The Allen Consulting Group

Productivity Commission Review of Airport Pricing

Behaviour of the Airports Since Removal of Price Control and Compliance with Review Principles 1 and 3

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Report to Virgin Blue

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Contents

Executive Summary

Purpose and Scope of Report

The purpose of this report is to present a framework for assessing whether the major airports have complied with the Government's Review Principles 1 and 3 in the period since the formal price controls were withdrawn and replaced with a price monitoring regime and to provide preliminary results from applying that framework.[1]

The Government – on the Productivity Commission's advice – recognised at the time that the decision to adopt the monitoring regime was one that was based in large part upon a judgement about how airport operators would act if formal price controls were removed. For example, while it was accepted by all that the major airports exercised considerable market power, particular weight was given to the incentives for pricing constraint that may flow from revenue earned from non-aeronautical services. Given the extent of judgement exercised in the decision to remove formal price control and replace it with a price monitoring regime, however, it was recognised that a subsequent review of the airports' actual behaviours since the withdrawal of formal price control would be required and a set of five principles were set out to guide that subsequent review.

Focus of Review Principles 1 and 3

The Government Review Principles 1 and 3 relate to the aggregate revenue that airports receive over all of the relevant airport services that are sold. These principles are as follows:

> *[Review Principle 1]* At airports without significant capacity constraints, efficient prices broadly should generate expected revenue that is not significantly above the long-run costs of efficiently providing aeronautical services (on a 'dual-till' basis). Prices should allow a return on (appropriately defined and valued) assets (including land) commensurate with the regulatory and commercial risks involved.
>
> …
>
> *[Review Principle 3]* At airports with significant capacity constraints, efficient peak/off-peak prices may generate revenues that exceed the production costs incurred by the airport. Such demand management pricing practices should be directed toward efficient use of airport infrastructure and, when not broadly revenue neutral, any additional funding that is generated should be applied to the creation of additional capacity or undertaking necessary infrastructure improvements.

The focus on revenue across the set of relevant services compared to cost implies that the matter of concern to these Principles is whether the airports have used their market power to raise prices generally, compared to cost, since the removal of formal price control. The remainder of the Review Principles focus on other aspects of the behaviour of the airports since the removal of price control, namely whether:

[1] The results are stated to be preliminary given that the analysis is reliant upon the information that the ACCC releases publicly with its monitoring report(s). We note that the ACCC has expressed concerns with the integrity of certain aspects of the information that it receives and that the ACCC's public reports include only a summary of the information that is provided by the airports, and omit certain pieces of information that would be especially useful to researchers. Accordingly, a number of approximations have been required in order to 'fill in the gaps' in the information that the ACCC publishes.

- the structure of prices has been appropriate (that is, promoting economic efficiency, and a subset of this, competition in the related markets), which is the focus of Review Principle 2;
- quality of service has remained at appropriate levels, which is the focus of Review Principle 4; and
- commercial negotiations and agreements have proceeded as expected, which is the focus of Review Principle 5.

While these aspects of the airports' behaviours are important, they are beyond the scope of this report.

Method for Applying Review Principle 1

The central focus for Review Principle 1 is whether revenue from the relevant services would recover 'long run cost'. However, defining 'long run cost' for infrastructure services – in common with many infrastructure services – is challenging, given that many of the assets that are used to provide airport services are 'sunk' investments (i.e. have no opportunity cost to being used as an airport) that may have been installed many years ago. The value assigned to such assets will have a substantial impact on the level derived for 'long run cost', but economic principles mean that a very low value could be assigned to these assets. A distinguishing feature of airports is that land makes up a material share of the assets required, which does have an alternative use (at least in theory) – the relevance of this is discussed further below.

The method for establishing the 'long run cost' of providing the airport services that is most consistent with the full context of the Review Principles is to assign a value to airport assets (and hence calculate 'long run cost') that is consistent with the level of the price controls that were previously in effect, *unless* economic efficiency would be considered to be advanced from revisiting the values of past investments. Subsequent investment and the calculation of cost generally should then be treated in a manner consistent with how economic regulators assess the total cost of proving a regulated service.

This method for interpreting and applying Review Principle 1 would have the effect of focussing attention on whether a sound basis applies for a *change* to the level of prices, noting that economic principles do not provide a unique answer to the level of pricing at any time. This method for interpreting and applying Review Principle 1, in turn, is consistent with the:

- Productivity Commission's terms of reference, which focus attention to economic efficiency. As an increase in airport prices is likely to reduce certain dimensions of economic efficiency – by dissuading marginal passengers from flying in the short term and reducing the frequency of flights and route selection in the long term – it is necessary then to consider explicitly whether that change in price nonetheless may promote other dimensions of efficiency;
- Government's concern at the time of introducing price monitoring that 'unjustifiable' price increases not occur, implying a desire for an explicit focus on any *changes* to prices from the level that otherwise would have applied and the justification for those *changes*; and

- the reasonable expectations of the purchasers of the privatised airports at the time that the airports were sold, thus avoiding the potential for unintended windfall gains or losses from the privatisation process.

To be clear, the method proposed for interpreting and applying Review Principle 1 would mean that a price rise would be 'justifiable':

- where operating costs increase (such as to reflect increased security costs);
- to reflect new investments;
- where necessary to retain revenue if the level or structure of demand changes; but
- not where the price increase merely implies an increase in asset values compared to their implied value under the former price control regime, unless such a revaluation would enhance economic efficiency.

Clearly, a central issue for the last of these 'justifications' is how land assets should be valued, which is addressed further below.

Interpretation of Review Principle 3

Review Principle 3 provides the airports with the flexibility to set prices that generate revenue that may exceed 'long run cost' as calculated in accordance with Review Principle 1 where necessary to set efficient prices in the presence of congestion at airports. However, the Principle also makes it clear that it intends that airports not retain the benefit from charging above 'long run cost' to signal congestion – rather, the increase in peak period prices is required either to be revenue neutral, or for the surplus to be quarantined from the airport owner to be used to finance future augmentation or improvement of services. The principle of not permitting the airport owner to benefit from congestion charging is very important. If the airport owners are permitted to retain congestion rents, then strong incentives against any future augmentation (i.e. removal of congestion) would be created.

For the current review, two clear implications follow.

First, as none of the airports have implemented any form of peak period pricing, nor identified any portion of their airport revenue that is being quarantined for airport augmentation or improvement, then it can be assumed that none have availed themselves of the flexibility provided in Review Principle 3. Hence, only Review Principle 1 is relevant for the assessment of the airports' behaviours since the removal of price controls.

Secondly, the intention in Review Principle 3 to preclude the airports from benefiting from 'congestion rents' necessarily means that the desirability of setting prices that reflect congestion is not a justification for setting a higher asset value for airport assets (or for some of their assets, such as land) than otherwise would occur. Review Principle 3 makes it clear that the price that the airports can charge can be independent of the revenue that the airports are permitted to retain if congestion charging is justified, only the latter of which is reflected in the value that is assigned to their airport assets. We note here that the explicit requirement for congestion rents to be 'quarantined' from airport owners removes one of the key justifications that has been relied upon in the past for concluding that land should be valued at its opportunity cost, which is considered next.

Valuation of Airport Assets (including Land)

As discussed above, a key input into the calculation of the 'long run cost' is the value that is assigned to airport assets, which in turn will have a substantial impact on how the airports are judged against Review Principles 1 and 3. Of central importance, therefore, is whether economic efficiency provides a justification for revisiting the values for airport assets that were implicit or explicit (in the case of Sydney Airport) in the previous price control regime. The question of how to value airport land for regulatory purposes is a matter of substantial and continued debate. Similarly, the question of how to value the remaining airport assets – which typically account for the majority of an airport's assets by value – raise issues that have been debated in numerous Australian regulatory decisions, and indeed by regulators all around the world.

A number of arguments have been advanced in previous submissions and reports to the effect that valuing land at its 'opportunity cost' would advance economic efficiency, and these arguments have been responded to in equal weight. This chapter draws on this material and evaluates the differing positions. Importantly, this evaluation is conducted against two important contextual settings, which are:

- *The requirements of Review Principle 3* – which precludes adopting a higher asset valuation to enable higher prices to signal congestion. While congestion pricing is encouraged, Review Principle 3 requires the benefits of congestion rents to be directed to reducing off-peak prices or investments to augment or improve the airport and not to flow to the owners of airports, which means excluding any such amount from the asset value.

- *All airport assets have to be considered* – land is only part of the collection of assets that are required to provide airport services and, while land assets (in theory at least) have alternative uses (and hence an 'opportunity cost'), the other assets (i.e. the improvements to land required for runways, taxiways and aprons) generally are specific to their existing use (i.e. economically 'sunk'). Accordingly, arguments to the effect that land should be re-valued *upwards* to signal its *high* opportunity cost necessarily also imply that the bulk of the remaining assets should be re-valued *downwards* to signal their *low* or zero opportunity cost.

The main propositions that have been advanced for how the value assigned to airport *land* may affect economic efficiency – and the resulting decisions that are affected – include the following:

- That valuing the land at opportunity cost would provide an appropriate signal at constrained airports, for passengers over whether to fly, and airlines over route choice;
- That valuing the land at its opportunity cost would provide the Government with the correct signal (or information) over whether to relocate the airport and
- That valuing airport land at its opportunity cost would provide airport operators with an efficient signal over whether to use airport land to provide aeronautical services or non-aeronautical services, including whether to acquire or dispose of land.

There are two shortcomings with the first argument. First, the appropriate economic concept to turn to in pricing for constrained airports is *short run marginal cost*, which excludes any amount in respect of assets that is fixed in the short term, including land. Secondly, Review Principle 3 precludes airports from retaining additional revenue from 'congestion rents' beyond long run costs. Any such excess revenue must be set aside for reinvestment, and were this not the case, a perverse incentive would exist for airport owners to delay augmentation.

The second argument similarly has a series of flaws. First, for 'opportunity cost' to be used to compare the relative merits of relocating or not relocating, all assets must be valued at 'opportunity cost' — including non-land assets, which typically have a very low or no opportunity cost. Secondly, opportunity cost valuations typically proffered by airports do not take account of externalities, such as noise and proximity to a transport hub. As such, these private opportunity costs do not provide appropriate signals for *socially optimal* behaviour. Finally, it is difficult to see how setting prices based on opportunity cost could, in practice, inform the decision of whether to relocate a major capital city airport in a situation where passengers do not have a choice between the current airports and its alternative.

The third argument misunderstands the disposal, acquisition and reallocation choices actually open to airport operators, and the incentives affecting them. The choices only exist at the margin, and the incentives rely not on the total regulatory asset value but on how regulatory asset value changes when there is a change in land use. An appropriate regulatory accounting treatment of the land that changes use would provide the incentives sought, without requiring a revaluation of all assets. Even if aeronautical land was valued at opportunity cost, there still exists the same incentive to change its use, since the market value of land in non-aeronautical use will generally exceed the opportunity cost of airport land as a whole. Moreover, even if it was decided that land should be valued at the opportunity cost, this does not imply that the total asset value need increase – rather, the increase in the value of land could be offset with a reduction in the value of non-land assets, with no loss of economic efficiency.

We conclude that there is no compelling reason to consider that an upward revaluation of airport assets from the value implicit in the previous price controls would enhance economic efficiency.[2] Rather, given the dampening effect on economic efficiency from an increase in airport charges, such an upward revaluation is more likely to reduce economic efficiency.

[2] We note here that Review Principle 3 provides the flexibility to implement efficient pricing for a constrained airport without revaluing assets.

Assessment of Airports against Review Principles 1 and 3

We have applied a method for deriving 'long run cost' (described in Chapter 3) to the price monitored airports drawing upon information reported in, or derived from, the ACCC's price monitoring reports as well as the ACCC's 2001 decision on Sydney Airport's aeronautical charges.[3] The specific method employed was as follows.

