Submission to Productivity Commission Inquiry:

The Economic Regulation of Airport Services

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Professor Peter Forsyth

Department of Economics

Monash University

Professor Hans-Martin Niemeier

Department of Economics and Nautical Sciences

FH Bremen

Outline

Key Points

Professor Peter Forsyth is known for his work on transport economics, regulation and microeconomic reform. He is known internationally for his work on airport regulation and is currently completing a review of Indian airport regulation for the World Bank with Hans-Martin Niemeier.

http://users.monash.edu.au/~pforsyth/index.html

peter.forsyth@monash.edu

Professor Hans-Martin Niemeier is known for his work on airport privatisation, regulation and performance of European airports. A former airport regulator, he has just completed studies on market power of Amsterdam airport and the role of benchmarking in incentive regulation of European airports.

Hans-Martin.Niemeier@hs-bremen.de

Key Points

- Judging from international evidence, the performance of the Australian airports is good, and the regime of light handed regulation is working well in most, though not all, aspects of performance.
- This is a tentative conclusion, given that key indicators, such as productivity, have not been measured or analysed.
- Regular benchmarking of productivity, prices, profits and quality is an obvious way of improving this regime. Benchmarking will show light on the performance of the regime itself, and on that of individual airports.
- Benchmarking can be part of the assessment of how well the airports are performing in terms of investment.
- An emerging efficiency issue is that of handling excess demand – will this be done by slot grandfathering, trading or auctions, or peak pricing?
- Linked to this is the issue of how well airports are catering for increased demand by investments- there is a real risk of underinvestment.
- While often passenger interests are reflected in airline interests, this need not always be the case. In such cases, airport – airline negotiations, with no input from passengers, may not advance the public interest.
- Benchmarking of quality will help determine whether passengers are getting the quality they are willing to pay for.
- Car parking charges embody monopoly as well as locational rent- this may be able to be addressed by increasing competition.
- There is a role for benchmarking in each of the mechanisms used in the Australian system of light handed regulation to moderate the use of market power.
- We recommend the continued use of monitoring the airports, and extending monitoring to include data to enable productivity of the airports to be assessed.
- Over time, the issue of excess demand and investment will create new problems of assessing efficiency which the Commission will be well placed to address.

1 Introduction: Overall Assessment

In this submission, we concentrate mainly on the efficiency of the airports, while recognising that the Commission is asked to consider other aspects of performance. In earlier work, Forsyth has argued that the performance of the Australian airports *appears to be* good, and that the system of light handed regulation is, overall, working well (Forsyth, 2008a). There are some aspects of performance which pose some problems- some of these are addressed in this submission.

However, this view is a tentative one. We cannot be certain that the airports have been performing well in the critical aspects of productivity and the use of market power, because the measurements have not been done. We cannot conclude that the airports are operating and pricing efficiently given that no analysis of these is available (other than for a few outdated studies). In spite of this, it would not be a major task to do it.

In his recent lecture, Gary Banks quoted studies of productivity in a number of Australian industries, and referred to the productivity slowdown (Banks, 2011). Clearly, productivity measurement is an important step in analysing and addressing the problems. However, he could not use airports as an example, because the studies have not been done.

A key theme of this submission is that there is a need for benchmarking of productivity, prices, profits and quality of the Australian airports. This can be done quite easily. The ACCC monitoring system provides much, though not all, of the data required. The Productivity Commission itself has a wealth of experience in benchmarking, particularly productivity benchmarking. By benchmarking, we mean not just the measurement of productivity or prices, but using the results to compare different firms or airports.

By benchmarking we can establish how well the overall Australian system of light handed regulation is working, and it can help us identify problems that have arisen. It can be used to assess whether individual airports have been performing well or poorly, and whether there is a case to require re regulation. Benchmarking can be useful in assessing whether the airports have been investing efficiently (Section 4), and whether passengers have been getting the quality of service that they are paying for (Section 5). Finally, Benchmarking is needed when implementing arrangements, such as negotiate / arbitrate systems, to resolve problems which emerge between parties (section 7). If benchmarking of key aspects of performance such as productivity is not done (even though it can be), how can one be sure that the system as a whole, and the individual airports, are performing well?

While the core message of this submission is the need for benchmarking, we also cover some other important aspects of performance. One of these concerns car parking at airports, something which has become controversial. A relevant issue is whether prices reflect monopoly or location rents.

