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# The theory of access pricing and its linkage with investment incentives

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## Abstract

The paper reviews how the question of access pricing has been fully investigated by the theoretical literature in a static context. On the other hand, there is no developed analysis of the linkage between access pricing and incentives to invest. This paper argues that some useful literature in related areas can be brought to bear on the issue of “races” to build infrastructures, on the relationship between infrastructure and service competition, and on two-way network competition.

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## 0. Introduction

The introduction of competition into formerly monopolised activities in telecommunications has led to a large volume of theoretical work on access pricing issues, as governments and regulatory bodies have been confronted with the practical necessity to set the terms and conditions on which competitors have access to the historical operators' facilities, and on which reciprocal access to entrants' facilities should be granted.

A major concern underlying regulatory intervention in setting the terms of access or interconnection pricing is that a vertically integrated incumbent may be able to foreclose entry by denying to its competitors the access to its network which they require. At the same time, there are additional features of the process of setting retail prices that have to be taken account of in access pricing in order to ensure competitive parity among firms; for example incumbents are required to

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price services uniformly, even when there are cost differences. These aspects will be briefly recalled in the first part of this paper.

Most of this analysis has taken place in a static context, or on the basis of limited or even casual consideration of the effects of access pricing on investment incentives, and hence upon the evolution of the competitive process in the industry. In telecommunications, infrastructure competition is likely to take the form of competition among a relatively small number of networks. Expectations of the level of access pricing over time will thus generate a range of possibly interdependent investment decisions taken by firms. This aspect of the process which has not been extensively analysed, is the subject of the second half of this paper.

### 1. A summary of one-way access pricing

In telecommunications, most interconnection disputes arise in a context in which the access provider is the historic operator, which is active in all traditional markets—i.e. vertically integrated across the provision of lines, local calls, long distance and international calls. A new operator that enters only in some segment needs access to the incumbent's facilities in order to survive, while the incumbent can well make its business without having access to the entrant's segment. This is why the literature talks about a 'one-way' access problem.<sup>1</sup>

In principle, the most immediate solution to the access problem would be to let the parties negotiate an agreement. This may actually work in some cases when there is a 'double coincidence of wants', i.e. both operators need each other in order to divide the surplus created by completed calls that otherwise could not be made. Unfortunately, this is unlikely to be the case when the entrant and the incumbent compete in the same market. There is a danger that the incumbent will set access charges which make entry difficult. In a limiting situation, the integrated incumbent may even deny access on reasonable terms.

This reasoning may suggest that the access price should be set low, in order to counteract the anti-competitive attitude of the incumbent. However, if the access price is set too low, inefficient entry may occur. Moreover, if fixed costs are involved in the bottleneck, the regulator should ask how much the entrants should contribute to repay the fixed cost of a service that they use in order to supply their customers. The literature has come up with different answers to this problem, according to the set of objectives pursued by the regulator and to the number of regulatory tools at the regulator's disposal.

The benchmark situation is one with a "benevolent" regulator that fixes *all* the prices in order to maximise an unweighted sum of consumer well-being and total industry profits, subject to a break-even constraint for the incumbent.<sup>2</sup> In a nutshell, the optimal theoretical access charge can be written as:

$$a = \text{direct marginal cost} + \text{Ramsey term.} \quad (1)$$

<sup>1</sup>See Armstrong (2002) for an excellent and extensive review of the literature on access pricing. See also Laffont and Tirole (2000).

<sup>2</sup>Imagine the bottleneck owner has to incur some fixed costs. These costs can be interpreted as the set up costs of the network, or some other costs deriving from social obligations that cause losses to the bottleneck provider.

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