PUBLIC POLICY FOR THE
Privatesector
Note No. 132 November 1997

Has Price Cap Regulation of U.K. Utilities Been a Success?

Richard Green

Developing the approach—a proposal for BT

The privatization of British Telecom (BT) in 1984 reintroduced the regulation of private infrastructure companies in the United Kingdom, after nearly forty years of public ownership. Two regulatory approaches were initially proposed: controlling BT's prices by setting a maximum rate of return,[1] and imposing an output-related profits levy on BT at a rate that would fall as the company's output rose, giving it an incentive to keep output high and prices low.

Professor Stephen Littlechild, an academic who later became the first regulator of the electricity industry, was asked to choose between the two schemes. But instead he proposed a third, a price cap system that the government adopted. Littlechild argued that a maximum rate of return would limit BT's incentives to operate efficiently, while the effect of an output-related profits levy remained uncertain. Expecting increased competition in telecommunications, he pointed out that if BT faced a levy that its competitors did not, it could be at a significant disadvantage.

Littlechild proposed an explicit limit on the prices that BT could charge in the areas where it was expected to retain some monopoly power—line rentals and local call charges. The weighted average of a basket of these charges should fall in real terms by a specified amount each year. This was equivalent to saying that the charges should not increase by more than RPI – X, where RPI is the increase in the retail price index (a standard measure of general inflation in the United Kingdom) and X is the real reduction in prices. He argued that this scheme would concentrate consumer protection where it was most needed while giving BT some freedom to change the balance of its prices. The scheme would be simple for the regulator to monitor, and it would minimize the risk of regulatory capture because it would be nondiscretionary. Above all, Littlechild hoped that the scheme would be temporary, for competition is by far the most effective means of protection against monopoly. He therefore recommended that the scheme be adopted for five years, and reviewed after four.

A price cap for British Gas

A second price cap was adopted for British Gas when it was privatized in 1986. This price cap is based not on individual prices, but on the average revenue yield from sales to small consumers—the value of sales divided by the volume of gas sold. This formula gives the company more freedom to introduce new tariffs, since there are no controls on individual prices and no need to worry about the weights in a basket. (See tables 1 and 2 for a comparison of the two types of price controls and traditional rate-of-return regulation.)

A second change is the pass-through of the cost of gas purchases to consumers so that they, not British Gas, bear the risk of changes in the wholesale gas price. This price is outside British Gas's control, but accounts for nearly half its costs. The formula became known as RPI – X + Y; X denotes the expected productivity increase (2 percent a year), and Y the pass-through of the cost of gas. In the years after privatization, the cost of gas fell significantly, and the benefits were passed straight on to consumers.

TABLE 1 FORMULAS FOR PRICE BASKET, REVENUE, AND RATE-OF-RETURN CAPS

Method	Formula
Price basket cap	Prices x quantity weights (set by regulator) < cap
Revenue cap	Revenues < actual output x price weights (set by regulator)
Rate-of-return cap	Proposed tariff x predicted output < predicted costs + fair profit

TABLE 2 KEY FEATURES OF PRICE BASKET, REVENUE, AND RATE-OF-RETURN CAPS

Feature	Price basket cap	Revenue cap	Rate-of-return cap
Constraint set by cap	Weighted average of prices cannot exceed cap	Revenues cannot exceed limit (related to output) set by cap	Tariff cannot predict a rate of return above regulated level
Coverage	Specified prices (line rentals, domestic calls)	Specified types of sales (such as to captive small consumers)	Regulated business's predicted revenues
Implementation requirement	A list of prices	Output measures	Tariffs that give revenue predictions
Weights on quantities	Set by regulator	Actual quantities	Predicted quantities
Price weights in cap	None explicit	Set by regulator	From tariff
Constraint on cross-subsidy	Subsidiary cap required	Separate constraint required	Regulator could disallow tariff
Opportunity for manipulation	Very small	Some (likely to be small in practice)	Some (likely to be small in practice)
Cost pass-through terms	Might be included in cap (difficult)	Simple to include in cap	Tariff might contain escalation clause
Correction factor	Not required	Required	Not required
Advantage	Simple to define and monitor	Allows constraint to respond to actual output and pass-through costs	Investors face lower risk, reducing cost of capital
Limitation	Needs a full list of prices	Needs homogeneous output measures (revenues must be < output x weight)	Needs predictions of revenues and costs for each new set of tariffs
Example	British Telecom	British Gas	U.S. utilities

