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# **Wholesale/retail pricing in telecom markets<sup>\*</sup>**

by

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**84**

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**Critical comments to the author are welcome!**

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## 1. Regulation: Three fundamental questions

Since 1998 market entry has been permitted nearly world-wide for all parts of the telecommunications networks, including both cable-based infrastructure and telephone services. Global entry deregulation, however, does not automatically imply the abolishment of all sector-specific regulations. On the contrary, the new telecommunications laws in many countries can be considered as “baroque” highly sophisticated sets of rules, which, in combination with additional decrees, form the legal basis for a wide range of future regulations, such as an obligation to provide network interconnection and network access, the detailed regulation of tariffs, including the control of the underlying cost conditions, etc. The 1999 Review of the European Commission indicates that in the future sector-specific regulation may even be extended to include markets not yet regulated (e.g. mobile telephony) and new markets (e.g. Internet services) (cf. Knieps 2001a, p. 648). It is well known from the positive theory of regulation and from public choice theory that incumbents as well as potential entrants may attempt to use the regulatory process as a means to subvert competition. For the evaluation of the *proper* role of the regulator’s mission three fundamental questions have to be answered: Why regulate? What to regulate? How to regulate?

### 1.1 Why regulate?

After global entry deregulation, three regulatory objectives are dominant: technical regulation (e.g. the organization of number portability, the design of standards); the provision of universal service through entry-compatible instruments; and the disciplining of the remaining network-specific market power. An extensive discussion of the long-term proper role of government intervention with respect to technical regulation is obviously beyond the scope of my paper. Neither shall the efficient provision of universal service by means of competitively neutral, yet economically efficient subsidies, including the design of an universal service fund be analyzed in this paper (for a discussion of this issue, see Blankart, Knieps, 1989).

What my contribution examines instead is the role of sector-specific regulation of the remaining network-specific market power, with special emphasis on price

regulation issues. In a comparison between competition policy and regulation, it is fair to say that regulatory agencies have more extensive powers than antitrust enforcers (cf. Laffont, Tirole, 2000, p. 277). As a consequence, sector-specific regulation must be based on the peculiarities of network industries which have to be identified carefully.

## **1.2 What to regulate?**

Even nowadays, telecommunications policy is strongly influenced by asymmetric market power regulation with an intrinsic bias against the former network monopolist. As a consequence, excessive regulation due to an oversized regulatory basis occurs. The specification of the regulatory basis is not explicitly founded on the identification of network-specific market power, instead classification as a dominant firm as laid down in competition law is chosen as the central precondition to justify sector-specific regulation. Thus, the provision of long-distance telecommunications infrastructure and voice telephony services by a carrier classified as dominant on those markets may be considered as non-competitive, although active and potential competition in itself is sufficient to discipline market power. In contrast, a symmetric regulatory approach should be applied, focussing on network-specific market power with no intrinsic bias towards any firm or technology (cf. Knieps, 1997b, p. 326).

Sector-specific regulation of network sectors constitutes a massive intervention in the market process; it therefore requires a special network-specific justification. Only monopolistic bottleneck areas pose the problem of stable network-specific market power.

A monopolistic bottleneck exists if certain network elements:

- are indispensable for providing a service on a downstream market,
- cannot be obtained elsewhere on the market, and
- cannot be duplicated in an economically feasible way.

As a consequence, the concept of market dominance as taken from competition law has to be interpreted in a manner compatible with network-specific market power:

- Making the extent of regulation dependent on the concept of market dominance requires a network-specific localization of market power.
- Problems of legal interpretation of the concept of market dominance in the context of ex post control of the General Competition Law should be clearly separated from the question whether regulation should be continued.
- A high market share is not a sufficient criterion for localizing network-specific market power.
- What is crucial is the extent of barriers to entry and of potential competition.

