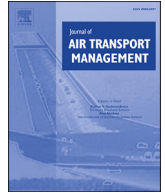




Contents lists available at ScienceDirect

Journal of Air Transport Management

journal homepage: www.elsevier.com/locate/jairtraman

Regulation in markets facing uncertainty: The case of Australia

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ARTICLE INFO

Article history:
Available online xxx

Keywords:
Regulation
Airports
Uncertainty
Australia
Air navigation
Price caps

ABSTRACT

This paper explores the ways in which economic regulation accommodates uncertainty through an examination of experience of regulation in Australia against a background discussion of literature on regulatory risk and principles for good regulation. Regulation, typically in the form of incentive based price caps, often applies to aviation infrastructure, such as major airports and air navigation services. At the same time, the demand for aviation infrastructure services is uncertain and subject to external shocks. Two case studies in economic regulation of aviation infrastructure are examined. They cover a period of volatile demand associated with the collapse of a major domestic airline which coincided with the September 11 terrorist attacks in the US. One case study involves the application of price caps to newly privatized airports during 1997–2002. The other case study examines the development of a long term price path for air navigation services over 2002 to 2004. The case studies illustrate the important role played by regulatory design. The paper concludes that the design of the regulatory framework has an important role in ameliorating the risks associated with uncertainty.

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1. Introduction

Airports and air navigation services, as part of aviation infrastructure, play an important role in the productivity of airline services, and in the accessibility of airline services for passengers. In common with other infrastructure industries, aviation infrastructure has relatively high costs in comparison to demand. As airports are capital intensive and subject to indivisibilities, there is generally a single airport, or only a few airports, in a given geographic region. Competitive influences on key aeronautical services¹ can be weak depending on the particular circumstances of an airport, including its geographical location. Although potentially less capital intensive than airports, the safety requirements associated with air navigation services imply that a single air navigation service provider (ANSP) serves a geographic region. There is limited, if any, scope for direct competition between infrastructure providers within a geographic area, other than through competitive tendering for the provision of services within the area. In areas where there is considered not to be enough competition to protect users, economic regulation, in some form, is often applied to major airports

and to ANSPs with the aim of achieving more economically efficient outcomes.

The demand for aviation services is subject to shocks due to external events, such as terrorist attacks, severe weather conditions, and geological events, the Eyjafjallajökull volcanic dust cloud in Iceland in May 2010 is a recent example. Changes in macroeconomic conditions, including exchange rates movements and financial crises, additionally have a magnified effect on the demand for aviation services. The occurrence of regulation of aviation infrastructure raises the question of the effect of regulation on the level of uncertainty faced by the aviation industry, and how industry uncertainties are taken into account in regulation. This paper examines economic regulation in the context of the uncertainties faced by aviation infrastructure services.

Price caps are a common approach to economic regulation applied to major airports, and an approach that is applied to some air navigation services. Under a price cap approach the overall level of prices is constrained over a period of time to an upper limit often linked to inflation minus a productivity factor, such as $CPI - X$.² Under a price cap there are incentives for cost efficiency because the regulated firm is able to keep the gains from cost reduction which may be passed on to users at the next price review. Two

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¹ 'Aeronautical services' include services related to aircraft movements and passenger processing.

² CPI stands for the retail price index while X is the expected efficiency gains by the company.

types of price caps can be distinguished; 'pure' price caps and 'hybrid' price caps (Gillen, 2011; Niemeier, 2009). Under 'pure' price caps the overall level of price caps is primarily determined through the estimated productivity gains available to the regulated firm rather than through reference to the regulated firm's costs. 'Hybrid' price caps set the overall level of the price caps primarily based on the firm's costs, typically estimated forward looking, and efficient costs.

'Hybrid' price caps are the most typical form of price cap applied. The key feature of price-cap regulation in practice, is that a fair rate of return on the capital base is set *ex ante*, on the basis of the regulator's perception of efficiency savings and input prices over the control period (Grayburn et al., 2002). The key advantage of the price cap form of regulation is that it provides incentives for cost reduction and efficient pricing. This approach compares with rate-of-return regulation where prices are regulated based on total costs including depreciation and a normal rate of return on capital and there is less incentives for cost reduction and efficient pricing for the regulated firm. It is commonly applied to airports in North America and some European countries. There are additional variants of these two broad types of regulation, including 'sliding scale regulation' which relates the level of charges negatively to passenger growth over a given period of time. The price cap form of regulation, and how this form of economic regulation manages uncertainty for aviation infrastructure, is this focus of this paper.

