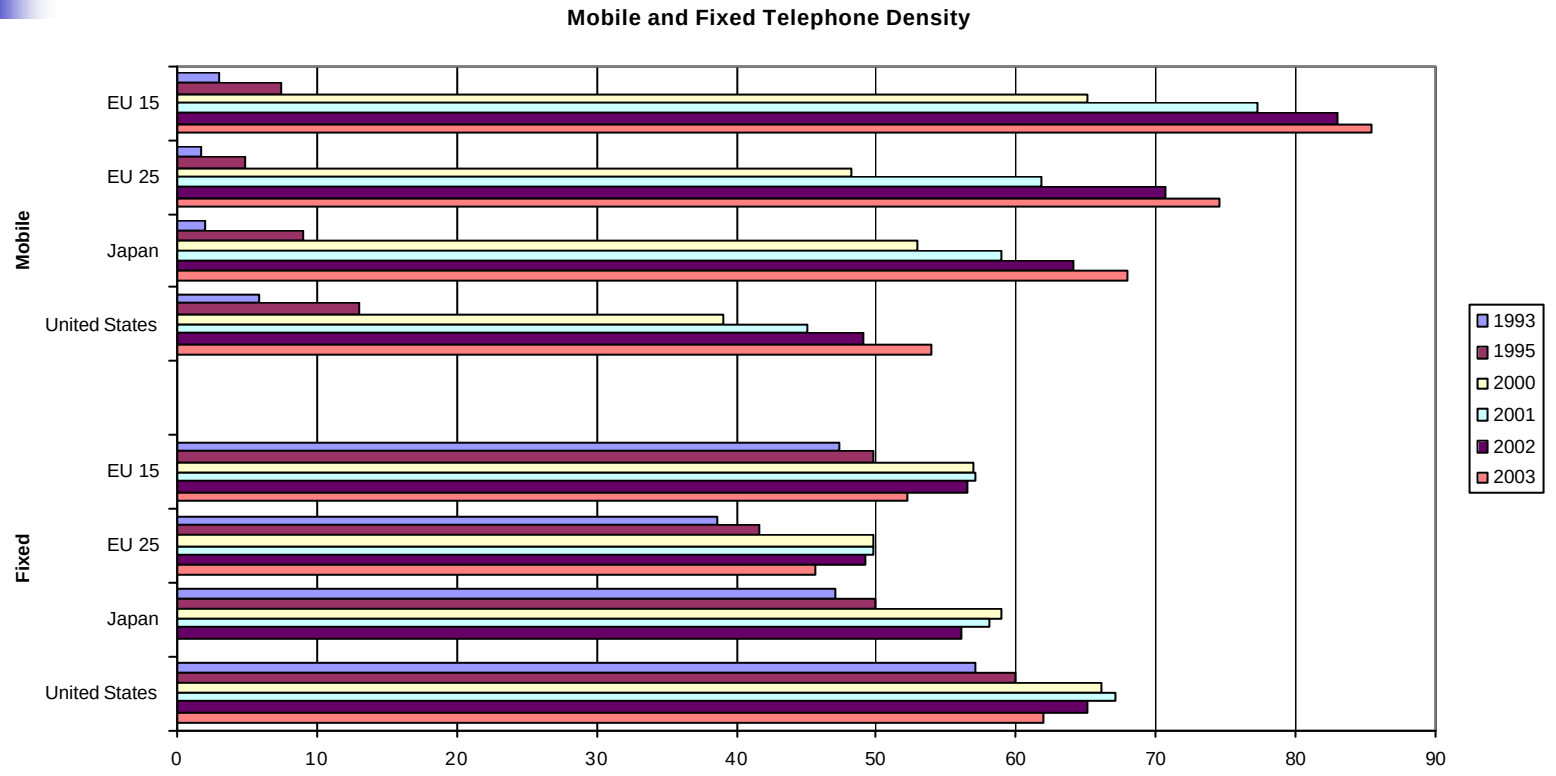
Sustainable Functional Competition in Sector/Market i

- 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

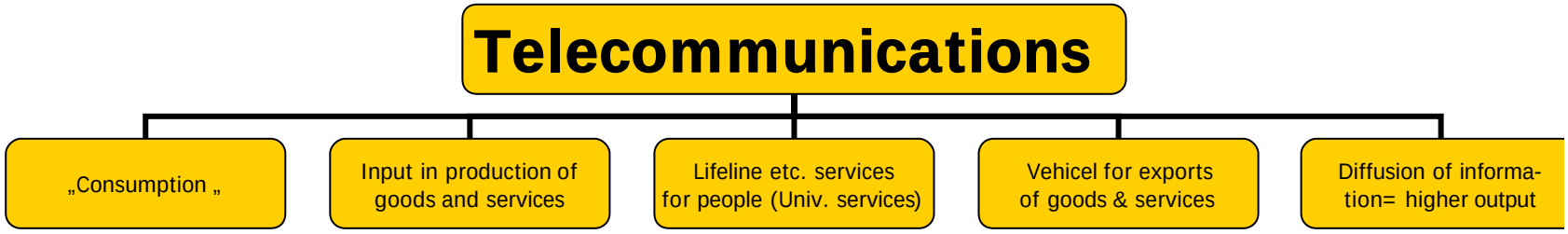
Competition Rules



Mobile Telecommunications is Overtaking Fixed Line Density (but more traffic on the fixed line network/& cable TV); US not yet!



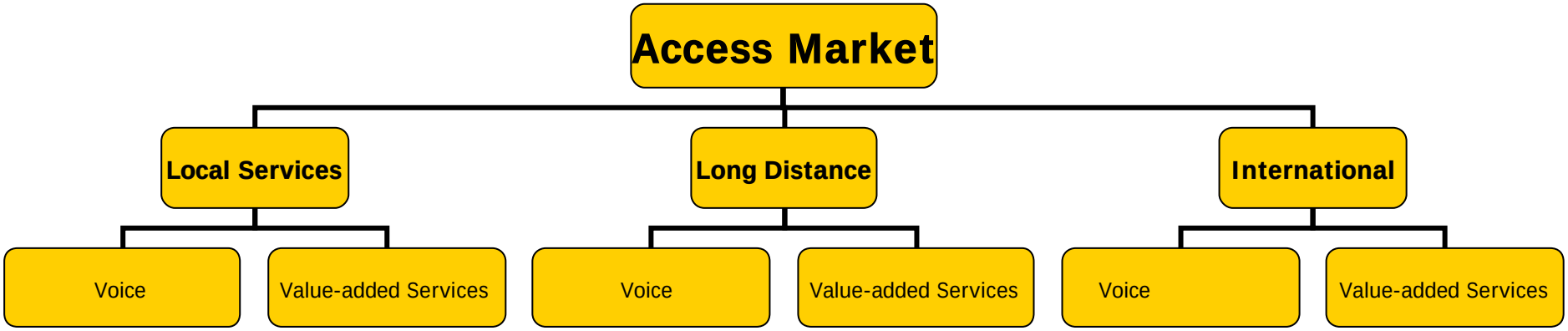
Economic Impact of Telecommunications Services



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?)