The other issue concerns the promotion of efficiency at airports which face a need for investment, particularly those with excess demand. While this is not a big issue at the

moment, it is steadily becoming so, as demand grows and capacity is constrained, and the mechanisms in place, such as slots allocations, or proposed, such as peak prices or slot auctions, can impact on efficiency. These have touched upon in earlier Commission Reports. (Productivity Commission, 2002, Appendix H) There is a real danger that, if not addressed now, a situation of under-investment will develop.

This submission begins with a review of the submission to the 2001-02 Inquiry (Forsyth, 2001) - while much of this is still relevant, it did not pay sufficient attention to the incentives for the airports to produce at minimum cost. One needs to test whether the airports are efficient, not simply assume that that they are. This can be done with benchmarking, which is discussed in Section 3. The issues posed by investment are handled in Section 4, and quality issues are discussed in Section 5. Car parking is discussed in Section 6, and the mechanisms to ensure good performance are discussed in Section 7. Finally, the role of review and the place of benchmarking is discussed in Section 8.

2 The 2001 Paper on Airport Regulation: How Applicable Now?

Some ten years ago, Forsyth discussed the role of regulation as a way of promoting efficiency at airports in a submission to the Productivity Commission's 2001-02 Inquiry (Forsyth, 2001). This paper was influential, judging from the references made to it in the Productivity Commission's Report. At that time, there was a general view that regulation could promote efficiency, by reducing the use of market power- this was the standard case for regulation. Forsyth argued that in the case of airports, low elasticities of demand meant that there would be very little efficiency gain from regulating the prices of airports unless the unregulated prices were very high indeed. A qualification to this is that, with the development of low cost carriers (LCCs), demand elasticities have risen- this will mean that the dead weight losses fron higher prices will be increased. However, it is still likely that they will be minor.

There could be other reasons for regulation. Against this, we need to recognise that regulation has its costs, particularly in terms of incentives. An airport subject to light handed regulation may perform more efficiently than a regulated airport once the disincentive effects on cost efficiency are taken into account. Thus there could be a case to subject the airports to light handed regulation, even though these airports might have considerable market power, and use it.

In the end, the Commission took a more radical stance than had been expected, proposing light handed regulation of the airports. It did however require monitoring of the airports, and set in place a review / sanction mechanism. With this, the airport's performance would be reviewed and if this performance were not sufficiently good, regulation could be re imposed. Thus there was a cost to an airport should its performance be poor. The Commission set out, in brief terms, the criteria for good or bad performance (Productivity Commission, 2002, p353). These were expanded upon after the 2006 review (Productivity Commission, 2006).

In terms of its general thrust, the 2001 paper was consistent with the direction that the Commission adopted, and it helped set out the theoretical basis for it. However, in hindsight, are there matters not covered?

Overall, the analysis in this paper is still very relevant. However, it did not give sufficient attention to some aspects of the regulatory problem, and there are some things which should be changed. These have a bearing on how things could be changed to yield a more effective regime for the airports. These are:

- The reliance on the assumption that private airports will produce efficiently, and
- The scope for rent seeking, and the possibility that profits could be dissipated.

In many cases, the airports will behave as though they are profit maximisers- in this context, this will be consistent with them behaving efficiently. The lure of profits will lead them to produce at minimum cost, since higher costs than could be achieved will result in lower profits. The airports may have market power, and they may use it, but the efficiency cost of this will be low unless they charge prices which are very high (though there may be other reasons why high profits are not acceptable).

If the airports are not profit maximisers, the efficiency results may not necessarily follow. An airport which is not seeking profits may have market power, and use it, but it may allow its costs to rise. Such an airport may be pursuing other objectives. In such a situation, the airport will be converting its potential profits to cost increases, and it will not be productively efficient. An airport which is achieving moderate profits may not be one which is performing well- it may be taking out its profits by allowing costs to rise. In contrast, an airport which is achieving high profits could be very efficient if it is keeping its costs low.

If we are sure that the airports are profit oriented, and prices are not very high, then we can be sure that they are efficient. But what if they are not? Moderate profits are no sign of efficient production. We need to have more information about them to determine whether or not they are productively efficient.