It is important to identify the regulatory basis by means of Stigler's concept of entry barriers, focussing on the long-run cost asymmetries between incumbent and potential entrants:

“A barrier to entry may be defined as a cost of producing (at some or every rate of output) which must be borne by a firm which seeks to enter an industry but is not borne by firms already in the industry.” (Stigler, 1968, p. 67)

The sector-specific characteristics of network structures (economies of bundling) are not a sufficient reason to conclude that market power must exist. It is necessary to differentiate between those areas in which active and potential competition can work and other areas, so-called monopolistic bottleneck areas, where a natural monopoly situation (due to economies of bundling) in combination with sunk costs exists. It can be demonstrated that the regulation of network-specific market power is only justified in monopolistic bottleneck areas. In all other cases, the existence of active and potential competition will lead to efficient market results.

Although an in-depth analysis of other network industries is beyond the scope of this paper, monopolistic bottlenecks should be localized in a disaggregated manner. For example, in railway systems monopolistic bottlenecks are limited to the track infrastructure, in air traffic systems to the airport etc. The remaining bottleneck in telecommunications is identified as being located in the area of the

local loop (cf. Knieps 2001a, p. 653; Laffont, Tirole, 2000, p. 98; Immenga et al., 2001, p. 6).

To sum up:

- In the telecommunications sector the only bottlenecks are parts of the subscriber network (the local loop) and local interconnection.
- However, no bottlenecks exist on retail markets and on wholesale markets for long distance telecommunications.

Proper distinction between the bottleneck and the competitive segments is required when designing adequate regulatory instruments.

### **1.3 How to regulate?**

Regulatory instruments can be differentiated according to whether they are limited to the bottleneck areas (disaggregated regulation) or applied globally (end-to-end), including the competitive segment. Since the application of regulatory rules is not costless and may also be abused strategically to disturb market forces, the advantage of the disaggregated regulatory approach is the strict limitation of the regulatory basis to bottleneck services. In other network industries, like railways or air traffic, it is considered natural and obvious to limit regulation to the access charges of the monopolistic bottleneck part of the infrastructure (e.g. airport landing fees, track access charges). In contrast, the pricing of the complementary transportation services (e.g. train tickets, airline tickets) is left unregulated (cf. Knieps, 1997a).

## **2. Disaggregated regulation of monopolistic bottlenecks**

From the debate on access charges to infrastructure capacities (airport, railroad tracks) it is well known that three objectives have to be kept in mind when regulating monopolistic bottlenecks:

- non-discriminatory access,
- efficiency of allocation, and

- recovery of stand-alone cost.

Obviously, monopolistic bottlenecks can be characterized as essential facilities (cf. Engel, Knieps, 1998, p. 19). To the extent and as long as local networks constitute monopolistic bottlenecks, ex ante regulation seems justified. Non-discriminatory access to essential facilities has to be guaranteed. However, it is important to view the application of the Essential Facilities Doctrine in a dynamic context. Therefore, one objective in the formulation of access conditions must be not to impede infrastructure competition, i.e. not to destroy incentives for either research and development activities or innovations and investments on the facilities level. This is the only way to reach a balance between service and infrastructure competition.

Since unregulated tariffs would allow excessive profits to the owners of monopolistic bottlenecks, the instrument of price-cap regulation should be introduced. Its major purpose is to regulate the level of prices, taking into account the inflation rate (consumer price index) minus a percentage for expected productivity increase. It seems important to restrict such price-cap regulation to those subparts of telecommunications networks where market power due to monopolistic bottlenecks creates a regulatory problem. In all other subparts of telecommunications networks price-setting should be left to the competitive market forces.

Concentrating on the regulation of the “last mile” does indeed constitute the one remaining task of a tailored sector-specific market power regulation. Non-discriminatory access to this bottleneck facility must be guaranteed for all competitors.