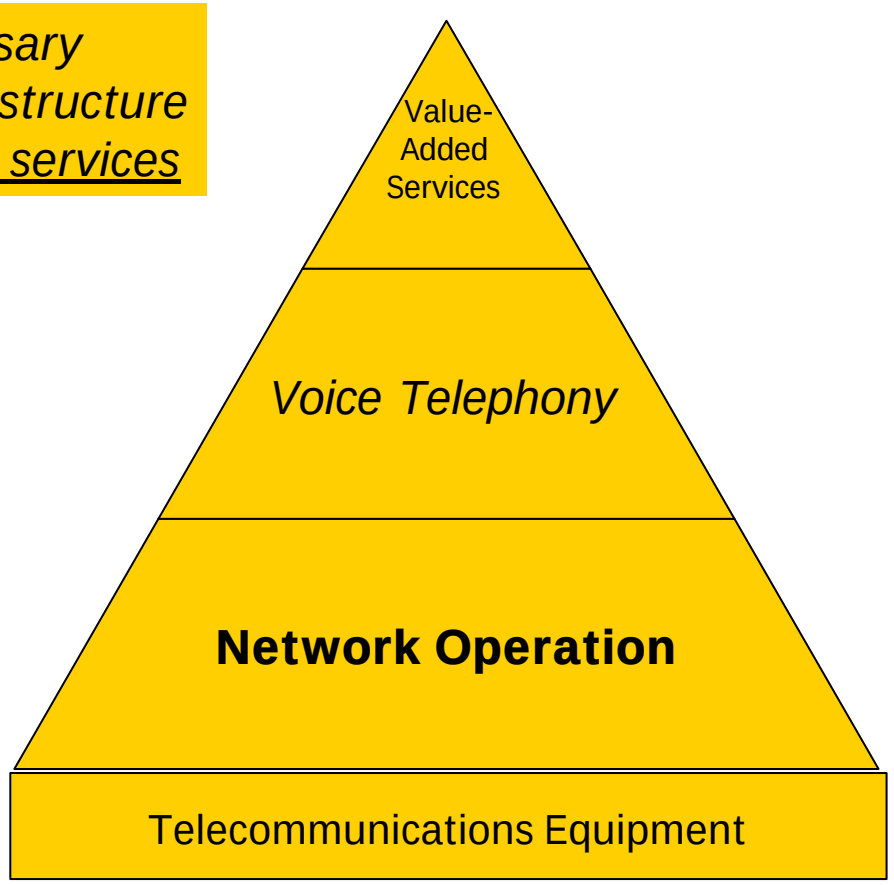
2.1 Telecommunications Markets



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

Telecommunication Sector

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=marginal costs k‘
- Oligopoly: Few firms – which act interdepen-dently; 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 tele-communications 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 inhomogenous 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 incumbant 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 incumbant 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

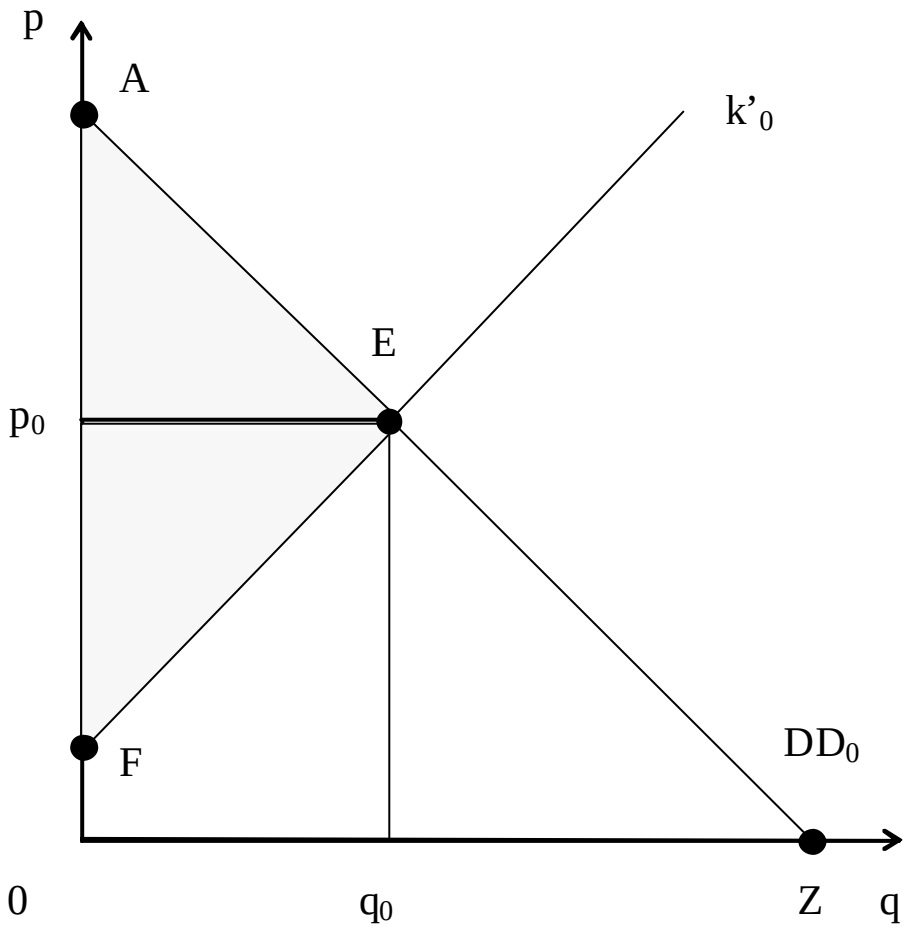
- Towards a broader concept
  - Identify normal markets with full competition
  - Identify specifics of telecommunications markets
  - Define market power with respect to the sectoral traits of this sector
  - The higher the degree of substitution on the demand side (and the supply side), the lower market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

Abuse of Dominant Position

- Refusal to deal/essential facilites 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'=dcost/dq