This is where benchmarking comes in (see Section 3). Benchmarking of productivity is an effective way of assessing whether an airport (or any other firm) is producing at minimum cost or not, and thus being efficient. The objective of benchmarking is to assess the productivity of the airport in order to establish how low its costs are relative to how low they could have been. As long as the data for benchmarking are available, benchmarking gives us a way of answering the question of whether an airport is indeed producing efficiently or not. While privately owned airports do have distinct incentives to seek profit, there is no guarantee that they will do so, nor will they be producing efficiently.

Thus we need to benchmark productivity to assure ourselves whether the goal of achieving an efficient airport industry is been met.

The second way in which the 2001 paper should be changed is through the explicit recognition of rent seeking. If elasticities of demand are low, the use of market power is not very costly in efficiency terms, unless very high prices are the result. This does assume, though that profits are not dissipated in some form of wasteful activity. This can happen, and a common form of waste comes from rent seeking. An example may help. Suppose an airport has control over ground access. If it is profit oriented, it will make use of its market power over this access, and enjoy profits as a result. If its control is only limited, it might need to impose restrictions on other means of access so as to protect its revenues from its most promising sources. Thus some of the monopoly profits will be effectively wasted. In short, if rent seeking comes about, some of the monopoly profits are reduced, and the airport will be less efficient than it could be.

It is less easy to diagnose problems of rent seeking than of simple productive inefficiency, since it is not a general conditition, but one which is very much dependent on specific situations. Rent seeking can sometimes be recognised from the presence of arbitrary constraints on choice.

As noted above, the nature of the problem of setting out what constitutes an efficient airport has changed over time- for example, the presence of LCCs has done this. Perhaps the most important change has come about with Sydney encountering excess demand. This was discussed in the 2001 paper, but it has become much more pressing to resolve. Hence we discuss this explicitly in Section 4.

3 Benchmarking – the Elephant Left out of the Room

There are several ways in which benchmarking can be used to improve the regulatory environment for airports. Two distinct but related ways are:

- As a way of assessing if the general approach to regulation (such as light handed regulation) is consistent with, and promoting efficiency; and
- As a way of assessing how efficient specific airports are, and whether services could be provided at lower cost.

The first of these is very central to the task in hand for this Productivity Commission Inquiry. The Inquiry is tasked with deciding whether the regulatory arrangements in place for the last ten years do promote efficiency – in order to do this, it is necessary to measure what the efficiency of the airports has been under these arrangements. The Terms of Reference for this Inquiry (ToR4) specifically state the need to establish how efficient the airports have been. It is difficult to see how this can be done without explicit benchmarking.

Benchmarking of several aspects of efficiency needs to be done. These include:

- Benchmarking of productivity (whether services are being produced at minimum cost);
- Benchmarking of prices and profits (and whether the airports are making use of market power but allowing costs to rise while protecting their profit margins), and
- Benchmarking of quality.

There are relationships between these aspects of efficiency - for example, profitability depends on prices and productivity.

The second of these concerns the efficiency of the individual airports:

- How efficient are individual airports? If there appear to be inefficiencies, the Commission or other monitoring body can look into what seems to be the reason;
- If sanctions are to be imposed on airports for poor performance (such as re regulation), this performance needs to be assessed by benchmarking, unless it is to be arbitrary;
- If a negotiate/arbitrate arrangement is set up, benchmarking will be needed so that the arbitrator is well informed and can avoid arbitrary decisions;
- In these assessments quality as well as cost will need to be benchmarked so that overall efficiency performance is taken into account;
- How efficient are the Australian airports compared to airports elsewhere? And;
- Are the Australian airports achieving productivity growth comparable to those elsewhere?

Benchmarking is commonly used in public and private industries - and the Commission has developed considerable expertise in it. Some aspects are worth noting:

- The Terms of Reference for the Inquiry make specific reference to benchmarking- "It should also seek to provide international comparisons of the performance of the airport operators" (ToR 4). While this is discussed briefly in the Issues Paper, these words suggest that serious benchmarking exercise is needed to answer the questions posed in the Terms of Reference.
- The ACCC Price and Quality regime is valuable for the benchmarking of airports, though it is not sufficient for it- for example, benchmarking of productivity also requires information on inputs. This information can be accessed relatively easily. Another question that has been raised concerning the ACCC monitoring is "what is it useful for?" If used in a benchmarking study, it will be very useful.