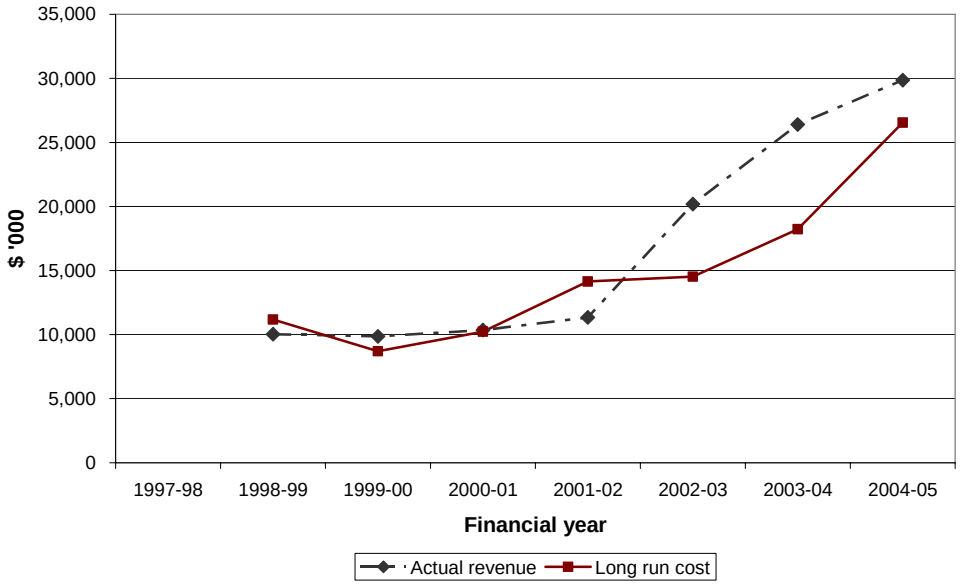
- With the exception of Sydney Airport, the regulatory value for each airport's assets was derived as the asset value that was consistent with the revenue earned during the previous price control regime, using standard regulatory approaches for calculating 'long run cost'. Once an initial asset value was locked in, this calculation of 'long run cost' was then extended over the period since price monitoring was introduced, taking account of actual operating expenditure and new investment over that period.
- For Sydney Airport the method was more straightforward, the ACCC asset value was adopted, which was determined as $1404 million as at 1 July 2000. 'Long run cost' was then calculated for that time forward, again using standard regulatory approaches and taking account of actual operating expenditure and revenue over the period.

Comparing the long run cost so determined with the airports' actual revenues since the removal of price controls provides a test of whether the airports have complied with Review Principles 1 and 3. The results of the comparison of the airports' actual revenues with the calculated 'long run cost' is set out in Figure 1.1 to Figure 1.7 below.

[3] We have drawn upon the *information* that has been presented in the ACCC monitoring reports, but not the *analysis* that is presented therein. Many of the measures of cost or profit that are reported by the ACCC are influenced materially by how the airports have chosen to values their airport assets, for which substantial discretion would appear to reside with the airports. In order to rely upon any measure of financial performance to draw inferences about the behaviour of the airports, it is essential that the airport assets be valued appropriately. Hence we do not consider that many of the measures of cost or profit that are reported by the ACCC in its monitoring reports to permit reliable inferences to be drawn.
We also note that there are gaps in the information published by the ACCC, as well as concerns expressed by the ACCC about the quality of the data received and the compliance of the airports with their current reporting requirements. Our approaches for overcoming the gaps in the information provided and comments on the quality of the data are described in Chapter 5. We do not consider that these gaps or questions of quality affect the conclusions reached in this report.

Figure 1.1

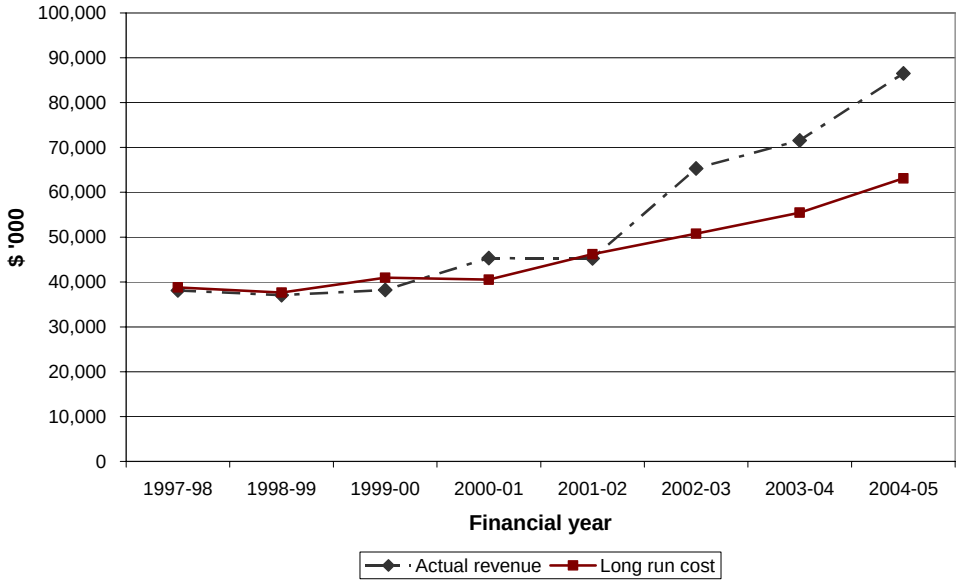
ADELAIDE AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



Source: ACCC Airport Regulatory Reports, 1997-98 to 2004-05

Figure 1.2

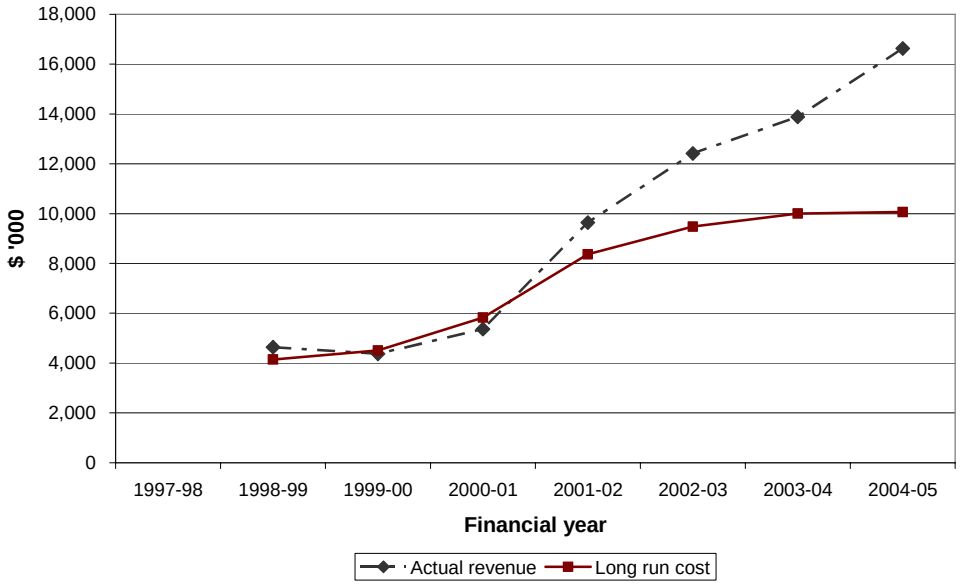
BRISBANE AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Figure 1.3

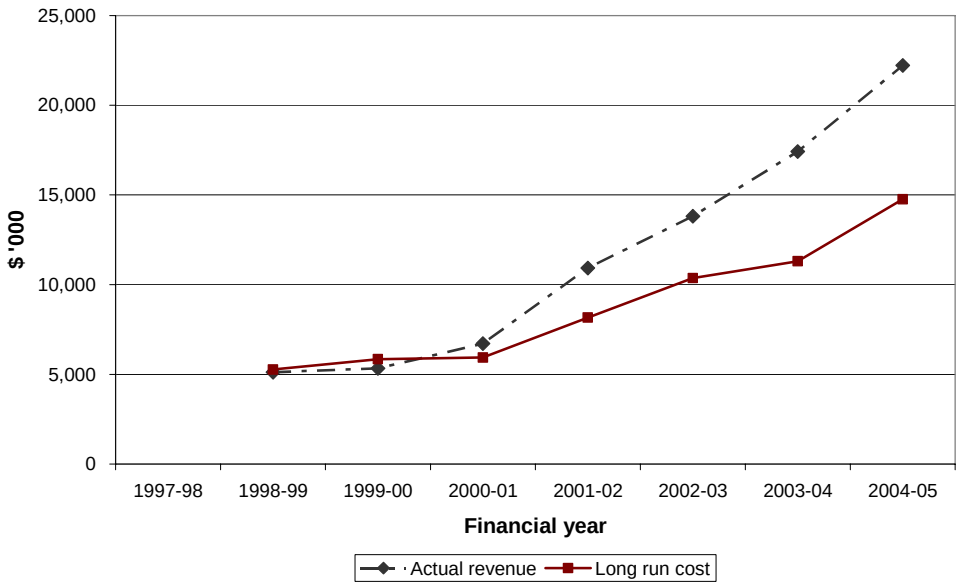
CANBERRA AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



Note: Excludes $67 million disposal of aeronautical assets reported in 2003-03.
Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Figure 1.4

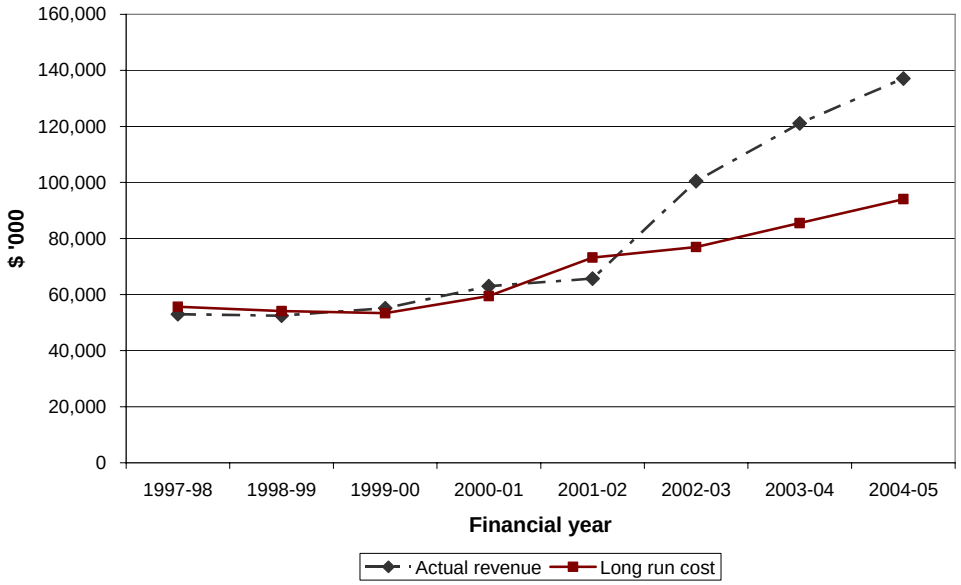
DARWIN AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Figure 1.5