Australia has experienced a wide range of regulatory approaches to aviation infrastructure in a short period of time. CPI-X price caps were applied to 11 newly privatized airports in 1997 and 1998 and were removed in 2001 and 2002. In 2002 light-handed regulation in the form of price monitoring was applied to aeronautical services at the five largest airports in 2002, replacing price caps. In addition, since 1995 regulation of airport services under the National Access Regime can potentially apply to airports, and has applied on some occasions. Regulation of air navigation services changed from a short term annual cost-based approach to the establishment of a 'long term price path' in 2004. This broad range of regulatory experience applied to aviation infrastructure provides interesting case study material for analysts of regulatory approaches.

Two case studies in regulation of aviation infrastructure in Australia illustrate very different approaches to the management of uncertainty faced by aviation infrastructure services. Australian experience is particularly interesting. A dramatic fall in demand for aviation services occurred in Australia at time when price caps were applied to newly privatized airports, and preceding the introduction of a long term price path for air navigation services. In October 2001, Ansett Australia, a major Australian domestic airline carrier, ceased operation coinciding with a global reduction in demand associated with the September 11 terrorist attacks in the USA. The severe acute respiratory syndrome (SARS) epidemic followed in 2002. The island nature of Australia, its large size, and the distances between major cities mean that there is a heavy reliance on air services. These characteristics contrast with those in some other countries where there is greater substitutability between airports and between modes of transport, such as in many European countries, where as a result the case for economic regulation of airports is considerably weaker.

The paper describes the approach taken to regulatory price determination and the management of industry uncertainties in each of the two case studies. Information for each case study is sourced from Government publications, regulatory documents, a review of airport regulation undertaken by the Productivity Australian Government, Productivity Commission (2002), two

regulatory reviews of Airservices' prices undertaken by the ACCC (2011, 2004) and discussions with industry representations.³ The structure of the regulatory frameworks is assessed in relation to regulatory risk and principles of good regulation.

The structure of the paper is as follows. An initial background discussion of regulatory risk and principles of good regulation is contained in section 2. A case study on the application and removal of price caps on airports in Australia follows in section 3. The second case study, the development of a long term price path for Airservices, is then presented in section 4. Section 5 examines the Australian case studies described in sections 3 and 4 to assess how well regulation handled uncertainty. Finally, conclusions are made in section 6.

2. Economic regulation of infrastructure and risk

2.1. Regulatory risk

In general risk is defined under international standards as "an effect of uncertainty on objectives" which can be positive or negative (UNECE, 2012). Identifying a source of risk involves envisaging an event that may or may not occur, the likelihood of the event occurring and the possible consequences of the event. Regulation impacts on the degree of 'market risk' to which a company is exposed. Market risk, unlike firm-specific, idiosyncratic risk, cannot be eliminated by means of portfolio diversification and is therefore of great importance to risk-averse investors (Wright et al., 2003).

Regulation potentially causes different types of risks for a firm. The form of regulation, such as whether a price cap approach is applied or rate of return regulation is used, is one potential source of risk. A company with high fixed costs that is under price-cap regulation faces excessive risk from demand fluctuations as these movements significantly affect the company's income but leave its cost level relatively unchanged (Alexander et al., 1996). The link between regulatory structure and risk in infrastructure industries has been the subject of studies including comparisons of UK price cap regulation and US rate-of-return regulation. The studies undertaken usually focus on the effect of the regulatory structure on the regulated firm's cost of capital.

Alexander et al. (1996) considered the evidence from a large number of countries to disentangle the influence of regulation on risk as measured by a firm's cost of capital. Their investigation involved studying regulated utilities in the UK, the Pacific region, Europe and North and South America. They show that the choice of regulatory regime affects the level of shareholder risk for the regulated company. They found that investors bear the greatest non-diversifiable risk with price caps and the least non-diversifiable risk with rate-of-return regulation. They considered that their results were in line with earlier more limited studies. The problem of focusing on just one specific element of what is a complete financial package is identified. The determination of the rate base and the way in which investment is treated are among other factors that are important.

In general, there is a trade-off between incentives to improve efficiency and the degree of risk to which a company is exposed. A company will not strive to lower its costs unless it benefits from these reductions, but an inability to pass on cost changes to customers means that the company faces risk from uncontrollable cost fluctuations. (Alexander et al., 1996, p.7)

Extending the earlier analysis, Alexander et al. (2000) consider the various methodological questions that arise in the transport sector when establishing the link between the degree of market

³ See 'Acknowledgements' section.

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