- The presence of several of the leading researchers on airport benchmarking, to attend the Air Transport Research Society Conference (University of New South Wales, June 29- July 2) and the German Aviation Research Society (Monash University, July 6 and 7) provides an ideal opportunity for the Commission to tap into this expertise[1].

It does need to be recognised that benchmarking of airports does pose a number of difficulties (see Appendix to this Submission) and that airport benchmarking is more difficult than, say, benchmarking of electricity generation. Clearly, it will not be possible to answer all questions about performance. None the less, many of the really critical questions about how the airports are performing can only be answered by a serious attempt at benchmarking.

There is a greater need for independent benchmarking under the Australian approach to light handed regulation of airports than there is under ex ante regulation, such as price cap regulation. Under the latter, regulators often use formal or informal benchmarking to assess the regulated firms performance as part of the regulatory process (thus the ACCC benchmarks in telecoms). However with airports, there is no guarantee that performance will be assessed in any rigorous way under the Australian approach. Thus there needs to be a conscious decision by the review body, in this case the Commission, to initiate benchmarking itself, and to set in train processes to ensure that it continues.

4 Investment: Will there be Too Much or Too Little?

The Commission is asked, among other matters, to assess if the airports are investing efficiently. Over time, as the regulatory regime becomes more established and there is a need for larger investments, it becomes more difficult to assess whether a regulatory environment is achieving this. Large new investments are required, and it is difficult to assess how they *should* impact on costs. Where capacity ceases to be ample for demand, new problems, such as congestion, arise. In addition, investment can be to increase quality.

Some of these problems have started to emerge. Some airports are investing, and costs have risen. An airport may still continue to achieve only moderate profitability, but this does not mean that it has been efficient in its investments. It is quite possible that it will over-invest, allowing costs to rise. If the firm is a profit maximiser, this will not come about. However, if the airport has other objectives, this could happen. An airport which has high prices and profit may be more efficient than another which has low profitability and high prices.

Ideally, we should be able to test for this. In practice, it is difficult to benchmark when capacity changes, especially when capacity changes in large lumps, as can be the case with airports. A lumpy investment such as a second runway at Brisbane airport will give rise to a

[1] Both societies have done considerable research in benchmarking. ATRS has set up a benchmarking group and has for almost ten years benchmarked airports on a global scale (Air Transport Research Society, 2010). GARS has organized several workshops on methodological problems of benchmarking. See. www.garsonline.de

large fall in some measures of productivity. Just because an airport has undertaken major investments, is it necessary that costs and prices have to rise? - the price rise could mask excessive investment.

This said, benchmarking does not handle major investments very well. One reason for this that it is difficult to assess how much extra capacity is warranted, and whether it has been provided at minimum cost. This is a problem which bedevils both light handed and price cap regulation. In spite of this, benchmarking is still useful, since it puts a dimension on what we do not know. Often regulators or inquiries will need to make an assessment of performance, even though they will have less access to information than they would wish for. "We don't know" is not an answer.

Handling Excess Demand

The big issue that will have to be answered in future is how well the airports are coping with the excess demand problem. This is becoming a real problem at Sydney, and for some hours, an issue with other airports. There is both a short and a long run aspect to this.

At Australian airports, as is the case for most busy airports outside the US, the short run problem is resolved by the slot system. A slot capacity is established, and an airlines need to obtain a slot to use the airport at the chosen time. This system has the advantage that it resolves the congestion externality, if the slot limit is set efficiently (Forsyth and Niemeier, 2008a and b). Alternatively, prices could be used (for the pros and cons of prices, see Czerny, 2008; Forsyth, 2008b). Both slots and prices can be consistent with efficiency *if* slots are allocated efficiently. (The 2002 Productivity Commission Report (Appendix H) provides very good summary of the analysis).

This proviso is important. Mostly, airport slots are allocated in very non transparent ways. In London, slots are traded in fairly open ways, and it is not too difficult to obtain their prices. However, in most airports), they are allocated in byzantine ways. It is not possible for the observer to assess whether the resulting allocation is efficient or not (most likely, the assumption of inefficiency is warranted). In Australia, slots are grandfathered, and there is no certainty that the airlines which want the slots most get them.

Given the ring-fencing of regional airline slots at Sydney airport, it is clearly the case that the slot management at Sydney is not consistent with efficiency. An obvious reform would be to allow regional airlines to sell their slots.