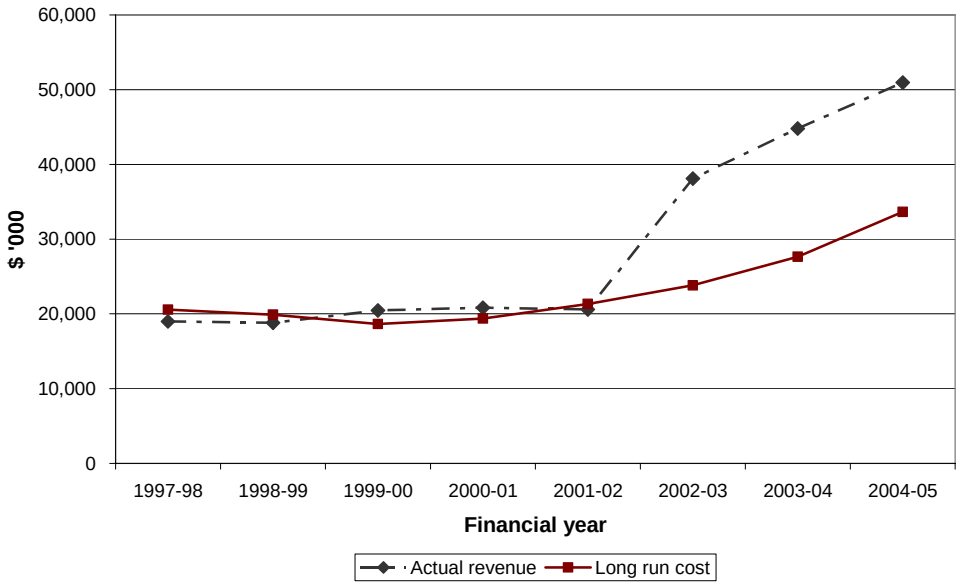
MELBOURNE AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Figure 1.6

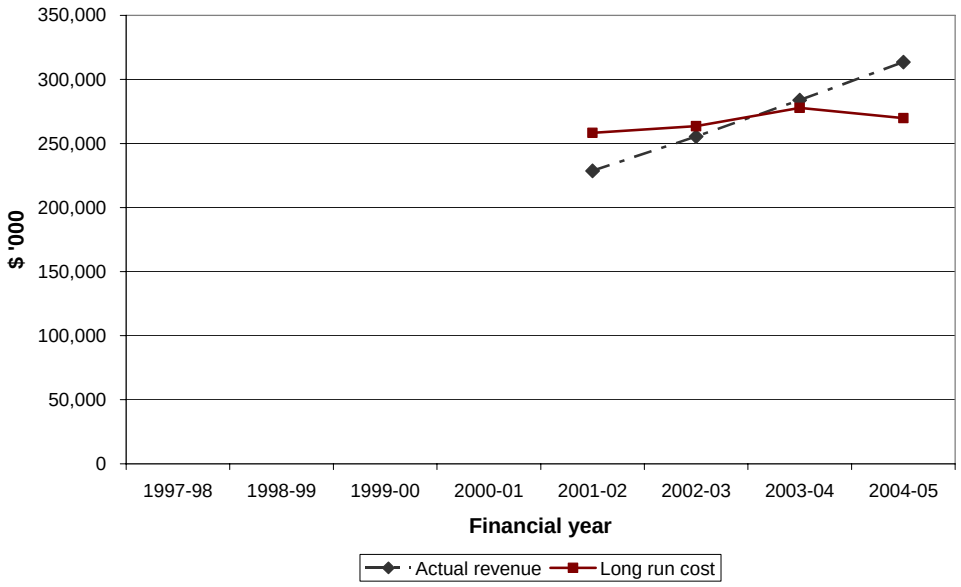
PERTH AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Figure 1.7

SYDNEY AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05; ACCC 2001, *Sydney Airports Corporation Ltd.: Aeronautical Pricing Proposal: Decision*, May.

A common theme across all of the airports is that, over the period since the removal of formal price controls on the airports, actual revenue has risen substantially above 'total cost' and, if aeronautical prices remain as they are, this gap would be expected to continue to grow. This increase in revenue is not driven by an increase in costs incurred (including new investment requirements), a change to the level or structure of demand or from a revaluation of assets that would promote economic efficiency. Accordingly, we conclude that the airports' pricing decisions over the period since the removal of price control and the introduction of monitoring have not been consistent with the requirements of Review Principles 1 and 3.

Chapter 2

Introduction

2.1 Background and Purpose

A central task for the Productivity Commission in its review of the price regulation of airports is to report on whether airport operators have acted in a manner consistent with the Government's Review Principles in the period since the formal price controls (CPI-X controls or price notification arrangements) for the major Australian airports were withdrawn and replaced with a prices monitoring regime.[4] As foreshadowed when the formal price controls were removed, an analysis of the behaviour of the airports against these principles would be a key factor in determining whether the Government's decision in 2001 and 2002 to withdraw formal price controls and replace it with a monitoring regime was sound, and hence whether and how the regime should be amended in the future. These Review Principles, in turn, are as follows:

> *[Review Principle 1]* At airports without significant capacity constraints, efficient prices broadly should generate expected revenue that is not significantly above the long-run costs of efficiently providing aeronautical services (on a 'dual-till' basis). Prices should allow a return on (appropriately defined and valued) assets (including land) commensurate with the regulatory and commercial risks involved.
>
> *[Review Principle 2]* Price discrimination and multi-part pricing that promotes efficient use of the airport is permitted. This may mean that some users pay a price above the long-run average costs of providing aeronautical services, whereas more price-sensitive users pay a price closer to marginal cost.
>
> *[Review Principle 3]* At airports with significant capacity constraints, efficient peak/off-peak prices may generate revenues that exceed the production costs incurred by the airport. Such demand management pricing practices should be directed toward efficient use of airport infrastructure and, when not broadly revenue neutral, any additional funding that is generated should be applied to the creation of additional capacity or undertaking necessary infrastructure improvements.
>
> *[Review Principle 4]* Quality of service outcomes should be consistent with user's reasonable expectations, and consultation mechanisms should be established with stakeholders to facilitate the two way provision of information on airport operations and requirements.
>
> *[Review Principle 5]* It is expected that airlines and airports will primarily operate under commercial agreements and in a commercial manner, and that airport operators and users will negotiate arrangements for access to airport services.
>
> Minister for Transport and Regional Services and Treasurer, Productivity Commission Report on Airport Price Regulation, Joint Press Release, 13 May 2002.

Related to this, the Commission is also required specifically to review aeronautical asset valuation practices and to advise on any improvements that would be consistent with the Review principles.[5]

[4] Terms of Reference, clause 1.

[5] Terms of Reference, clause 3.

The purpose of this report is to set out a method for assessing whether the revenue the airports have been earning from the monitored aeronautical services is consistent with Review Principles 1 and 3. Preliminary results from the application of this method are then presented. Review Principle 1 notes that the long run cost of efficiently providing aeronautical services should include a return on appropriately valued and defined assets (including land) that are used to provide those services. Accordingly, a key issue addressed in this report is also how assets generally should be valued for the purpose of assessing compliance with Review Principle 1 and 3, which includes an assessment of the valuation of land assets.

2.2 Structure of the Report

The remainder of the report is set out as follows.

Chapter 3 addresses two important methodological issues associated with the interpretation of Review Principles 1. First, the issue of how the requirement in Review Principle 1 for revenue to be commensurate with 'long run cost' should be interpreted and applied is discussed, which concludes with a method for testing whether the revenue from airport services meets Review Principle 1. The chapter then addresses the question of how Review Principle 3 modifies the operation of Review Principle 1, in particular, how the flexibility to charge to reflect airport congestion affects the assessment of revenue against 'long run cost'.

A conclusion from Chapter 3 is that the most appropriate interpretation of the Review Principle 1 for revenue to be commensurate with 'long term cost' is that the level of prices that were set under the former price control regime should be viewed as remaining appropriate, unless a convincing reason for change (evaluated against the objective of economic efficiency) existed. While changes in the ongoing cost of providing aeronautical services of the level or structure of demand provides an obvious justification for changes in prices (and revenue), an important issue is whether an increase to the value of assets that were in place at the commencement of the formal price controls can be justified from an efficiency perspective, which is addressed in Chapter 4. A key issue this raises, in turn, is how land should be valued for regulatory (or price monitoring) purposes. It is noted, however, that it needs to be kept in mind that land typically would account for less than half of the cost of constructing a new airport.

Chapter 5 then applies the method for calculating 'long term cost' developed in Chapter 3, in light of the findings about how assets should be valued presented in Chapter 4, using information drawn from the ACCC's price monitoring reports. The outcome of this chapter is an assessment of whether the airports have complied with Review Principles 1 and 3.

Chapter 3

Method for Applying Review Principles 1 and 3

3.1 Introduction

The purpose of this section is to address the key issues with the interpretation and application of Review Principles 1 and 3. These issues are:

- how 'long run cost' as referred to in Principle 1 (and implicitly in Principle 3) should be calculated – and, related to this, how the assets used to provide aeronautical services should be valued – given the full context of the Review Principles and the Commission's terms of reference; and
- how the flexibility in Principle 3 to set prices that may not be consistent with Principle 1 where there are capacity constraints should be interpreted, and in particular how the requirement for congestion charges to be either 'broadly revenue neutral' or, where it generates additional revenue, for this revenue to be 'applied to the creation of additional capacity or undertaking necessary infrastructure improvements' should affect the assessment of whether the airport has complied with the Review Principles.

These two matters are addressed in turn.

3.2 Defining 'Long Run Cost'

A central component of Review Principle 1 is that the revenue that is generated from the sale of the relevant services should not exceed the long run cost of providing the service. However, it is clear that a large part of the 'long run cost' of providing aeronautical services will reflect the costs associated with investments that were made prior to the commencement of formal price control and the subsequent introduction of the monitoring regime, which values cannot be uniquely defined.

In particular, it is a characteristic of many infrastructure services that the assets employed have long economic lives, and no feasible alternative use once the investment has been made, which is the case for many of the assets that are used to provide aeronautical services (e.g. runways, taxiways and aprons). A distinguishing feature of airports to many other forms of infrastructure is that land makes up a material portion of the assets employed to provide aeronautical services, which has alternative uses (at least in theory).[6] The relevance of land to the analysis is discussed further below. In principle at least, where investments have no feasible alternative use once made (i.e. are economically sunk) then a very low or zero value could be ascribed to those assets. That is, as the assets have no feasible alternative use, little or no payment would be required to ensure the assets remain in that current use.

[6] The regulatory asset value for Sydney Airport that the ACCC determined as at the start of the 2000-01 financial year was 1404 million, which comprised $951 million for improvements (runways, aprons, terminals, etc) and $453 million for land. SACL's proposed value for the land component was approximately $705 million.

However, it is also widely recognised that if regulators were to write-down the value of all sunk assets once investments were made, then strong disincentives for future investment would be created. While this implies that it is important that the regulatory regime provide confidence that new investments will be permitted to be recovered, economic principles do not provide a single solution to how to value sunk investments that were made prior to the introduction of formal price regulation. The need to provide certainty that new investment will be recovered requires some certainty about how past investments are valued (otherwise investors may have a concern that changes to the value of past investments may be used to effect changes to the value of new investments), but not a single solution to what should be that value.

Consistent with standard regulatory practice, the investments undertaken under the price control and monitoring regimes should be valued (and added to the regulatory asset value) at cost and depreciated over time. The more difficult question for the current review of the behaviour of the airports is how the values for the assets that were in place at the commencement of the formal price controls should be determined.

It is contended that the approach that is most consistent with the Review Principles and the Commission's terms of reference for setting the value for the assets that were in place at the commencement of formal price control is as follows:

- First, to adopt a presumption that the value for those assets that was implied by the level of the initial price controls was appropriate. While the price control regime did not involve setting an initial regulatory asset value and deriving price controls from an explicit assessment of cost, the controls that were set implied a value for the assets (i.e. the asset value that would have delivered the controls set by the Government), which it can be assumed the Government considered appropriate at the time.
- Secondly, to assess whether there may be sound reasons for adopting a higher or lower value for those assets presumed in step 1 above. We note that the absence of a formal review of the level of prices at the commencement of the former price control regime (Sydney Airport excluded) implies that the possibility of an error in the level of the former price controls should not be ignored. The central consideration when deciding whether to revisit this implied value of past investments should be whether the increase or decrease in that value may affect economic efficiency.

