

# Chapter I

## Static and Dynamic Efficiency in the European Telecommunications Market: The Role of Regulation on the Incentives to Invest and the Ladder of Investment

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### **ABSTRACT**

*In this chapter the authors provide evidence of the effectiveness of European National Regulatory Authorities in applying the basic principles of the ladder of investment. The analysis discusses and compares the regulatory approach adopted in 12 European Countries from January 2005 to July 2007. Results are not easy to interpret, given the peculiarities of the different national markets. Nevertheless, they can conclude that the policies adopted by National Regulatory Authorities are broadly consistent with the ladder of investment theory.*

### **1. INTRODUCTION TO THE THEORY OF INVESTMENT LADDER**

With the advent of next generation networks, the telecommunication sector is undergoing a deep

transformation: from an industry characterized by a “quasi-monopolistic” infrastructure to an industry where alternative networks compete with the incumbent (and with each other). It is widely accepted that these changes are actually challeng-

ing the regulatory approach towards telecommunications: while in the near past regulators' efforts were aimed at introducing more competition into quasi-monopolistic markets, nowadays regulation also tries to create favourable conditions for the necessary capital investments needed to sustain and innovate the network infrastructure (see, among others, Bauer and Bohlin, 2008).

This transformation also exacerbates the traditional trade-off between static and dynamic efficiency. Static efficiency occurs when marginal production costs are minimized (production efficiency) or when the price consumers pay in exchange of a good or service equals the production cost (allocative efficiency); on the other hand, dynamic efficiency relates to demand creation and innovation. While in competitive markets firms price at cost thus achieving static efficiency, competition may actually be the source of dynamic inefficiency since it reduces the incentives to innovate by preventing innovators from recovering the fixed costs of their investment in new technologies.

Usually, industry regulators face this trade-off whenever they attempt to maximize static social welfare through price regulation, while providing firms with sufficient incentives to innovate (see, e.g., Guthrie, 2006).

All these issues are particularly important in telecommunications, probably the most dynamic industry subject to sector specific regulation (for a theoretical and empirical analysis of the impact of regulation on the dynamic efficiency in telecommunications, see Prieger and Heil, 2008). Here, the tension between static and dynamic efficiency is so crucial that it is explicitly mentioned in the new European regulatory framework for electronic communications services. There, it is clearly stated that the scope of regulation is to "promote competition in the provision of electronic communications networks, electronic communications services and associated facilities" and to "encourage efficient investment in infrastructures and to promote innovation" (Framework Directive, Article 8.2.).

Regulation may influence innovation in telecommunications either through prices or by impacting the dynamics of market entry (Bourreau and Dogan, 2001). In telecommunications, both retail and wholesale (interconnection) charges are heavily regulated. This has an impact on operators' profits and, consequently, on their incentives to invest in innovative activities. At the same time, regulation may alter the terms of entry (which are often asymmetric, in the sense that entrant operators are often not subject to regulatory impositions) and, again, this is likely to have an impact on the degree of innovation undertaken by both the incumbents and entrant operators.

In order to reconcile static with dynamic efficiency, European countries have implemented a set of common regulations based on the key regulatory instrument of local loop unbundling (LLU). LLU is the regulatory process whereby incumbent operators lease, wholly or in part, at a regulated price the local segment of their telecommunications network (usually pairs of copper wire) to competitors to let them provide voice and broadband services on the retail market.

Regulatory provisions aimed at implementing LLU have been introduced in all member states since 2001. The regulatory framework adopted by the national regulatory authorities of all EU15 member states mandates incumbent operators the provision of a (more or less) wide portfolio of wholesale services that alternative operators aggregate according to their needs in order to provide voice and broadband services to their customers.

More specifically, local loop unbundling usually comes in three forms: bitstream access, shared access and full local loop unbundling. Bitstream access occurs when the incumbent installs a high speed access link to the customers premises (e.g., by installing ADSL equipment in the local access network) and then makes it available to third parties. With bitstream access, entrants do not have control over the physical line nor are they allowed to add other equipment; therefore, entrants are

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