Thus there is a coming problem of how to allocate scarce capacity at Sydney. If slots are efficiently allocated, there is a choice between slots and prices. This comes down to who should get the slot rents- the airlines or the airport? In most busy airports, it is the airlines (British Airways gains slots worth billions of Pounds). The passengers are unaffected in the short run when capacity is unchanged (though not necessarily in the long run). It is essentially an issue of distribution between airports and airlines.

If, on the other hand, slots are not efficiently allocated, prices are the more efficient option. If prices are used, over time, excess demand will grow at Sydney, and revenues from charges will rise, and the profitability of the airport will do likewise.

Ultimately, if it is desired to have an efficiently run Sydney airport system, it will be necessary to

- Allow Sydney airport to gain the scarce rents through peak pricing; or
- Fix the slot system so that slots are traded and allocated efficiently; or
- Auction the slots.

Each of these options have advantages and disadvantages (see Forsyth, 2008b). The 2002 Report recognised that efficient pricing might result in airports subject to excess demand becoming more profitable ((Productivity Commission 2002, P353).

Investment Incentives under the Current Regime

The long run poses different difficulties. In the long run additional capacity can be provided. If an airport is efficient, it will add to capacity when the benefits from that capacity match the cost (including environmental cost) of providing that capacity[2]. Under what mechanisms will a system of light handed regulation ensure this?

In short, there is a lot that can go wrong- achieving efficient investment in airports under regulation or light handed regulation is tricky to achieve (Czerny and Forsyth, 2008b). It is not easy to set clear tests to determine whether investment is warranted, nor set incentives to ensure that the actors in the process have the right incentives so that it comes about. If prices, including slot prices, are higher than the incremental costs of an additional tranche of capacity, this additional capacity is worthwhile. The difficulty is that it is difficult to operationalise this rule - it is not just a matter of comparing prices to costs.

Ultimately, there is a need for cost benefit analysis, to determine whether an investment should go ahead, and when it should go ahead. In an ex ante regulated context, a good regulator does a cost benefit analysis to determine whether the investments proposed by the regulated firm is worthwhile or not. In a situation of light handed regulated, such as under the Australian system, the same process is needed (in fact, the UK government itself undertook a cost benefit analysis to assess the case for the expansion of London's airports). Something like this might be more than the Commission is contemplating doing. However, this may not be as involved as it seems. The Commission or other review body might review some of the major investments by the airports, using a simplified cost benefit analysis, and only subject those cases which they appears to be a problem with greater scrutiny (perhaps once or twice a decade). The Commission does not have the power to order an airport to invest, but it has

[2] It should be added that this might not be easily to achieve if slot prices or scarcity prices are not available. In competitive industries scarcity prices guide firms when to invest and at what rate.

the power to recommend re regulation should an airport not be performing efficiently. The Commission is tasked with determining whether the airports are efficient in their investment behaviour- how else could it be confident that this is the case?

If it were possible, it would be preferable to create an arrangement such that the buyer and seller of airport services could directly negotiate to ensure that efficient investments go ahead. However, there is a problem in that three parties, not two are involved- airports, airlines and passengers. While two parties, airport and airlines may negotiate a solution, this solution may not be in the interests of the passengers. While much of the time airlines (if they are profit maximising) reflect passenger interests, this is one of the cases where they may not.

It is easy to see how this might happen. Suppose that an airport is slot controlled, and that additional capacity is warranted. The beneficiaries of this investment will be the passengers, who gain from lower fares. The airport and airlines may lose if the investment goes ahead- the airlines will lose from lower slot rents, and the airport may be charging a price which embodies some monopoly rents (and the airport may not find it in its interest to invest). If need be, the airlines can induce the airport to oppose expansion by sharing some of the slot rents with it. There is no guarantee that efficient investments will go ahead, when the airlines and airports can share the slot rents (as they can under light handed regulation).

This is an example of a situation in which the interests of the airlines, and the ultimate customer, the passenger, diverge. It has been suggested that this is the case with the London airports- additional capacity is long overdue, but airports have not been providing it. The main beneficiary would be the passengers through lower fares, but it is in the interest of the airlines to delay extension (slot rents are very high) and the airport owner, BAA, may not have had much incentive to expand.