The effect of valuing the initial aeronautical assets in this manner – and then calculating 'long run cost' in a manner that is consistent with standard approaches from economic regulation practice – would include the following.

- The 'return' element in the calculation of cost that is attributed to the assets in place at the commencement of formal price controls would be consistent with their implied value under those controls, unless efficiency would improve from revisiting this value, as discussed above.
- The 'return' element in the calculation of cost that is attributed to the investments made under the price control regime and monitoring regime would permit the recovery of those costs over their economic life, together with a reasonable (risk adjusted) return, which would be consistent with ensuring the capacity and incentive for ongoing investment.

- The calculation of cost would include all operating expenses incurred, including those associated with meeting new obligations (such as increased security requirements in light of September 11), and hence permit the recovery of cost increases that have been incurred since the commencement of the formal price control and then monitoring regimes.
- The comparison required by Review Principles 1 and 3 is of revenue compared to cost, rather than prices. Accordingly, the application of these principles would acknowledge automatically the need to change prices if there was a reduction in demand for the services (such as occurred at the time of the departure of Ansett).

The implication of the above method for calculating 'long run cost' is that a degree of 'inertia' would be embedded into pre-existing levels of prices. In particular, this method would imply that the level of prices that were set under the former price control regime would remain appropriate, unless a convincing reason for change (evaluated against the objective of economic efficiency) existed. The arguments that support the adoption of this approach include the following.

- First, we consider it a reasonable assumption that an increase in the price of aeronautical services would generate a reduction in efficiency (all else constant). This reduction in efficiency would take the form of a reduction in flights by price sensitive passengers in the short term, and then a reduction in the frequency of flights and number of routes available to passengers over the medium term. Therefore, given the objective of maximising overall economic efficiency, it would be necessary to demonstrate that a revisiting of the value of past investments from the value that was implicit in the pre-existing level of prices would lead to sufficient gains in efficiency that would more than offset these losses.
- Secondly, the clear concern of the Government at the time that formal price controls were withdrawn was whether the new regime would be sufficient to prevent 'unjustifiable' increases in prices for aeronautical services. For example, the Government noted the following at the time:

  > As a safeguard, the Commission proposes that the price monitoring arrangements in Option B would only apply for a probationary period of five years. A review would be conducted towards the end of this period to determine whether there have been unjustifiable price increases that warrant reimposition of price controls.
  >
  > Minister for Transport and Regional Services and Treasurer, Productivity Commission Report on Airport Price Regulation, Joint Press Release, 13 May 2002.

  The Government's concern to prevent 'unjustifiable' price increases evidences a clear intention for Review Principles 1 and 3 to require a review of price *changes* against pre-existing levels and whether those *changes* can be justified (with the justification being one against the objective of economic efficiency). The approach to deriving 'long run cost' described above would imply an explicit assessment of whether any *changes* to the level of prices from those that existed under the price control regime were justified on efficiency grounds.[7]

[7] To be clear, the approach that has been proposed to value aeronautical assets and calculate long run cost would imply that it would be justifiable to increase prices if new investment or operating expenditure requirements rose or demand for the service fell, but would preclude any revaluation of the assets except where this was specifically justified.

- Thirdly, we note that all of the airports except for Sydney Airport were sold in the context of an existing regulatory regime with formal price controls applying. We consider that an assumption that prices in the future would have remained commensurate with those operating under the formal price control regime – albeit varying to take account of changes in ongoing expenditure requirements or demand – would have been most consistent with the reasonable expectations of the purchasers of those businesses, and hence avoid creating windfall gains or losses to the purchasers. In relation to Sydney Airport, we note that an initial regulatory asset value had previously been set by the ACCC for all relevant airport assets, and the purchasers noted at the time that the airport was sold that they expected to be permitted to set prices commensurate with the ACCC asset value.[8] Again, preserving the pre-existing regulatory value would be most consistent with expectations at the time of the sale.

As noted above, however, an implicit assumption in discussion about assigning a value to assets for the purpose of applying Review Principle 1 and 3 is that the asset itself is economically 'sunk' – that is, its value in an alternative use is very low or zero. It was also noted that one of the features that distinguish the provision of aeronautical services from many other forms of infrastructure is that land accounts for a material share of the assets that are used, which does have alternative uses. An important issue, therefore, is whether the fact that land does have an alternative use means that a revaluation of the land component of airports' assets – for example, to a value that approximated its value in its next best use – would deliver improvements in efficiency. This matter is discussed in detail in Chapter 4.

3.3 Pricing in the presence of capacity constraints

Where prices are regulated explicitly, the regulatory task can be seen as comprising two objectives, which are:

- *aggregate revenue* – to ensure that the revenue that is received across all of a regulated entity's regulated services is at an appropriate level, including that it is sufficient to provide an efficiently run entity with the capacity and incentive to continue to undertake the long-term investments necessary to provide the services sought by customers (but not so high as to induce unnecessary losses in allocative efficiency) – which inevitably leads to aligning revenue with a measure of cost; and
- *price structure* – to ensure that the structure of prices set for the relevant services provides efficient price signals to users of the service, including that it signals the marginal cost of using the relevant facility but otherwise to least distort the pattern of demand (i.e. in the typical case where marginal cost pricing leads to an under-recovery of cost).

[8] Specifically, it was noted that the Sydney Airport regulatory land value would be 'maintained using ACCC's preferred methodology of indexed historic cost': Macquarie Airports Prospectus, 18 July 2002, p. 144.

A further objective that is now central to the practice of price regulation is to ensure that the regime provides regulated entities with a financial incentive to act in a manner that is consistent with the public interest, obviating the need for the regulator to attempt to decide efficient outcomes through analytical means. For example, it is common for financial incentives to be provided for regulated entities to achieve productive efficiency, undertake service improvements where sufficiently valued by customers, and to set efficient prices. This element of regulatory design is not directly relevant to the matter at hand, however, and so is not expanded upon further.

In the normal course of events, the two objectives of determining an appropriate level of aggregate revenue and an appropriate price structure can be considered to be independent. In particular, provided that the level of revenue that is generated under the efficient price structure is not greater than the allowed aggregate revenue, then the two tasks can be separated. In theory, however, it is possible that the most appropriate price structure could generate a level of revenue that exceeds what the regulator would have decided for aggregate revenue, in which case some means of resolving the apparent inconsistency between the two objectives would be required.

While the Review Principles are not a prescription for how regulation should be undertaken – but rather, for assessing whether past behaviour has been appropriate – the two objectives discussed above remain relevant, and are reflected in the structure of the Government's Review Principles. That is:

- *Review Principle 1* – reflects the concern that aggregate revenue be at an appropriate (but not excessive) level; and
- *Review Principle 2* – reflects the concern that prices be structured in a manner that provides the signal for the efficient use of airports, but otherwise least distorts the pattern of consumption (i.e. by distinguishing based on capacity to pay).

Review Principle 3 then addresses the potential for these the former two objectives to conflict. Relevantly, this Review Principle advises two courses of action, which are to:

- *Minimise the conflict between the Principles* – to reduce off-peak prices simultaneously with raising peak period prices, in order to deliver 'revenue neutrality' (i.e. consistency with the aggregate revenue principle in Review Principle 1). It is noted that, while a high-price during times of congestion may be required to signal the cost of using the airport during that time, the marginal cost of using the airport during non-congested times may be low or zero, permitting a reduction in the latter without adversely affecting efficiency; or
- *Apply the revenue to service augmentation / improvement* – where setting prices that signal the cost of use during peak times necessarily would be revenue non-neutral, then the revenue that is received in addition to the appropriate (i.e. Review Principle 1) level should be set aside for investment in projects that expand or improve the airport services.

When read in the context of Review Principles 1 and 2, it is clear that the intention of Review Principle 3 is to permit efficient pricing in the presence of constraints even when such pricing would deliver revenue that is in excess of the level that otherwise would have been calculated pursuant to Review Principle 1. However, equally, it is clear that the intention is to preclude the airport owners from retaining that surplus. Rather, the surplus should be quarantined from the owners for service augmentation or improvement. We note that there is a strong justification in economics for precluding these congestion rents from flowing to airport owners. In particular, if airport owners are able to charge prices that reflect the congestion and also to keep the rents, then augmentation would lead to these rents being lost. The loss of congestion rents consequent on augmentation would lead to a strong incentive against augmentation, even if the augmentation would be socially efficient.[9]

The requirement for any surplus over the appropriate level of aggregate revenue to be quarantined from airport owners has a number of direct implications for the assessment of whether the airport owners have complied with the Review Principles, and the related question of how assets – including land – should be valued for the purposes of assessing compliance with the Review Principles. Some of the more important criteria are as follows:

- *Peak pricing must be implemented and revenue neutrality demonstrated not to be appropriate* – the flexibility to charge prices that deliver revenue in excess of what otherwise would be considered appropriate (i.e. in line with Review Principle 1) is only permitted if peak period pricing has been implemented and it is not possible to implement peak period pricing in a revenue neutral manner.
  - We note that, as none of the major airports have implemented any form of peak period pricing, the necessary condition for any of the airports to charge prices that deliver a 'surplus' of revenue does not exist.
- *Revenue surplus' must be clearly separated and quarantined (including interest earned) and netted off of future capital expenditure* – if any of the airports had implemented peak period pricing and sought the flexibility over pricing implied by Review Principle 3, then the relevant airport would need to be able to demonstrate that the surplus of revenue had been identified clearly and that the creation of the surplus is not providing a 'benefit' to the owner of the airport (if any benefit from overcharging was being received, then the perverse incentive not to augment discussed above would remain). The most practicable means of quarantining the revenue surplus would be to create a trust fund or similar instrument in which to keep the revenue surplus until it had been spent, with interest earned on the proceeds in the interim to be returned to the fund and then for the fund's proceeds transparently to offset the airport owner's future capital expenditure requirements (i.e. for the fund's contributions to be netted off of the capital expenditure that the airport owners declare in their monitoring information).
  - We note that none of the Australian Competition and Consumer Commission's (ACCC) monitoring reports disclose the existence of any trust fund or similar instrument into which 'surplus' revenue has been

[9] In competitive markets, the existence of congestion rents would lead to strong incentives for new investment and an expansion in supply, even though this process would reduce average prices. A key assumption of competitive market theory, however, is that an expansion of supply would not influence the market price, which is not the case for a firm in a position of substantial market power, like a major airport.

devoted, and nor do the ACCC's reports disclose that any airport owner has noted that part of its capital expenditure for a particular year has been offset from any such fund.

- *Asset valuations and other inputs must not be higher to reflect the desirability of congestion charging* – the intention of Review Principle 3 to quarantine from airport owners any additional revenue that may result from congestion charging would also preclude such a transfer of revenue arising through indirect means. As discussed further in Chapter 4, one of the arguments that has been raised in previous debates about the valuation of the land that is used to provide aeronautical services is that a higher value may be justified where an airport is constrained as the effect of that higher value would be to raise average charges (which, the argument proceeds, would be desirable in those circumstances). However, such a line of argument is equivalent to stating that the airport owner should be permitted to recover a higher level of revenue than otherwise would be considered appropriate in order to permit congestion pricing, which is inconsistent with Review Principle 3.

  – It follows that, when considering how land (and other) assets should be valued for the purpose of assessing compliance with the Review Principles, Review Principle 3 precludes a higher value from being adopted merely because that higher value would be consistent with providing more efficient price signals to users of the airport.[10]

[10] An alternative interpretation of how Review Principle 3 may affect asset valuations is that 'dual' values for the assets would be required where congestion pricing is applied, one part of which reflects the share of the revenue that is permitted to be received by the airport owner, and the remainder reflecting the revenue associated with congestion charging, which is required to be quarantined and used to fund future capital works (to the benefit of airport users). If such an interpretation were adopted, then the conclusion from the discussion above would be that Review Principle 3 would require the desirability of congestion pricing to be ignored when deriving the share of the asset value that is used to calculate the revenue that the airports are permitted to retain, but would be a relevant consideration if an asset value was determined to derive congestion charges. The remaining conclusions in this report hold irrespective of which interpretation is adopted.

