

**Selected Comments on “Price Regulation of Airport Services”**  
(Draft Report by the Productivity Commission, August 2001)

**Land Valuation and Congestion Pricing**

This brief note has been prepared at the request of the Australian Competition and Consumer Commission (ACCC) to provide some comments on two particular issues addressed by the Productivity Commission (PC) in its Draft Report, *Price Regulation of Airport Services* (PC-ADR): (i) valuation of aeronautical land at Sydney’s KSA, and (ii) pricing and the treatment of congestion.

The PC-ADR is a comprehensive document that covers a wide range of important and complex issues. Based on its findings the PC has recommended a number of major new policy prescriptions. Airport congestion (at Sydney’s KSA) is a central focus of the PC report and it is one driving factor behind the policy recommendations. This particular note touches on only a few selected aspects. Other related areas are not discussed here. However, a few remarks are also included on a couple general aspects of the draft report.

The purpose of the note is to offer some feedback, which the PC may wish to consider in the preparation of its final report on price regulation of airport services.

A point-by-point “informal” format has been judged Pareto optimal.

**I. Valuation of Aeronautical Land**

1. Opportunity Cost Approach. The PC-ADR records that opportunity cost is the appropriate approach to value land for economic efficiency purposes (p. 214 and F.2). Its role in providing demand and supply side signals for airport related decisions (including the how, how much, when and where) are outlined. The opportunity cost principle for land valuation is widely accepted, for example, by the ACCC, the NZCC, SACL, and BARA, although views differ substantially on its interpretation.
2. But, there are also formidable methodological difficulties in *practical empirical application* of the principle to estimation of the value of the total land at a major capital city airport site. Unfortunately, these practical difficulties are not discussed in the PC-ADR. It simply recommends the use of “*current market (land) value*”, without suggesting how this should be estimated for the KSA site. Notwithstanding the attention given to land values in the PC report, perhaps the question of implementation was judged outside the PC’s TOR. Whatever the reason, valuation of aeronautical land is a core component in the pricing of airport services and in the shaping of their location. It should not be sidestepped. Without a satisfactory empirical methodology for estimating opportunity cost, alternative bases of valuation (such as indexed historical cost) are obliged to be adopted by default. These are poor surrogates as they are unlikely to bear a reliable relationship to the underlying opportunity cost. For example, an indexed historical cost basis (as resorted to by the ACCC

in its *SACL Aeronautical Pricing Decision*, May 2001) may have some properties that allow it to serve as a reasonable substitute. But it could result in a valuation that is higher or lower than the real opportunity cost.

A constructive empirical design strategy is needed to progress this matter. Some preliminary lines of approach are opened-up here.

3. Actual Empirical Estimation. Three main issues need attention. First, the KSA site is not subject to actual land market transactions, nor are there “similar” site transactions that can be observed and directly utilized. One starting point/datum is to adopt current prices of marginal land transactions for properties *adjacent* to KSA-Mascot, and “factor them up”, to estimate “the market” value of the entire KSA existing site. This appears to be the estimation method suggested (implicitly) in PC-ADR.<sup>1</sup> But its basis is likely to be insufficient. While the most appropriate methodology to employ is open to debate (on cost-benefit grounds taking into account the ultimate consequences of valuation inaccuracy), the case appears strong for tackling the value estimation more carefully. This means *indirectly*, by inference from a structural “model” of the determinants of land parcel prices in the Sydney urban area.<sup>2</sup>
4. Probably the simplest “model” would be to systematically test for hypothetical bids for the property rights to the existing site in “approved” alternative uses (residential/commercial). There are sophisticated techniques (a la “stated preference”) to probe such hypothetical “expressions of interest” but the bottom line in the KSA case is that the results are likely to lack credibility. Another “model” would involve the estimation of residual profits based on a *synthetic in situ construction*, drawing upon expert judgment regarding the next best use; say a mix of *commercial* development. This is, in essence, the method attempted by SACL, albeit with technical flaws. Yet another “model” would involve econometric estimation of unimproved property/land values in the Sydney urban area, based upon comparable site characteristics (local environment, accessibility, etc.) and alternative candidate land use(s) developments, in effect using a hedonic price index approach.
5. All methods would, of course, be approximations and their accuracy in “simulating” the land market would be hard to estimate and “verify”. Once a valuation had been estimated, a relatively easy task would be making the adjustment necessary for the “removal/restoration” costs of sunk infrastructure (runways etc.) at the existing site.
6. Second, the methodology would need to address the “counterfactual” issue: namely, the hypothetical substitute location of KSA, as this could influence the empirical estimation of land value (social opportunity cost) at KSA-Mascot. One (or more) specific potentially feasible alternative location(s) (such as Badgery’s Creek) would need to be adopted as a working basis for estimation, and the sensitivity of the valuation of land at KSA/Mascot to alternative airport site could be examined; it may be a “second order” matter.
7. Third, estimations of land values are normally associated with small parcels, *marginal* changes in land use, and uses for which inter-dependencies with other uses are registered through an effectively competitive land market, i.e., loosely “partial equilibrium” conditions prevail. A major capital city airport, such as KSA, has a significant structural impact on the

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<sup>1</sup> This is also apparently the approach to the estimation of the Auckland airport land value taken by the NZCC.

