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Regulating alongside competition – issues raised in the UK airport market

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Abstract

Airports differ from natural monopoly network utilities, such as energy and water networks, and yet have historically been regulated using similar approaches, relying on price caps designed to recover historical costs incurred. However, airports can – and do – compete with each other and, following the recent decision by the UK Competition Commission to require BAA to sell three of its seven airports, this inter-airport competition looks set to intensify.

This paper explores the issues that should be considered when regulation sits alongside competition. It describes how the investment incentives created by the application of ‘RPI-X’ style price cap regulation can be similar to the incentives typically associated with ‘rate of return’ regulation; namely the existence of ‘gold plating’ incentives, through the Averch-Johnson effect.

However, these distortions to incentives also affect non-regulated airports. A model is presented that illustrates the potential for perverse incentives on non-regulated airports and distortions to their investment decisions. Finally, this paper considers the case of the regulation of Stansted Airport, which illustrates that these incentive effects can occur in practice. The paper also describes the Civil Aviation Authority’s approach to regulating Stansted against the background of these incentive effects.

Keywords

Airports, Regulation, Competition, Investment, Price caps

¹ The views expressed in this paper are those of the author and do not constitute a statement of policy by the UK Civil Aviation Authority. I would like to thank Harry Bush and Alina Jardine Goad for their helpful comments on this paper; all remaining errors are the author’s.

1. Introduction

Airports differ from natural monopoly network utilities, such as energy and water networks, and yet have historically been regulated using similar approaches, relying on price caps designed to recover historical costs incurred. However, airports can – and do – compete with each other and, following the recent decision by the UK Competition Commission to require BAA to sell three of its seven airports, this inter-airport competition looks set to intensify.

This paper explores some of the issues that should be considered when regulation sits alongside competition. In particular, it considers the potential for price cap regulation to distort the behaviour of both price capped and non-regulated airports, setting out a model to explore some of these incentive effects and referring to the example of the regulation of Stansted Airport to illustrate how these incentive effects can occur in practice. Finally, the paper refers to the recent UK Civil Aviation Authority (CAA) price control decision at Stansted, and how the CAA dealt with some of the issues raised in this paper.

1.1 Paper outline

This paper starts, in section 2, with a description of the UK airports sector and the evolution of competition. Section 3 considers the economic characteristics of airports, whether airports are natural monopoly businesses and the implications for how airports are regulated. Section 4 discusses the impact that price control regulation can have on non-regulated airports, illustrated by reference to a simple model of airport incentives. Section 5 presents the example of the regulation of Stansted Airport, in order to illustrate that the incentive effects discussed in Section 4 can apply in practice. Finally, Section 6 sets out a summary of the paper.

2. Background

2.1 The UK airport market: a brief history

In the last 25 years, the UK airport market has moved from a model where ownership was predominantly by local and national Government, towards one where there is a mix of private and public ownership of airports, with most airports operating on a commercial basis. This trend is best illustrated by the privatisation of the British Airports Authority, owners of seven UK airports, including Heathrow and five of the other ten largest UK airports.² The British Airports Authority was privatised and listed on the London Stock Exchange, as BAA plc, in 1986.

In addition, a number of local government owners were coming under increasing pressure to reduce the levels of public sector debt, which included the debt held by the airport businesses that they owned, with the Government obtaining powers to require local authorities to transfer airports into commercial entities.³ This move also followed the manifesto commitment made

² CAA airport statistics, 2008.

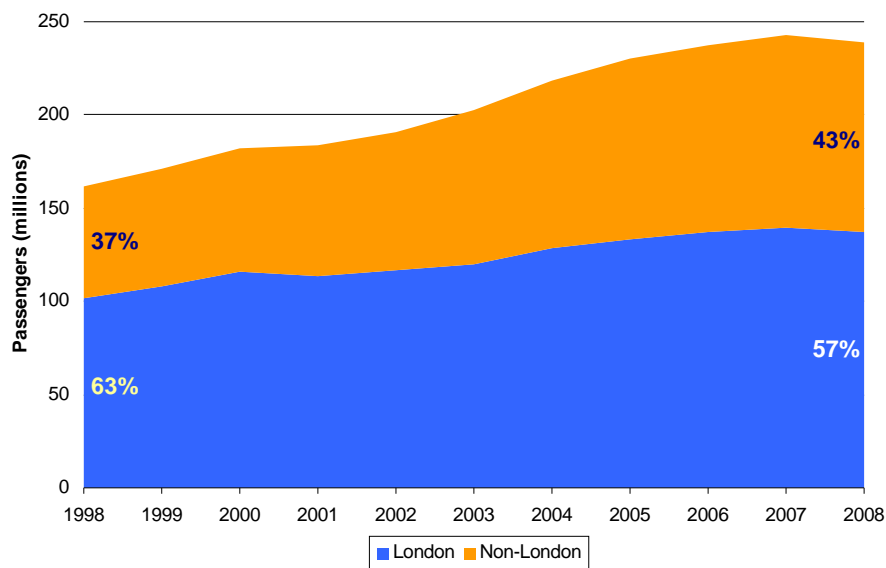
³ Section 13, Airports Act 1986

during the 1983 election to make as many as possible of the UK's airports private sector companies.⁴

This resulted in a number of new airport companies, including the creation of the Manchester Airport Group (MAG), now the UK's second-largest airport operator, and the privatisation of Liverpool Airport in 1990, which now forms part of the privately-owned Peel Airports Group. London Luton Airport, now the UK's fifth largest airport, was also transferred in 1987 to a wholly-owned subsidiary of Luton Borough Council, but operated on a commercial basis. In 1998 the airport's operation was transferred, under a 30-year lease, or 'Public-Private Partnership', to a private company which is now owned by Abertis Infraestructuras and Aena Internacional, both of Spain.⁵

This growth in commercial ownership accompanied a period of relatively rapid growth in UK air travel, during which airports outside of London took an increasing share of passenger demand, increasing from 37 per cent to 43 per cent of the total number of passengers between 1998 and 2008, as illustrated in Figure 1 below.⁶

Figure 1 – Passenger numbers at London and non-London airports, 1998 to 2008



Source : CAA Airport Statistics

This growth in the commercial operation of airports did not, however, provide sufficient competition to allow these airports to operate free from economic regulation of their pricing, service quality and investment plans. Indeed, the privatisation of BAA as a single entity vested the company with a very strong market position which, to a significant degree, it retained. In

⁴ Conservative Party manifesto, 1983

⁵ London Luton Airport website

⁶ Recently there has been a slowing of growth, and reductions in passenger numbers, at a number of UK airports, reflecting the changing economic circumstances in the UK.

