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An economic analysis of the receiver pays principle

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Abstract

This paper examines the effect of the receiver pays principle (RPP) on the calling price, social welfare and interconnection charge. A significant difficulty with introducing this system in telecommunications pricing is the possibility that the receiving party may refuse to receive a call if the charge he has to bear is very high. We find the condition under which no calls are refused and show that the profit maximizing prices charged to the calling party and the receiving party must satisfy this condition. We demonstrate that the calling price under RPP must be lower than the price under the caller pays principle (CPP), that the profit of a firm will be increased under RPP, but that the consumer surplus will not necessarily be increased under RPP despite the lowered calling price. Also, we show that, if the demand function is linear, the reciprocal interconnection charge under RPP is higher than that under CPP. © 2001 Elsevier Science B.V. All rights reserved.

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1. Introduction

The most striking characteristics of the telecommunications industry might be the presence of two kinds of externalities, network externalities and call externalities. Network externalities result from the fact that a subscriber to a network is made better off by being able to communicate with more people if more people

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subscribe to the network. Call externalities occur since both the calling party and the receiving party may benefit from a phone call, even though the cost usually falls entirely on the caller. Therefore, call externalities are the product of a particular usage fee payment system, the so-called the caller pays principle (CPP) under which the caller only is charged for a call, while network externalities are a characteristic inherent in the telecommunications industry.

Then, a natural question arises: why is CPP being used instead of the receiver pays principle (RPP) under which the receiving party is charged in part for a call as well, given the obvious free-riding of the receiving parties?¹ The traditional rationale for this apparent unfairness is that, even if the receiver is bound to bear a part of the calling charge, the reduced amount of fees for a person in calling and the additional amount of fees to bear in receiving are almost averaged out, if the calling ratio and the receiving ratio are similar, so that CPP is equivalent to RPP. Furthermore, if we take into account technical difficulties and administration costs involved with collecting charges from the receivers as well, it seems that there is no reason to use RPP instead of CPP.² However, in fact, this is true only in a restricted sense. First of all, there currently coexist several networks interconnected to each other, say the Public Switched Telephone Network (PSTN) and mobile networks, whose call traffic patterns are asymmetric.³ In most countries, a large proportion of calls originating from a mobile network terminate on the PSTN and only a small proportion of calls made on the PSTN terminate on mobile networks. This implies that subscribers to mobile networks subsidize subscribers to the PSTN. This observation weakens the strong rationale that has justified CPP and favours an alternative fee system whereby the receiver pays for part of a phone call. Moreover, even in a situation where there is no mobile network, and asymmetry in calling patterns is not significant, internalization of call externalities by dividing a calling charge between the caller and the receiver would lower the calling price, thereby increasing calling, which would obviously affect social welfare.

¹ Recently, the use of RPP is observed in some restricted situations. In particular, the US and some other countries (e.g., Hong Kong) have adopted RPP in mobile call pricing. However, it is well-known that this is for a technological reason, rather than for an economic reason. Since mobile service providers do not have distinct network access codes, a consumer cannot tell whether the call he is making terminates on the fixed network or on the mobile network. Therefore, it may be considered unfair to charge the high price of the mobile phone call to a consumer who does not realize which network he is calling. Collect call services and toll-free, 800-number services are other examples of RPP.

² CPP may be a historically established convention. In the past when only the manual or the mechanical switching system was feasible, it would have been technically impossible to implement RPP, and so resulting CPP became a long-standing payment system.

³ According to the Ovum report by Joseph and Nourouz (1996), only 33% of all mobile calls in US are incoming. Doyle and Smith (1998) also observe this asymmetric call patterns in the UK market. These observations imply that the balanced calling pattern assumption often used in literature is violated in reality.

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