Chapter 4

Valuation of Airport Assets, Including Land

4.1 Introduction

As discussed above, a key input into the calculation of the 'long run cost' is the value that is assigned to airport assets, reflecting the capital intensive nature of airport services. This value, in turn, will have a substantial impact on how the airports are judged against Review Principles 1 and 3. The method for calculating 'long run cost' that was set out in Chapter 3 would imply that the default value for airport assets would be the value that was implied for those assets under the previous price control regime (or the value that was set under the previous price control regime, in the case of Sydney Airport). The purpose of this chapter is to assess whether a case can be made, from the perspective of economic efficiency, for revisiting these implied values.

The question of how to value airport land for regulatory purposes in Australia is a matter of substantial and continued debate. It was originally posed as an input into building block revenue calculations for the ACCC review of Sydney Airport's price notification in 2001. It was addressed briefly in the Productivity Commission's 2002 report on *Price Regulation of Airport Services*, though it was not central to the terms of reference of that inquiry. It is again raised by the terms of reference for Productivity Commission's current *Review of Price Regulation of Airport Services*. In addition, the question of how the remaining non-land airport assets – which typically account for the majority of an airport's assets by value – raise issues that have been debated in numerous Australian regulatory decisions, and indeed by regulators all around the world.

A number of arguments have been advanced in previous submissions and reports to the effect that valuing land at its 'opportunity cost' would advance economic efficiency, and these arguments have been responded to in equal weight. This chapter draws on the material that has been presented to date to summarises the relevant argument and evaluates the differing positions. Importantly, however, the treatment of how land should be valued in this report does so against two important contextual settings, which are as follows:

- First, the requirements of Review Principle 3, which has the effect of precluding a higher asset valuation to reflect the desire to permit higher prices where there is congestion. A clear implication of Review Principle 3 is that, while congestion pricing is encouraged, the benefits from congestion rents should not flow to the owners of airports. Rather, the surplus of revenue in the form of congestion rents must be used to lower off-peak prices or quarantined to augment or improve aeronautical services.

- Secondly, land assets are only part of the collection of assets that are required to provide airport services. While land assets – in theory at least – have alternative uses (and hence an 'opportunity cost'), the other assets (such as the improvements required for runways, taxiways, aprons, etc.) would be likely to have a low or zero value in an alternative use, and hence very little opportunity cost. Accordingly, arguments to the effect that land should be re-valued *upwards* to signal its *high* opportunity cost (or its 'true economic cost') necessarily also imply that the bulk of the remaining assets should be re-valued *downwards* to signal their *low* or zero opportunity cost.

First, however, several comments on the terminology are adopted in this report are appropriate.

Note on terminology: opportunity cost

In some of the debate that has occurred on how land should be valued, different views have been expressed at times about what is meant by the 'opportunity cost' of the land assets that are used. We consider the meaning of the 'opportunity cost' of a particular choice to be well-established in economics, being the value of the other opportunities that are foregone as a result of that choice. Where the relevant choice is to use a section of land for an airport, the opportunity that is foregone is to use the land for its next best use.

As will be discussed further below, however, the airport owners are required to continue to operate an airport on the relevant land, which limits their abilities to change the use of the land to realise the alternative opportunities. While such restrictions do not affect the opportunity cost to *society* from using the land as an airport, those restrictions are relevant to the question of whether (or to what extent) the objective of ensuring that airport land remains in its current use imposes constraints on the asset value that is adopted. Where relevant, the discussion below distinguishes the *opportunity cost to society* from the *opportunity cost to the airport owners*, the latter of which is conditioned by the legal restrictions on land use.

A further debate that has occurred is about how the opportunity cost of land should be measured. Again, in principle, this is straightforward: the value should reflect an estimate of the market value of the land if an airport was not in existence, although of course this cannot be observed but only estimated. In addition, it is clear that the value of land will depend upon whether the land is ready to build upon or whether it first needs to be cleared, and so the costs associated with restoring the land first to a 'blank sheet of canvas' need to be factored into the calculation of the opportunity cost. Similarly, the opportunity cost cannot be measured by referring to the actual value of land adjacent to the airport, or to the value of land if used as an airport, as both of these values are affected by the existence of the airport, and hence are not a measure of the value in alternative use. Moreover, valuing the assets in their current use is highly circular where the value is used for a regulatory purpose: that is, the value would reflect the prices that exist, and would then be used to test whether those prices are themselves appropriate.

4.2 Efficiency Implications of the Value of Airport Assets

As noted above, a number of arguments have been made in previous reports, submissions or other such material about the efficiency implications of the value that is assigned to airport assets for pricing purposes (and land in particular).

To evaluate how economic efficiency may be affected by the value assigned to airport assets, it is important to trace carefully how that value would affect the decisions of the various economic agents. As the demand for airport services is a derived demand – resulting from the demand for passenger and freight air transport services – this assessment must take into account the effect on decisions concerning the supply of airport services, the intermediate demand for airport services (and the corresponding supply of air travel services), and the final demand for air travel services. Moreover, the assessment of the effect of airport asset values on efficiency also needs to be placed in the context of the actual situation in which airports operate – including the regulation that exists regarding the use of airport land, and the substantial externalities – both positive and negative – that are associated with major, capital city airports.

The main propositions that have been advanced for how the value assigned to airport *land* may affect economic efficiency – and the resulting decisions that are affected – include the following:

- That valuing the land at opportunity cost would provide an appropriate signal regarding the cost of using constrained airports, and influence the decisions of:
  - the travelling public's decisions over whether to fly; and
  - the airlines' decisions over the routes that are flown, including the choice of airports as 'hubs';
- That valuing the land at its opportunity cost would provide the Government with the correct signal (or information) over whether to continue to use the existing site as an airport or to relocate it to another site; and
- That valuing airport land at its opportunity cost would provide airport operators with an efficient signal over whether to use airport land to provide aeronautical services or non-aeronautical services, including whether to acquire or dispose of land.

Each of these arguments is evaluated in turn.

Passengers' decisions regarding when, where and whether to fly and airlines decisions regarding route planning, fleet composition and use of 'hubs'

In the Productivity Commission's 2002 discussion of aeronautical land valuation, much was made of the role of opportunity cost land valuation in raising prices to market clearing levels, avoiding non-price rationing of demand. The argument made is that where capacity is constrained, a cost-based price will always be below the equilibrium level; and that given this, a higher cost-based price, as results from a higher land valuation, is preferable to a lower cost-based price.[11] Importantly, this argument would relate to both the decisions made by passengers about whether to fly, as well as the decisions of airlines over regarding the choice of routes, fleet composition and the use of 'hubs'.

There are, however, two weaknesses with this argument.

[11] Productivity Commission 2002, *Price Regulation of Airport Services: Inquiry Report*, Report no. 19, AusInfo, Canberra, pp. 404–406.

First, while we agree that prices have a role in signalling to airlines and ultimately passengers the economic cost of using constrained airports (i.e. where constraints actually exist), the valuation of land and other airport assets is not relevant to setting the efficient price for the use of airport capacity (slots) in the presence of constraints. The efficient price for the use of an asset is the *short run marginal cost*, which excludes any amount in respect of assets that are fixed in the short term (i.e. capital or land) but does include the cost of congestion.[12] While the efficient prices for an airport that is constrained most of the time may exceed long run average cost, it would be purely by chance that this was consistent with any particular valuation methodology for fixed assets.[13]

Secondly, and more importantly, while Review Principle 3 provides airports with the flexibility to set prices that reflect the cost of using an airport during periods of constraints,[14] it specifically precludes the additional revenue from being retained by the airport, and hence precludes it from being reflected in a higher value for airport assets. As noted in Chapter 3, the requirement for airports to apply 'congestion rents' to reduce off-peak charges and/or to invest in service improvements or capacity augmentation is a very important principle: if the airport owners are permitted to retain congestion rents, then strong incentives not to augment airport capacity when required are created.

Decision of government regarding whether to relocate the airport

It has been argued that the valuation ascribed to airport land provides a signal to the airport owner, or alternatively the government, as to whether to relocate the airport.[15] According to this argument, if the opportunity cost of airport land, as reflected in output prices, is higher than airlines (and their customers) are willing to pay, then the airport should be relocated and the land converted to the best alternative use. It then follows that any valuation not based on opportunity cost – including historical cost – will provide inefficient signals for relocation.

There are three conceptual problems with this argument.

[12] Short run marginal cost charging typically would not be expected to recover the cost associated with providing infrastructure services (at least in the absence of congestion), and a mark-up over marginal cost or additional charge (e.g. a form of fixed charge) would be required to achieve cost recovery. The objective behind the design of the mark-up or additional charge should be to least distort the pattern of consumption compared to the situation where marginal cost prices apply.

[13] In utility regulation, there is at times debate over the appropriateness of pricing at short run marginal cost as against long run marginal cost, with one school of thought being that the latter provides superior 'signals' for users when making long term (irreversible) decisions (like the location of an electricity generator), and also avoids the volatility in pricing that may occur under short run marginal cost pricing, albeit sacrificing a signal for the efficient use of existing capacity at any point in time. For airports, the justification for long run marginal cost pricing is not strong, given that the decisions over the use of airports by both passengers and airlines are shorter term and more reversible in nature than typical users of other infrastructure. Moreover, where an asset is constrained, short run marginal cost clearly is the preferable pricing convention.

[14] The discussion in some of the previous reports and submissions about charging for congestion would seem to accept that short run marginal cost is the appropriate charging basis for constrained airports, but were just arguing for a higher level of revenue (supported by a higher asset value) to provide the flexibility to implement efficient pricing. Review Principle 3 provides this flexibility without a need to set higher asset values.

[15] See, for example, Sydney Airports Corporation Ltd 2000, *Sydney Airport* Revised *Draft Aeronautical Pricing Proposal*, section 5.3.3.5, pp. 39–42.

The first is that, the 'opportunity cost' of using the airport in its current use that is relevant for the decision of whether or not to locate the airport is the combined opportunity cost of all of the airport assets, and not the opportunity cost of the land assets in isolation. As discussed already above, while the opportunity cost of the land assets for airports may well exceed the value that was implied by the former price control regime, the opposite is likely to be true for the non-land assets (given that these latter assets typically are 'sunk' investments). Thus, if a comparison is to be made about the relative merits of continuing to use a current site as an airport, or whether to relocate to another site, the fact that the current site would permit the continued use of sunk assets – whereas the new site would require investment in new assets – is an important factor when weighing the options. This is illustrated further with a simple example in Box 4.1.

Box 4.1

THE OPPORTUNITY COST SIGNAL FOR RELOCATION

A number of authors have argued that valuing airport land at opportunity cost provides a signal to the airport operator, or the government, about whether the airport should be relocated to a location with cheaper property. Simple analysis shows that this is only true if all assets are valued at opportunity cost. Consider the following example:

	Opportunity cost ($ million)	Replacement cost ($ million)
Existing airport site		
Value of land	1000	1000
Value of improvements	0	1000
Proposed alternative site		
Value of land	500	500
Value of improvements	1000	1000

As the alternative site is yet to be developed, opportunity cost and replacement cost are the same ($1.5 billion). By contrast, the existing site has sunk assets, for which the opportunity cost is zero but the replacement cost is substantial. If the existing airport assets are valued at a mix of opportunity cost (for land) and replacement cost (for improvements), then the apparent total cost of the existing site is $2 billion. This would suggest that, all else being equal, the airport should be relocated. Correct economic analysis would value all assets at opportunity cost, showing that remaining at the existing site ($1 billion) is more efficient than relocating ($1.5 billion).

