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## Regulating Telecommunications

Lessons from U.S. price cap experience

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### Regulatory shift

Rate-of-return (ROR) regulation has been used for many years to regulate telecommunications carriers in the United States. This regulatory approach has important desirable features: it limits monopoly rents, and it provides a stable environment to attract investment. But it also has serious flaws. Like cost-plus procurement, ROR regulation provides limited incentives for firms to cut costs or otherwise to improve efficiency. As markets become more competitive, the incumbent may overprice monopoly services to subsidize competitive services. All firms may use the regulatory process strategically to undermine rivals' ability to offer better value to customers.

For these reasons, many U.S. telecommunications regulators have recently replaced ROR regulation with price cap regulation. Price cap regulation uses a formula, set in advance, to determine the price increases for a firm's services for a period of several years. During this period, the firm may keep all the benefits of its incremental productivity gains. Customers can also benefit, in several ways. The price cap formula may cause prices to rise less rapidly during the period than they did historically. The sharpened incentives created may encourage the firm to offer innovative new services. And after the period ends, regulators may order price reductions that reflect productivity gains during the period.

Another advantage of price caps is that they reduce firms' incentives to cross-subsidize. Cross-subsidy generally reduces a firm's profits, and during the price cap period the firm has no opportunity (as it would in an ROR rate

case) to recoup those lost profits.<sup>1</sup> In addition, price cap plans usually allow the firm substantial flexibility—within the price cap constraints—to restructure rates, with minimal regulatory delays.

The primary drawback of price caps is that they create incentives for firms to cut costs by degrading the quality of service. Many price cap plans deal with this problem by imposing penalties for quality degradation. Another drawback is that price levels may become inappropriate over time as a result of unexpected changes in demands or in real costs. Shortening the term of the plan helps ensure that rates do not drift too far out of line, but it also reduces efficiency incentives. (A firm faces the prospect of earlier unfavorable adjustments to prices if it improves efficiency.) U.S. regulators have generally opted for terms of three to five years. Longer terms will become appropriate as regulators gain more experience with price caps and uncertainty is reduced.

This Note reviews the U.S. experience with price caps, focusing primarily on federal regulation. It then briefly discusses the lessons of this experience for developing countries.

### Competition and the regulation of AT&T

AT&T has been subject to competition in long-distance services since the 1970s, though the competition intensified substantially after equal access was implemented in the mid-1980s. In this more competitive environment, federal regulation of AT&T has been reformed and relaxed. The Federal Communications Commission (FCC) began granting AT&T pricing flexibility shortly after its breakup into the seven





regional operating companies in 1984. In the early 1990s, the FCC streamlined regulation of AT&T's large-business and 800-number services, and it has just streamlined regulation of AT&T's remaining services. Thus, although AT&T still has to file tariffs with the FCC, its prices are no longer subject to regulatory review. AT&T has generally responded to regulatory freedom by competing more aggressively for large customer accounts. Its competitors have stopped gaining market share at AT&T's expense, but remain prosperous.

**FIGURE 1 REAL NONCAPITAL EXPENSES OF AT&T, 1985–91**

Billions of U.S. dollars



Source: Richard Schmalensee and Jeffrey H. Rohlfs, "Productivity Gains Resulting from Interstate Price Caps for AT&T," filed with U.S. Federal Communications Commission, Docket 92-134, September 3, 1992.

The FCC began to use price cap regulation for AT&T in 1990—though AT&T had started to act in anticipation of price cap regulation even before then. The FCC's 1993 review concluded that the price cap plan was working well. According to the FCC's calculations, price caps yielded US\$1.8 billion of gains to con-

sumers over the 1990–93 period.<sup>2</sup> Estimates by Schmalensee and Rohlfs show that 90 percent of the gains from price cap regulation went to consumers and 10 percent to AT&T stockholders.<sup>3</sup> Consumers enjoyed real price reductions as the price cap declined (in real terms) and from AT&T's voluntarily pricing below the cap, and they also made greater use of discounted pricing plans.

For AT&T, the most dramatic gains were reductions in its real noncapital expenses (figure 1). The rising trend in AT&T's real noncapital expenses was reversed in 1989. In 1988, the company took a US\$6.8 billion write-down of antiquated analog equipment and started to replace it with digital equipment, primarily fiber-optic systems, to thoroughly modernize its network.

### Transition to competition

Competition, rather than price caps, was undoubtedly the primary impetus for AT&T's modernization effort. When Sprint began to advertise its all-fiber network in the mid-1980s, AT&T perceived an urgent need to improve its network to maintain the company's reputation for quality. But price caps have eased the transition to streamlined regulation. Under ROR regulation, a detailed cost allocation manual would have had to be developed to ensure that prices in markets not subject to streamlined regulation covered the costs allocated to those markets. By contrast, under price caps, the FCC simply had to order streamlined regulation for some services, leaving the formulas for price cap regulation of other services unchanged.