2005, BAA's airports accounted for around 90 per cent of passengers starting their journey in the Southeast of England and over 80 per cent of passengers starting their journey in Scotland.⁷ Consequently, the legislation that privatised BAA – the Airports Act 1986 – also introduced powers for Government to 'designate' airports for price control regulation by the Civil Aviation Authority (CAA). The Government initially designated four airports for this form of economic regulation: Heathrow, Gatwick, Stansted (all owned by BAA) and Manchester Airport (owned by MAG).

However, despite the structure of the market reducing the potential for competition between airports, the changes taking place in the airline sector had a significant impact on the dynamics of the sector and on the commercial pressure brought to bear on airport operators. The creation of a single European aviation market swept aside the restrictions that previously constrained the ability of European airlines from operating services to, from and within other member states. This liberalisation of the European market facilitated the rapid growth of no-frills airlines, notably Ryanair and easyJet.

These airlines offered simplified air services, on a point-to-point basis, sold directly to passengers, initially via the telephone and then predominantly through direct Internet sales. These no-frills airlines also brought a sharper focus on cost reduction to the industry, resulting in greater pressure on the charges levied by airports for the use of facilities; pressure backed by implicit – and sometimes explicit – threats to move services or growth plans to alternative airports.⁸ The entry of no-frills airlines also brought increased pressure on the incumbent airlines, as illustrated by British Airway's decisions to sell its regional UK business to FlyBE and then its franchise business at Gatwick (GB Airways) to easyJet. As a consequence, easyJet is now the largest airline at Gatwick and carries more short-haul passengers than BA.⁹

These developments facilitated competition, at least outside of the southeast of England and lowland Scotland, to such an extent that the Government decided to remove price cap regulation from Manchester Airport, following advice from the CAA.¹⁰

Whilst the ownership of many of the UK's airports has changed in the last decade, BAA's ownership of a number of neighbouring airports in the Southeast of England and in Scotland has, to date, remained unchanged. However, in March 2009 the UK Competition Commission (2009) issued its final decision that BAA should be required to sell Gatwick and Stansted airports to different owners, together with one of Edinburgh or Glasgow Airports. This decision is now

⁷ OFT (2007)

⁸ Recent examples include the decision by Ryanair to withdraw services from Manchester Airport, whilst opening a new base at the nearby Leeds-Bradford airport, and its decision to relocate aircraft from a number of UK airports, including Stansted, to bases in Europe, notably in the Canaries (source: www.ryanair.com). Similarly, easyJet announced plans to reduce its capacity at London Luton and to close its East Midlands base, stating that it "will move this capacity to more profitable airports and expects that most of the aircraft will be redeployed to continental European bases" (source: www.easyJet.com, 3 September 2009).

⁹ CAA Annual Airport Statistics 2008

¹⁰ Statutory Instrument 2008 No. 2702 and CAA(2007).

subject to appeal by BAA, which is scheduled for a hearing of the Competition Appeals Tribunal commencing on 19 October 2009.¹¹

3. Nature of airport markets and the role of competition

Whilst the UK has placed significant reliance on competitive pressure to protect consumers from exploitation by airport operators, this approach is far from widespread. Indeed, public ownership of major airports is common. For example, the major airports in the USA are owned by local Port Authorities, although there are examples of airline ownership and/or operation of individual terminals.¹² In addition, other states have adopted a model of airport charging that involves extensive cross-subsidies between different airports, as is the case in Spain.¹³

Indeed, there is considerable debate about whether competition between airports is an appropriate, or sustainable, model for the sector, with industry participants arguing that “airports ... are natural monopolies that are able to exert significant market power” (IATA, 2007). Whilst airports can enjoy very strong positions of market power – as is the case for undertakings in many other sectors of the economy – it is useful to explore whether it is reasonable to characterise airports as natural monopoly businesses.

3.1 Airports as natural monopoly networks

There are a number of different approaches to defining what constitutes a natural monopoly, but the unifying characteristic is the premise that they are markets in which competition cannot be sustained and where it is inevitable that a single firm will supply the entire market demand. The potential for single-firm supply is often explained by reference to the cost characteristics of the industry, with a natural monopoly industry exhibiting falling long-run average costs as production increases (see, for example, DiLorenzo, 1996). These falling costs can result from significant economies of scale, such as is caused by high fixed costs of production, or by economies of scope.

There are a number of difficulties associated with the analysis of the cost structure of airports. Indeed, Starkie (2008) refers to the difficulty in analysing the cost structure of airports, but does refer to evidence presented by the Monopolies and Mergers Commission (1991), which noted that whilst Heathrow was larger than some international comparators its costs were significantly higher. Other work, citing much earlier evidence, has argued that there are economies of scale in the operation of runways, but diseconomies of scale in the operation of terminals, meaning that the overall cost characteristics depend upon the balance between these two effects (Betancor, 2000). The Australia Productivity Commission (2002) argued that there was some evidence of economies of scale in airports, at least in relation to runway infrastructure, but at the airport as a whole these may be exhausted at quite low levels of output. The Productivity Commission cited evidence suggesting that economies of scale would be exhausted at about 3 to 3.5 million passengers per year – a relatively low level in the context of the UK airport market, which served 235 million passengers in 2008.