Price cap regulation in the monopolistic bottleneck area and accounting separation are sufficient for disciplining the remaining market power and ensuring the discrimination-free access of service providers in the long-distance markets to the complementary local networks. Detailed input regulation contradicts the spirit of a price cap regulation. One of the main reasons for limiting the scope of regulation to the level of output prices is to keep the information needs of the regulatory authority as low as possible. This will not only reduce regulatory work, but also create entrepreneurial incentives to seek out cost savings and in-

novative price structures. The decisive advantage of price cap regulation over individual rate approval procedure lies in the fact that the former does not impede the entrepreneurial quest for innovative price structures (cf. Beesley, Littlechild, 1989; Knieps, 2001a, p. 654).

### **3. The advantages of flexible wholesale and retail pricing structures**

#### **3.1 Competitive prices between stand-alone costs and short-term marginal costs**

A salient feature of the telecommunications sector (even after the full opening of the market) is the fact that economies of scope and scale play a significant role in the provision of services. Competitive prices must therefore be allowed to freely find their level between stand-alone costs and short-term marginal costs, depending on demand. An abuse of market power cannot be said to exist in this case. Upper limits for interconnection fees on the basis of uniform mark-ups on incremental costs are not consistent with the new competitive environment. Rather, the short-term marginal costs (variable costs) represent the short-term price floor without constituting predatory pricing. Long-term incremental costs, on the other hand, which also contain the relevant fixed costs, represent the long-term price floor (cf. Vickrey, 1985; Willig, Baumol, 1987).

#### **3.2 Market-oriented allocation of overhead costs**

The coverage of product group-specific joint costs and company-specific common costs must be determined in accordance with the prevailing demand conditions (price elasticity of demand). The information required for this purpose is spontaneously generated in the market. Therefore, the resulting allocation of overhead costs may be determined only *ex post*. Administrative allocation procedures established by the regulator *ex ante* are fundamentally incapable of anticipating the overhead cost allocation which should be an endogenous result of the market process. The information deficit of the regulatory authorities is too great, especially considering the substantial variation of the relevant demand elasticities over time (time of day, season, etc.) (cf. Knieps, 2001b, p. 44).



Economies of scale and scope are due to bundling advantages on telecommunications infrastructure (wholesale level) and on telecommunications retail services. As a consequence flexible wholesale and retail pricing structures are required:

- Competitive prices between stand-alone costs and short-term marginal costs
- Market-oriented allocation of overhead costs
- Welfare-increasing price differentiation potential

As a result we obtain:

- pricing structures can not only be explained by marginal or incremental cost, but entail different mark ups, depending on the relevant price elasticities of demand for the individual products;
- pricing structures on the retail level may not mimic the pricing structures on the wholesale level.

### **3.3 Welfare-increasing price differentiation potential**

It is important to note that strategies of price differentiation are not only beneficial from a welfare point of view, but are also compatible with the principle of non-discriminatory access conditions. Moreover, the principle of price differentiation does not contradict the criterion of cost-orientation of interconnection prices. In order to cover stand-alone costs of network services market-driven mark-ups on incremental costs are unavoidable in order to take into account product-group specific as well as enterprise-specific common costs (cf. Knieps, 1998, p. 68).

Both at the European and the national level there is a requirement for discrimination-free access to monopolistic bottlenecks at non-discriminatory prices. These regulations, however, may not be allowed to restrict the diverse welfare-increasing potential of price differentiation in the telecommunications markets.

As already indicated (short-run) variable costs represent the short-term price floor and (long-run) incremental costs the long-term price floor: in addition both

the product group-specific joint costs and the company-specific common costs (overhead costs) must be covered (viability condition). Therefore a substantial price differentiation potential exists which should be exploited for the benefit of consumers, regardless of the underlying market form selected. In order to evaluate different price differentiation schemes in economic terms, the schemes must be compared in their entirety. It is inadmissible to infer general conclusions about the welfare effects of price differentiation from arbitrary comparisons of individual prices. In particular, a price differentiation required to ensure the survival of the network operator must not be confused with anti-competitive discrimination. In fact, it is the instrument of price differentiation that first allows for undistorted infrastructure and service competition.