Because of the altogether favorable experience with the price cap regulation of AT&T, the FCC renewed AT&T's price cap plan without change in 1994.

### Regulation of local exchange carriers

After implementing price cap regulation for AT&T, however, the FCC backslid, adopting a hybrid of price cap and ROR regulation for local

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exchange carriers. This hybrid plan allowed the local exchange carriers to keep all their marginal productivity gains until their rate of return reached a certain level. Above that level, the carriers had to share further efficiency gains equally with their customers, which reduced their efficiency incentives by 50 percent. At a still higher rate of return, the plan reverted to pure cost-plus regulation.

Despite this declining incentive structure, local exchange carriers have significantly increased their efficiency under federal price cap regulation. To ensure that consumers did better under price cap than under ROR regulation, the FCC included in the plan a “consumer dividend” of 0.5 percent a year. But local exchange carriers have still been highly profitable. Their rate of return on capital averaged about 10 percent a year in 1991–94,<sup>4</sup> compared with the yield on short-term U.S. Treasury securities of less than 5 percent a year.

The improved efficiency of the local exchange carriers is only partially attributable to federal regulation: many states also adopted price cap regulation or one of many variants of incentive regulation during the period. Because local exchange carriers were so profitable under price caps, the FCC made adjustments when it renewed the plan. Rates have to be reduced and will decline more rapidly than under the original plan.

#### **Hybrid drawbacks**

The FCC applied the same percentage adjustments to all price cap–regulated local exchange carriers—a form of “benchmark” regulation, often used in industries with many regulated firms. Thus, the adjustments to each firm’s rates were largely unrelated to its productivity gains, so each firm was able to retain most of the incremental benefits of its productivity gains, even after the end of the price cap period. As a result, the plan provides much greater efficiency incentives than one that makes adjustments for each firm based on that firm’s productivity gains.

The drawback of this approach—indeed, the problem with benchmark regulation generally—is that one size does not fit all. Price reductions that are not onerous for some firms may cause financial distress for others. The FCC dealt with this problem by offering a range of options. Firms could opt for smaller annual price reductions but would then have to share most of their productivity gains with customers. Or firms could opt for pure price caps (with no sharing of gains with customers) but would then have to agree to larger annual price reductions. Several large local exchange carriers chose the second option.

#### **Lessons for developing countries**

For developing countries, which generally lack strong regulatory institutions, creating and staffing a regulatory agency that can perform ROR regulatory functions competently would be

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costly and take considerable time. Furthermore, ROR regulation is subject to abuse—especially in the absence of judicial precedents. For these reasons alone, price cap regulation may be more feasible than ROR regulation for newly privatized telecommunications companies.

But the U.S. experience suggests that even where regulatory capacity is strong, price cap regulation may be better. Price cap regulation in the United States has been highly successful—the theoretical benefits of price caps for industry performance appear to have been realized in practice. Moreover, because price cap regulation is simpler and more transparent than ROR regulation, it may be less subject to abuse. And the U.S. experience in long-distance



telecommunications suggests that price cap regulation works well during an industry's transition to a competitive structure.

Price cap plans have the additional advantage of being indexed to inflation. But even though they adjust automatically to unexpected changes in inflation, as occur often in developing countries, the adjustments do not fully compensate for the effect of inflation on capital costs. Thus, where inflation is unstable, an additional adjustment factor may be desirable.

This comparison of regulatory performance suggests that developing countries are well advised to avoid ROR regulation altogether and to leapfrog to price caps. By doing so, they can benefit from the greater efficiency incentives of price cap regulation while avoiding the administrative costs and difficulties of ROR regulation. Hybrid regulation incorporating formal mechanisms for sharing efficiency gains with consumers is a third alternative. But hybrid regulatory plans require having ROR regulatory institutions in place, offer weaker efficiency incentives than price caps, and provide less protection against cross-subsidy. Thus, pure price caps are the best alternative.

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<sup>1</sup> For the same reason, price caps increase the firm's losses from providing subsidies mandated by regulators—for example, subsidies of residential services in rural areas. Consequently, regulated firms may carry out subsidized programs with less vigor under price caps.

<sup>2</sup> U.S. Federal Communications Commission, "In the Matter of Price Cap Performance Review for AT&T," CC Docket 92-134, adopted June 24, 1993, released July 23, 1993, at para. 9.

<sup>3</sup> Richard Schmalensee and Jeffrey H. Rohlfs, "Productivity Gains Resulting from Interstate Price Caps for AT&T," filed with U.S. Federal Communications Commission, Docket 92-134, September 3, 1992. The Schmalensee-Rohlfs estimate, unlike the FCC's, includes the customer benefits from greater use of discounted services.

<sup>4</sup> Derived from U.S. Federal Communications Commission, *Preliminary Statistics of Communications Common Carriers* (Washington, D.C.: U.S. Government Printing Office, July 7, 1995) and *Statistics of Communications Common Carriers* (Washington, D.C.: U.S. Government Printing Office, various editions).

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