¹¹ Competition Appeals Tribunal, case 1110/6/8/09

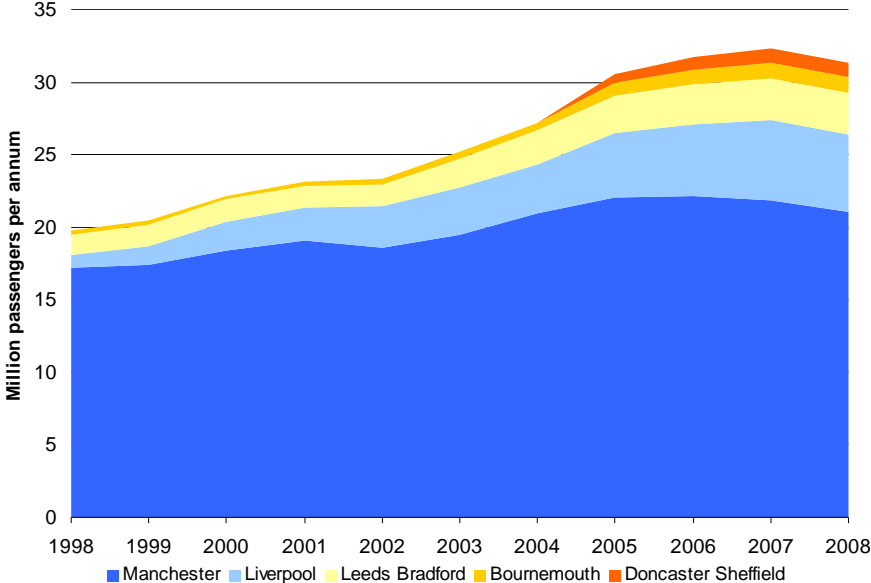
¹² See, Annex A10(11) of Competition Commission (2009)

¹³ For a description of the operation of the Spanish airports market, see Bel (2005)

The more recent CC report into BAA also discussed the issue of economies of scale, focusing on whether BAA’s ownership of multiple airports resulted in any significant economies of scale or scope. The CC concluded that the magnitude of any economies of scale was moderate (a maximum of £29 million per annum) and that many of these scale economies arose from the sharing of central costs between multiple business units. As such, these scale economies did not require the joint ownership of neighbouring airport businesses and would not suggest that these airports are natural monopoly businesses.

Furthermore, the UK airports sector does provide examples of conduct that are consistent with the view that larger airports experience diseconomies of scale, such that the sector is not characterised by natural monopoly and that competition is sustainable. This is illustrated by the pattern of airport growth, and competition, in the northwest of England, as illustrated by Figure 2. As is shown below, this region was historically dominated by Manchester Airport, accounting for around 17 million passengers in 1998, or 87 per cent of the total. Whilst the airport grew, peaking at 22 million in 2007, its share of the regional market fell to 67 per cent by 2008. This fall in market share has coincided with a period when its charges to airlines have fallen in real terms. Indeed, Peel Airports opened a new commercial airport (Doncaster-Sheffield) at a former military airfield, successfully attracting around one million passengers in 2008, four years after opening. The rapid expansion of Liverpool Airport also suggests that there is no inevitable cost advantage enjoyed by Manchester Airport and that smaller airports can successfully, and sustainably, grow and compete for passengers.¹⁴ This pattern of competition and airport growth strongly suggests that there is no underlying cost advantage for incumbent airports that would amount to a position of natural monopoly.

Figure 2 Total number of passengers travelling using airports in the northwest of the UK, by airport (1998 to 08)



Source: CAA Airport Statistics, 2008

¹⁴ See, for example, the case studies cited by the Competition Commission (2009)

The other principal source of economies of scope at airports seems most likely to arise from the operation of network airlines at some airports. Airports supporting hub airline operations are likely to enjoy economies of scope through the value generated by the combination of various airline routes into a network, which lowers the average cost of serving individual markets by connecting a number of feeding services into a single outbound service.

However, it is somewhat simplistic to characterise hub airports as not being subject to competition. For a significant proportion of routes and of passengers, Heathrow Airport faces a degree of competition. First, there is direct hub-on-hub competition for connecting passengers, something that Heathrow's owner stresses and which is becoming increasingly important as alternative hub airports expand in the middle east and east Asia.¹⁵ These new entrant hubs are capable of offering convenient onward connections, supported by feeder flights from the UK regions.¹⁶ As a consequence, as the number of domestic services into Heathrow has declined, there has been a growth in UK regional connections to overseas hub airports.

Second, airports that serve connecting passengers are likely to be exposed to competition from direct services, as passengers are likely to prefer direct services to those that require an intermediate connection. The growth in UK aviation demand has led to growth of short and long-haul services from airports across the UK (for example, in 1990 only one airport outside London had a scheduled long-haul service, but by 2008, there were seven). These services inevitably compete with direct and connecting services offered by Heathrow, a dynamic that is particularly relevant for the most popular services.¹⁷

Third, there is significant competition between airports for point-to-point travel. In contrast, there is now a significant degree of route overlaps between the major UK airports. To illustrate the strength of these overlaps, in 2005 more than half of the destinations available at Heathrow, and 70 per cent of those available at Gatwick, were also available from another London airport (CAA, 2007). This competitive dynamic has been reinforced by the emergence of no-frills airlines, which (as discussed above) have introduced an element of pan-European competition to the airport market, as these businesses relocate their fleet across a range of destinations across the single European aviation market.