5 Passenger Interests and Quality

There is a growing recognition that, in the discussion about airport regulation, passenger interests have not been given much attention. This is especially true of the UK, where the regulatory system for the London airports has been criticised, and is being changed (Cave, 2009). It has been claimed that the London airports have been providing too low a quality of service, and that this is due, at least in part, to the system of regulation.

In section 4 it was argued that there can be cases where airport and airline interests conflict with passenger interests. This need not be the case all the time- for much of the time, airline and passenger interests can be the same, especially if the airlines are profit maximisers. Where airlines are not profit maximisers, airline and passenger interests may diverge. Thus regulators and reviewers of regulatory systems need to be aware that interests may be conflicting, and that it is necessary to consider passenger interests explicitly. This may be particularly the case when it comes to service quality.

An important dimension of efficiency is that customers are provided with the quality of service that they are prepared to pay for (though passengers of LCCs will be prepared to pay different amounts for quality than passengers of full service airlines). When airports are profit maximisers, and airlines are in competitive markets, this will come about. However airlines may not be operating in competitive markets- some markets are monopolistic or oligopolistic. Even when the airlines have an incentive to demand what the passengers are prepared to pay for, this incentive can be quite weak- for example, it is not difficult for the airline to pass on the cost of excessive quality. Furthermore, airports may not be profit maximisers. In this environment, airports need not be supplying the quality of service that passengers want - they could be supplying an excessive level of quality, which passengers do not want, and the airlines may simply be passing on the higher costs to their passengers. Alternatively, they may be supplying too low a level of quality, and airlines may not be able to induce them to do otherwise.

The changes brought about as a result of the Commission's 2002 Report can be argued to have improved matters. Light handed regulation makes it easier to the airport to make investments to improve quality when there is a demand for it (and price regulation creates incentives for the airports to under-supply quality). This is a case where freedom to negotiate is in the public interest.

While the quality situation at the Australian airports may be good, it is still worthwhile to test whether this is so. Impressions are useful, but not as convincing as hard data. In this respect, there is a clear role for benchmarking, in this case, not only of prices and costs, but also of quality. The ACCC monitors quality, as well as prices. Thus there is the scope for benchmarking of whether passengers are getting good value from the airports, and that they are getting quality at the right price. By benchmarking, Australia is more likely to lessen the problems that have bedevilled the London airports.

6 Car Parking: Monopoly or Locational Rents?

Over the last few years, car parking has become an issue with some Australian airports- prices have risen quite rapidly (ACCC, 2011). As a result, the issue of whether prices reflect locational rents or monopoly rents comes to the fore. If these prices reflect only locational rents, they are consistent with the airports pricing efficiently. On the other hand, if they embody monopoly rent, they are higher than efficient rents.

Forsyth (2004b) provides an analysis of these issues which has been quoted often. One of the difficulties is that often both locational and monopoly rents will be present, and there is a need to separate out the effects.

There is strong evidence that the prices for car parking at some airports in Australia include monopoly rent. In some cases, prices have risen sharply- this of itself is not conclusive, as prices could have been below the price consistent with the full use of locational rents (though

this is not likely). However, locational rents are not consistent with the airport being price setters- if only locational rents are present, the airport is a price taker. Where an airport claims that it is setting its prices for car parking based on the rates for CBD parking, for example, this is suggestive that it is pricing at monopoly levels. Other indicators are suggestive of monopoly are the use of monopoly power- for example, the extensive use of price discrimination (only firms which have some market power have the ability to price discriminate). Price discrimination may not be inefficient, but it is a symptom of market power. Another test is whether it could be feasible for a competitor to supply parking services using land that has been supplied (perhaps by the airport) at a cost no greater than the value of surrounding land, and undercut the airport's own parking.

Granted that some airports are pricing car parking using monopoly power, to what extent us this a problem? There is an impact on passengers and so there is a distributional dimension, though this is an issue to be dealt with by the government. The use of monopoly power will have a cost in terms of efficiency, depending on the elasticity of demand for the service. Unless prices are well above costs, this efficiency loss may not be very large.

