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Network externalities and two-part tariffs in telecommunication markets

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Abstract

This article analyzes demand side particularities of telecommunications markets and their consequences for the market structure. I assume that telecommunications markets are characterized by two distinguishing features: (i) the efficacy of network externalities and (ii) the presence of two-part tariffs as a simple instrument of price discrimination. Then, the usual tendency to conformity established by network externalities may in some sense be overcome by sufficient differentiation in price structures. In contrast to the perception that deregulated telecommunication markets exhibit a genuinely higher degree of competition, this article points to the observation that discrimination may retain monopoly power to network suppliers by introducing more product differentiation. Various regulation patterns and pricing rules are analyzed with respect to their influence on competition and market structure.

Keywords: Telecommunication markets; Demand structure; Network externalities; Two-part tariffs; Market share

JEL Classification: D12; D4; D62; L43; L96

1. Introduction

The telecommunications industry is without doubt a key industry of the future. Driven by liberalization, globalization and the rapid pace of innovations such as the Fax, various generations of mobile phones, fiber optic cables and Internet

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telephony this industry has already transformed the way people live and work in the last decade. It is not difficult to presume that a further evolution in the way of using these products and their successors will change our present world further. In her book *The Death of Distance*, Frances Cairncross (1997) points out the immense changes that are to come by a dramatic cut in the cost of long distance telephone calls and data transfer. She portrays a world with virtual offices where ever more people can live and work in different regions or even countries. This prophecy suggests that, possibly, another shift of globalization with all its economic consequences may be expected in the future.

In the present article I follow the view that some typical characteristics of telecommunications markets will survive or even be reinforced, albeit with a colossal innovative change in others. First is the presence of network externalities in consumer purchasing decisions. The size of a network matters, since a customer has only direct access to members of the same network. Interconnection to other networks, while technically feasible, is often more expensive since the operator of another network can raise ‘access charges’. Currently, this tends to be the case between local and long distance networks in the same country, between networks of different countries, between a mobile phone network and a fixed wire network or between different cellular networks. Moreover, for mobile telephone customers the value of a handset depends on space coverage and sound quality, which, in turn, can depend on the size of the network.

Another typical feature of telecommunication services is non-linear prices. These will survive in more competitive telecommunications markets since telephony is one of the most highly personalized type of goods, identifying individuals with (telephone) numbers. This property naturally invites suppliers to take advantage of various sorts of discrimination such as, for example, with respect to quantity, location or time.

In this article, I investigate two specifications of demand structures, telecommunication characteristic network externalities and two-part tariffs. In Sections 2 and 3, I assume ‘exogenous network externalities’, i.e. the size of the network appears in the utility functions of heterogeneous consumers. In Sections 4 and 5, a larger network, rather than being preferred exogenously, can turn out to be cheaper as a consequence of access charges being raised by network operators.

My results are the following. In Section 2, I show that the presence of a network externality establishes a strong force towards conformity (all consumers tend to choose the same network) as long as price structures (two-part tariffs) are ‘too similar’. However, this tendency towards conformity is alleviated by the possibility of differentiation in price structures. The differentiation is related to consumer heterogeneity with respect to their demand. In particular, network operators are able to separate high-demand consumers (business consumers) from low-demand consumers (private households) by charging high entry fees and low per unit prices or a lower entry fee and higher per unit price. Different pricing regimes can coexist (between network operators or within the same network) and create additional opportunity to gain monopoly power over specific consumers.