<sup>2</sup> International evidence of market values of land used for a major airport could be useful, especially if it was associated with the re-location or re-structuring of a city airport.

spatial pattern of urban land use. The methodological question is whether it is a reasonable approximation to accept that the hypothetical re-location of KSA to an alternative site location in the Sydney urban area would not involve major real shifts in the Sydney economy, i.e., the counterfactual is more like a “marginal change in the location of airport land use” within Sydney as a whole. If so, the opportunity cost/land valuation relevant to the existing KSA site may be estimated under that proposition drawing on existing real property data. In this case, no major (avoidable) indirect social costs would need to be considered, although there would be re-allocations and transfers with substantial windfall gains and losses associated with sunk private and public capital.

8. Support for the principle that land valuation should be based on opportunity cost should be expanded to support for its practical implementation. The methodological issues raised above may be able to be addressed/dismissed by bounding the estimation using more than one approach/accepted as imposing tolerable “estimation errors.”<sup>3</sup> The empirical determination warrants development – and its role is likely to be increasingly important over time. (This also raises the question of appropriate treatment of exogenous changes in the opportunity cost/real value of airport land in the asset base. They should be passed through to users but be “neutralized”/netted-out so as to not yield windfall gains to the airport operator/private concessionaire. The rules of the privatization (bidding) process should spell this out very clearly. Otherwise, (some) capitalization of these expected windfall gains into the bids might be anticipated. According to the PC-ADR (p. F.2), the impact of land values at KSA on aero charges is significant; using the PC’s figures, the implied elasticity is around 0.25.
9. Land Valuation and Regulation The main discussion of the valuation of aeronautical land in the PC-ADR is presented in Appendix F (and carried in the text at pp. 213-215). The economic analysis is largely centered on Figure F.1. *The policy recommendations being suggested by this analysis are (to this reader) at best unclear.* The analysis attempts to examine land valuation, the “building block” cost approach to economic regulation, and congestion pricing, using a highly simplified model of the market for airport-aircraft movement services.
10. Aeronautical land valuation, in the context of cost-based economic regulation, should be established as a *separate matter* by empirical estimation of the social opportunity cost of the airport site. Whatever that opportunity cost is, it contributes (via a unitized rental value) to aero user charges. The question of efficient treatment of airport congestion is essentially a separate issue (although of course its resolution will involve, inter alia, short and long run incremental costs and their land cost components). Thus, the statement that it is

“.....likely that the aeronautical prices that would efficiently allocate available capacity at Sydney airport at certain times of the day already exceed production cost charges based on *any feasible land valuation method*”(emphasis added). (p.215)

detracts, perhaps unintentionally, from this important separation.

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<sup>3</sup> The methodological issues could be difficult to resolve completely, nevertheless, as long as an alternative location for KSA is technically feasible, then the opportunity cost principle should not be cast aside; the site opportunity cost should be estimated by the “best” approach available.

If price rationing is the superior approach to deal with congestion then it can and should supplement the (“congestion-free”) “production” cost base that forms the primary building block for aeronautical price “determination”. Land valuation should not be a “driver” of achieving higher prices to address congestion.

11. The present discussion in Appendix F of the draft report suggests that cost-based price regulation precludes specific attention to congestion:

“the highest that prices can get to under this approach is  $P_1$ ”.....and  
 .....” not the appropriate “congestion” price  $P_c$ ”. (p. F.5)

No justification for this determination is stated and its presumption imposes an unnecessary bias on what might be a potentially useful comparative institutional analysis. Congestion, can, and, of course, is addressed within airport regulatory regimes, including by using pricing. Just how the efficient price ( $P_c$ ) is otherwise set in Figure F.5 is not spelled out – Is the market structure unregulated monopoly? If so, then a monopolist airport operator would raise the price above  $P_c$  and reduce service output below OA to where marginal operating cost equates to marginal revenue. Full information and “perfect” implementation (of  $P_c$ ) appears to be compared with “impotent” (re congestion pricing) economic regulation?