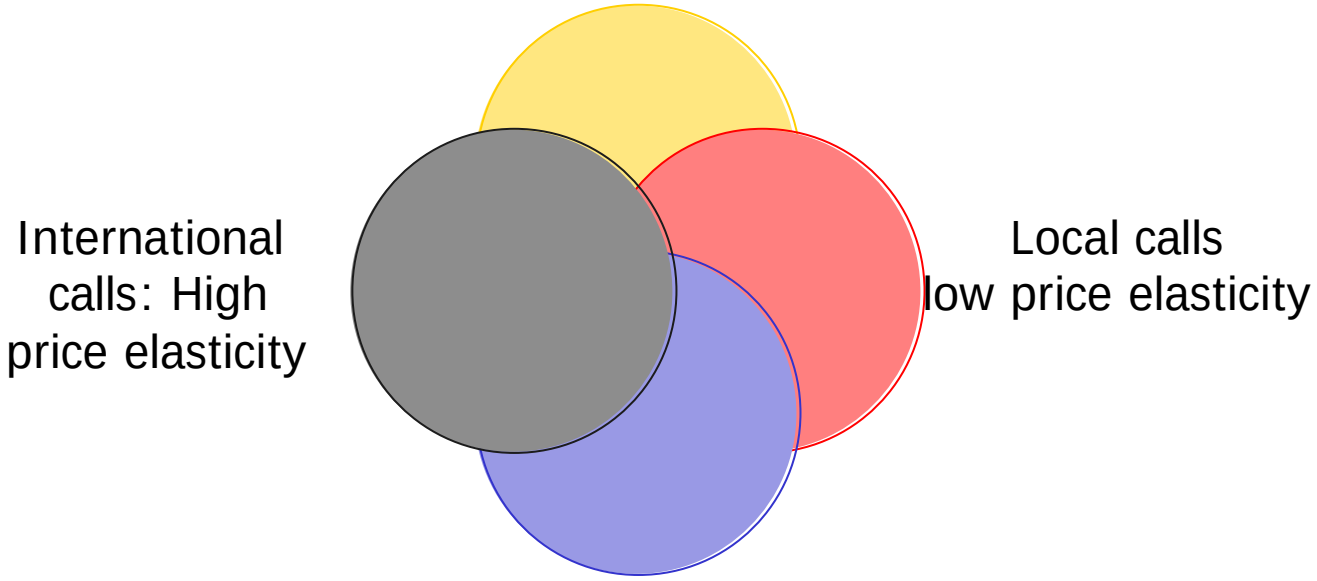
Rational economic policy-making should maximize (under constraints) consumer welfare= consumer surplus or overall economic welfare in the respective sector: which is the sum of consumer surplus and residual profit=producer surplus



Under competition: revenue is area p_oEq_oO, cost of producing q_o is Equal to the area $OFEq_o$; hence triangle p_oEF is profit (as a residual!). All consumers buy at uniform price p_o, many would have been willing to pay more: area AEp_o is „consumer surplus"

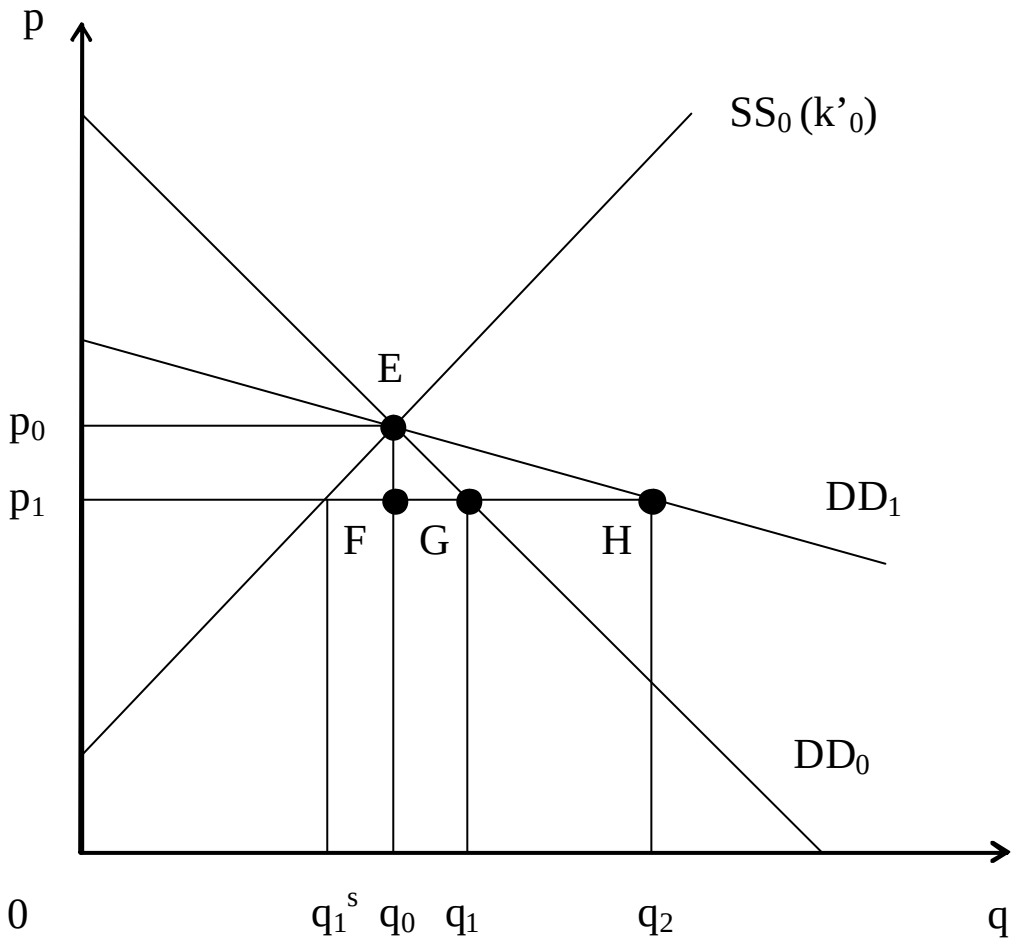
Links Between Sub-markets

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



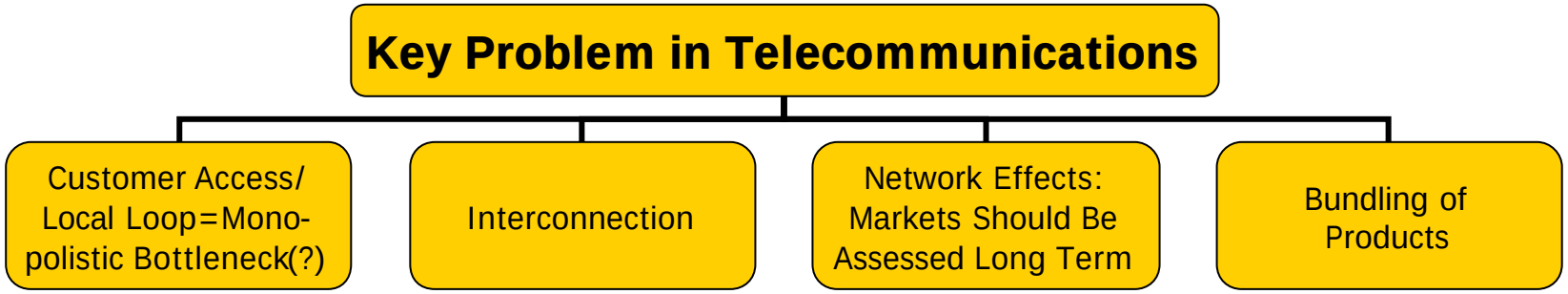
Elasticity of Demand: The Flatter (see DD_1 vs. DD_0) the Curve is, the Higher Elasticity. In i-Market: With New Substitutes (i,j) Becoming Available Curve Is Flattening!

