Price Control Regulation in North America: Role of Indexing and Benchmarking

Price cap plans in regulation are designed to mimic competition. The authors present the index logic that underpins this rationale in North American plans and offer two statistical approaches – indexing and benchmarking – that play a role in determining industry and/or national productivity trends and economy and/or industry input price trends that are used to track the unit cost of the industry.

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I. Introduction

Price caps are used widely today in the regulation of network utilities. Under a price cap plan, rates are allowed to rise each year by the growth rate of a price cap index (PCI). The growth of the PCI is driven by an inflation measure, often adjusted by an offset called an *X*-factor. For instance, in the approach to index design used in Britain, the PCI is based on Britain's retail price index (RPI). The *X*-factor is calibrated to recover projected cost over the term of the indexing plan.

Despite the influence of the British model, price caps actually have a longer history and a larger scale of application on the North American side of the Atlantic. The approach taken to price caps differs greatly in the United States and Canada and provides European regulators with a useful set of alternatives. Its simplicity makes it especially appealing in regions relatively

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new to utility regulation, such as Eastern Europe. North American regulation is also of interest because the large sets of data available on utility operations there have made possible the use of sophisticated econometric benchmarking methods.

We discuss the rationale for the North American approach to PCI design in Section II and the implementation of price control plans in Section III. In Section IV, we provide applications of PCI design in power and gas distribution, which illustrate the role of indexing and benchmarking used in crafting a price cap plan. We offer concluding remarks in Section V.

II. The North American Approach to PCI Design

The founding principle of PCI design in North America is that indexes should simulate the workings of competitive markets.[1] The logic of economic indexes yields information about competitive markets that can be used to implement this principle. If an industry earns a competitive rate of return in the long run, the long-run growth trend in an index of the prices that it charges will equal the trend in its unit cost index. Under competition, it is well known that

$$C = R \Rightarrow \ln(C) = \ln(R) \qquad (1)$$

Here, C is cost and R is revenue, and trend is approximated by the natural log. By definition, revenue is the product of output price, P, and output quantity, Y.

$$\ln(R) = \ln(P) + \ln(Y)$$
$$\Rightarrow \ln(P) = \ln\left(\frac{C}{Y}\right) \qquad (2)$$

Thus, the trend of unit cost of an industry equals the trend of its output price.

In a competitive market, maximum prices reflect industry conditions, and each individual supplier keeps all of the after-tax benefits accruing from its efforts to slow its own unit cost growth. This creates strong incentives for suppliers to contain unit cost growth. Competition ensures that slower growth in an industry's unit cost leads eventually to slower growth in the prices that it charges.

The unit cost of an industry can be volatile from year to year.

A price cap plan can simulate these competitive market conditions. Actual price index (API) measures the growth in a utility's price for services offered on a non-competitive basis. The growth in the API can be limited by a PCI that tracks the unit cost trend of the relevant utility industry, as reflected by:

$$\ln(\text{PCI}) = \ln\left(\frac{C}{Y}\right) \qquad (3)$$

Conformity can be achieved when the PCI tracks either the *annual* fluctuations in the unit cost of an industry or the industry's long-run unit cost *trend*. Each approach has advantages and disadvantages. The unit cost of an industry can be volatile from year to year due to input price fluctuations or to a temporary slackening or strengthening of market conditions. Unit cost responds to input prices in much the same manner as output prices do, but responds differently to demand fluctuations. For example, a slackening of demand typically lowers prices but raises unit cost. Thus, linking the PCI to annual industry unit cost fluctuations honors the competitive market standard only in the long run. Another problem with a short-term annual approach is that often the data needed to calculate industry unit cost trends accurately are not available in a timely fashion. For example, the final data needed to calculate the cost of power distribution nationwide in 2008 are not available until the middle of 2009, when FERC Form 1 reports are due. Delays for gas distribution data are even longer.

A PCI that is calibrated to reflect only the industry's long-run unit cost trend can mitigate these problems. However, in times of input price volatility, the long-run approach may subject