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The three criteria test, the essential facilities doctrine and the theory of monopolistic bottlenecks

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Abstract:

The focus of this paper is on regulatory reforms towards rule-based regulation. The theory of monopolistic bottlenecks is contrasted with the concept of essential facilities and the so-called three-criteria test. It is important to differentiate between efficient private bargaining of access conditions among competitive networks and regulated third party access to monopolistic bottlenecks. Regulation of infrastructure access charges should be limited exclusively to price-capping. In order to avoid the problem of extensive discretionary behavior of regulatory agencies a disaggregated regulatory mandate should be implemented.

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1. Introduction

Since the abolishment of legal entry barriers in network industries effective competition became a key topic in regulatory economics. When the debate on the possibilities of privatization and deregulation started in the late 1970s and early 1980s, the primary focus was on active and potential competition in the markets for network services. Whereas the focus of the theory of contestable markets concentrates on the role of potential competition with identical cost functions for both active and potential competitors (Panzar, Willig, 1977), competition in the markets for network services does not only mean potential competition. As soon as competition works, the behaviour of markets for network services becomes more complex than is assumed in the model of the theory of contestable markets. Examples may be strategies of product differentiation, price differentiation, creation of goodwill etc. However, even strategic behaviour on competitive markets for network services should not lead to the opposite conclusion to regulate these markets. In contrast, the goal of the disaggregated regulatory approach is the development of the preconditions for effective competition on the markets for network services.

The focus of this paper is on the division of labor between competition policy and regulatory interventions. Whereas competitive policy aims to intervene once anti-competitive conduct has been identified, the focus of sector-specific regulation is on ex-ante regulatory provisions before an abuse of market power has taken place. Ex-ante regulation is only justified in those kinds of network areas where a systematic abuse of market power is likely in the absence of regulation.

The potentials of phasing out sector-specific regulation are of particular relevance within the telecommunications sector (Knieps, 1997). In 1999, an EU review started with the aim of maximising the application of general European competition law, the minimisation of sector-specific regulation, a rigorous phasing out of unnecessary regulation and the introduction of ‘sunset’ clauses. Nevertheless, the unspecific regulatory obligations based on the EU directives in the

1999 review package – in particular the Framework Directive[1] and the Access Directive[2] – resulted in a tangle of contradictory decisions and statements (Knieps, 2005, 78). The Commission's guidelines[3] do not present a clear and economically well-founded concept for localising network-specific market power. Criteria like relative market share, financial strength, access to input and service markets and so forth can only serve as a starting point for evaluating the existence of market power, but the development of an ex ante regulatory criterion creates a need for a more clear-cut definition of market power. Nevertheless, in the meantime the process of phasing out sector-specific regulation gains increasing momentum (Knieps, Zenhäusern, 2010).

In the following the question is considered, whether and to what extent sector-specific regulation is essentially a transitional phenomenon, or whether important differences can be found between the individual sectors. In this respect, a distinction needs to be drawn between the normative and the positive theory of regulation. The normative theory of regulation stipulates criteria that can be used to judge which network areas need to be regulated (regulatory basis), which instruments can achieve this most effectively (regulatory instruments), and when regulation needs to be abandoned. These criteria need to be applied symmetrically across the network industries. They should therefore not apply only to one single sector but to all network sectors. The positive theory of regulation analyzes the development, modification and elimination of sector-specific regulation. The regulatory mandate is defined by transferring regulatory competencies from a legislative body to a regulatory authority.

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[1] Directive 2002/21/EC of the European Parliament and of the Council of 7 March 2002 on a common regulatory framework for electronic communications networks and services (Framework Directive), *OJ* 2002 L 108/33.

[2] Directive 2002/19/EC of the European Parliament and of the Council on access to, and interconnection of, electronic communications networks and associated facilities (Access Directive), *OJ* 2002 L 108/7.

[3] See Commission guidelines on market analysis and the assessment of significant market power under the Community regulatory framework for electronic communications network and services, *OJ* 2002 C 165/6-31.

2. Regulatory reforms towards rule-based regulation

2.1 The theory of monopolistic bottlenecks

The theory of monopolistic bottlenecks is central to the disaggregated regulatory approach in terms of locating network-specific market power to determine the minimum basis for regulation (Knieps, 1997, 327-331). The aim is to come up with a coherent basis for access regulation consistent with network economics which can be applied to all network sectors and which regardless of historical or institutional quirks provides justification for ex ante regulatory measures. For the remaining competitive network areas the application of general competition law is sufficient.

