



A general framework for price regulation of airports



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ABSTRACT

Price cap regulation (PCR) was first implemented for privatized utilities in the UK in the 1980s. It has since been adopted by numerous countries as a regulatory regime in several sectors. This paper focuses on the development of different forms of price regulation of airports of which PCR is one variant. In countries where airport privatization is still in the early stages, the spectrum of airports and varied nature of regulatory regimes can be confusing and the lack of a general framework can itself become an obstacle to privatization. This paper proposes a general framework comprising decisions to be made for seven variables which is able to accommodate the diversity of airports and varied approaches that may be required as well as transitions between approaches. These approaches include light-handed regulation, price or revenue yield caps, rate of return regulation, earnings sharing, as well as choice of till.

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1. Introduction

When the UK began privatization of its state owned utilities in the 1980s, rate of return regulation (RORR) was the form of price regulation most commonly used in the US for the regulation of privately owned utilities. Instead of US style RORR, the UK government introduced price cap regulation (PCR) for industries with no or limited competition. Proponents of PCR argued that RORR did not incentivize cost efficiency and often led to regulatory capture. PCR was held up as a superior form of price regulation where the regulator could delegate pricing decisions to the firm while providing it with the incentive to reap profit increases from cost reductions and productivity improvements.

Other types of incentive regulation include rate case moratoria, profit sharing, revenue sharing, banded RORR and yardstick regulation (Vogelsang, 2002). PCR became widely adopted as it combined simplicity with incentives for cost reductions and flexibility for price rebalancing (Sappington and Weisman, 2010; Gómez, 2013). PCR was subsequently applied to the UK privatized telecoms, electricity, gas, water, airports and railways sectors. PCR was also adopted by many other countries around the world as privatization of utilities and infrastructure gathered momentum from the 1990s.

PCR for airports was introduced for UK privatized airports in 1986. Since then, airports in several other countries have also been

privatized and global airport players are increasingly making their presence felt (Graham, 2008a; Gillen, 2011). Different approaches to price regulation of airports have developed of which PCR is one variant. These approaches include light-handed regulation, price or revenue yield caps, rate of return regulation, earnings sharing, as well as choice of till (Forsyth et al., 2004). In countries where airport privatization is still in the early stages, the spectrum of airports and varied nature of regulatory regimes can be confusing and the lack of a general framework can itself become an obstacle to privatization.

This paper proposes a general framework, comprising decisions to be made for seven variables, which is able to accommodate the diversity of airports and varied approaches that may be required, as well as allow for transitions between approaches. We begin with a brief review of price cap regulation in Section 2. Section 3 examines the diversity of regulatory approaches in the airport sector. Section 4 contains a proposal for a general framework that can accommodate the diversity of price regulatory regimes for airports. Section 5 concludes.

2. A brief review of price cap regulation

PCR is typically characterized by the following (Acton and Vogelsang, 1989):

- The regulator chooses initial prices and sets a price ceiling for prices to be charged by the regulated firm;

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- In a multiproduct industry, price ceilings are defined for baskets of services offered by the regulated firm which can be expressed as an aggregate price index or weighted average of prices;
- Price ceilings are adjusted periodically by a pre-announced adjustment factor external to the firm;
- The adjustment factor, baskets, and weighting schemes for the baskets are reviewed and changed periodically.

Within the above general framework, PCR has proven to be flexible in accommodating variations in design in response to different goals in different contexts. The main variations in design are briefly described below.

2.1. Pure PCR

In the initial version of PCR, price increases were capped at $RPI - X$ where RPI is the retail price index and the X-factor in the cap is specified by the regulator and typically reviewed at set intervals. Here, the inflation index is the RPI with the X-factor representing the efficiency target. The X-factor represents the positive technical change of the firm's process relative to the economy plus the input cost savings enjoyed by the firm relative to the economy arising from differences in cost weights relative to the average firm in the economy (Wolak, 1998). This pure form of price capping sets the cap independently from the costs of the regulated firm and is also known in the literature as “high-powered” caps. By regulating prices and not earnings, PCR are high-powered in the sense of not continually adjusting prices to reflect costs and thus provide strong incentives for cost reduction.

