Real Options and the Costs of the Local Telecommunications Network

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Abstract - The Telecommunications Act of 1996 invites entry in the local telecommunications networks whereby entrants will lease parts of the network ("unbundled network elements") from incumbents "at cost plus reasonable profit." A crucial question in the implementation of the Act is the appropriate measure of cost. This paper examines the economic principles on which the cost calculation should be based. It concludes that the appropriate measure of cost (maximizing allocative, productive, and dynamic efficiency) is forward-looking economic cost and not the historical, accounting, or embedded cost of the incumbent's network. In calculating costs, demand and supply uncertainty, as well as the asymmetric position of incumbents and entrants, should be taken into account. A close examination of the issue of uncertainty in the local telecommunications network reveals that 1) for most unbundled network elements, there is little demand uncertainty, and 2) those elements that face significant uncertainty do not have sunk value. Thus, the incumbent does not face higher expected costs by investing. Moreover, the rewards to the incumbent can be higher because buyers prefer to buy services from the owner of the network. Finally, strategic considerations in oligopolistic interaction are likely to dominate any uncertainty considerations and will increase the incentive of incumbents to invest.

On February 1, 1996, President Clinton signed into law the Telecommunications Act of 1996 (1996 Act). This was the first major reform since the original 1934 Telecommunications Act. In passing the 1996 Act, Congress took radical steps toward a major restructuring of the U.S. telecommunications markets. These steps may result in very significant benefits to consumers of telecommunications services, telecommunications carriers, and telecommunications equipment manufacturers. But the degree of success of the 1996 Act depends crucially on its implementation through decisions of the Federal Communications Commission and state public utility commissions, as well as the outcomes of the various court challenges that these decisions, and the Act itself, face.
The Act attempts to introduce and enhance competition in all parts of the telecommunications network. It envisions a network of interconnected networks that are composed of complementary components and generally provide both competing and complementary services. The 1996 Act uses both structural and behavioral instruments to accomplish its goals. It attempts to reduce regulatory barriers to entry and competition. It also outlaws artificial barriers to entry in local exchange markets in its attempt to accomplish the maximum possible competition. The 1996 Act attempts to enhance competition in telecommunications markets wherever it exists and establish it where it does not. Before competition takes hold, the Act attempts to create conditions that imitate competition in the local exchange. To facilitate entry in the local exchange, the Act mandates the interconnection of telecommunications networks, unbundling, non-discrimination, number portability, and cost-based pricing of leased parts of the network, so that competitors can enter easily and compete component by component as well as service by service.

1. COST PRINCIPLES FOR LEASING OF UNBUNDLED NETWORK ELEMENTS IN IMPLEMENTING THE 1996 ACT

Currently, the "last mile" of the telecommunications network that is closest to the consumer (the "local loop") remains a bottleneck controlled by an incumbent local exchange carrier (ILEC), a Regional Bell Operating Company, GTE, or a smaller independent. The 1996 Act boldly attempts to introduce competition in this last bottleneck, and in all parts of the local exchange market, while preserving the effective competition that has developed in the long distance market.

To facilitate entry in the local exchange, the Act imposes mandatory interconnection, unbundling, and number portability. In particular, Section 251(c)(2) mandates:

"interconnection,

(B) at any technically feasible point

(C) that is at least equal in quality to that provided by the local exchange carrier to itself or to any subsidiary, affiliate, or any other party to which the carrier provides interconnection; and

(D) on rates, terms, and conditions that are just, reasonable, and nondiscriminatory, in accordance with the terms and conditions of the agreement and the requirements of this section and section 252."

Section 251(c)(3) mandates unbundling, that is, offering for sale network elements at "rates, terms, and conditions that are just, reasonable, and nondiscrimi-