International Benchmarking for Monopoly Price Regulation: The Case of Australian Gas Distribution

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Abstract
Price-cap regulation is widely applied to network industries. However, regulators often encounter the problem of asymmetric information on efficient costs. Benchmarking can help reduce this problem. We present a benchmarking analysis, conducted for an Australian regulator, that derives measures of efficiency for Australian gas distributors relative to U.S. counterparts. Several techniques, such as data envelopment analysis and stochastic frontier analysis, are used to ensure that our measures are robust to methodology choice. We conclude with a discussion of how the regulator used the benchmarking results, along with other information, to help it determine appropriate price caps.

* The authors would like to thank three anonymous referees and the editor for constructive comments that have greatly improved the paper. The usual disclaimer applies. The views expressed in this paper are the authors and not necessarily those of NSW Treasury, the Independent Pricing and Regulatory Tribunal (IPART) or the NSW Government. Roger Carrington participated in this project while on secondment to IPART.
1. Introduction

It is widely recognized that network industries, such as gas and electricity, have natural monopoly characteristics. Monopolies can exploit their market power and set prices above minimum costs, so as to achieve above-normal profits. For much of this century the answer to this potential problem has generally involved one of two options: (i) government ownership, or (ii) private ownership combined with some form of cost plus rate-of-return regulation, where the regulated firm is allowed to set prices so as to cover non-capital costs plus a ‘fair’ rate-of-return on capital. The latter has been favored in the U.S., while the former has been favored in Europe, the U.K., and many other countries.

However, these two options are not without problems. In particular, both options suffer from a lack of efficiency incentives, which tends to result in costs that are above minimum costs. This has led to the recent development of new forms of regulation which seek to be incentive compatible. These incentive regulation methods were championed by U.K. telecommunications regulators in the 1980s, and have since been adopted in various forms by many regulators in many industries around the world.1

Incentive regulation can take many forms, but the most common form involves a combination of “unbundling” the network services from other parts of the industry (production and retail) and the application of some type of “price-cap” (or CPI-X) regulation to the (natural monopoly) network component. CPI-X regulation involves the setting of maximum allowable price increases equal to the rate of increase in the consumer price index (CPI) minus an X factor. The value of X is based upon the regulator’s expectations regarding future possible productivity improvements, plus other relevant information. The regulator’s assessment of potential productivity growth is generally based upon assessments of the present level of efficiency of the firm and past rates of productivity growth in the industry. Hence, the effective implementation of CPI-X regulation requires high quality, defensible measures of firm performance.

In this paper we describe an attempt to measure the efficiency of Australian gas distributors relative to each other and relative to U.S. counterparts. The benchmarking study coincided with the Independent Pricing and Regulatory Tribunal of New South Wales (IPART) review of the AGL Gas Network Ltd (AGLGN) Access Arrangement for its network in the State of New South Wales (NSW) in Australia. Several performance measurement techniques are used in the exercise, including partial productivity measures, regression analysis, data envelopment analysis (DEA), corrected ordinary least squares (COLS) and stochastic frontier analysis (SFA). We describe some of this analysis, and then discuss how the results of the exercise contributed to the setting of price caps for AGLGN’s NSW network.2

We have chosen to publish the results of this benchmarking exercise for a number of reasons. First, we hope to obtain feedback from a wider audience, regarding the appropriateness of the methods that we have employed. The use of benchmarking techniques in the implementation of incentive regulation is a relatively new area of

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1 See Crew and Kleindorfer (1996) for further discussion of incentives and regulatory structures.
2 See IPART (1999a) for a detailed description of the benchmarking analysis reported in this paper.