The UK Competition Commission also published analysis of the overlaps between the catchment areas of each of the five main London Airports (Heathrow, Gatwick, Stansted, Luton and London City). Whilst the strength of any measured overlap depends upon the approach adopted to defining catchment areas, the Competition Commission reported that 83 per cent of Heathrow's passengers originate from areas that fall inside at least one other airport's catchment area, whilst the corresponding figure for Gatwick, Stansted and Luton is 92 per cent of passengers.¹⁸ The CAA also published evidence on passengers' preferences between different UK airports, obtained through a survey of around 2000 passengers. This suggested that the passengers using each of the four largest airports had relatively strong preferences to use alternative airports, as illustrated by Figure 3. This figure shows that between 40 and 50 per cent

¹⁵ 'Transport Times Conference', Colin Matthews, Chief Executive, BAA, 25th June 2008

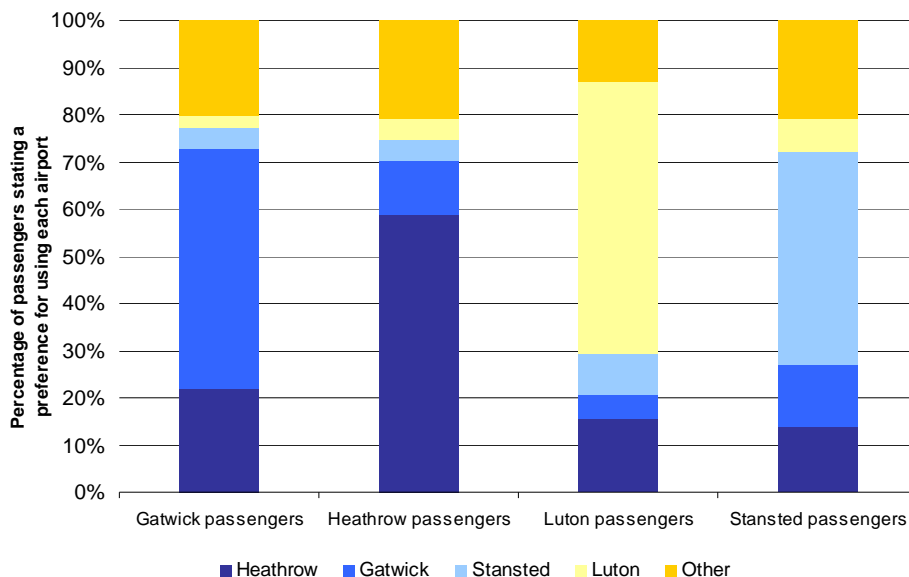
¹⁶ For example, Emirates opened scheduled services from Newcastle Airport to Dubai in 2008.

¹⁷ 'Connecting Passengers at UK Airports', Civil Aviation Authority, November 2008

¹⁸ See Table 4, Appendix 3.5, Competition Commission (2009)

of passengers using these airports stated a preference to use an alternative airport for the trip that they were taking, suggesting that the market position of BAA in the southeast of the UK owes more to the ownership structure than the underlying preferences of passengers to use a single airport.

Figure 3 Passengers stated preference for using an airport for the trip that they were undertaking



Source: CAA survey statistics

Overall, therefore, the available evidence suggests that airports in relatively large markets (such as the UK) are unlikely to enjoy sufficiently strong economies of scale that result in the market being characterised by natural monopoly. Evidence from the development of competition in the UK market (outside of London and lowland Scotland) supports the view that competition can develop and be sustained and that new entry can take place. Further, evidence on passenger preferences, and the decision by the Competition Commission to force BAA to divest a number of airports, highlights that airports should not be characterised as being natural monopoly activities. This still leaves open the possibility that individual airports may have very strong market positions¹⁹, such as market dominance, but it should not be assumed that the characteristics of airports are such that they will, at some point, inevitably enjoy such market positions.

3.2 Implications for airport markets

The potential for competition to be meaningful and sustainable in airport markets has a number of implications for the economic regulation of these markets.

First, long-term regulatory withdrawal is a possible (but not a certain) outcome in airport markets. As economic regulation is not costless, and can result in a number of significant costs and unintended consequences (some of which are discussed further below), this suggests that

¹⁹ Indeed, in smaller markets will be unable to sustain multiple airports and that such markets might exhibit the characteristics of natural monopoly.

there are potential benefits to be achieved through encouraging competition and reducing the role that economic regulation plays in determining outcomes. It is, therefore, possible that economic regulation of airports could simply be “holding the fort” until competition arrives, as was envisaged by Littlechild (1983) for the regulation of the telecommunications in the UK.

This implies that economic regulators, and other policy makers, need to understand the impact of regulation on competing airports (in the short term) and on the development of competition (in the long-term). Indeed, the potential for competition to replace economic regulation means that regulators should broaden their analysis beyond the traditional focus on understanding the impact of regulatory decisions on downstream markets. Whilst it is still important to understand the impact of, for example, price cap regulation of an airport on downstream airline markets and on consumers, where there is a realistic prospect of the development of airport competition regulators should also assess the impact of regulatory decisions on competing airports. In simple terms, where there is current or prospective airport competition, the regulator is, in effect, a participant in a horizontal market and needs to understand its impact on competition in that market. Rather than the regulator regulating access to essential infrastructure in order to facilitate downstream competition, the regulator is taking an additional role of regulating alongside a (potentially) competitive market.

Second, and in light of the above, it cannot be assumed that the techniques applied by economic regulators to natural monopoly network businesses should be applied to airports. The cost-benefit appraisal will inevitably differ between airports and a natural monopoly sector. The former will involve consideration of the potential impact of regulation on current and prospective competition whilst the latter, reflecting its genuine natural monopoly structure, will not. Such an appraisal might result in similar techniques being applied to airports – but it cannot be assumed that this is appropriate.