The conditions governing a monopolistic bottleneck are met when:

(1) a facility is necessary for reaching customers, i.e. if no second or third such facility exists, in other words if there is no active substitute. This is the case when due to economies of scale and economies of scope a natural monopoly exists and a single provider is able to make the facility available more cheaply than several providers;

(2) at the same time the facility cannot reasonably be duplicated as a way of controlling the active provider, in other words when there is no potential substitute. This is the case when the costs of the facility are irreversible.

Consequently, network-specific market power is only to be expected in those parts of networks which are characterised by a natural monopoly and irreversible costs. Although irreversible costs are no longer relevant for the decision-making of the established enterprises, potential competitors must decide whether to invest in such irreversible costs or not. Established firms therefore have lower decision-relevant costs than their potential rivals. This means there is room for strategic behaviour, with the result that inefficient production or profits no longer necessarily enable newcomers to enter the market. The market power of the firm that enjoys such a monopolistic bottleneck is therefore stable, even if all

market players are fully informed, all users are prepared to switch to another provider, and small price adjustments have an effect on demand.

2.2 Monopolistic bottlenecks and the concept of essential facilities

When applying rule-based regulation in order to discipline network-specific market power, the concept of essential facilities is of crucial importance. This concept suggests the connection to the essential facilities doctrine, derived from US antitrust law, which is meanwhile being increasingly applied in European competition law also. The doctrine states that a facility is only to be regarded as essential if the following conditions are fulfilled: entry to the complementary market is not effectively possible without access to this facility; it is not possible for a supplier on a complementary market to duplicate this facility at a reasonable expense, and there are also no substitutes (Areeda, Hovenkamp, 1988).

In the context of the disaggregated regulatory approach the essential facilities doctrine is no longer applied case by case – as is common in US antitrust law – but to an entire class of cases, namely, monopolistic bottleneck facilities characterised by a combination of natural monopoly and irreversible costs in the relevant range of demand. The design of non-discriminatory conditions of access to essential facilities must be specified in the context of the disaggregated regulatory approach. It is important in this context to view the application of the essential facilities doctrine in a dynamic context. Therefore, an objective for the formulation of access conditions must be to not obstruct infrastructure competition by regulatory micro-management, but rather create incentives for the symmetric development of infrastructure and service competition by rule-based regulation.

2.3 Monopolistic bottlenecks and the three criteria test

In the context of European telecommunications policy, in February 2003 the European Commission recommended the so-called three criteria test. This test

seems to substantiate the requirements for regulatory intervention. The Commission summarises the three criteria as follows:

> "The first criterion is the presence of high and non-transitory entry barriers whether of structural, legal or regulatory nature. … [T]he second criterion admits only those markets, the structure of which does not tend towards effective competition within the relevant time horizon. … The third criterion is that application of competition law alone would not adequately address the market failure(s) concerned".[4]

Thus, it can be concluded that within the EU telecommunications regulatory framework an intention to avoid over-regulation with respect to new markets can be observed. However, an economic approach to the remaining need for sector-specific regulation is still missing. In order to provide a consistent regulatory framework, the three criteria in the Commission's Recommendation of February 2003 have to be rewritten in economic terms, applying the theory of monopolistic bottlenecks (Blankart, Knieps, Zenhäusern, 2007, 423 ff.). After entry liberalization of network industries, high and non-transitory entry barriers are only present, when a monopolistic bottleneck infrastructure exists. Markets do not tend towards effective competition within the relevant time horizon as long as a natural monopoly in combination with sunk costs is stable over a foreseeable future without phasing out potential. The question whether the application of competition law alone would adequately address the market failure(s) concerned raises the question whether ex ante or ex post intervention is more efficient.

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[4] Commission Recommendation of 11 February 2003 on relevant product and service markets within the electronic communications sector susceptible to *ex ante* regulation in accordance with Directive 2002/21/EC of the European Parliament and of the Council on a common regulatory framework for electronic communication networks and services (2003/311/EC), *OJ* 2003 L 114/45-49, recital 9.