In the case DD1: price reduction brings large increase in equilibrium output (q2>q1) if price falls from level p_o to p1! High elasticity in the presence of many good substitutes



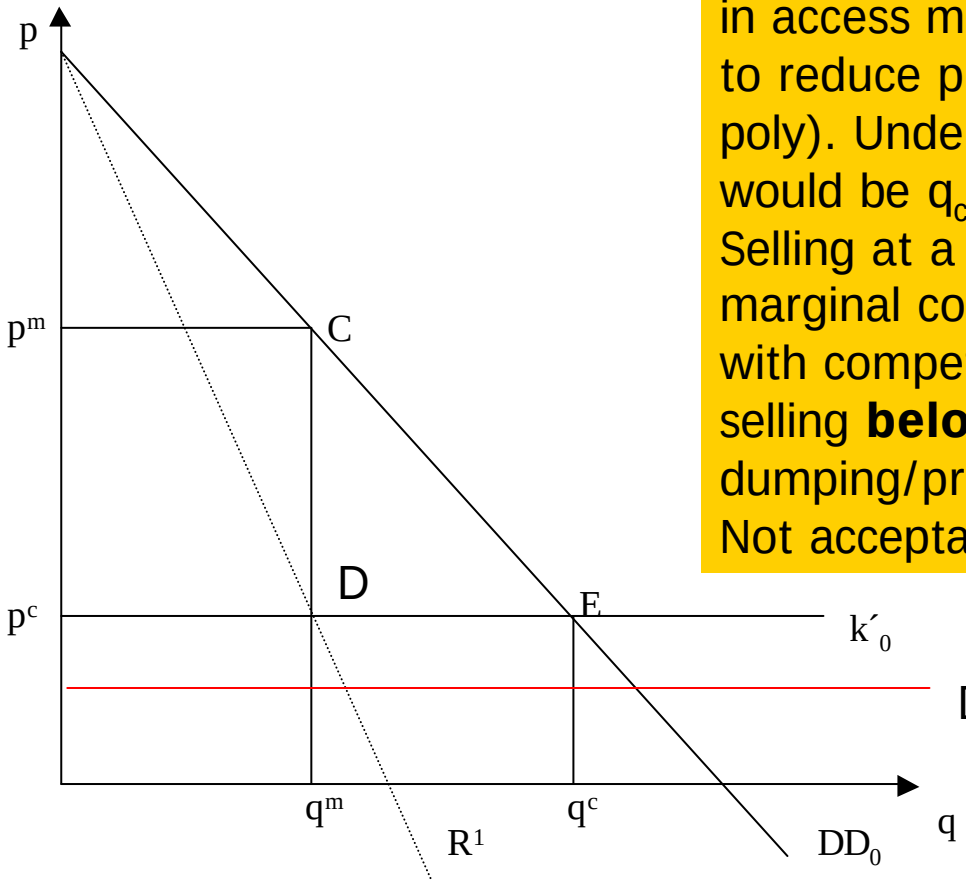
Alternatively, price elasticity could be defined as (dq/q)/(dp/p) along a given demand curve. Note that in ln p-ln q space the slope of the tangent at a point of the demand curve is equal to the point elasticity!

Important Problems in Regulation of Telecommunications



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
<u>If 100% FDI =national welfare loss= CDE+P^mCDP^c !</u>

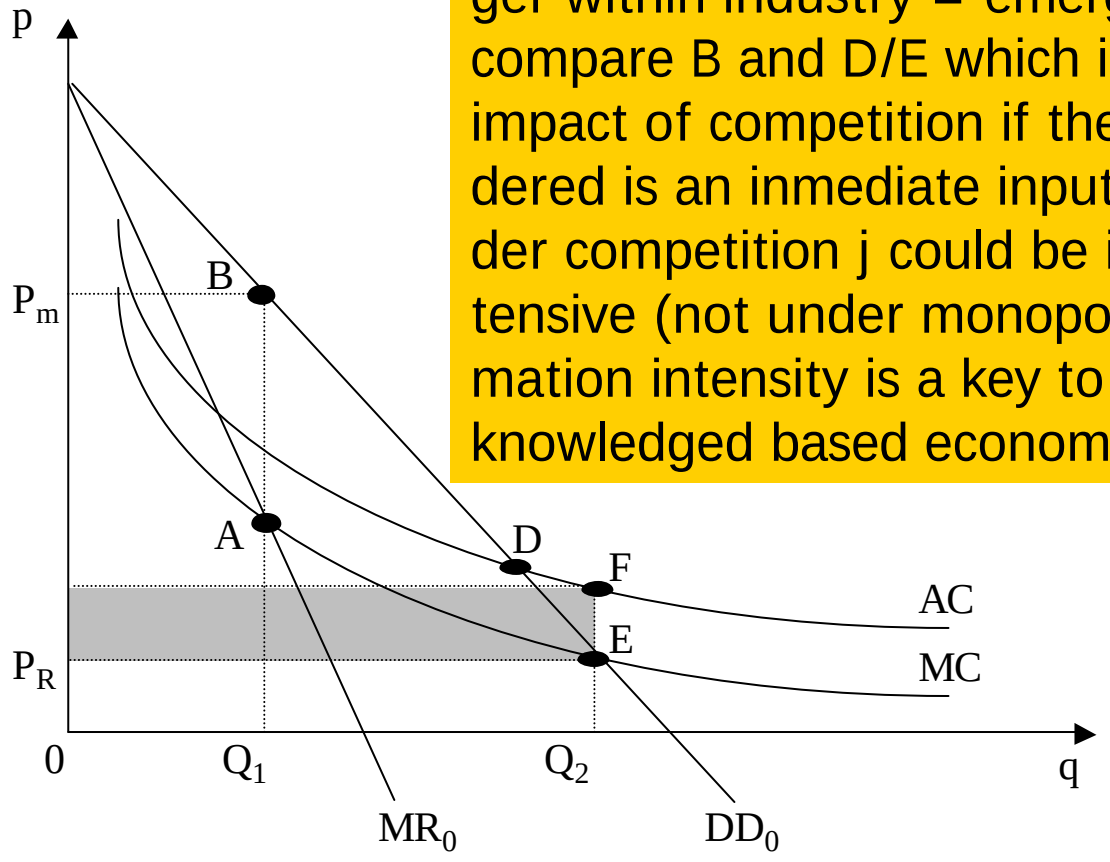


Dumping!