In addition, the example above considers only the opportunity costs associated with the airport assets and does not take account of the costs and benefits that would be incurred outside of the airport if it was to be moved. While moving a major airport may bestow external benefits (such as a reduction in noise in the areas under the former flight paths), substantial costs would also be created – such as investment in new transport infrastructure and the requirement for airport-dependent businesses to move. Accordingly, a proper testing of whether an airport should be relocated requires a much wider range of (opportunity) costs and benefits that merely the costs and benefits associated with airport assets.

Moreover, the relevant matter is how airport assets should be valued for the purpose of setting prices. We find it difficult to see how setting prices that are based upon the opportunity cost of continuing to use the current airport assets as an airport could provide meaningful information for the decision of whether to relocate an existing airport.

The observation that passengers continue to fly to the existing airport as prices are raised (although higher prices need not follow if all airport assets are valued at opportunity cost)[16] would provide evidence of the value that passengers place upon the use of the existing airport. Indeed, the fact that passengers continue to use the existing airport as airport prices rise (and airline fares rise as a result) would merely demonstrate the market power of the airport.[17] The more relevant question when deciding whether the airport should be relocated is the relative value that a passenger would place upon landing at the airport in its current location, compared to the alternative location. Given that customers do not have a choice between the current and alternative location (as the alternative airport does not exist), observing passengers' behaviours as the price for using the existing airport rises will not yield any insights into this matter.

Decision of airport operator to acquire / dispose of land, or to reallocate land between aeronautical and non-aeronautical uses

In the previous discission, it was assumed that any airport relocation decision would ultimately be made by the Government, and not a private operator, given the major regional (and perhaps national) consequences. Indeed, the current legislative and lease conditions that require airport sites to continue in that use, and hence preclude an operator from ceasing operation as an airport and using it instead for its 'next best use'.

If the existing legislative provisions were not in place, however, then it would be necessary for airport charges to provide the owner with revenue that covered at least the opportunity cost associated with using the existing assets as an airport. However, even in this situation, the relevant opportunity cost is the opportunity cost of all of the airport assets, and land cannot be considered in isolation in this regard. As discussed already, while the land assets may have a material opportunity cost, the other assets – such as runways, aprons and terminals – are likely to have an opportunity cost that is very low or zero. Accordingly, even if it was necessary to provide revenue that exceeded the opportunity cost associated with the airport assets to ensure that the site remained as an airport (i.e. if the legislative restrictions were not in place), it is far from clear whether this would require greater revenue than earned under the previous price controls (and a commensurate increase in the asset values) – rather, it is more than likely that the revenue under the previous price controls would have been more than sufficient to provide an incentive not to cease using the site as an airport.

[16] As discussed above, the opportunity cost of land may be significant, the opportunity cost of the remainder of the assets – which typically comprise the major share of the cost of constructing an airport – may be very low. Accordingly, setting the value of all airport assets at their opportunity cost may well imply a reduction in asset values compared to those implied by the former price controls.

[17] If prices were set to reflect the full opportunity cost of providing the airport services (including externalities) and demand for the airport was sufficient to recover these costs, then the government could infer that it remained socially desirable to continue to use the current site as an airport (noting that this would require all airport assets to be valued at opportunity cost, including the sunk assets). However, for major capital city airports, this information should be self-evident.

Even where total closure or relocation of an airport is not a relevant consideration, it may be open to the operator to acquire additional parcels of land, dispose of existing airport land, or reallocate land between aeronautical (regulated) and non-aeronautical (unregulated) uses at the margin.[18] One of the arguments that has been emphasised in previous submissions is that, unless land assets are valued at opportunity cost, a perverse incentive will exist to change the use of land from aeronautical services to non-aeronautical services, to dispose of land, to fail to move non-aeronautical services off of the existing airport site (possibly combined with to purchasing adjacent sites to provide aeronautical services).[19]

Again, this is an argument that, when analysed closely suffers from a number of flaws.

First, whether or not an incentive exists to transfer land between aeronautical and non-aeronautical uses depends upon how the area of land whose use changes is valued when its use changes, rather than how land is valued for regulatory purposes generally. An accounting treatment that would have the same incentive properties as valuing all land at its opportunity cost regrading the use of land would be to value only the area of land whose use changes at its opportunity cost (i.e. while valuing the remaining land on a different basis). This would ensure that the reduction or increase in the regulatory value when the use of land changes would reflect the opportunity cost of the land – but without requiring all land to be re-valued at opportunity cost. Given that airport operators can only make disposal and reallocation decisions at the margin, this would be a pragmatic means of introducing the incentives intended by the opportunity cost valuation.

Secondly, it is also not clear that valuing airport land at opportunity cost would provide the desired incentive for the land to be used for its most highly valued use, or even to remain providing aeronautical services. In particular, the market value of airport land in non-aeronautical activities is likely to exceed its opportunity cost (given that the latter reflects the best use of the land on the assumption that the land is not adjacent to an airport), and so an incentive to transfer land out of aeronautical service would remain nonetheless. Secondly, the effect of valuing the land whose use changes at its opportunity cost (or, more relevantly as argued above, market value) would be to ensure that the land remains in use providing aeronautical services, irrespective of the extent to which passengers or airlines valued the relevant aeronautical service. Rather, in order to ensure that airport land is devoted to its most valuable use, then other processes would be required to ascertain the value of the relevant aeronautical service – such as by providing airlines with the choice over the scope or quality of aeronautical services provided.

[18] For regulatory purposes, changing the use of land from aeronautical services to non-aeronautical services or vice versa is equivalent to a disposal or acquisition from the aeronautical business, except that the counterparty to the transaction is the airport operator itself. As such, in the following paragraphs, acquisition should be read as including reallocation from non-aeronautical to aeronautical use, and disposal should be read as including reallocation for aeronautical to non-aeronautical use.

[19] Sydney Airports Corporation Ltd 2000, *Sydney Airport* Revised *Draft Aeronautical Pricing Proposal*, section 5.3.3.9, pp. 45-47.

Thirdly, even if it was accepted that it was essential to value airport land assets at opportunity cost in order to provide appropriate signals over the use of airport land, this does not therefore imply that the total value for the airport assets must increase. Rather, this objective could be met merely by changing how the total asset value for the airport is allocated between land and non-land assets, with the increase in the former offset with a reduction in the latter. As discussed already above, the opportunity cost of the non-land assets is likely to be very small, and hence very low value could be set for these assets without adversely affecting economic efficiency.[20]

4.3 Conclusion

While a number of arguments have been raised in previous matters suggesting that a revaluation of airport land to its opportunity cost would advance economic efficiency, none of these arguments are considered to be persuasive. Moreover, even where the argument was established that opportunity cost would provide the correct price signal to users, or incentive to the airport owner, the same argument must apply also to the non-land assets. While land assets may have a material opportunity cost, non-land airport assets generally do not, and the non-land assets typically account for a greater share of the cost of constructing an airport than the land assets. Accordingly, it is possible – indeed, likely – that if all of the airports' assets were valued at their opportunity cost (land and non-land assets), then the resulting value would be lower than the value implied by the former price controls.

Accordingly, we conclude that there is no compelling reason to consider that an upward revaluation of airport assets from the value implicit in the previous price controls would enhance economic efficiency.[21] Rather, given the dampening effect on economic efficiency from an increase in airport charges, such an upward revaluation is more likely to reduce economic efficiency.

[20] We note here that the reduction in the value of the non-land assets would be matched by an increase in the value of land assets, and so there would be no change to the value of airport assets overall.

[21] We note here that Review Principle 3 provides the flexibility to implement efficient pricing for a constrained airport without revaluing assets.

Chapter 5

Estimation of Aeronautical Long Run Cost and Revenue

5.1 Introduction

Chapter 3 set out our preferred method for deriving the 'long run cost' of providing aeronautical services, as required by Review Principle 1 and implicitly also by Review Principle 3. The value that is assigned to aeronautical assets is an important component of this calculation, and the value that is assigned to the assets in place prior to formal price control being the most challenging. It was concluded that the method for valuing aeronautical assets in place at the commencement of formal price control that would be most consistent with the full context of the Review Principles and the Commission's terms of reference is to set a value that would be consistent with the level of prices that operated under the formal control, unless a revision to that value would be likely to promote economic efficiency. However, while it was noted that, in principle, there may be a basis for reviewing the value of land assets, Chapter 4 concluded that the practical efficiency improvements from such a revaluation were likely to be illusory – and so it was concluded that the presumption that the value of the aeronautical assets that was implied by the formal price controls (when in effect) remains reasonable.

The purpose of this Chapter is to set out the preliminary results of a comparison of the airports' aeronautical revenue against long run cost, as defined above. The results are stated to be preliminary given that the analysis is reliant upon the information that the ACCC releases publicly with its monitoring reports. We note that the ACCC has expressed concerns with the integrity of certain aspects of the information that it receives, which is discussed further below. In addition, we note that the ACCC's public reports include only a summary of the information that is provided by the airports, and omit certain pieces of information that would be especially useful to researchers. Accordingly, a number of approximations have been required in order to 'fill in the gaps' in the information that the ACCC publishes. The sources of data relied upon and any approximations made are described in full below.

5.2 Method Applied

Calculation performed

As described already above, an asset value for aeronautical services was derived by finding the value for the relevant assets at the commencement of the formal price controls for airport services that would generate revenue that was consistent with those controls. For Sydney Airport, this process was straightforward – as the formal price control that applied to it was calculated on the basis of an opening asset value for aeronautical assets, the ACCC asset value simply could be adopted.[22]

[22] The ACCC determined an opening asset value for Sydney Airport of $1404 million as at the commencement of the 2000-01 financial year.

For the remaining formerly price controlled airports, the calculation performed was to:

- adopt a 'seed' value for the opening asset value for the aeronautical services;
- calculate the 'long run cost' that would be implied by such an opening asset value, that is, the sum of a return on assets, depreciation, operating expenses and a taxation allowance, with the asset value being updated over the period to reflect new capital expenditure, the depreciation amount that is included in 'long run cost' and disposals;
- compare the 'long run cost' calculated in step 2 above to actual revenue; and
- continue changing the opening asset value for aeronautical services until the value is found that equates with the 'long run cost' with actual revenue over the period that the price controls were in effect,[23] in present value terms.

Once an opening value is established for the aeronautical assets, step 2 was then applied to extend the calculation of long run cost after the withdrawal of the formal price controls. As described in Chapter 3, this calculation of 'long run cost' would imply that aeronautical charges could be changed to reflect:

- the need to make a reasonable (risk adjusted) return on new investment undertaken since the formal regulation and monitoring of charges for aeronautical services;
- the need to recover operating and maintenance expenses incurred to provide aeronautical services, including where costs have increases (such as with respect to security requirements); and
- the need to change prices to continue receiving sufficient revenue to recover costs where the level or structure of demand changes.

An increase in prices that was not driven by the three factors above would be disclosed as a gap between actual revenue and 'long run cost'.

Assumptions adopted and sources of data

The calculation performed above requires a number of inputs, including finance-related inputs, aeronautical revenue and aeronautical expenditure. The inputs that are required for the calculation above, and the assumptions or sources of data that were relied upon, are as follows:

- *Annual aeronautical operating expenditure* – this has been taken as the operating expenditure that is recorded in the aeronautical services column in the table referred to as '*Table A1 Statement of Financial Performance for the Year Ended 30 June [ ]*' in the annual ACCC public monitoring reports.[24] Depreciation and amortisation has been excluded, but no other adjustments have been made.

[23] The period 1997-98 to 2000-01 has been used to determine the opening aeronautical asset value for Melbourne, Brisbane and Perth, and the 1998-99 to 2000-01 period has been used to determine the aeronautical asset value for Adelaide, Canberra and Darwin. While price controls remained in operation for part or all of 2001-02, this year has been excluded from the analysis given the unexpected effects of the collapse of Ansett and September 11.