3 Disaggregated monopolistic bottleneck regulation

3.1 The need to regulate third party access

It is important to differentiate between efficient private bargaining of access conditions among competitive networks and regulated third party access to monopolistic bottlenecks. Competition fulfils the function of mitigating market power. It can be expected that private bargaining of access conditions between the different network owners under competition will lead to economically efficient solutions. Strategic behaviour can be excluded, because every bargaining partner can easily be substituted by an alternative (potential) network carrier. Private bargaining solutions on access conditions among network carriers under competition are not only beneficial for the carriers themselves but in particular improve the market performance of the network services provided to the customers. Independent of the market size of the carriers involved, inefficient suppliers of access services are rapidly confronted with strongly decreasing market shares due to the strong pressure of alternative (potential) network service providers.

In order to allow active and potential competition on service markets non-discriminatory access to monopolistic bottleneck infrastructures is necessary. To the extent that a monopolistic bottleneck is observable, ex ante regulation should be in place; otherwise the evolution of service markets will be hampered. Innovative ways of access to existing bottlenecks should be guaranteed in order to allow the evolvement of new service markets.

There remains the problem that monopolistic bottleneck infrastructures may be involved. Illustrative examples are railway systems, where competitive suppliers of transportation services need access to the tracks and railway stations. In contrast to rail services, railway tracks must be regarded as a natural monopoly with sunk costs, which cannot be shifted to another market. Therefore, if a potential competitor would plan to enter with a parallel track, the incumbent railway owner could reasonably claim to reduce his tariffs to short-run variable costs. As soon as a railway network is completed, one therefore cannot expect further en-

tries with additional tracks. The decision-relevant costs of entry include the costs of tracks, which could not be covered by tariffs based on short-run variable costs. In contrast to the supplier of rail services, the established track owner has obtained market power. A similar situation holds for other network infrastructures, such as airports, electricity and gas networks.

In contrast to access to competitive networks, the market power involved in monopolistic bottlenecks fundamentally disturbs such bargaining processes. One extreme alternative could be (vertical) foreclosure of competitors on a complementary service market. Such a tying can be used as a method of price discrimination, enabling a monopolist to earn higher profits. Another way of abusing market power within the bargaining process on access conditions is to provide insufficient network access quality or require excessive access charges. Examples for insufficient access quality may vary within the network sectors under consideration.

So far the role of regulation has been considered from the perspective of intramodal competition. The question arises to what extent effective intermodal competition, e.g. the entry of low cost airlines, could restrict the market power of Deutsche Bahn AG (vgl. Bender, Götz, Pakula, 2010). There is no doubt that intermodal competition by trucks, cars, airlines can limit to some extent the profit potential of a railroad infrastructure provider. However, the goal of these new railway regulations in Germany is to stimulate active competition on the railroad service markets. Newcomers' entry into the market for rail services broadens the range of services offered extensively as well as widening consumers' choices in terms of price and service quality. Opportunities for new entrants include the detection and exploitation of new train service networks, such as the development of a Europe-wide express service for passengers and goods based on a high-performance, computer-assisted logistics system. Mandatory access requirements to tracks are based on the intramodal perspective of train service companies; the decisive factor is the need for complementary service providers to have non-discriminatory access to the monopolistic railway infrastructure.

3.2 Limiting regulation to monopolistic bottlenecks

The effect of a total refusal of access to monopolistic bottleneck facilities can also be achieved by providing access only at prohibitively high tariffs. This shows that an effective application of the essential facilities doctrine must be combined with a suitable regulation of access conditions to bottlenecks with regard to price, technical quality, and timeframe. However, the fundamental principle of such a regulatory policy should be to strictly limit regulatory measures to those network areas where market power potential does indeed exist. A regulation of access tariffs to monopolistic bottlenecks must therefore not lead to a regulation of tariffs in network areas without market power potential. There are two further issues that have to be taken into account: On the one hand, the existence of competition on the service level should not lead to the conclusion that there is no market power potential on the upstream network level, as long as the latter fulfils the criteria of a monopolistic bottleneck. On the other hand, there is the question of the minimum regulatory depth necessary to guarantee non-discriminatory access to essential facilities, without, however, disproportionately interfering with the property rights of the regulated firm.

