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The need for a new approach to regulating fixed networks

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ABSTRACT

The increasing danger of excess capacity in the regulated fixed networks calls into question the established long-standing pricing standards for wholesale services based on forward-looking long-run incremental costs (FL-LRAIC). Within the EU "Regulatory Framework for Electronic Communications and Services", the FL-LRAIC standard has worked quite well in expanding markets, although even there price-squeeze problems have appeared. In contracting markets the price-squeeze issue, however, becomes paramount and lower prices both at the wholesale and retail levels would be efficient. Because both expansion and contraction could be relevant in the future, this paper suggests an optional approach based on the wholesale price formula $p = \min\{FL\text{-}LRAIC, Retail\text{-}Minus\}$ with an optional replacement of per-minute charges by capacity-based access charges (CBC). This will generally protect alternative competitors against price-squeeze while at the same time allowing the fixed-network incumbent full downward price flexibility. It also protects alternative competitors and end users against excessively high prices.

1. Introduction

In 1997/98 the European Union (EU) liberalized its markets for fixed-network voice telephony by granting alternative operators non-discriminatory access to regulated inputs from the incumbent operator (the formerly state-owned monopoly provider and the only operator with a nation-wide network). The concrete design of access regulation has been a cornerstone of ex ante regulation and has provoked intense discussions since then. Access regulation has from the beginning featured regulated access prices that were based on the assumption of expanding networks. This occurred in spite of the fact that many core voice and data networks (that are relevant for all termination and origination charges in fixed networks) have been characterized by excess capacity during most of last decade.[1] More recently, in many member states the mobile sector has begun to exert increasingly competitive pressures ("inter-modal")[2] on fixed voice telephony markets ("Fixed-to-Mobile Substitution"=FMS), exacerbating any pre-existing and creating new excess capacities. Indeed, with regard to the mobile sector (2G and 3G) one observes persistent growth at European penetration levels to 121.9% in 2009 (European Commission, 2010a, p. 10) whereas fixed-line penetration has been decreasing steadily for several years.[3] As a strong example, in Austria after a large decline in fixed line penetration the ratio between fixed telephone lines and mobile users is currently almost 1:5

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[1] Jahn and Prüfer (2008), citing Telegeography according to whom significant growth of capacity demand has been substantially overcompensated by growth in network capacity.

[2] In turn, competition stemming from infrastructure or service-based fixed network operators shall be called "intra-modal" below.

[3] See OECD (2009, p. 20, 73, 77), or Schäfer and Schöbel (2006, p. 6–87) for international case studies.

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and for fixed to mobile telephone usage approximately 1:3. About a third of the EU countries are in a roughly similar situation (European Commission, 2010b, p. 26; Vogelsang, 2010a).

Although there is a remarkable average volume decline in fixed-line telephony in many countries, one has to keep in mind that substitution patterns have to be distinguished among market segments. In general, FMS is strongest with regard to national calls. In contrast, the reduction for fixed-narrowband subscriber access has been significantly smaller for calls, although this does not necessarily translate into less excess capacity in the access network.[4] FMS does not under all circumstances translate into excess capacity in fixed core networks because mobile carriers use fixed networks for carrying traffic between base stations and because fixed networks fill capacities with data traffic from increased broadband usage. However, given the pre-existing excess capacities, underutilization has to be suspected for large parts of networks and definitely for abandoned local loops, which cannot be used for wireless/mobile access.

