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Incentive regulation for airports

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1. Introduction

A significant proportion of airports around the world are monopoly infrastructure providers, or at least enjoys a significant degree of market power, as there are often few substitutes and limited competition between airports. This is likely to be especially true for the largest point-to-point airports.

Market power in airports, as in other infrastructure sectors presents a range of economic problems, which can lead to excessive pricing and poor incentives with regard to allocative and dynamic efficiency. Depending on the precise market characteristics, the relevant public authorities use a range of different approaches to address this market power issue. These range from direct price setting to *ex ante* economic regulation to relying on the option of *ex post* intervention based on competition law. As regards airports, [Gillen \(2007\)](#) demonstrates that the regulatory response varies considerably between countries. For example, the UK applies *ex ante* price regulation to Heathrow Airport, the Australian government uses price monitoring for its largest airports and US airports are generally required to recover only those costs that relate to the provision of aeronautical services. There is no consensus, even within as homogenous a region as the EU as to the most appropriate way to address airport market power issues. Approaches depend on a number of local circumstances including the type of ownership and the size of the market. For example, [Reinhold et al. \(2010\)](#) shows that the regulatory approaches across Europe range from price caps and cost-plus regulation to no regulation at all. Furthermore, some of the approaches have changed significantly since 2010 with no clear convergence towards a common approach.

In other sectors, including energy networks, one particular form of regulation that is commonly applied is incentive regulation (also often referred to as price cap regulation). The rationale for incentive regulation is to control for the effects of market power while at the same time provide incentives for the regulated entity to improve its efficiency in both its operations and its investment decisions.

Incentive developed in the 1980s in response to the perceived problems of US-style rate of return regulation, which was seen to control excessive process, relative to actual costs, but have poor incentive properties to control costs in the first place, particularly leading to problems of “gold plating” in investment. The idea of capping prices independently of costs evolved over a period of time but reached its clearest and best known articulation in [Littlechild \(1983\)](#). His initial conception of RPI-X regulation (with a privatised British Telecom in mind) was to peg prices relative to the Retail Price Index for a fixed period (say five year) to protect consumers from the negative effects of market power on prices while providing BT with a strong incentive to overhaul its efficiency. Littlechild saw this form of price cap as an interim measure (see [Stern, 2003](#)), which would become unnecessary as the developing competition took away the need for *ex ante* regulation. As a result there was no consideration of how the X efficiency factor might be reset on a repeated basis.

The problem with resetting the allowance for costs on a regular basis is that price cap or incentive regulation runs the risk of coming cost-plus rate of return regulation again. Prices can be held to a reasonable level, given costs, but the incentive to achieve allocative and dynamic efficiency may be reduced.

Yardstick regulation (see [Shleifer \(1985\)](#)) represents one solution to this problem: in this case the costs that the regulated firm should be allowed to recover are not its own costs, but rather those incurred by the most efficient of its peers. Shleifer’s basic model assumes a comparison amongst homogenous firms, but he assumes that the problem of heterogeneous firms can be dealt with by the

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use of econometric techniques to control for exogenous differences between firms.

However, despite some progress in benchmarking airports (see [Morrison \(2008\)](#), [Adler et al. \(2009\)](#) and [Adler and Liebert \(2014\)](#)), the problem of adjusting for the extent of heterogeneity in infrastructure providers (see [Reinhold et al. \(2010\)](#)), combined with the financeability implications of setting cost allowances that may be significantly different to a company's actual costs, means that there are virtually no cases of regulators applying a pure yardstick approach either to airports or to other regulated utilities.

Many different approaches to incentive regulation have been adopted in response to this problem, and there is a growing body of literature focussed on assessing the relative merits of different forms of regulation, usually focussed on trying to assess how relative efficiency is impacted by different regulatory models (for instance, see [Gillen \(2007\)](#) and [Adler et al. \(2015\)](#)). This work of comparing regulatory regimes at different airports tends to focus on high level differences in regulatory design: single till vs. dual till; price caps vs revenue caps; yardsticks vs. hybrid models.

This literature is valuable in helping the community of regulatory practitioners identify the form of regulatory scheme, at a high level, most likely to promote economic efficiency.

At the same time however, there is a something of a gap between this literature and the reality faced by regulatory practitioners. While regulators can use benchmarking or yardstick information to get a sense of the productive efficiency of their regulator charges, it is impossible for them to observe the counterfactual; that is how costs and prices would have evolved had they, the regulator, taken different decisions.

There is no issue that places a regulator's commitment to incentive regulation under greater strain than the relationship between price (allocative efficiency) and cost (productive efficiency) in any given regulatory scheme. When regulation is seen as a temporary expedient (as in [Littlechild \(1983\)](#)) this is not an issue because growing competition is seen as the force that brings prices and costs into line.

But (as recognised in Littlechild's later work on the water industry, which envisaged a permanent role for regulation ([Littlechild \(1986\)](#))), when prices need to be re-determined on a regular basis many other factors come into play which risk undermining the incentive properties of the regime:

Incentive regulation requires prices (or revenues) to be fixed for a period of time while costs may vary. As a consequence outturn profits may be higher (or lower) than envisaged when price limits were determined. The key challenge for regulators is how to deal with this discrepancy. If prices are adjusted to match costs more closely or with greater regularity this may give the appearance of fairness (to both investors and customers) but may serve to undermine the incentive to reduce costs in the first place. If prices are adjusted to match actual costs to regularly then price cap regulation collapses to cost-plus rate of return regulation again. On the other hand if prices are allowed to diverge significantly from costs for too long the regulated company may risk financial failure (if costs are higher than anticipated) or may reap significant profits, which can lead to growing political pressure to renege on the existing agreement, with knock-on consequences for the future incentives of the scheme. Then, when prices are re-adjusted, how does the regulator take into account the new information created by the discrepancy?

The challenge the regulator faces is to balance the competing pressures of allocative and productive efficiency. In practice this focus differs from a large part of the academic literature which focusses on benchmarking evidence to identify which high level forms of regulation appear to deliver the highest level of productive efficiency, with little regard to allocative issues. From the regulator's point of view, high efficiency is only a means to an end. Efficiency by itself is of no value if the fruits of that efficiency are not passed on to customers. But the process of passing on those benefits undermines the incentive to create those benefits in the first place. A balance needs to be struck, which is often as much political – what is acceptable in the particular local circumstances – as it is economic.

The objective of this paper is to:

- consider how incentive regulation works in practice in the context of airports; and
- identify the critical factors that make incentive regulation a success, with particular focus on the balance of incentives discussed above, in conditions of imperfect information.

This will help governments and regulators to make better-informed choices on the most appropriate regulatory regime. In this paper, we draw on our practical experiences in advising airports, airlines and regulators in the aviation and other sectors around the world.¹

We first briefly discuss the theory underlying incentive regulation and then look at how price caps are set in practice before identifying the critical factors that make incentive regulation a success.

2. Theory behind incentive regulation

2.1. Concept

Provision of infrastructure under conditions of significant market power can lead to a number of welfare-reducing outcomes that include higher prices and lower efficiency. This involves both productive and dynamic efficiency as there is insufficient pressure to

¹ We regularly advise airports, airlines and regulators around the world, including Heathrow Airport, Changi Airport, easyJet, Emirates, Toronto Pearson Airport, etc.

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