Chapter XVIII
Regulation and the Deployment of Broadband

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ABSTRACT

This study examines the impact of telecommunications regulatory policy on broadband service deployment. Using U.S. data covering all forms of access technology (chiefly DSL and cable modem) and all areas served by major carriers, we investigate the impact of state and federal regulation on broadband availability. Alternative regulation increases the probability of broadband availability, particularly for price caps. Unbundled network element (UNE) rates, the prices incumbent carriers charge to competitors for access to the local exchange network, also matter. Areas with lower UNE rates have a slightly higher probability of broadband availability. The effects of UNE rates on broadband deployment are largest where incentive regulation is in place. Our objective in examining regulatory factors is to highlight the role of incentive regulation and local telecommunications competition policy—policies used or available around the world—in stimulating broadband service deployment.

INTRODUCTION

Broadband Internet access services are available in the United States via digital subscriber line (DSL), cable modem, and wireless or satellite technology for residences and additionally, dedicated leased lines for businesses. New Economy enthusiasts have touted the promise of broadband to provide significant benefits to consumers and businesses since the inception of the technology. Crandall and Jackson (2003) estimate that the benefits to consumers in the United States from broadband Internet access are valued at hundreds of billions of dollars annually. Businesses also can benefit from broadband technology through lowering their cost of doing business.[1] The longer-term benefits may be even higher, if broadband follows the pattern set by the information technology sector as a whole, which is a major contributor to GDP growth (Jorgenson, 2001).

Broadband access technology spread quickly in the U.S., compared to other popular consumer technology innovations such as analog cellular telephony and videocassette recorders (VCRs)

(Faulhaber, 2002). Notwithstanding, commentators (e.g., Hausman, 2002) note that the pace of broadband diffusion has not been as swift in the U.S. as in some other countries, and point to regulatory roadblocks as potential causes. Although broadband technology is diffusing rapidly, not all areas of the U.S. are receiving broadband access at the same time. This study examines whether differences in regulatory treatment across states contributes to the unequal availability of broadband.

Federal and state regulation may give some firms less incentive to deploy broadband than they would have absent regulation. At the federal level, the unbundling and resale provisions of the Telecommunications Act of 1996 meant that in 2000, the time of the data we analyze, telephone companies could face "instant competition" from competitive local exchange carriers (CLECs) and broadband resellers if they deployed DSL. Cable firms offering cable modem service have no such obligations, and therefore may have more incentive to invest in the necessary infrastructure. Similarly, smaller and rural telephone companies are exempt from unbundling and resale rules,[2] and may therefore (other things equal) have more incentive to deploy DSL than do larger local exchange carriers.

Due to lack of variation in the federal regulations in the cross-sectional data we use in this study, we are not able to investigate the primary effects on broadband deployment from federal regulation. Other authors attempt to uncover the impact of federal telecommunications regulation on broadband from variation over time (Hazlett & Bazelon, 2005) or by comparing cable modem deployment to DSL (Hausman, 2002). Neither of these strategies is ideal, because many other factors may change over time, and cable modem and DSL service differ in other ways beside regulation.[3] In this chapter, we instead investigate the effects on deployment of state telephone regulation, the rates charged to competitors for the incumbent telephone companies' network elements, and the interaction between state telephone regulation and federal unbundling policy.

State legislatures and regulatory commissions can influence the diffusion of broadband through (at least) three channels. First, a legislature could pursue policies to encourage infrastructure development through tax incentives, loan programs, or other means. As of 2000, the vintage of the data explored in this study, few states had such policies and we do not investigate this channel.[4] Second, a state regulatory commission could regulate broadband pricing directly, through ratemaking cases, inclusion in the rate base for rate-of-return regulation, or the application of price caps. Often, however, broadband pricing is effectively unregulated.[5] Third, and of primary interest for this study, the state regulator may indirectly influence broadband deployment through its regulation of basic services and the prices it allows incumbents to charge competitors for access to the local network.

The two main classes of telecommunications regulation are rate-base rate of return regulation (RORR) and alternative regulation, the latter of which includes price caps, rate freezes, and hybrid regulatory schemes combining price caps and rate freezes. These regulatory schemes are described in more detail in the section on regulation later in the chapter. The incentives facing local exchange carriers to deploy DSL may differ under RORR and alternative regulation. RORR may not be conducive to investment in general, since an ex-post "prudency review" by the regulator can strike failed investments from the rate base (Kolbe & Tye, 1990). If revenue from DSL is included in the rate of return calculation, then any underinvestment problems associated with RORR would also apply to broadband infrastructure.[6] On the other hand, Lehman and Weisman (2000) show that in states with alternative regulation (specifically price caps), regulators have insisted on lower prices for unbundled network elements (UNEs).[7] We confirm this fact with our own data. Because a local exchange company is required to offer UNEs to competitors that allow the offering of broadband service, the profit from deploying DSL may be smaller in states with alternative regulation because the UNE rates are (expected to be) lower. Finally, if state regulation influences the telephone companies' incentives to offer broadband service, it will have another, indirect, effect through the cable companies. If regulation affects the decision to offer DSL, it will also affect the profitability of