Third, regulation that restricts prices to measures of historical accounting costs may not result in prices that are (approximately) economically efficient. There are a number of reasons for this. As Starkie (2008) argues, to the extent that airports exhibit increasing long-run average costs, efficient prices may be above average historical cost. This can result in measures of profitability based on accounting costs (falsely) suggesting supernormal levels of profit. There is, therefore, a risk that economically efficient prices might be misdiagnosed as a sign of market abuse. In addition, as accounting costs reflect the accumulation of historical accounting policies and historical investment decisions, there is no reason why, even in the absence of significant scale economies, measures of accounting cost will approximate measures of economically efficient prices. In the UK, the historical practice of cross-subsidising the operation of Stansted Airport by higher charges at Heathrow serves to illustrate this general principle.

4. Regulating alongside competition

The previous section has argued that the economic regulation of airports should take into account the potential for competition to replace the need for the economic regulation of airports and that there should be no presumption that techniques applied to natural monopoly networks should be applied to airports. The following section considers in more detail the particular features of the

‘standard’ – or ‘utility-style’ – approach to regulating natural monopolies in the UK and how this approach can affect competition in airport markets.

4.1 The impact of ‘standard’ regulation on competition

The UK approach to the regulation of natural monopolies is frequently referred to as the “RPI-X” approach, in contrast to the “rate of return” approach typically applied in the US.²⁰ However, in practice, the UK approach shares some of the principal characteristics of the ‘rate of return’ approach, namely incentives to undertake too much investment in order to boost financial returns.

The ‘RPI-X’ approach applied across the natural monopoly elements of energy, water and rail in the UK involves the estimation of the efficient level of cost that will be incurred by the business in the next period (typically a five-year period), including both operating and capital costs.²¹ In order to remunerate capital costs the UK regulators typically apply the concept of the Regulatory Asset Base, or ‘RAB’ (alternatively ‘Regulated Asset Value’ or RAV). Capital expenditure is added to the RAB, after an assessment of whether it was undertaken efficiently, and then in each price control period the regulated company is provided with an allowance for the cost of financing the RAB, in simple terms the value of the RAB multiplied by the assessed cost of capital, and an allowance to cover the depreciation of the RAB.

There is, therefore, a link between the level of the price cap and the accumulated value of historical investment. This link results in RPI-X sharing some of the characteristics of ‘rate of return’ regulation, namely the potential for an over-accumulation of capital (as described by Averch & Johnson, 1962)).

This incentive on the airport to increase the price cap through capital accumulation affects the incentives faced by airlines operating at the airport. In well-functioning markets, there is a link between investment and the value placed on that investment by customers and, ultimately, consumers. In the airports sector, there are examples of long-term contracts between airlines and airport operators that support investment in additional infrastructure.²² In this way, charges reflect the value that infrastructure delivers to a particular airline and, ultimately, to consumers.

However, under a price control based on the ‘RPI-X’ methodology, the price paid by airlines will reflect historical average cost. Consequently, the act of an airport investing can, due to the operation of the price control, expose airlines using the airport to an increase in cost, irrespective of whether the airlines place sufficient value on the investment project. It is, therefore, possible for all incumbent airlines to oppose an efficient investment project, particularly if the project delivers additional capacity to be used by new entrant airlines. In light of the potential for airlines to affect investment outcomes through their role in regulatory and planning processes, these distorted incentives could impact upon outcomes for consumers.

²⁰ See, for example, Carlton (2005)

²¹ Airport price controls in the UK also reduce the allowance provided to cover costs by an estimate of the income that will be generated by non-aeronautical activities, such as car parking and retail income. This is referred to as the ‘single till’ approach.

²² See, for example, easyJet press notice, 22 December 2006

A further consequence of this disconnect between the marginal value placed on investment and the marginal cost faced by customers is that it has potential to distort competition between airports. If an airport market has both regulated and non-regulated airports, as is the case in the UK, there is a risk this distortion to marginal investment signals will affect investment decisions at both regulated and non-regulated airports. In particular, regulation can have the effect of making projects that would not be viable in a well-functioning market profitable for the regulated airport and have the effect of ‘crowding out’ more efficient investment projects at other airports (as discussed below).

This effect is likely to be particularly marked when the price cap applied to an airport is below the level that would be expected in a well-functioning airport market. In such circumstances, the airport might be able to recoup the cost of projects for which there is insufficient demand simply by virtue of the link that is established between the price cap and the capital costs that it incurs. Where accounting costs are below the current economic value of the business, the price cap will tend to be below the competitive price level and there is a real risk that the regulated airport will face an incentive to undertake inefficient investment simply to raise the price cap up to the competitive price level, as by doing so the value of the RAB (and the size of the benefit from any margin between the actual and allowed financing costs) will increase.²³

4.2 A model to illustrate the incentives faced by a non-regulated airport in a market subject to price cap regulation

This section sets out a simple, highly stylised, model to illustrate the potential for RPI-X regulation (or other forms of regulation that link the level of the price cap to incurred capital costs) to affect the incentives faced by an unregulated supplier that is in competition with the regulated supplier. The discussion is in the context of two airports but, in principle, could apply to other sectors.

Consider the case of two commercial airports, Airport A and Airport B, in two periods. There is sufficient expected demand in period 2 to support expansion of one, but not both, of the airports. To simplify the exposition, the airports are of equal size, v , and the expansion would double passenger volumes at either of the airports, to $2v$.

Airport A enjoys a position of very substantial market power and determines the market price in periods 1 and 2: p_1 and p_2 respectively. By virtue of its market power, Airport A is subject to an RPI-X style price control, reflecting the historical accounting costs of the airport. Airport A’s annualised average historical cost in period 1 is h_a . If we assume that depreciation and replacement capital expenditure are equal then in the absence of expansion this will also be the average historical accounting cost in period 2. The annualised long-run average economic cost of Airport A is c_a . There is no guarantee that h_a and c_a will be equal, as historical accounting policies could result in a divergence between these two values, as discussed above.