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

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

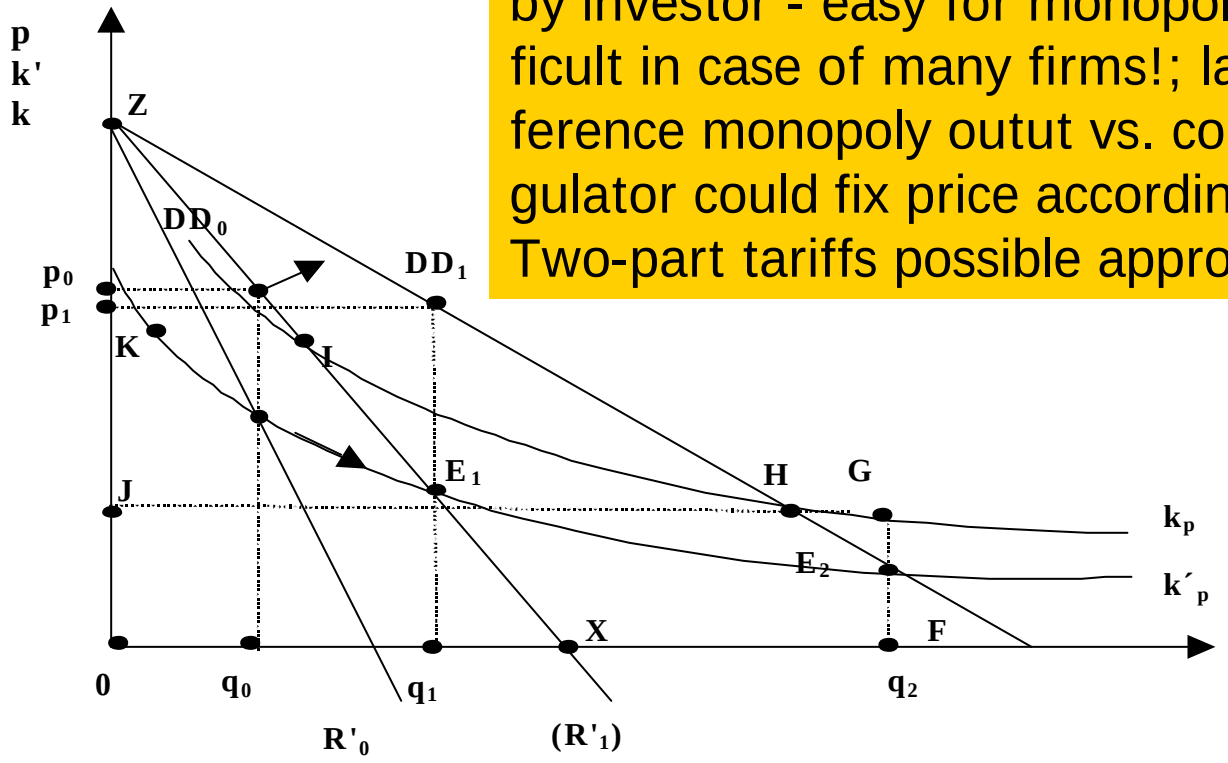
Telecommunications (narrow-ly def.) is natural monopoly!



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 inmediate input in sector j; under competition j could be information intensive (not under monopoly in i). Information intensity is a key to success in knowledged 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...

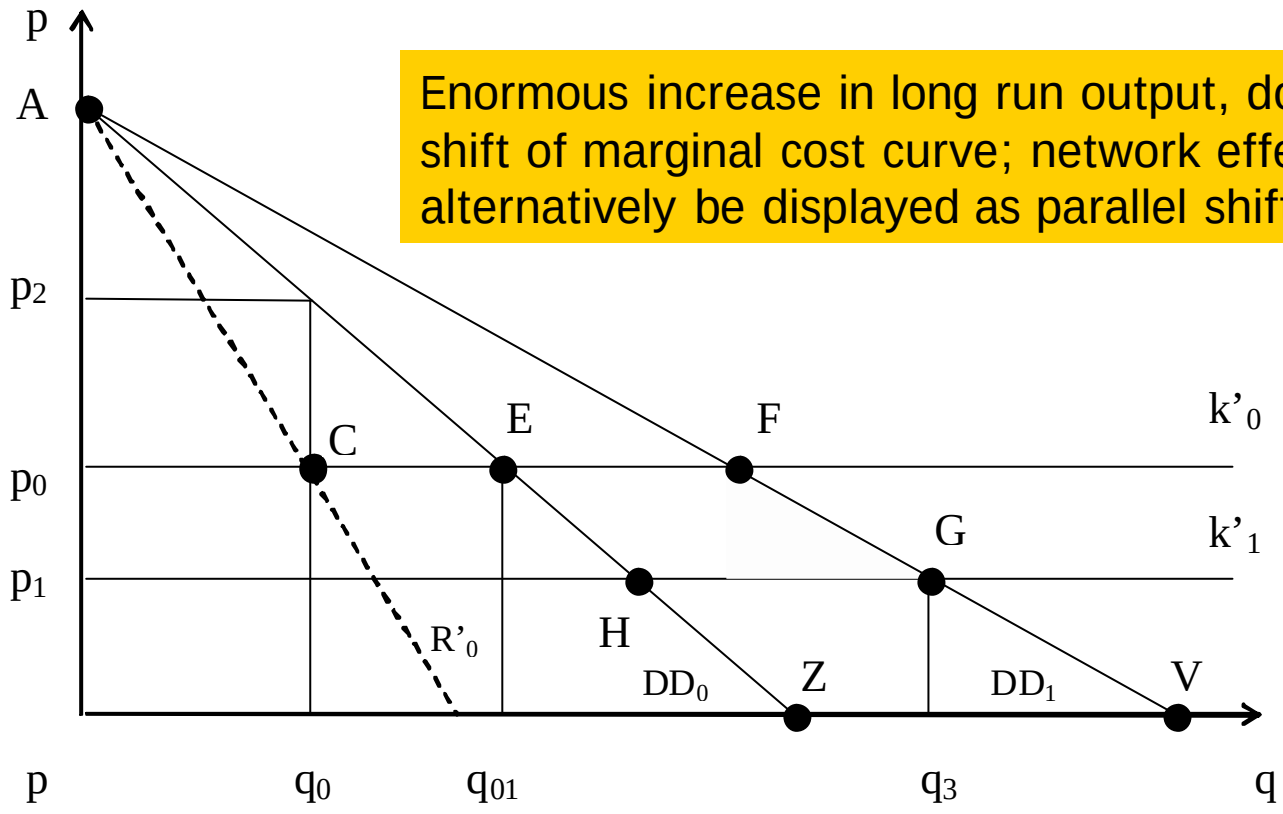


Initial demand curve is DD_0/marginal revenue curve is R'_0; network effect=shift to DD_1

