



A unified framework for open access regulation of telecommunications infrastructure: Review of the economic literature and policy guidelines

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ABSTRACT

The concept of open access (OA) plays a central role in the ongoing academic and political debate on the appropriate regulatory framework for next-generation access networks in Europe. However, clear policy conclusions on the effect of OA regulation were usually precluded by a fundamental lack in common understanding what actually defines an OA policy and along which dimensions of OA regulation can be structured. This paper attempts to reconcile these diverse views by offering a definition and a conceptual framework by which OA endeavors can be identified and uniquely classified. The framework encompasses, among others, mandated OA regulation of vertically integrated firms, public-sector participation, co-investments, and OA in the context of vertical separation. Along this framework, the extant economic literature is surveyed with regard to aspects of competition and social welfare, investment and innovation, as well as practical and legal issues. Based on these insights, a policy guideline is developed that shall assist policy makers in identifying the appropriate OA scenario for the regulation of telecommunications infrastructure.

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1. Introduction

With the Digital Agenda 2020 the European Commission has set ambitious targets for its member states and the European telecommunications industry. The requirements stipulate that until 2020 every household in the EU should be covered by a broadband connection offering at least 30 Mbit/s of bandwidth. Moreover, a penetration rate of above 50% is envisioned for 100 Mbit/s connections. In contrast to the ambitious political goals, the current implementation status is far behind schedule. For instance, by mid 2013 only 2% of European households have already subscribed to a connection offering 100 Mbit/s or more (European Commission, 2013b). Thus, large investments are needed to upgrade the existing broadband networks to the desired level. Especially, the deployment of next-generation access networks (NGAN) represents the most substantial share of these investments.

At the same time, European network operators experience declining revenues and profits facing strong competition by alternative infrastructures and IP-based services. In particular, former incumbent operators have criticized the current regulatory regime as heavy-handed and hostile to any investment strategy, portraying the European regulatory framework as the underlying root cause for the industry's bad performance (ETNO, 2013).

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In July 2012, Commissioner Neelie Kroes announced her plan to enhance the broadband investment environment signaling her willingness to lighten the regulatory burden. The industry and various analysts have viewed this promise as a paradigm shift of the European Commission's stance towards access regulation. While it will likely not lead to a complete withdrawal of the regulatory framework, the balance between static and dynamic efficiency goals is going to be readjusted. Addressing the slow uptake of next-generation networks in Europe compared to Asian countries and the US, Kroes declared establishing an investment-friendly environment as the primary goal. While only a year before, the Commission postulated strict unbundling rules based on cost-based pricing, Kroes now advocated in favor of an approach based on non-discrimination rules. In addition, she promised to abstain from further price cuts of wholesale access charges to legacy copper networks and to establish a harmonized stable price floor across Europe (Kroes, 2012).

The first action of the European Commission in light of this announcement is the recommendation on non-discrimination and costing methodologies, which was published in September 2013. The recommendation outlines the conditions that would allow European regulators to replace cost-based price regulation with non-discrimination obligations, even in the presence of significant market power (European Commission, 2013a). During the consultation process that followed the draft recommendation, discussions have evolved around the implementation of non-discrimination. Most of all, contrary views have been stated on what actually defines a level playing field between the incumbent's subsidiary and competitors, besides a uniform wholesale price. In particular, network operators oppose an *equivalence of input* regime that prescribes equality in terms of the used infrastructure and processes. Instead they argue in favor of *equivalence of output* that abstracts from the actual infrastructure and is concerned with equal functionality. Thus, the debate illustrates the difficulties and conflicts that are hidden behind the intuitive notion of non-discrimination.

Previously, in Europe the idea of non-discriminatory access has been discussed under the notion of open access (OA) and in the context of public-sector participation (European Commission, 2009). It has frequently been stated that OA could provide a balance between static and dynamic efficiency (e.g., Klumpp & Su, 2010; OECD, 2013). Yet, OA has been used to describe a very diverse set of access concepts. While there is no explicit definition given by regulators or legislators, the term has been used in various contexts of access regulation, state aid and voluntary provision of wholesale access provision. Despite the widespread use, there is no common understanding of the term among scholars, regulators and industry practitioners. Therefore a clarification of the actual OA notion and the related concept of non-discrimination is needed. In particular, a structured evaluation of the diverse applications is required in order to allow for precise policy conclusions that can guide the search for a new European regulatory framework.

With regard to this ongoing discussion, this paper is concerned with the application of OA at the network infrastructure level as well as with current regulatory issues and use cases that have influenced the European debate. At the same time, the history of OA as a regulatory remedy goes back for several decades and encompasses applications in telecommunications, but also in other industries such as the media sector. Policy debates about appropriate access provisions within the US have coined and significantly shaped the understanding of the OA principle. While covering the details of these historic applications is beyond the scope of this work, information drawn from the US is included when it can be applied to and interpreted in the European NGAN context. Moreover, the paper does not explicitly address the current Net Neutrality controversy (which is, e.g., surveyed by Krämer, Wiewiorra, & Weinhardt, 2013) nor a comparison of both concepts (which is, e.g., discussed by Hogendorn, 2007). However, the proposed framework may serve as the basis for further refinements and extensions that focus particularly on quality of service (QoS) characteristics and requirements in access relationships among network operators as well as between network operators and application services providers. On top of the telecommunications network infrastructure, digital convergence is likely to raise new questions whether traditional network concepts should be applied to higher layers of the value chain. Therefore, the conclusion of this paper points to potential applications of OA at the services level of the Internet value chain.

Along these lines, the remainder of this paper is structured as follows: In Section 2 the various notions of OA that were proposed by different stakeholders are presented and subsequently reconciled into a unified definition. Moreover, a conceptual framework is developed that allows for the classification of the diverse OA application scenarios. Based on this classification, in Section 3 the extant economic literature is reviewed and policy implications are derived for each OA application scenario. Section 4 relates the various OA applications to each other and presents an overreaching policy guideline for the OA regulation of NGAN. Finally, Section 5 concludes by summarizing the main results and identifying possible limitations and extensions.

2. The concept of open access

There is a fundamental lack in common understanding what actually defines an OA policy and along which dimensions of OA regulation can be structured. For example, while OA has been used to describe access obligations including price regulation in the US (Farrell & Weiser, 2003; Speta, 2000), the European Commission's understanding of OA refers to mandated access in the case of state aid (European Commission, 2013c), and on the other end network operators have put emphasis on voluntary access (Deutsche Telekom, 2011).

In the following, the definitions of OA proposed by the European Commission, the German telecommunications industry, and proponents of the open access network model are presented. The definitions indicate that there is common ground in referring to non-discrimination as the central criterion, but they also illustrate that stakeholders highlight different additional aspects. As mentioned above, these aspects differ with respect to how open access terms shall be reached

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