Airport B has no market power and so is a price taker in the market and is not subject to any regulatory control of its prices. The annualised long-run average economic cost of Airport B is

²³ For a more detailed description of this effect see CAA, April 2008.

c_b . If we assume that there are no economies of scale, A and B face the same long-run economic costs in both periods.

The price cap in period 1 is set to enable Airport A to recover its annualised historical accounting costs. Airport A's market position means that the price cap determines the market price, so that the market price in period 1 is:

$$p_1 = h_a$$

If Airport A does not undertake the capacity expansion its cost base is unchanged and the price cap will be unchanged, meaning that the price in period 2 will be equal to p_1 (i.e. $p_1 = p_2 = h_a$).

If Airport A undertakes the capacity expansion, its cost base will increase by the current economic cost of expansion: i.e. by c_a . The airport will also double in size, which will spread the increased cost over a larger number of passengers. The impact on the price cap will depend upon the combination of the impact on the airport's total costs, which will rise by c_a , and the increase in passenger numbers, which will double. Consequently, the price cap (and the market price) in period 2 will be the average of the annualised historical and economic costs:

$$p_2 = \frac{1}{2}(h_a + c_a)$$

Let us now consider the incentives faced by Airport B to expand. The airport operator would be expected to compare the returns it earns if it undertook the investment against the returns if it did not undertake the investment, with the expectation that Airport A would, in this case, undertake the expansion.

In this model, if Airport B invests, its profit (Π_b) in period 2 will be:

$$\begin{aligned} \Pi_b &= \text{Revenue} - \text{Costs} \\ &= 2v(p_2 - c_b) \end{aligned}$$

As Airport A is not investing the price cap, and the market price, are determined by Airport A's annualised historical costs, this means that:

$$\Pi_b = 2v(h_a - c_b) \quad \dots(1)$$

If Airport B does not invest, its profit in period 2 ($\Pi'b$) will be:

$$\begin{aligned} \Pi'b &= \text{Revenue} - \text{Costs} \\ &= v(p_2 - c_b) \end{aligned}$$

As Airport A invests, the price cap and the market price change in period 2, which implies that:

$$\Pi'b = v(\frac{1}{2}(h_a + c_a) - c_b) \quad \dots(2)$$

Airport B will, therefore, find it profitable to invest if expression (1) is greater than expression (2). Therefore, the condition that must be satisfied for Airport B to invest is:

$$\begin{aligned} 2v(h_a - c_b) &> v(\frac{1}{2}(h_a + c_a) - c_b) \\ \Rightarrow c_b &< \frac{1}{2}(3h_a - c_a) \quad \dots (3) \end{aligned}$$

Inevitably, the exact formulation of the expression in (3) is the product of the highly restrictive assumptions adopted in the model.²⁴ However, this formulation does indicate some of the impacts of adopting price cap regulation on competing airports.

First, an improvement in the cost efficiency of Airport B (i.e. a reduction in c_b) will increase the likelihood that B invests, as would be the case in a market not subject to price cap regulation.

Second, the incentive faced by a competing airport (i.e. Airport B) is a function of its costs and also the historical costs of the regulated airport, rather than being determined by the relative efficiency of investment at the two airports.

Furthermore, if Airport B has lower costs than Airport A (i.e. $c_b < c_a$) there is no guarantee that the inequality in (3) will hold and, consequently, the less efficient investment takes place. In such circumstances, the application of RPI-X regulation distorts the investment decision between the regulated and non-regulated airports.

Third, Airport B is less likely to invest if Airport A has a greater cost disadvantage (i.e. the higher c_a relative to c_b , the less likely Airport B is to invest). This seemingly counter-intuitive result reflects the operation of the price cap. If Airport A undertakes a more expensive investment project, a higher amount will be added to the airport's regulated asset base (RAB) and the increase in the price cap – and the market price – will be greater. The application of a price cap based on incurred costs (such as an RPI-X approach) results in Airport B's profits rising if Airport A undertakes a less efficient investment. The gold-plating incentive that arises in this form of price cap regulation impacts upon the incentives of the regulated and non-regulated airports.

Fourth, the higher Airport A's accounting costs (h_a) relative to its economic costs (c_a), the more likely it is for Airport B to invest. One mechanism at play here is that, if the economic costs faced by Airport A are significantly below its historical accounting costs, the act of that airport investing can reduce the price cap and the market price. This raises the prospect that Airport B will find it profitable to undertake investment simply to prevent the fall in the market price that would occur if Airport A invested.

More generally, therefore, the application of price cap regulation (based on historical costs incurred) replaces normal commercial investment signals, based on the relative efficiency of investment projects, with a potentially perverse set of incentives on the non-regulated company. The consequence of this can be that less efficient investment takes place and that this investment takes place at the wrong location.

4.3 Implications for regulators

These observations have a number of implications for the way that economic regulation should be applied in airport markets. First, it is important to understand whether and to what extent the operation of regulated airports affects the operation of non-regulated airports. Where there is

²⁴ In particular, relaxing the assumptions that the airports were of equal size and that the expansion would double the size of one airport would introduce a number of additional variables into this inequality. However, the following analysis would still hold.

evidence of demand substitutability between regulated and non-regulated airports this raises the possibility that economic regulation will have significant effects at non-regulated airports.

Second, the potential for economic regulation to distort the conduct of non-regulated airports, and distort investment decisions across the market, should be incorporated into any assessment of the case for applying detailed economic regulation of an airport.

Third, they serve to illustrate that it cannot be assumed that forms of regulation that are designed in the context of natural monopoly regulation – such as the ‘RPI-X’ approach – should be applied to a company that faces a degree of current or prospective competition with alternative suppliers.

The following section illustrates these implications in the context of the regulation of Stansted Airport, during the review leading up to the determination of the price control that applies to Stansted Airport for the five-year period commencing 1 April 2009.