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'_o): 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 averge income) (2003)

Nr	Economy	Subscription per month (USD)	Price per 100 kbit/s (USD)	Subscription as % of monthly income	100 kbit/s as % of monthly income
1	Japan	24.19	0.09	1.11	<0.01
2	Korea (Rep. of)	49.23	0.25	3.58	0.02
3	Belgium	34.41	1.15	1.51	0.05
4	Hong Kong, China	38.21	1.27	1.71	0.06
5	Singapore	33.18	2.21	1.69	0.11
6	United States	52.99	3.53	1.81	0.12
7	Canada	32.48	3.25	1.39	0.14
8	Netherlands	51.55	3.36	2.25	0.15
9	Macao, China	38.34	2.56	2.43	0.16
10	New Zealand	40.61	2.71	2.43	0.16
11	**Germany**	**33.93**	**4.42**	**1.55**	**0.20**
12	Norway	46.16	6.56	1.55	0.22
13	Israel	20.40	3.98	1.27	0.25
14	Austria	45.20	5.89	1.92	0.25
15	Slovenia	79.54	3.88	5.40	0.26
16	Italy	73.59	6.13	3.49	0.29
17	United Kingdom	32.59	6.37	1.51	0.30
18	Luxembourg	91.77	17.92	2.16	0.42
19	Sweden	44.56	8.91	2.13	0.43
20	Switzerland	57.84	11.30	2.22	0.43
21	Australia	50.56	9.87	2.25	0.44
22	France	51.46	10.05	2.36	0.46
23	Ireland	61.69	12.05	2.64	0.52
24	Portugal	39.64	7.74	2.74	0.54
25	Cyprus	58.03	9.07	3.86	0.60

Nr	Economy	Subscription per month (USD)	Price per 100 kbit/s (USD)	Subscription as % of monthly income	100 kbit/s as % of monthly income
26	Iceland	73.66	14.39	3.09	0.60
27	Lithuania	12.80	5.00	1.55	0.61
28	Malta	53.34	10.42	3.77	0.74
29	Jordan	14.06	2.75	4.15	0.81
30	Denmark	51.82	20.24	2.11	0.82
31	China	30.10	7.84	3.70	0.96
32	Croatia	24.26	9.48	2.62	1.02
33	Estonia	49.72	4.86	10.58	1.03
34	Venezuela	42.95	11.18	4.02	1.05
35	Hungary	57.36	22.41	2.71	1.06
36	Finland	47.63	18.61	2.79	1.09
37	Spain	29.21	7.61	4.23	1.10
38	Malaysia	68.90	13.46	7.03	1.37
39	Argentina	22.44	8.77	3.71	1.45
40	Brazil	71.19	27.81	3.89	1.52
41	New Caledonia	76.15	14.87	9.02	1.76
42	Poland	35.50	13.87	4.64	1.81
43	Chile	106.10	41.44	8.01	3.13
44	Bahrain	57.46	22.44	8.01	3.13
45	Mexico	75.31	29.42	10.11	3.95
46	Latvia	80.00	31.25	11.62	4.54
47	Costa Rica	99.00	19.34	24.75	4.83
48	Peru	93.26	36.43	16.58	6.48
49	Grenada	238.65	93.22	24.65	9.63
50	Saudi Arabia	174.75	68.26	31.39	12.26

Quelle: ITU (2003)

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

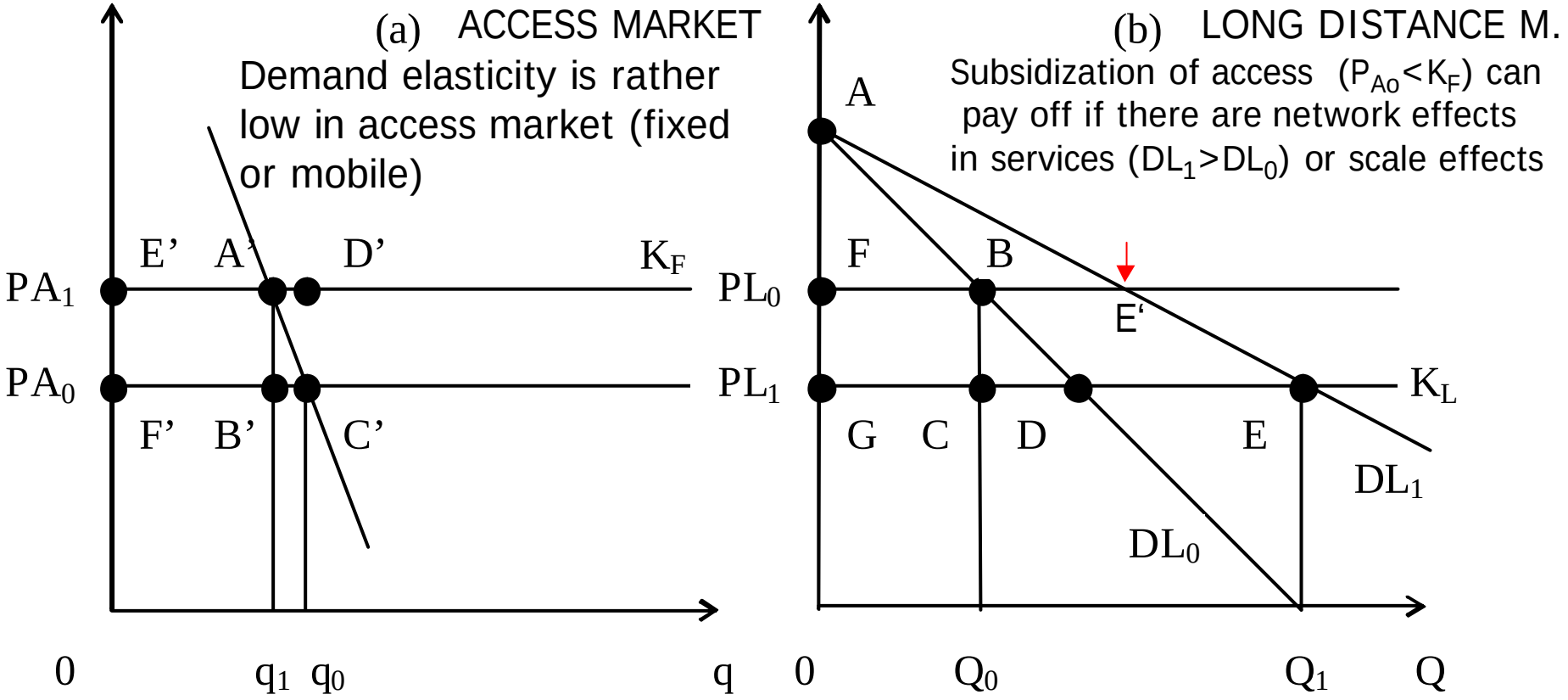
  IFF costs structures in country I and II are identical while I has low elasticity for international calls and II has high elasticity the price I-II should be higher than II-I; assumption that this indicates significant market power in I and nonsignificant market power in II is not necessarily true