A price cap for water

Littlechild was consulted again when the water industry was prepared for privatization, in 1986. The industry was required to complete a large backlog of investments, and prices were expected to rise to finance them. Once again, Littlechild recommended a control on prices rather than profits, although it was clear that direct competition between water companies was practically impossible and a permanent control would be needed. Indirect competition in the form of yardstick regulation (advocated by Shleifer 1985) was possible, however, and Littlechild recommended using comparisons between companies when setting and resetting price controls. Because prices were expected to rise, the scheme became known as RPI + K, although it was really RPI – X + Q, where Q is the cost of investment to meet quality targets.

Revision of the first price control

In 1988, it became clear that BT did not face enough competition to abolish the price control, so the regulator proposed a new control. For the first five years, BT had faced a control of RPI – 3 on line rentals and directly dialed domestic calls, and a subsidiary price control that limited any increase in line rentals to 2 percent a year in real terms.[2] The regulator proposed a new control, RPI – 4.5, which would also bring some operator services into the basket of controlled prices.

The regulator gave little information on this decision at the time, but later explained how the new value of *X* had been chosen. His staff had built a financial model of BT (in consultation with the company) so that they could predict BT's profits and rate of return on capital, given a value of *X*. In 1988, BT earned more than its perceived cost of capital, so the regulator chose a value of *X* predicted to eliminate the excess return by the end of the price control period (set at four years). This approach has much in common with the calculations used in rate-of-return regulation, although the fixed review period and the regulator's ability to disregard excessive costs give the company a greater incentive to be efficient and force it to bear more risks. BT accepted this control; if the company had rejected it, the issue would have been decided by the Monopolies and Mergers Commission (MMC), the United Kingdom's competition tribunal.

A check on the regulator's discretion

The Telecommunications Act of 1984, which set up the system of regulation, gave the Monopolies and Mergers Commission the role of "court of appeal," acknowledging the need for a check on the regulator's discretion. The commission has had to rule on six price cap disputes since 1992. These rulings have gradually built up some case law, for while each case is decided individually, the commission has recognized the value of developing a consistent methodology. Not wanting companies to appeal their proposals, the regulators have increased the amount of information they release and generally argue that they follow the "MMC methodology." If a company knows that the commission is likely to use the same methodology as the regulator, it also knows that it has little to gain from an appeal. The commission's role has brought a welcome increase in transparency in the resetting of price controls.

One-time reductions

When the early price controls were reset, only the value of *X* was changed, so prices stayed on a smooth path. But in 1994, Littlechild faced different needs in resetting the price controls for the distribution businesses owned by the twelve regional electricity companies in England and Wales. These companies, given RPI + *X* price controls when they were privatized in 1990, had subsequently earned high profits, so a large reduction in prices was clearly required. But if only the value of *X* was to be changed, Littlechild faced a difficult choice. If he set *X* so that prices reached the "correct" level at the end of the period, the companies would continue to earn high profits for several years, an excessive reward for their earlier cost reductions.

The alternative was to set prices so that the companies would receive an appropriate amount of revenue over the period as a whole. If the prices declined evenly from the present level, however, they would have to fall well below their long-term level to bring down total revenue, creating future problems. Littlechild therefore decided to implement a one-time cut in prices followed by a control of RPI – 2, in order to combine an acceptable total revenue with a sensible price level at the end of the period. Similar one-time cuts have since been made in the price controls of British Gas Transco (gas transmission and distribution) and the National Grid Company (electricity transmission).