5. The analysis of the impact of regulation on competing airports: the example of Stansted Airport

Stansted Airport is the UK’s third largest airport, serving 22.3 million passengers in 2008, 9.5 per cent of the UK’s total.²⁵ It is located approximately 35 miles from central London, with good connections to the motorway network and with direct rail connections to London and to central England. The airport predominantly serves the no-frills sector, with Ryanair and easyJet accounting for 63 and 22 per cent of the airport’s passengers, and is the UK’s third largest freight airport.²⁶ The airport is owned by BAA Ltd, which also owns two other airports serving London and the southeast of the UK: Heathrow and Gatwick. Heathrow, Gatwick and Stansted airports are all subject to price control regulation by the CAA.²⁷

In 2003 the UK Government published the Air Transport White Paper (ATWP), which set out its strategic framework for the development of airport capacity over the following 30 years.²⁸ This document stated that there was “an urgent need for additional runway capacity” in the southeast of the UK, stated that the Government’s “first priority is to make best use of the existing runways, including the remaining capacity at Stansted and Luton” and offered support for the construction of two new runways in the southeast by 2030. The Government also stated that the first of these runways should be at Stansted, “to be delivered as soon as possible (around 2011 or 2012)”.

However, the responsibility for bringing forward expansion plans was left with the airport operators and their owners, with the Government making clear that it would “not promote or pay

²⁵ CAA Airport Statistics, 2008

²⁶ Supporting Paper II of Civil Aviation Authority (2006)

²⁷ Manchester Airport was the only other UK airport subject to price cap regulation, until the UK Government removed the CAA’s obligation (and ability) to apply a price cap to the airport, following advice from the CAA. The airport’s final price control expired on 31 March 2009.

²⁸ Department for Transport (December 2003)

for the development of Stansted". As Stansted is an airport subject to a price control, this passed the issue of how best to treat the potential for expansion at the airport to the regulator, the CAA.

This task was made more complicated by the fact that the project appraisal undertaken by Government was a social cost-benefit analysis, rather than an analysis of whether the projects were commercially viable. This difference is significant. In a sector with large up-front capital costs and revenues that tend to be earned over the asset's life, there can be a significant difference between the social appraisal and any commercial appraisal, simply by virtue of the discount rates used. The analysis underpinning the Government's support for expansion at Stansted was based on modelling of costs and benefits to the economy over a 60-year time horizon, discounted at a rate of 3.5 per cent²⁹, and did not monetise the impact that any particular investment would have on the development of competition.³⁰ To illustrate the potential impact of this difference, and ignoring tax effects, the present value of a constant real annual cashflow will fall by approximately 45 per cent if the discount rate is increased from 3.5 per cent to 7.1 per cent, the most recent assessment of the average cost of capital at Stansted.³¹

A further complication arises from the size of the contemplated project. The airport's expansion proposal included a new runway and terminal with an estimated cost of £2.27 billion (2005 prices).³² This compares to the valuation of the regulatory asset base as at 1 April 2009 of £1.12 billion (2005 prices).³³ The second runway project would, therefore, approximately double the value of the asset base. As operating costs are approximately offset by expected commercial revenues, under an RPI-X methodology this would be expected to have the effect of almost doubling the price cap, until such time as passenger numbers at the airport increased to reduce the average cost per passenger.

This potential impact on the price cap goes some way to explaining the reactions of the incumbent airlines to the proposed project. Whilst these airlines expressed their support in principle for the expansion of the airport, they vociferously opposed the airports expansion plans.³⁴

However, as discussed above, the airport's apparent willingness to invest and the incumbent airlines' stated opposition to the project tells the regulator relatively little about whether the project would be economic and efficient. Airline opposition could indicate either that the project is unnecessary and/or over-specified project or that airlines' are responding to the financial incentives caused by an expectation that the price cap will rise if the project is approved.

²⁹ Regulatory Impact Assessment to ATWP, DfT (2003)

³⁰ The competition assessment accompanying the ATWP was limited in scope to considering the impact of expansion on competition in airlines markets and the competitiveness of the UK economy. (Ibid)

³¹ Competition Commission (2008)

³² BAA news release, 25 April 2007

³³ The Competition Commission (2008) recommended that the value of the Stansted RAB should be £1.214 billion (in 2007/08 prices).

³⁴ See, for example, CAA (2009)

Similarly, the airport's willingness to proceed with a project could reflect the existence of a genuine business case or the 'gold plating' incentives created by the RPI-X approach.³⁵

A further consideration for the CAA was the impact that the project might have on competing airports. This was particularly relevant to the CAA, as it is obliged to set price caps to meet four statutory objectives that refer to the need to promote the efficient, economic and profitable operation of all UK airports and to encourage investment at all of these airports. This provides the CAA with a legal obligation to consider the impacts of its price control decisions on not only the regulated airport but also any other affected airports.

The CAA and the UK Competition Commission both considered the impact of Stansted on other competing airports, notably on Luton Airport.³⁶ Luton Airport is not regulated and has been assessed as not having a position of substantial market power (or 'dominance').³⁷ Luton and Stansted serve very similar market segments: both airports' largest customers are Ryanair and easyJet.³⁸ These airports have a relatively long history competing with each other. In 1993 Luton Airport complained to the EC and CAA that Stansted's charges were below cost and were having a predatory effect on the airport, which led to the EC imposing interim undertakings on Stansted Airport to prevent the airport from causing undue harm to Luton.³⁹ In 2002 the Competition Commission accepted that Stansted Airport faces competition, and that prices reflect the service quality provided.⁴⁰ The CAA also published analysis of the overlapping catchment areas of Stansted and Luton airports, as well as the extent to which passengers with a strong route preference were able to choose between the two airports, which showed that Stansted was the only provider of routes in London for less than half of its services, whilst the same figure for Luton airport was approximately 10 per cent.⁴¹

In 2008, the CC also published analysis of the relationship between prices and volumes at Stansted and Luton, looking at the change in average actual prices and at the change in passenger volumes at Stansted and Luton. This analysis, reproduced as Figure 4, was intended to assess the cross-price elasticity between Stansted and Luton airports and shows that there is a significant association between the airports.