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' ~ BCGF); K^F is average fixed costs in the access market a); b) is long distance services

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



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

EU Competition Policy

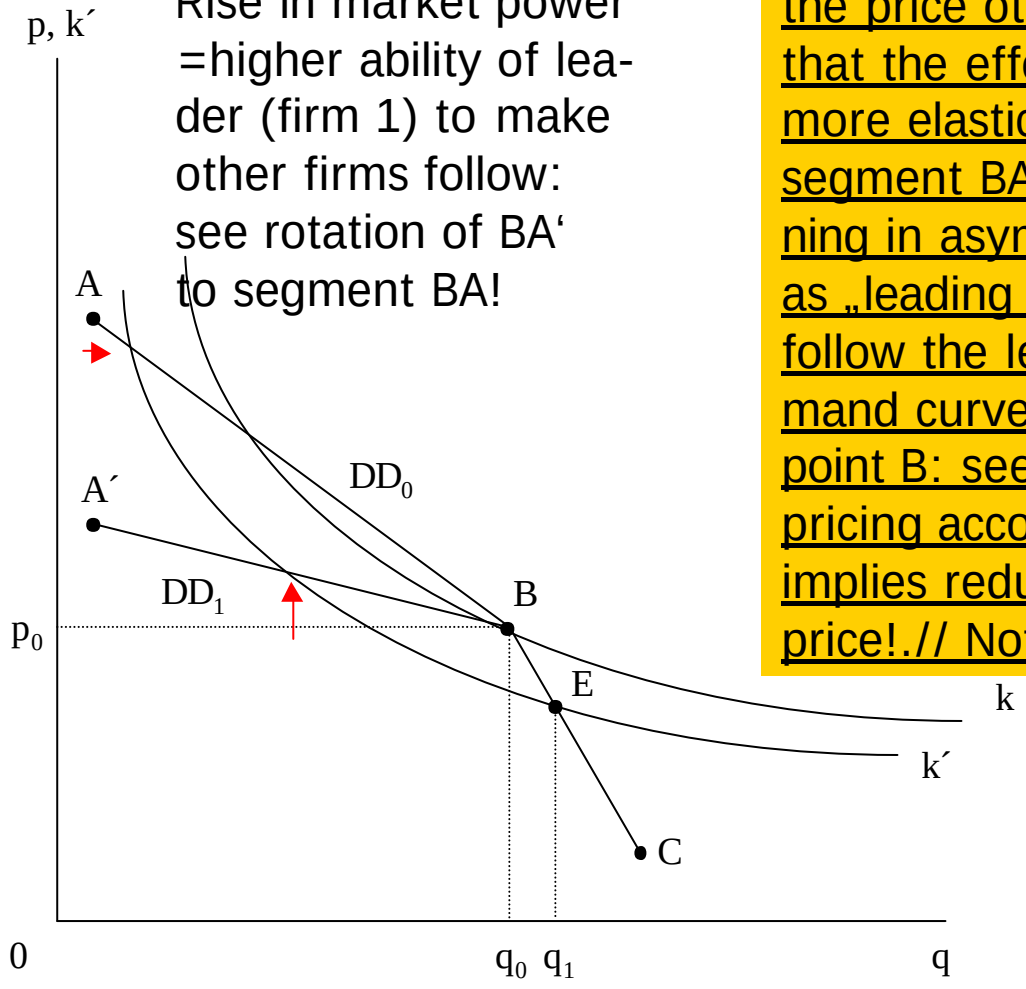
- Principle of open markets: internationally = WTO; EU = EU member countries
- Avoid abuse of dominant market power in the relevant market
  - Market power = e.g. measured as market share
  - Market power = e.g. measured by import competition
  - Market power = e.g. measured through barriers to entry
  - 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 incumbant 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 incumbant 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 monoply, 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 qo vs. q1!

2.4 Market Power: Dimensions of Power and Regulatory Policy

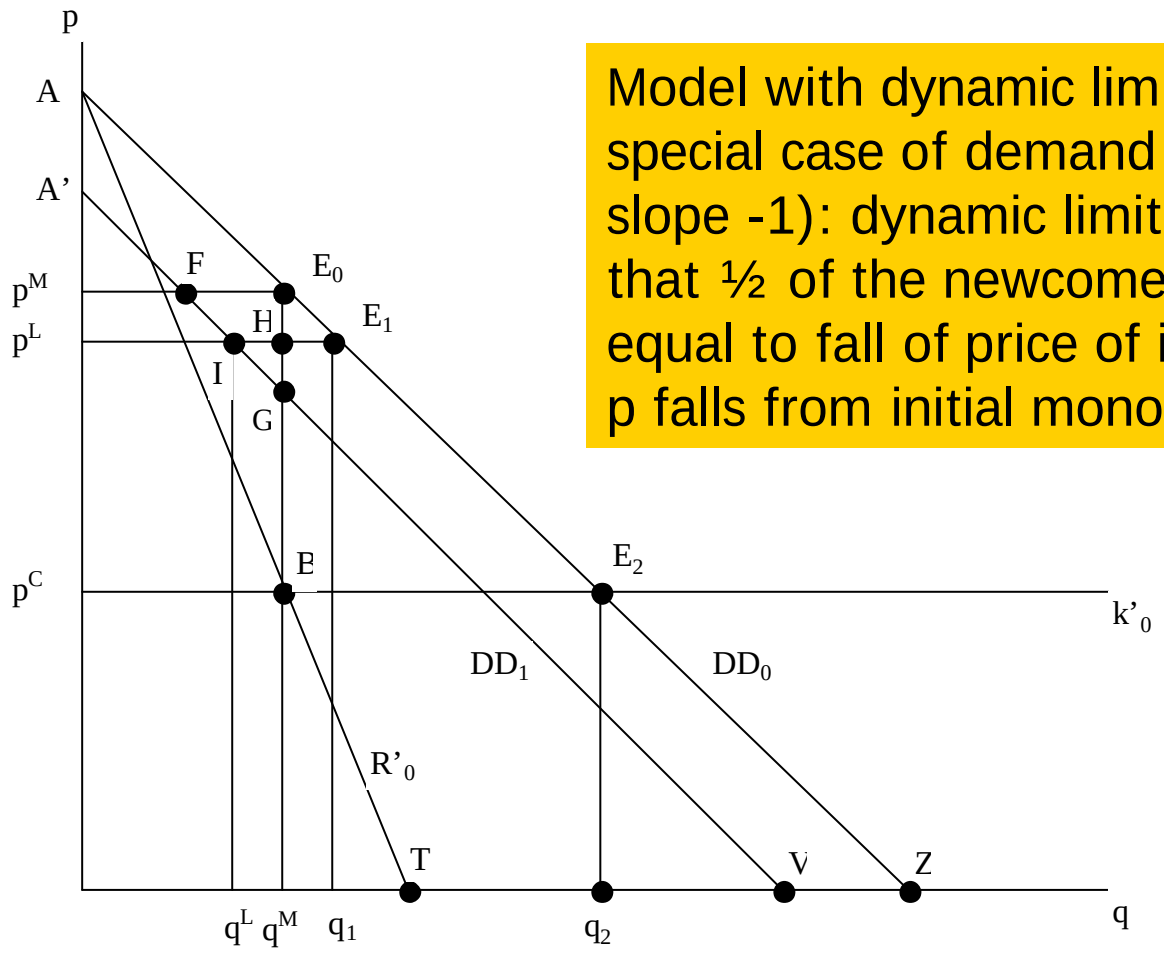
- **Market share of firm F1(if it exceeds 33%, 50%, x%..)**
- Market share differential F1/F2 or F3(duopoly special problem)
- Conglomerate power which includes financial power **(deep pocket)**
- Barriers to entry in single sector firm which are represented in *sunk costs*= those costs which cannot 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 incumbant 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 incumbant, 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 ½ of the newcomer supply x is equal to fall of price of incumbant (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 indepency 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