An assessment

Price controls in the United Kingdom have been controversial. The initial price controls for the

electricity companies and the water industry, based on underestimates of the companies' scope for reducing costs, turned out to be overgenerous, allowing them high profits. The 1994 review of the electricity price controls promised to reduce the companies' revenue by more than a sixth over the period, which Littlechild thought would give them no more than an adequate return. But Northern Electric, threatened with a takeover, was still able to promise to make a one-time payment to shareholders in cash and shares valued at twice the price for which it had been sold four years earlier and to increase future dividends. This caused a major political row, and Littlechild decided to reopen the review in March 1995.[3] Three months later, he announced additional price cuts of about 10 percent, supported largely by a different treatment of the companies' asset values at flotation. Even these reductions were less than some people had expected, and share prices later rose, partly because of takeover bids. Littlechild received heavy criticism for his handling of the situation.

Following these events, some commentators (such as Burns, Turvey, and Weyman-Jones 1995) suggested forms of profit sharing regulation. Under such schemes, the regulator would continue to set a price control for several years at a time, but would also monitor the company's costs and profits from year to year. If profits rose above a trigger level, the company would have to reduce its prices, returning some of the "excess" profits to consumers. These suggestions have gained political support, and some regulators have considered implementing them, although they have not yet done so. The practical problem is that profit sharing would require audited cost information every year for calculating the allowable prices, and obtaining this information would place a heavy burden on both firms and regulators. Profit sharing would also weaken companies' incentives to reduce costs.[4]

The utilities remain unpopular in the United Kingdom, but most experts would be willing to defend the price control system as one that gives companies an incentive to cut their costs and returns the gains to consumers after a short time. The high profits of the early 1990s were due largely to unanticipated, one-time productivity gains following privatization, which are unlikely to be repeated. The established method for resetting price controls makes further "mistakes" unlikely. In the future, price controls can be expected to give companies an incentive for efficiency without allowing them to earn excessive profits.

[1] Rate-of-return regulation, the traditional method of utility regulation, is widely used in the United States. The regulator allows the company to charge the prices expected to produce profits equal to a fair rate of return on the fair value of the capital invested in the company. If profits fall below this level, the company can request approval for a new set of prices. Investors therefore know that profits should not be too low, and consumers know that they should not be too high. The problem with this system is that it gives the company little incentive to improve efficiency and may even encourage inefficient behavior that raises the company's allowable revenues.

[2] Like many other telecommunications companies, BT had set line rentals below cost and call charges above cost. To prepare for competition, the company needed to rebalance its prices, raising rentals and reducing call charges, but that would increase the bills paid by small consumers, who made relatively few calls. The RPI + 2 constraint was imposed for political reasons, to limit the speed of these increases.

[3] It had been generally assumed that the controls were finalized, but because a final stage of formal consultation remained before they could be implemented, Littlechild was legally allowed to change his proposals.

[4] It has been suggested that the interval between main reviews could be lengthened, to restore incentives. But by the end of the period, prices (even after profit sharing) could diverge just as far from costs as they would under a pure price cap and a shorter review period, negating the main advantage claimed for profit sharing.

References

Burns, P., R. Turvey, and T.G. Weyman-Jones. 1995. "Sliding Scale Regulation of Monopoly Enterprises." Discussion Paper 11. Centre for the Study of Regulated Industries, London.

Littlechild, Stephen. 1983. *Regulation of Britisb Telecommunications' Profitability*. London: HMSO.

Shleifer, Andrei. 1985. "A Theory of Yardstick Competition." *Rand Journal of Economics* 16(3): 319–27.

Richard Green, Department of Applied Economics, University of Cambridge, and Visiting Fellow to the Economic Development Institute of the World Bank