2.2. Hybrid PCR

Hybrid price caps which take into account the costs of the industry or the regulated asset base in the inflation index do less to decouple prices from costs and are considered to be a less “high-powered” price setting process as compared to pure PCR.

2.3. Pure revenue cap

A pure revenue cap regulation (RCR) arrangement caps the total amount of revenue the regulated firm is permitted to earn, with a correction mechanism which adjusts for under or over recovery of revenue (Alexander and Shugart, 1999). Instead of the restriction being on price, the restriction is on revenue or price multiplied by quantity. In order to set the initial price, the regulator will need to have a reasonable forecast of quantity. RCR is appropriate for industries where demand is relatively stable, risk of price volatility is low and where fixed costs are high. High fixed costs industries have costs that do not vary appreciably with units of sale so that the firm has less incentive to adjust forecast output downwards. RCR induces firms to discourage rather than encourage consumption and have been used where demand management is a key objective, such as in water and electricity. However, revenue caps do not cap prices and could result in a situation with price being above and quantity being below the unregulated monopoly level (Crew and Kleindorfer, 1996).

2.4. Hybrid cap

A hybrid cap, comprising both price and revenue components, is designed to make the regulatory regime mimic the mix of fixed and variable costs in a company. The underlying theory is that the fixed variant is regulated through a revenue cap and variable costs are regulated through a price cap (Alexander and Shugart, 1999). Hybrid systems have mostly been used in the electricity sector.

2.5. Revenue yield price cap

A revenue yield price cap (RYPC) sets the maximum weighted average revenue per unit of output for the regulated firm. Total revenue varies directly with an output variable while average revenue is allowed to vary in line with some form of $CPI - X$ formula similar to weighted average PCR. Under PCR, the allowed marginal revenue varies according to the actual price of the additional unit. Under RYPC, the allowed revenue per additional unit is fixed.

2.6. Yardstick competition

In yardstick competition, prices are linked to the costs of a peer group of companies and the regulated firms are not allowed to charge higher prices than the average costs of the peer group. The X-factor could also be based on the average industry productivity improvement.

2.7. Sliding scale regulation

Under a profit or earnings sharing arrangement, the regulated firm may be made to share earnings above a specified level with consumers, thus avoiding excessively high earnings for the regulated firm (Sappington and Weisman, 1996). Under a revenue sharing arrangement, the regulated firm shares with its customers a fraction of the revenues it generates beyond a certain level.

Each of the above regulatory options has its pros and cons (Sappington and Weisman, 2010; Gómez, 2013). These are summarized in Table 1. A hybrid price cap which allows for input costs to be passed through has been commonly used instead of pure PCR. Hybrid forms of regulation such as combining a price or revenue yield cap with a sliding share profit or revenue regulation have also been devised. The objective of these modifications is to attempt to offset weaknesses of PCR (primarily high degree of risk on the regulated firm from earnings volatility) with the strengths of others. The tradeoff is re-introducing the need for the regulator to track costs and the potential reduction in incentives to maximize efficiency. The design criteria, the kind of mechanism implemented, and parameters chosen depend on a number of factors: efficiency incentives, regulatory risk, political concerns, investment objectives as well as the practicability of information requirements.

3. Airport ownership and price regulation

3.1. Airport ownership and privatization

Airport infrastructures are characterized by different levels of private sector participation, degrees of congestion, different price regulation regimes, charge components, charge structure and charge levels. The factors behind this heterogeneity include historical differences, differences in national agendas, degree of market power, hub or destination airport, policy toward airline competition, etc. In the past two decades and following behind the deregulation of the airline industry, the airport sector has evolved rapidly from an industry characterized by public sector ownership and control to one in which the private sector and global players are increasingly making their presence felt (Graham, 2008a; Gillen, 2011). The commercialization of airport activities has been motivated by the well-known arguments for privatization which include greater efficiency, reduced need for public sector investment and improving the organization's ability to diversify and to provide incentives for management and employees to perform well.

However, privatization might also result in a private monopoly which could over-charge, deliver lower standards of service, invest

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