[24] The publication for the 2004-05 financial year is entitled: ACCC, 2006, Airports Price Monitoring and Financial Reporting 2004-05, February.

- *Annual aeronautical revenue* – this has been taken as the total revenue that is recorded in the aeronautical services column in the table referred to as '*Table A1 Statement of Financial Performance for the Year Ended 30 June [ ]*' from the annual ACCC public monitoring reports. No adjustments have been made.

- *Annual aeronautical capital expenditure and disposals* – the summaries that the ACCC provides of the airports' regulatory accounts do not disclose annual aeronautical capital expenditure or disposals,[25] and so this has been derived from the chart in the body of the latest report of the change in tangible non-current assets for aeronautical services.[26] This data has been cross-checked to the extent possible with other information provided in the summary of the regulatory accounts.[27]

  – An adjustment has been made for one obvious anomaly in the data, which is the recording of over 300 million in aeronautical 'additions' in 1997-98 for Brisbane Airport in the ACCC monitoring report.[28] Given that Brisbane Airport recorded less than $10 million in capital expenditure between 9 January 1007 and 30 June 1998 (in cash terms) across the whole of its operations,[29] we assume that the addition for 1997-98 is merely reflects the transfer of the initial set of assets into the regulatory accounts rather than capital expenditure. For the purposes of this report, we have conservatively assumed that the capital expenditure recorded in its annual report (in cash terms) related only to aeronautical services and used that amount as a proxy for aeronautical capital expenditure for 1997-98.

  – A further adjustment has been made for an anomalous disposal made by Canberra Airport in 2002-03 amounting to approximately $67 million. This disposal of aeronautical assets (presumably as a transfer to non-aeronautical assets) does not appear to be accompanied by a corresponding transfer in revenue. We have conservatively ignored the disposal and continued to treat the amount as aeronautical assets, which may overestimate aeronautical costs.

[25] We approached the ACCC to obtain access to this data (noting that it is released in chart form and intermittently throughout its monitoring reports, but were advised by the ACCC that its legal advice questioned its powers to release any information in addition to that already released in the monitoring reports.

[26] ACCC, 2006, Airports Price Monitoring and Financial Reporting 2004-05, February, charts 3.1.10, 3.2.9, 3.3.9, 3.4.10, 3.5.9, 3.6.9 and 3.7.9.

[27] An approximation for capital expenditure can be derived from the change in the asset values recorded in the airports' regulatory accounts statement of financial position, given the reporting of depreciation in the regulatory accounts statement of financial performance and the requirement to record the balance of reserves in the statement of financial position. We note, however, that gaps remain – in particular, no information on disposals is provided, and some airports now record 'intangible' assets under aeronautical services but do not break down the 'reserves' entry between tangible and intangible assets.

[28] Other apparent anomalies exist in the ACCC charts referred to above. For example, while the title of the charts imply that the entries relate only to tangible assets, it is clear that some of the 'depreciation' displayed includes depreciation related to intangible assets. These anomalies have not affected the analysis presented in this report, however.

[29] Brisbane Airport Corporation, Annual Report 1997/98, Statement of Cash Flows. We note that the ACCC's latest monitoring report would appear to mistakenly assert that the initial 'additions' related to new investment: ACCC, 2006, Airports Price Monitoring and Financial Reporting 2004-05, February, p.56.

- *Depreciation Rates* – for airports other than Sydney, we have calculated the weighted average lives that each airport has used to calculate depreciation (these lives can be inferred from the recorded depreciation and asset values) and used the airports' lives to calculate the annual regulatory depreciation allowances. This effect of this method is that the same depreciation method, lives for each asset class, and mix of asset classes will be used for regulatory purposes as the airports themselves use. We note that, as the ACCC does not report asset values or capital expenditure by asset class, a bottom-up calculation of depreciation was not possible. The exception to this approach was Sydney Airport, for which regulatory depreciation is available from the 2001 price notification. This reflects a longer weighted asset life than suggested by SACL's reported depreciation, but is more likely to reflect economic asset lives of component assets.

- *Company Taxation* – this has been calculated using the standard approach that the ACCC adopts in its regulatory modelling. In particular, revenue and expenditure is taken as the amounts used to calculate allowed revenue, the opening taxation asset value is deemed to be the opening asset value for regulatory purposes, the same rates of depreciation are used for tax purposes as for regulatory purposes (except that tax depreciation is calculated under a historical cost accounting convention rather than a current cost or inflation indexed convention) and the interest deduction is calculated as the implied benchmark allowance for interest in the 'return on assets' calculation.

- *Reasonable (Risk Adjusted) Rates of Return* – the relevant inputs into the reasonable (risk adjusted) rate of return have been taken from the ACCC's 2001 review of Sydney Airport. These were an equity beta of 1.37 for a gearing level of 60 per cent debt-to-assets, a market risk premium of 6 per cent, a margin for debt of 1 per cent over the Government bond rate and an assumption that franking credits are valued at half of their face value. The one variable that we have allowed to vary over the period is the real risk free rate, where we have calculated the real reasonable (risk adjusted) return for each year using the average real risk free rate that was observed for that year. Inflation is allowed for by escalating the asset value by the observed change in the *Consumer Price Index (All Groups, Average of Eight State Capitals)*, following standard regulatory practice.[30]

[30] The change in the consumer price index is relevant for this purpose because the objective is to ensure that investors are compensated for both the real opportunity cost of their funds, and the decline in the purchasing power of the returns they receive from those investments (the consumer price index being the proxy for the latter). It is noted that the actual change in input prices would already be reflected in the recorded operating and capital expenditure over the period.

As noted above, we are also aware that there are several weaknesses with the information reported by the airports to the ACCC. In its most recent report, the ACCC has noted concerns about the basis upon which costs are allocated between aeronautical and non-aeronautical services,[31] and also expressed the view that several airports may have been wrongly treating some services as non-aeronautical when they should be classified as aeronautical.[32] In addition, while the services that are monitored cover the aeronautical services (such as landing charges) and aeronautical-related services (such as check in counters), expenditure is only broken down into aeronautical and non-aeronautical services and aeronautical-related expenditure is included in the non-aeronautical category.

The fact that some services may be incorrectly classified as non-aeronautical or costs may be over-allocated to aeronautical services does not invalidate our analysis. The only assumption that we rely upon is that an airport's definition of aeronautical services in any year is the same for its reporting of revenue and its reporting of expenditure. Rather, the fact that the true scope of the monitored services is wider than we have considered, or that more than an appropriate share of costs may have been allocated to aeronautical services, would suggests that our analysis may understate the increased profitability of the monitored services.

5.3 Results

Figure 5.1 to Figure 5.7 below set out the results of the calculation of 'long run cost', and compare this to actual revenue. Most of the airports show revenue rising faster than long term cost from 2001-02 onwards. In some cases, for instance Melbourne Airport and Perth Airport, the revenue increases following the end of the price cap are extremely clear.

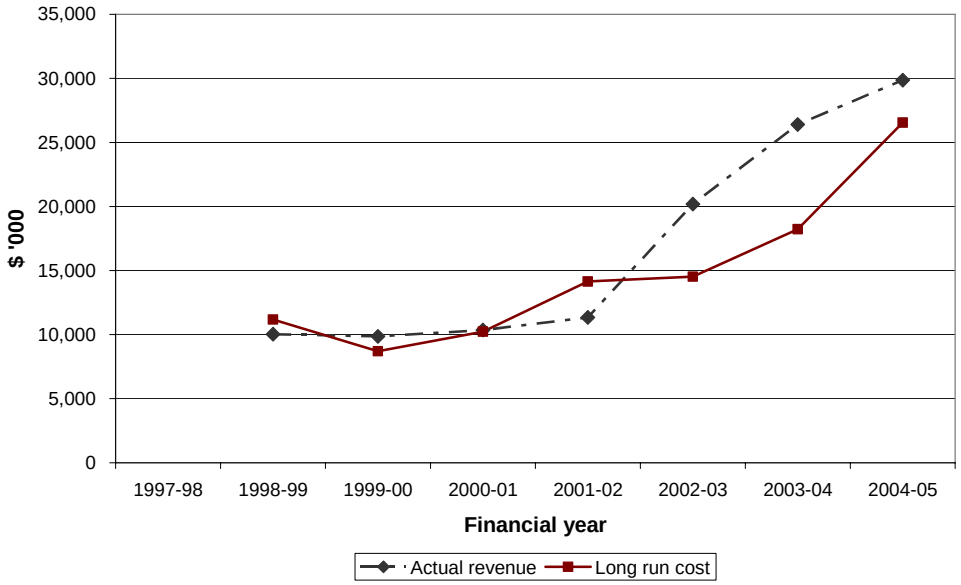
Adelaide Airport (Figure 5.1) reported substantial revenue increases through 2002-03 to 2004-05. The long run cost of operating Adelaide Airport has increased substantially over the last two years in the series, reflecting the investment that has been made in the new terminal facilities, which has had the effect of closing the gap between revenue and cost. However, now the terminal has been completed, long run cost would be expected to plateau, while – under the existing prices – revenue should continue to grow, and it would be expected that the gap between revenue and cost would grow once more.

[31] ACCC, 2006, Airports Price Monitoring and Financial Reporting 2004-05, February, p.11.

[32] ACCC, 2006, Airports Price Monitoring and Financial Reporting 2004-05, February, pp.11, 15. The ACCC's comments on this matter suggest that the airports have not been complying with the law as it currently exists, which raises the question of whether there are adequate sanctions to secure compliance and also whether the ACCC has taken all reasonable steps to secure compliance.

Figure 5.1

ADELAIDE AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST

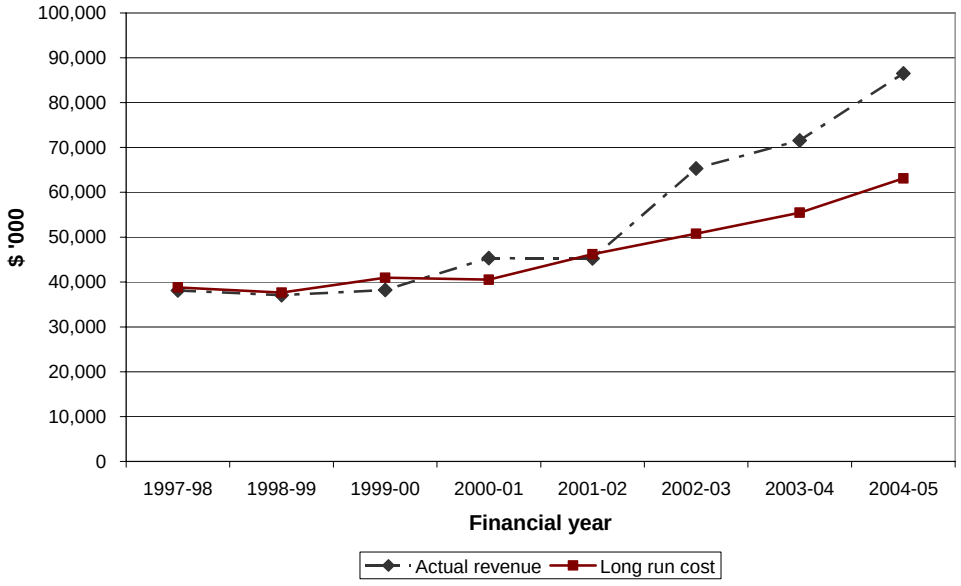


Source: ACCC Airport Regulatory Reports, 1997-98 to 2004-05

Brisbane Airport reported a large one-off revenue increase that appears to be unrelated to long run cost in 2002-03. Since then revenue has grown slightly faster than long run cost, increasing the gap between the two measures.