Conceivably, it may not be the use of monopoly power pose that is the problem, but rather other problems that it leads to. There is a suggestion that some airports are becoming involved in rent seeking to strengthen their profitability. For example, suppose there is a competing car park beyond the boundaries of the airport, and that shuttle busses are used to provide access. If the airport imposes a charge for dropping off/picking up passengers which is based on cost, there would be no efficiency cost. However, if the airport imposes a charge above cost, it will strengthen its monopoly at a cost in terms of efficiency. Over time the airports monopoly power may decline, but if the airport uses inefficient devices to protect its power, and this needs to be factored in as part of the cost of the monopoly.

Addressing market power in car parking may well be difficult to do effectively. Price regulation may be too costly to be worthwhile. If feasible, the most practical solution might be ensure access to alternatives to using the airport's car parks- making off airport cars easier and cheaper to use, and simplifying access to those parks.

7 Light Handed Regulation in the Long Haul

The Australian system of light handed regulation includes two types of constraint in the use of market power by an airport. These include:

1. A trigger/sanction mechanism, whereby if an airport is judged to have performed poorly, a sanction such as re regulation, is imposed; and

2. A negotiate/arbitrate mechanism, whereby under particular conditions, the customers of the airport are entitled to negotiate with the airport, and in the event of the dispute not being resolved, the matter goes to an independent arbitrator.

The first of these is set out most explicitly in the 2002 Report, though it has been revised in the light of the 2006 Report (Productivity Commission, 2006). The criteria for determining whether the sanction if re regulation should be applied includes that "...efficient prices broadly should generate revenue that is not significantly above the long run costs of efficiently providing aeronautical services...". (Productivity Commission, 2002, P353). Even though the Terms of Reference for the current Inquiry do not explicitly refer to the 2006 pricing principles, the airports were aware that poor performance could lead to re regulation.

This sanction seems to be a strong one, though the criteria are fuzzy and ambiguous (Forsyth, 2004a). The terms look clear, but they will be difficult to operationalise. They are very cost oriented, emphasising costs rather than productivity (though they do say costs of "efficiently providing" - but how do you measure efficient costs?)

The answer is that is necessary to use benchmarking to determine whether the airports have been meeting these conditions. In particular it is necessary to use productivity benchmarking, not just benchmarking of prices and profits, and measuring whether prices are significantly above costs. If productivity is not explicitly measured, how can one be sure that an airport is not using its market power, and allowing costs to rise, while keeping profits at a moderate level?

An example of the second is the use of the Part IIIA provisions in connection with Sydney airport. There have been several other suggestions of similar mechanisms that have been discussed at and after the Commission's 2006 Report. Negotiate / arbitrate approaches have been employed in other industries and countries, such as rail haulage rates for materials in Canada.

A simple requirement that the parties negotiate only would not necessarily impose a constraint in the use of market power. It is also conceivable that both airports and airlines might agree to share the rents from the airport. To constrain the use of market power, there needs to be an arbitrator, and this arbitrator needs to act in the public interest.

It is here that the role of benchmarking becomes important. An arbitrator needs to know what costs are, but also, what they could be if the airport is producing efficiently. This information is available if the arbitrator has access to benchmarking reports, which covers not just prices but also productivity.

At busy airports the arbitrator needs even more information in order to separate monopoly rents from scarcity rents. Given the current IATA slot allocation this will be extremely difficult as market clearing prices can only estimated and historically cost based prices do not reflect the opportunity costs and the cost of additional capacity. The task of the arbitrator to find efficient solutions will be relatively difficult and it needs to be very well prepared.

8 Reforming the Institutions for Light Handed Regulation

A number of recommendations follow from this discussion.

We recommend that the regime of light handed regulation of the major Australian airports continue. This would involve periodic reviews of performance. In particular the criteria for poor performance need to be strengthened, and backed up with benchmarking of productivity, prices, profits and quality.

Collection of data required for benchmarking is essential, and the ACCC monitoring should also include data required for the measurement of productivity.

Ideally, benchmarking should be done by the Commission itself as part of its review, but in addition, it is desirable that benchmarking be undertaken regularly (say, every three years) to inform future reviews and provide information for public policy purposes (eg, for a negotiate/ arbitrate dispute). The Commission could be the body entrusted with this task (in the way it handles other monitoring roles).

Airports which are subject to excess demand pose several public policy problems. Short run problems can be resolved by devices such as slots and peak pricing, but only if efficient slot allocation rules are implemented, or peak pricing or slot auctions are adopted.

