

Unbundling and Incumbent Investment in Quality Upgrades and Cost Reduction

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Abstract

In the last 10 years, mandatory unbundling has become a standard remedy proposal for solving the bottleneck problem in fixed telecoms competition. Under mandatory unbundling an incumbent firm has to share the use of some of its facilities with its competitors. This implies that an essential input is, at the wholesale level, separated from the incumbent's overall facilities, in order to allow for commercial wholesale supply of this input.

However, the service-based competition promoted by unbundling has been criticized on the basis that it only promotes static efficiency. The main argument is that incumbents would not have incentives to invest if they had to share the benefits of their investments with rivals (see Jorde et al., 2000).

Partially as a response to this argument, several empirical studies analyzing the effect of unbundling on incumbent firms' investment have emerged. For instance, Willig et al. (2002) examine the relationship between unbundling prices and Bell companies' investments. Their results support that a low unbundling price encourage entry, and this increased competition strengthens the incumbents' incentive to invest. A study by Hassett et al. (2003) obtains similar conclusions.

However, the Willig et al. (2002) result is not without controversy. Haring et al. (2002) obtain the opposite relationship, i.e., low unbundling prices reduce the profitability of incumbents' investment

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leading to a reduction in that investment. Hausman and Sidak (2005) corroborate this opinion in their case study about the unbundling experience in the US, New Zealand, Canada, United Kingdom, and Germany. Gabel and Huang's (2003) econometric results indicate that in the US the higher the unbundling price, the more likely is the introduction of new services by the incumbents

In 2003 a new controversy has emerged after the publication of the Phoenix Center Policy Bulletin n^o5, which shows that the rise in unbundling lines has increased investment by incumbents. This gave origin to two replies, one by Hazlett et al. (2003) and another by Hill (2003), both arguing that the rise in unbundling lines has led to a decline in incumbents' investment. As a response, the Phoenix Center published its Policy Bulletin n^o6 which, by incorporating the comments of the two replies, shows that its previous result was robust.

Finally, there is also a study by Chang et al. (2003) that finds, using US data, that lower access rates have spurred investment in digital systems by incumbent local carriers. Even so, the same study points in the opposite direction for Europe.

We can conclude that there is an unresolved controversy about the true effects of unbundling prices in incumbent's investments and, following from this, what the regulated unbundling price should be. In this paper we will focus on these two points distinguish between investment in cost reduction and in quality upgrades.

In contrast with the large amount of research on static access pricing (Armstrong, 2002), the dynamic study of optimal access pricing is still in its early stages.

Foros (2004) shows that, under some conditions, investment in quality is lower with price regulation, since the access price is set equal to marginal cost. Kotakorpi (2006) considers a similar model with vertical differentiation, and obtains similar results. In addition, there are some papers that consider cost-reducing investments, as Biglaiser and Ma (1999), Cabral and Riordan (1989) and Sappington (2002), the first in a context of an incumbent firm and the other two in monopoly.

In our paper, we develop a theoretical model with two operators that offer differentiated services, and try to explain the relationship between the unbundling price and the investment made by the incumbent. Since it is a partial consumer participation model, it portrays non-mature markets, such as the broadband market. Bourreau and Dogan (2005) assume full consumer participation represented by a Hotelling model. In this model profits are insensitive to the unbundling price for a large interval of unbundling prices, which does not seem to be reasonable in the context of investment choice.

The main contribution of our model is the comparison of the incumbent's incentives for two different types of investment: quality-upgrades and cost-reduction. We show that, although these investments are complements, the direct effect of the unbundling price on each one differs. Indeed, a lower unbundling price decreases incentives for quality improvements, but raises incentives for cost reduction. This follows from the fact that, for a lower unbundling price, the incumbent wants to maintain its competitive advantage. Thus, it has more incentives to invest in cost reduction increasing its cost-advantage. On the other hand, it has less incentives to invest in quality upgrades because this benefits both operators. Therefore, in equilibrium, it is not obvious what the equilibrium effect of a lower unbundling price will be.

We also determine the socially optimal unbundling price. First, we assume that the decision about the unbundling price is taken before investment. We show that the regulator sets a higher unbundling price when the cost of improving quality is relatively low, in order to give incentives for this type of investment. When cost reduction is less expensive, then the unbundling price the regulator should set is lower. We contrast these results with a context where the regulator cannot commit to his decisions and revises the unbundling price after the investment has been made. In this case, the incumbent does not invest since the regulator sets a price such that it always earns zero profits. Social welfare is then lower in a no-commitment context.

We compare both contexts with an unregulated market. We show that the incumbent has incentives to unbundle its infrastructure in order to attract new consumers to the market. This is always worse than the context where the regulator sets the unbundling price before investment as the price set by the incumbent is too high, but it can be better than a no-commitment context since there is some investment. Therefore, we conclude that the unbundling problem raised by some authors is more a problem of commitment rather than unbundling as such.

JEL classification: L41, L43, L51, L96

Keywords: Telecommunications Regulation, Unbundling, Investments, Commitment.

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