The welfare-increasing effects of price differentiation should not be impeded by asymmetrical regulatory intervention. The development of innovative rate structures must be an option open to all providers. One should not hamper the development of new rate structures by extending the requirement for rate approval by the regulatory authority to cover new rates as well. All market participants should have the opportunity of providing optional rates, multiple rates, non-linear price structures, etc.

The advantage of optional two-part tariffs is that they provide users with incentives to reveal information about their individual willingness to pay (for instance whether it is worth their while paying a specific fixed admission charge), thereby assigning themselves automatically to a specific user group.

From an economic point of view, the prime advantage of two-part tariffs over one-part tariffs is that the objective of cost recovery can be achieved without greatly deterring demand by charging substantial mark-ups on the variable price. Of particular significance for the welfare-enhancing impact is the growth in the market volume (additional traffic) typically associated with two-part tariffs. Users with a sizeable demand for capacity will pay a fixed charge and make all the more intensive use of the capacity thanks to the low variable price, whereas users with a small demand, for whom it is not worthwhile paying the fixed rate charge, will – provided there is the option of the two-part tariffs – likewise be

able to use the capacity, albeit at a higher variable price. In this way, no user group is discriminated against (cf. Willig, 1978).

At this point, it should be emphasized that there is no single optimum tariff scheme that a central agency could aspire to achieve. Rather, for every two-part tariff system, a welfare-enhancing three-part tariff system can be developed, for every three-part system a four-part system, etc. The limit of a more far-reaching differentiation is reached when the transaction costs for the pricing scheme become too high, i.e. when the costs of avoiding arbitrage exceed the advantages of a more refined tariff system. However, this limit cannot be defined uniformly, but depends on the local circumstances prevailing in any given case. As a consequence, a policy framework for bottleneck regulation is necessary that does not hamper the search for innovative tariff structures (cf. Knieps, 2000).

#### **4. The obstacles of regulating wholesale/retail pricing structures**

There are several rules which are discussed in the current regulatory context, focussing on upstream-downstream relations. The problem with long-run incremental costs (LRIC) in determining access prices is that they preclude infrastructure owners from earning the mark-ups necessary to cover the stand-alone costs of their infrastructure. The symmetric treatment of infrastructure owner and service provider is disturbed and incentives are created to favour one's own affiliate by biasing access against (downstream) competitors; moreover, incentives to invest in infrastructure may disappear.

A proportional sharing rule distributing the common costs in proportion to the incremental costs, such that the relative mark-up is equal, may create incentives for inefficient bypass of interconnection facilities.

The efficient component pricing rule allows the incumbent to charge access prices equal to his opportunity costs in the competitive segment. The basic idea behind this rule is that an entrant to the competitive segment should only enter if he is more efficient. In the absence of an efficient regulation of final products this rule provides no mechanism for forcing retail prices to the competitive level and does not provide incentives for minimizing costs in the bottleneck segment.

If this rule was applied in such a manner that the bottleneck owner's "opportunity costs" of providing access also included monopoly profits as part of its foregone opportunities in the competitive segment, the market power of the bottleneck owner would even be cemented. Although the efficient component pricing rule, at first glance, looks like an appealing regulatory rule for disaggregated regulation, it is only a partial rule requiring additional end-to-end regulation (cf. Knieps, 1997a, p. 367).

Global regulation covers the whole of the business. It does not focus explicitly on those particular services where monopoly power and public concern are greatest. A global price cap implicitly makes no difference between access services from bottlenecks and services from the competitive segment. Under a global price cap the bottleneck owner has no incentives to favour its own downstream department. Its major disadvantage, however, is that it extends the regulatory basis to competitive segments, thus raising the regulatory costs and resulting in overregulation, and thereby contradicting disaggregated bottleneck regulation.

The regulators should not be allowed to extend the regulatory base (beyond the monopolistic bottleneck) even if such endeavour would reduce static efficiency distortions of Ramsey-pricing.

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