In the long run there is a risk that too little investment in capacity will be made, at a cost to the passengers who use the airport, since both airports and airlines can gain from a shortage of capacity. This will require addressing if the Commission is to be assured that the airports are investing efficiently.

Appendix : Benchmarking of Airports

There has been considerable interest in, and research into, the benchmarking of airports over the past decade or two. There are different benchmarking techniques which might be used, depending on the objective of regulation and on the required data (for a general overview, see Coelli 2005, and for a review on benchmarking literature on airports see Forsyth, 2008c, as well as Liebert and Niemeier, 2010, and Reinhold et al, 2010)). From the perspective of regulation, benchmarking should provide information on technical and economic efficiency. Benchmarking of efficiency can be expanded to include benchmarking of prices and profitability. An airport is operating technically efficiently if it produces a given level of output with minimal inputs. This concept is very relevant to monopolies and regulation because very often airports with market power use more resources than necessary.

Both partial and total benchmarking methods can be applied for benchmarking. Managers have so far preferred partial indicators like labour productivity or average costs per passenger. Such data have been collected for a large sample of international airports by Jacobs (former TRL). Partial measures have the advantage that they are easy to understand but disadvantage that they are, by their very name, partial and incomplete, and may disregard key inputs to the productive process.

In most cases, enough data can be generated to use total measures. The most prominent are:

- Total Factor Productivity (TFP),
- Data Envelopment Analysis (DEA), and
- Stochastic Frontier Analysis (SFA)[3].

TFP measures changes in the level of output and the associated changes in inputs- it is a ratio of total output to total input. For multi- product firms like airports, it is necessary to construct price index-based numbers to measure the total factor productivity. It is necessary to aggregate inputs and outputs using, for example, prices as weights. However, often price data

[3] It is useful to differentiate between frontier and average approaches. Frontier methods like DEA and SFA estimate the efficient production or cost function where an airport that deviates from the frontier appears to be inefficient.

are sometimes difficult and costly to get or not publically available The Air Transport Research Society produces yearly Airport Benchmarking Reports (ATRS, various years).

DEA is less data demanding and does not need price information. DEA is a non-parametric approach which uses linear programming to construct a piece-wise linear frontier which is determined by the efficient airports of the sample. DEA optimizes the weights without the need of price information. An advantage of this approach is that it can handle multiple inputs and outputs - for example aeronautical and non-aeronautical services.

The SFA approach is a parametric method which requires the specification of a production or cost function. In contrast with DEA, SFA not only explains deviations from the frontier with inefficiency, but also accounts for errors.

All methods can be used to determine the relative technical and allocative efficiency of airports and have different strengths and weaknesses. A central problem of benchmarking is the heterogeneity of airports, which must be taken account. These heterogeneities can be classified as external exogeneties, external endogeneties and internal exogeneties. Airports are subject to exogenous heterogeneities which are caused by the environment for example, geographical constraints[4], or social particularities[5]. Over these factors, airport management does not have any control. Endogenous heterogeneities are due to national differences in the regulatory framework. This is particularly relevant for benchmarking of airports of different countries, where airports have to meet different national regulation requirements. Airport performance might differ because of different safety and security regulations. These heterogeneities cannot be influenced by management and need to be adjusted for by including these particular characteristics in the benchmarking analysis. Internal heterogeneities across airports are due to managerial decisions. For these effects benchmarking should not be adjusted with the exception of capacity utilization which differs widely over the life time of investment due to lumpy character of airport investments.

In principle, any relevant factor can be included in a benchmarking study. Some techniques, such as SFA, are open ended in the sense that any factor considered to be of potential

[4] Airport growth might be constrained by limited space, and any extensions can lead to higher costs.

[5] In many European countries like Finland, Sweden, and Spain airports are publicly owned by one national airport company. Typically, small airports are cross subsidized.

relevance can be included as a determinant of efficiency, just as any variable can be included in a regression analysis. By contrast, a TFP study is limited to inputs and outputs- it does not allow for other relevant factors such as size or traffic mix. However these factors can easily be allowed for in subsequent regression, which can determine the effect of these factors on efficiency. Thus, for example, the effect of size or traffic mix on efficiency can be calculated.

Benchmarking techniques are improving over time, and several of the problems handling airports are being resolved. The current focus of research is to work with more disaggregated data, and incorporate negative externalities such as noise or delays.

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