Recommendation of European Commission (2003)

- 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

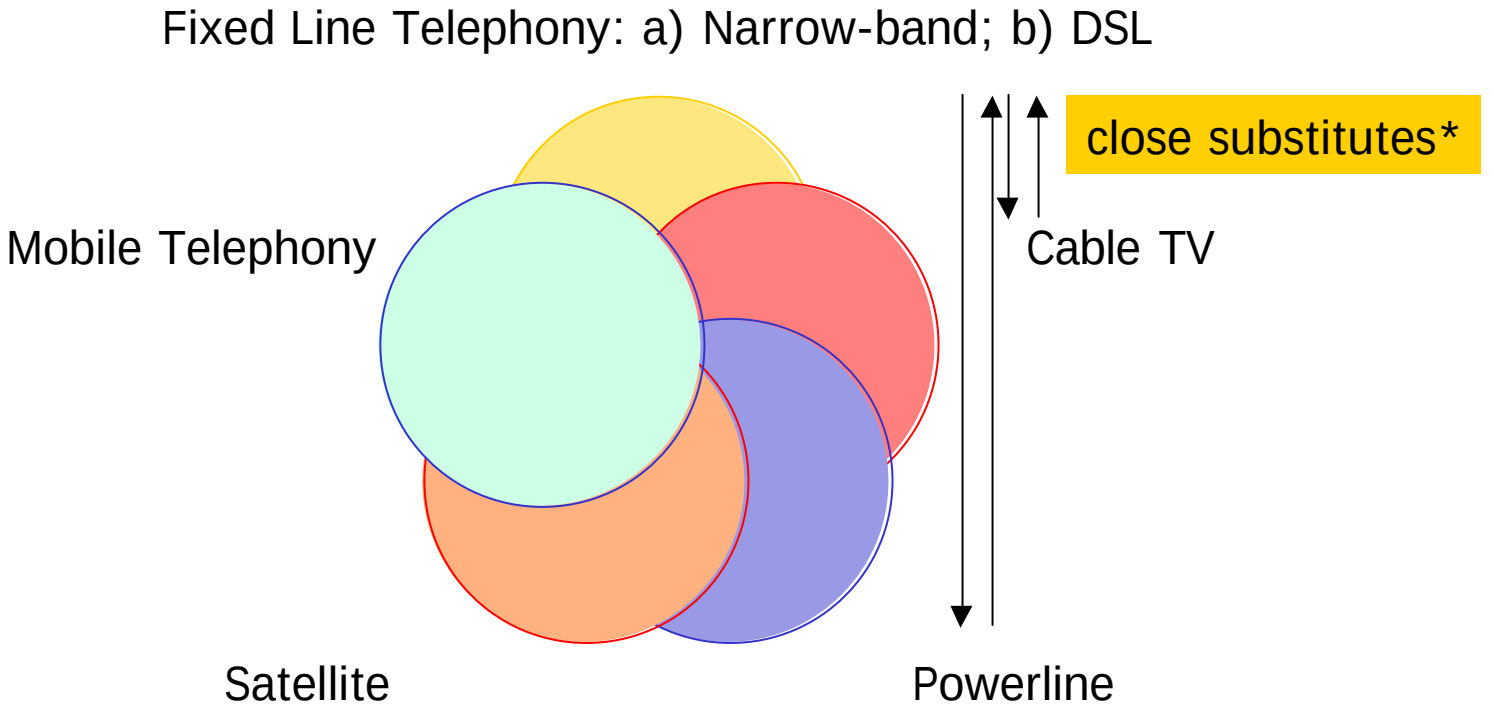
Regulation: Identifying markets in accordance with competition law principles

- 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!)



* Sudden fall of DSL price can kill powerline

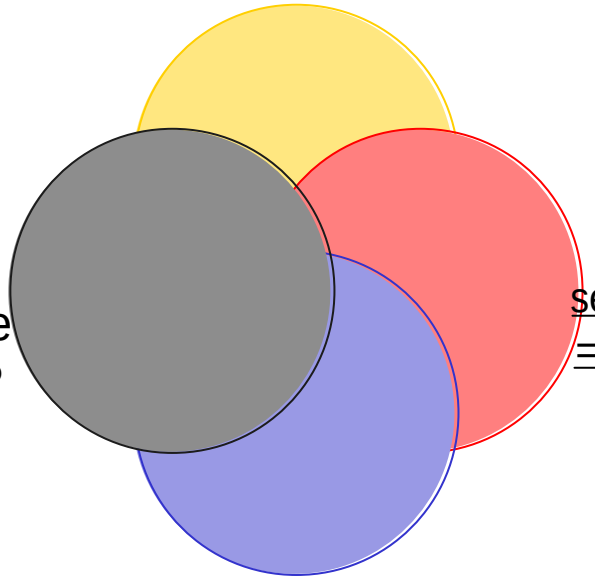
2.4.3 Problems of Bundling

- If incumbant – 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 incumbant = +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 incumbant important
  - Develop clear regulatory approach and practice by communicating goods reasons for strategies adopted and measures taken
  - Consider broad options: unbundling, accounting separation, divestitutre, 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 whereever appropriate, but carefully watch incumbant/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 predadory pricing
- Bundling strategies of incumbant should be carefully observed since those can easily undermine the way to more competition
- Establish links with scientific community to get cricital 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 incumbant or strengthen the newcomers; the latter is normally desirable if the incumbant 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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