Figure 5.2

BRISBANE AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST

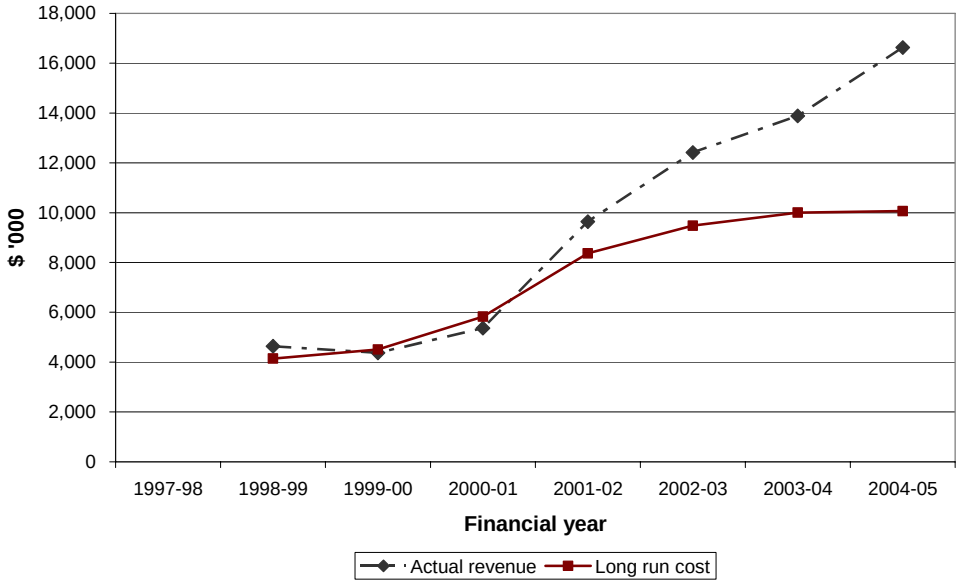


Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Canberra Airport (Figure 5.3) and Darwin Airport (Figure 5.4) show a similar pattern, with revenue growth exceeding growth in long run costs over the entire period from 2001-02 to 2004-05. For both airports, this results in revenue over 50 per cent higher than costs by 2004-05.

Figure 5.3

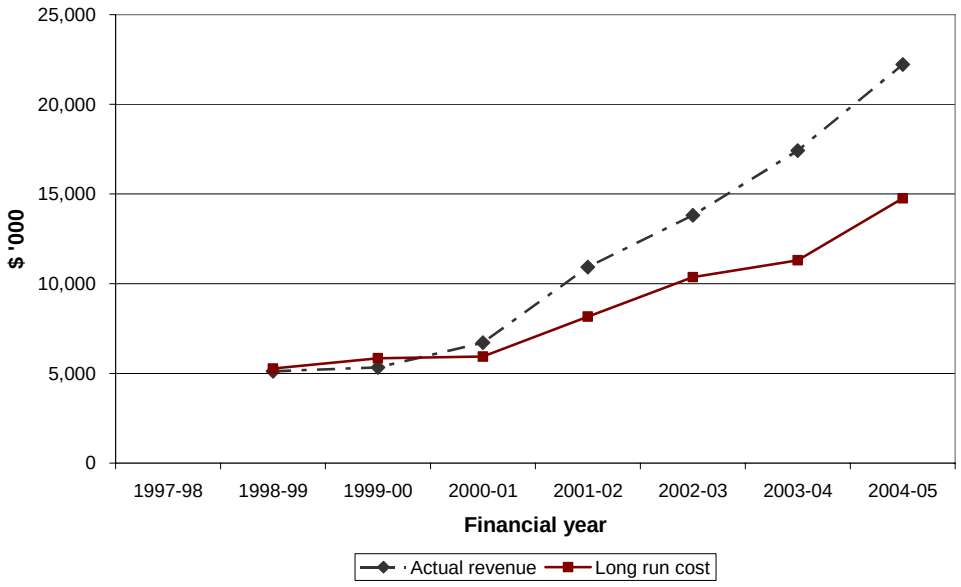
CANBERRA AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



Note: Excludes $67 million disposal of aeronautical assets reported in 2003-03.
Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Figure 5.4

DARWIN AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST

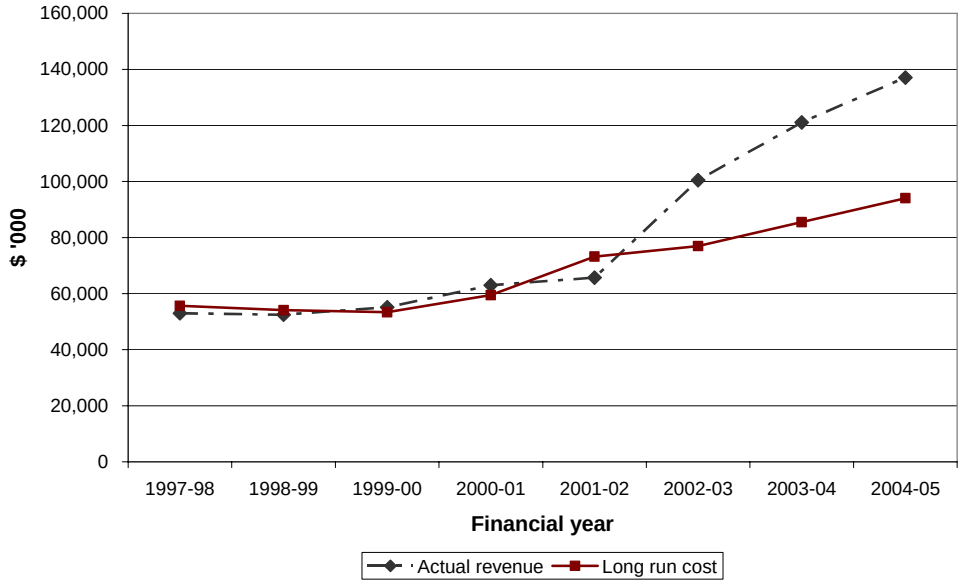


Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Melbourne Airport reports a number of revenue increases in excess of costs, with the largest being in 2002-03. The subsequent movements in 2003-04 and 2004-05 also go beyond the corresponding increases in long run costs.

Figure 5.5

MELBOURNE AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST

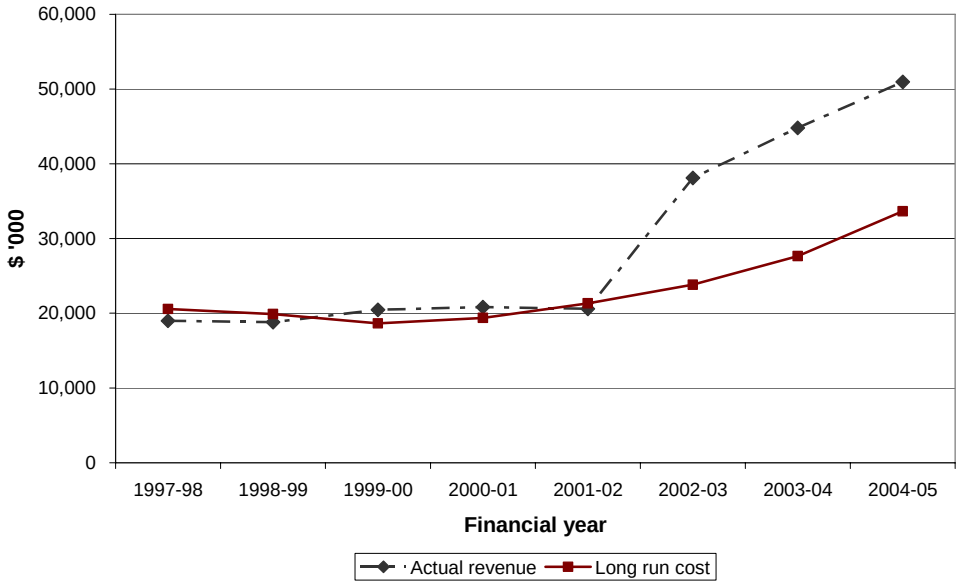


Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Perth Airport shows most clearly the effect of the end of price caps. Revenue tracks long run cost steadily until 2002-03, at which time there is a large one-off revenue increase. Since then, revenue growth has matched growth in long run costs, but the effect of the one-off increase is that revenue in 2004-05 was still 50 per cent higher than long run cost.

Figure 5.6

PERTH AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



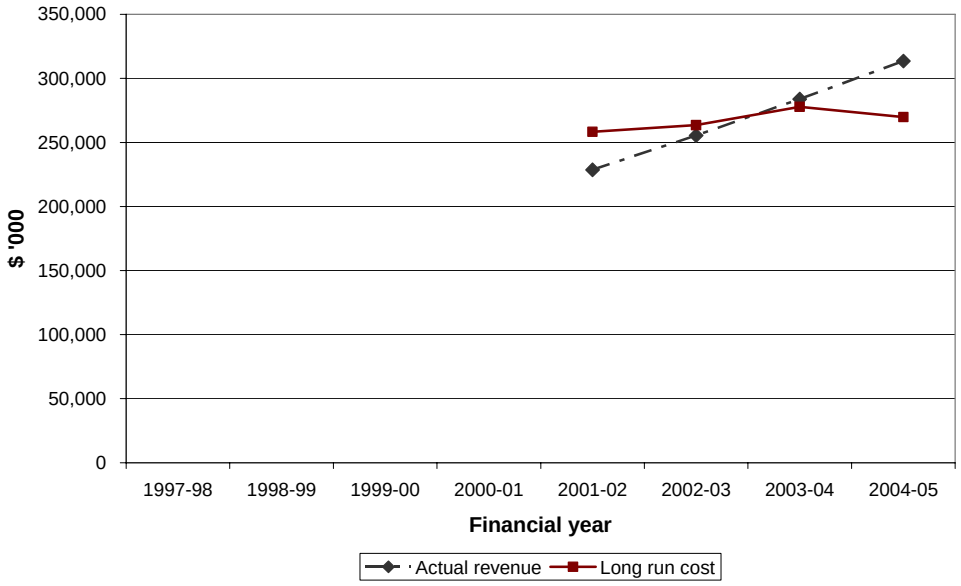
Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05

Sydney Airport costs have been calculated using slightly different input data from the other airports, in order to remain broadly consistent with the ACCC 2001 decision on SACL's price notification. For the same reason, revenue and costs are only shown from the first full financial year following the 2001 price reset.

In 2001-01 and 2002-03, revenue is below long run cost, reflecting a large increase in reported operating expenses ($96 million, compared to the approximately $60 million allowed in the ACCC decision). SACL's revenue growth has generally resulted from growth in passenger numbers (captured through a change in the pricing basis from MTOW to passengers for international passengers in late 2001 and for domestic passengers in July 2003), rather than increases in unit price. In 2003-04 and 2004-05 actual revenue exceeded long run cost. The per-passenger pricing basis means that even without price increases in the future, SACL revenue will grow strongly in line with passenger growth, and be expected to outpace the growth in long run costs.

Figure 5.7

SYDNEY AIRPORT: AERONAUTICAL REVENUE VS LONG RUN COST



Source: ACCC Airport Regulatory Reports 1997-98 to 2004-05; ACCC 2001, *Sydney Airports Corporation Ltd.: Aeronautical Pricing Proposal: Decision*, May.

A common theme across all of the airports is that, over the period since the removal of formal price controls on the airports, actual revenue has risen substantially above 'total cost' and, if aeronautical prices remain as they are, this gap would be expected to continue to grow. This increase in revenue is not driven by an increase in costs incurred (including new investment requirements), a change to the level or structure of demand or from a revaluation of assets that would promote economic efficiency. Accordingly, we conclude that the airports' pricing decisions over the period since the removal of price control and the introduction of monitoring have not been consistent with the requirements of Review Principles 1 and 3.