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Information Economics and Policy 13 (2001) 77–93

INFORMATION ECONOMICS AND POLICY

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Access pricing and market structure

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Received 31 October 1998; received in revised form 8 November 2000; accepted 8 November 2000

Abstract

In telecommunications industries access charge problems are important issues during deregulation. In Japan and the US, deregulation also involves the issue of industrial structures as integration or divestiture of a long-distance sector. This paper analyzes access charge problems by introducing effects of the divestiture on cost functions. We show how the effects influence economic welfare under the integration and the divestiture in the Stackelberg model. The main result is that, without regulation, welfare losses, caused by an effect of double marginalization in the divestiture case, are not crucial when an entrant and a divested long-distance firm can make use of an efficient cost function. We also obtain a relationship between Ramsey access charges and the Efficient Component Pricing Rule.
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Keywords: Access pricing; Vertical integration; Divestiture effects; Efficient Component Pricing Rule

JEL Classification: L51; L13; L96

1. Introduction

Formerly public utilities were monopolies, due to huge fixed facilities needed to supply services. Even with current technology, we cannot do without such facilities, which are normally huge networks for the distribution of services from gas pipelines, electric wires, and telecommunication circuits.

Furthermore, public utilities are integrated organizations. In many counties such

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0167-6245/01/$ – see front matter © 2001 Elsevier Science B.V. All rights reserved.
PII: S0167-6245(00)00034-2

public utilities have recently been deregulated since the basis for a natural monopoly has gradually disappeared due to technological advances, and the belief that competition is necessary for the social welfare. In such situations, upstream sectors with huge fixed facilities must be regulated, while downstream sectors do not need to be so.

When the upstream sector supplies only distribution services and not the final services to consumers, the regulation problem resembles that of monopolies. In telecommunication industries, however, the upstream sector supplies services to both the downstream sector and the consumer. Such a situation complicates regulations because of access services and distorted competition.

Regarding the access charge problem[1], various authors have recently presented papers classified into three main categories: Ramsey pricing, the Efficient Component Pricing Rule (ECPR)[2], and long-run incremental cost. For instance, Armstrong (1998) and Laffont et al. (1998) considered situations such as the UK market in which an incumbent (British Telecom), an entrant (Mercury), and CATV companies compete. In order to expand and cover service areas each company must interconnect to each other. They used the Hotelling model of product differentiation, and the characteristic of their models was consideration of a mature market in which firms equally compete with each other.

These papers assumed situations causing interconnection, that is, a two-way access.[3] However, there is another situation to be analyzed. Baumol and Sidak (1994), Armstrong et al. (1996), and Sidak and Spulber (1997) considered a one-way access and insisted on efficiency of the ECPR. One-way access takes place in the transit from monopolistic to competitive situations. Whenever a new entry occurred, the US telecommunications industry has seriously considered access charge problems of the one-way access. A similar situation arose in the Japanese telecommunications industry. In 1999, Japanese giant common carrier, Nippon Telegraph and Telephone (NTT), was divided into two local carriers and a long-distance carrier. The aim of such a divestiture was to create equal competitive conditions for long-distance common carriers. Since NTT's long-distance sector had the advantage of integration in competition, to remove this advantage was

[1] Laffont and Tirole (1994) and Vickers (1995) argued access pricing from the point of a Bayesian incentive regulation. Their models have some theoretically strict assumptions, especially linearity, when solving their Bayesian games. As we consider more practical situations, our approach differs from theirs.

[2] ECPR indicates an optimal input price in such a situation where two firms compete in a market of final goods and one supplies the other with intermediate goods to produce final goods. In this case the firm producing intermediate goods has an advantage in competition, because the firm can control the other firm's costs through the price of intermediate goods. See Chapter 7 of Baumol and Sidak (1994), Chapter 8 of Sidak and Spulber (1997), and Baumol et al. (1997). These papers insist on the validity of ECPR. Concerning criticisms of ECPR, see Mitchell et al. (1995) and Laffont and Tirole (1996).

[3] A similar situation of the interconnection exists in international telecommunications industries. That is called international accounting rate system, which recently faces many criticisms and is in need of reform. See Domon and Kiyono (1999) and Wright (1999) in detail.

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