Consequently, the CAA noted that airport investment decisions are typically taken against the background of the returns expected over the long-term and that this raised the importance of

³⁵ The CAA published a worked example of the impact of this approach on airport and airline incentives, in Supporting Paper 1 of CAA (April 2008). This paper reached a number of conclusions, including that: incumbent airlines' incentives do not necessarily align with those of new entrants; and airlines might not support an economic and efficient project that the airport would find profitable and that was commercially justified.

³⁶ Luton Airport is approximately 50km to the west of Stansted Airport, to the northwest of London, with direct rail connections to central London and to the north and south of England, and located on the motorway network.

³⁷ CAA (2007)

³⁸ See Supporting Paper II of CAA(2006) for Stansted and www.london-luton.co.uk.

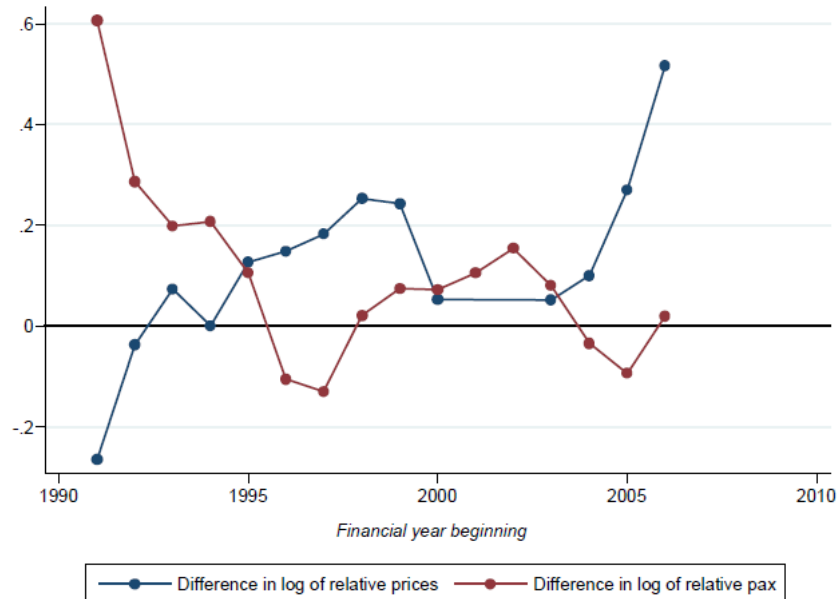
³⁹ See, for example, Competition Commission (2008)

⁴⁰ Para 2.456, 'BAA Plc', Competition Commission, 2002

⁴¹ Supporting Paper II, 'Initial price control proposals', CAA, December 2006

ensuring that long-term incentives were not unduly distorted. This led the CAA to consider the longer-term impacts of regulation on investment incentives and on competition.⁴²

Figure 4 – Comparison of average actual prices and passenger volumes at Stansted and Luton



Source: CAA and Competition Commission

The CAA’s final decision on the Stansted price control is consistent with the key result of the model set out above. In particular, the final price cap was set on based on a ‘dual rationale’, with the CAA using the overall revenue requirement recommended by the CC but then modifying the price cap so as to ensure that the resulting profile of prices is consistent with the development of competition. In practice, this meant that the CAA increased the level of the price cap in the final years of the price control, in order to reduce the difference between the final price cap and estimates of the long-run incremental cost of airports (a proxy for the long-term average competitive price level).

The CAA also stated that there ‘should be no presumption’ that there would be price cap based on an assessment of historical costs, such as through the use of RPI-X methodology backed by a RAB. Indeed, the CAA announced a programme of work to identify alternative approaches to this form of regulation. The CAA stated that ‘... by signalling now that there should be no presumption that a RAB-based approach would apply in future, the adverse consequences of this approach to regulation can be mitigated.’ This emphasis on managing the expectations of the airport operator, its competitors and its customers should, in principle, mitigate some of the incentive effects discussed earlier in this paper.

⁴² CAA (December 2008)

6. Summary

This paper has considered the nature of the UK airport market, arguing that the application of price cap regulation in such a sector can have a number of unintended impacts on investment incentives and on the potential for competition to develop free from significant distortion.

It is argued that airports are not natural monopoly businesses and that there should be no presumption that forms of economic regulation designed to regulate natural monopolies will be appropriate for airport markets. In particular, as airports – to a greater or lesser degree – compete for passengers and for airline services, the application of price cap regulation to some airports has the potential to distort competition. In addition, this paper has argued that the form of ‘RPI-X’ price cap regulation applied in the UK shares some of the incentive properties of ‘rate of return’ regulation, notably the incentive on the regulated company to inflate its capital costs; that is, to invest at an inefficient cost and/or to invest too early.

This paper then presented a simple model of the interaction between a price capped and non-regulated airport. This model demonstrated the potential for price cap regulation to distort the behaviour of non-regulated airports. In particular, the application of price cap regulation can result in investment taking place at the wrong airport and encourage higher cost investment to take place. Indeed, the incentive for unregulated airports to invest can be lower when the price-capped airport faces a greater cost disadvantage.

The final section of this paper has sought to demonstrate that the incentive problems highlighted in this model can occur in practice. Indeed, the CAA’s approach to regulating Stansted has been based on a recognition that price cap regulation, and linking the price cap to the capital costs incurred by the airport, can distort investment decisions at regulated and non-regulated airports, and distort competition between airports.

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