Consequently, fixed networks have been subject to actual or imminent excess capacities with access prices still regulated at average costs in most EU member states.[5] In this situation, however, the welfare-optimal retail call prices of the incumbent often appear to be below the regulated (cost-oriented) access price, because wholesale regulation is based on the average, and not on the marginal, costs of access. With access prices fixed at a long-run average cost level, which is significantly above short-run marginal costs in communications, regulated fixed-network operators also lack pricing flexibility for inter-modal competition at the retail level. This holds for alternative competitors because they have to depend on inputs for which they pay a too high price and for incumbents because they have to avoid price-squeeze accusations and therefore are de facto subject to minimum-price regulation at the retail level. This might then further reinforce FMS patterns. As a result, current regulation provides wrong signals by forcing the incumbent (and entrants) to set retail prices above the desired level and thereby not allowing them to compete against mobile services on equal terms. Accordingly, some scholars and practitioners recently advocated regulatory changes in access pricing.[6] Although there is a large literature on access pricing in network industries,[7] there has been no systematic attempt at evaluating regulated (communications) markets which exhibit non-temporary over-capacities. The main research questions therefore are: (i) should national regulatory authorities (NRAs) maintain a concept of access pricing based on long-run average costs in markets where non-temporary over-capacities exist and, if not, (ii) what is the best alternative form of access regulation based on a set of pre-defined criteria. This form of regulation will have to take into consideration that regulators will generally be unable to determine the extent and duration of excess capacity. Finally, one also has to consider (iii) the impact on retail competition, since wholesale and retail markets are inherently interrelated via regulations and underlying competition problems. In investigating these questions the EU framework is taken as the main point of departure, but the analysis extends more generally to any future regulation of telecommunications markets where FMS is intense. The latter in turn not only raises the question of future access regulation in fixed networks, but also brings together regulation of wireline and wireless markets at the wholesale level.

This paper aims at deriving clear policy implications taking account of practical feasibility. It covers origination and termination services as well as unbundled local loops (ULL). Therefore, the paper also refers to the activities of alternative fixed-linked access providers (most notably, ULL and cable operators) who are confronted with the same market situation as the incumbent but with typically less intense ex ante obligations. Also, one has to distinguish the different units of measurement of ULL (per access loop) and origination and termination services (per-minute). As will be seen, the units of measurement might be of considerable relevance in the future design of access regulation.

If FMS became sufficiently established with respect to all relevant retail segments, then any kind of remaining ex ante regulation could ultimately be called into question (apart from termination issues, which in calling-party-pays systems continue to call for regulation). Currently, however, the customer shift from fixed to mobile is not associated with sufficiently higher demand elasticities faced by fixed-line incumbents to justify their full deregulation.[8] This would for instance occur if the fixed-network customers were switching because they prefer mobility so much that marginal price changes have no influence. In this case, the fixed-line incumbent could pursue a limit-pricing strategy (or cash cow strategy) and may even want to increase prices if, for example, he is left only with customers unwilling to switch. Therefore, alongside the discussion of optimal access regulation market-specific inferences about FMS and the actual state of inter-modal competition appear to be cornerstones on which future regulatory judgements should be based. In the current paper deregulation is not considered to be an option, since in the medium term there will be hardly a deregulation of all wholesale markets. Thus, for the price regulation of single wholesale markets the question of the best alternative will remain relevant.

[4] For an overview of empirical studies see Stumpf (2007, p. 14-15) and Vogelsang (2010a).

[5] Excess capacity in parts of fixed networks may also be generated by the switch to all-IP networks, for example, because packets need less capacity than voice channels.

[6] See Kruse (2007, p. 110-115) or IRG (2005). Briglauer, Götz, and Schwarz (2008, in press) show that the current cost-based access regime will lead to a margin-squeeze for fixed-network operators if inter-modal competition is intense.

[7] For an extensive view see the surveys of Armstrong, Doyle, and Vickers (1996), Laffont and Tirole (2000) and Armstrong (2002), who use a theoretical framework, and Vogelsang (2003), who points out the policy implications of these results. More recent work focused on various alternatives to cost-based access pricing, such as Calzada (2007) and Kennet and Ralph (2007) discussing capacity-based versus time-based interconnection charges or Goncalves (2007) discussing the adequacy of retail-minus as an alternative to cost orientation in determining bitstream access charges.

[8] Almost all demand estimations cited in the survey by Vogelsang (2010a) have both fixed line subscription and fixed line usage clearly in separate markets. As an exception Briglauer, Schwarz, and Zulehner (in press) clearly show fixed line subscription (with a long-run demand elasticity of 0.25) to be a separate market but not fixed line calling (long-run elasticity 1.37).