3.3 Price-cap regulation of access charges

The reference point for regulatory rules concerning access charges should be the coverage of the full costs of the monopolistic bottleneck (in order to guarantee the viability of the facility). In particular, when alternatives to bypass essential facilities are absent, the cost-covering constraint may not be sufficient to forestall excessive profits. Therefore the instrument of price-cap regulation should be introduced (Beesley, Littlechild, 1989). 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 the bottleneck components of networks, where market power due to monopolistic bottlenecks is really creating a regulatory problem. In other subparts of networks price-setting should be left to the competitive markets.

Regulation of infrastructure access charges should be limited exclusively to price-capping. The basic principle underlying price-capping regulation is that price levels should be regulated in areas where there is network-specific market power. The benefits of price-capping in terms of efficiency improvements and future investment activities can only unfold, if price-capping is not combined with input-based profit regulation. Individual pricing agreements lead to over-regulation which is harmful to competition.

The question remains whether regulators should also be allowed to prescribe pricing rules focussing on tariff structures within monopolistic bottlenecks. There are serious arguments for regulators to refrain from detailed tariff regulation. In the first place, firms should have the flexibility to design (Pareto superior) optional tariff schemes (Willig, 1978). Pricing rules prescribed by the regulator could induce inefficient bypass activities. For example, a first pricing rule could be access tariffs according to the long-run average costs of the essential facility. Since in such a case a differentiation among different user groups according to different price-elasticities is not possible, incentives for inefficient bypass of the bottleneck facility may be created for certain user groups. A second pricing rule would be access pricing according to the Ramsey pricing principle. Mark-ups on the marginal costs of access to the monopolistic bottlenecks are chosen according to the elasticity of demand for network access in order to maximize social welfare given the cost-covering constraint. However, Ramsey prices could become unsustainable, even if applied strictly to monopolistic bottlenecks. The technological trend towards the unbundling of monopolistic bottleneck components increases the possibilities for inefficient bypass. Secondly, the danger arises that regulators extend the regulatory basis to include the competitive subparts of networks. From the point of view of increasing static (short-run) efficiency such behaviour could even be justified by welfare theory. It is well known that efficiency distortions caused by applying Ramsey pricing can be reduced by extending the regulatory basis. Nevertheless, such an endeavour would in fact mean a return to fully regulated networks, including price and entry regulation of the competitive subparts. As such, this would not be a suitable response to deregulation (Damus, 1984).

Regulatory authorities should not force firms to apply specific pricing rules, such as Ramsey prices or two-part tariffs, as this would hamper their quest for innovative pricing systems. It is always possible that better rules will evolve in the future. The design of pricing rules should be part of the decision-making process of the firms.

4. Towards a disaggregated regulatory mandate

The statutory regulatory framework is defined within the political process in the form of laws and regulations. Sector-specific regulation is implemented by the authorities appointed by the legislator. When transferring regulatory competencies from a legislative body to a regulatory authority, the regulatory authority's future scope of responsibilities is also defined. This involves a regulatory mandate between the legislator (principal) and the regulatory authority (agent). The regulatory authority can be granted varying competencies in this respect (Knieps, 2007, p. 182).

European telecommunications regulation is a clear example of how a vague regulatory mandate can systematically lead to overregulation. As has been pointed out, the phasing out process of sector-specific regulation gains increasing momentum. Nevertheless, due to the vague regulatory mandate of the EU regulatory framework the EU Commission gained a large potential of regulatory discretion. The markets which the Commission classified as potentially in need of regulation include service markets such as international and domestic telephone calls, leased lines and transit services that are undoubtedly competitive. The EU Directives are an ideal breeding ground for varied forms of discretionary intervention, depending on the particular influences of the interest groups involved (Knieps, 2005, p.78) .

In order to avoid the problem of extensive discretionary behavior of regulatory agencies the following disaggregated regulatory mandate should be implemented. The legislator limits the regulatory authority's discretionary behavior by means of the disaggregated regulatory mandate. Firstly, regulation is limited to

areas with network-specific market power. End-to-end regulation, which also includes competitive areas, is incompatible with this principle. Secondly, when the network-specific market power disappears in a network area, say as a result of technical progress, regulation of this subarea must also be ended. Thirdly, non-discriminatory access to the monopolistic bottleneck facilities must be ensured. Incentive regulation must be restricted to monopolistic bottleneck components. The disaggregated regulatory mandate also provides a binding restriction on the regulatory authority's competencies and consequently reduces its possibility of opportunistic behavior.

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