12. *The relative welfare effectiveness of alternative institutional arrangements (such as cost based or incentive economic regulation, on the one hand, or light-handed oversight of monopoly on the other, in responding to congestion is important. This is a core issue of the PC-ADR, but it is not pursued.* Therefore, it would be instructive for the PC to put together an analysis that could probe a balanced comparison of the order of magnitude of the expected full social costs (information / errors – static and dynamic)/welfare outcomes, in terms of the different responses to airport congestion under “imperfect regulatory regimes” and “imperfect monopoly oversight”.
13. The analysis surrounding Figure F.1 is based on a highly implausible combination of the *regulation* of maximum aircraft movements, an assumption of *no* “environmental considerations” (such as noise and rising congestion costs), separate determination of the market clearing price, and sale of the airport based on (short run) *capacity (or congestion) rents* (which it would be efficient to reduce or possibly eliminate by capacity expansion) – as well as other simplifications. In addition, where a change in land input is socially cost effective in alleviating congestion, an *inadequate* explicit distinction is made between the *total/average cost* of using the entire aeronautical land at the existing site and the *marginal cost* of changing aeronautical land input.
14. The suggestion that the “value” of the airport to the operator (or a private bidder), as described by the simple single price signal (!) denoted  $P_c$ ,

“.....provides an appropriate signal as to whether to sell and move elsewhere and to the government in evaluating the effects of regulation” (p. F.5)

is, as stated, *incorrect and misleading, from both a private and social standpoint*. Even accepting the unrealistic and sweeping assumption of no “environmental” externalities that are a key feature of airports, the alternative locations for a major airport involve wider important (differences in) social and private benefits and costs – for example, passenger access travel time and other resource costs, air service costs, and the avoidable costs of

complementary infrastructure (that are not adequately registered in markets or typically in corresponding alternative user charges). Moreover, the statement in referring to “the effects of regulation”, repeats the “unbalanced” comparison noted in para.11 above.

15. Distribution Issues. The valuation of aero land and (excessive) congestion have different distributional consequences and it is desirable to conduct analysis of them separately. The discussion in PC-ADR (p.215 and Sect. F.3) might be expanded usefully in that respect, to include the influence of privatization, alternative regulatory regimes, and the market structure of air services on the capture of congestion rents by airlines, the non-price rationing of congestion, and the proceeds of the airport sale. (Demand side and supply side A-J and risk effects aside, under cost-based regulation, would not a change in the aero land value component of the allowed asset base, and the resulting increment in revenue stream, be capitalized into the bid price and transferred to the government?)

16. On what appears to be a related point, the concern expressed with “under-valuation” of KSA:

“.....A valuation of the airport that uses “building block” prices, even those that used the full opportunity of the land for purposes other than an airport, are likely to undervalue the airport, in terms of the value that users place on it” (p. F.7)

is obscure. Setting aside the prospects for non-aeronautical profitability, the social and private “values” of the airport are *not* represented by the “asset base”, or some capitalization of (excessive) existing congestion rents that might be internalized/transferred under the bid conditions to the Government.

## **II. Pricing of Congestion – Some Selected Aspects**

17. Airport congestion as manifested directly in terms of periodic delays in aircraft operational movements arising from airport capacity constraints is a complex topic. Only a few selected comments on the wide-ranging discussion in the PC-ADR are noted here. The comments relate to aspects of the *analysis as presented in the PC report* which center on “improved pricing as the solution”. The much broader and central question of what is the best (most economically efficient) policy instrument(s) to apply to tackle airport congestion is not addressed here. However, as suggested below, the net efficiency of appealing to monopoly market power to raise prices -- as the primary way to deal with congestion relative to other direct approaches (e.g., facilitation of a slot market, removal of protection to regional carriers, movement controls) – is at best unclear and quite possibly grossly inferior. The PC-ADR notes the importance of information and its cost for the efficient management of (excess) demand. But there is virtually no systematic assessment of the social cost effectiveness of alternative approaches to congestion – including implementation and monitoring costs, and the measurement of efficiency changes under incomplete price rationing.

18. The PC-ADR (particularly Chapter 4) provides an outline of a basic economic framework for analyzing the pricing of airport services in the presence of congestion and airport market power. Unfortunately, the analysis as presented is selective and the conditions under which several of the conclusions actually hold are not declared. It would be highly desirable for the PC to advise about such conditions and to develop a more complete analysis. Then, the likelihood and consequences of a range of possible net welfare outcomes, as far as possible with some empirical guidance, could be assessed and hopefully clarified.

19. In the PC –ADR it is asserted that:

“capacity constraints effectively mean that Sydney has little incentive, or need, to exercise market power as such” (p. xxxii).

First, it is likely to be efficient to reduce the “incidence” of the existing capacity constraints, on the demand side (e.g., removal of protections) and at some future time possibly on the supply side (partly depending on aircraft technology and noise abatement). Second, the aircraft movement market demand elasticity (ies) are low and the profit-maximizing level of airport use may well be *below* the capacity constraint. If so, the airport operator *does* have an incentive to exercise her market power. What “pressures”, if any, are envisaged that would “persuade” the operator to fully utilize the allowable movements in peak periods? Third, depending on the long-run marginal/incremental cost of expanding capacity relative to marginal revenue, the airport operator may have no incentive to expand capacity efficiently, or to facilitate relaxation of a movement constraint. The operator may have no “further” incentive to exercise market power because the capacity constraint has provided (the) excess profits in the form of congestion rents. (Taxing them away by transfers to government is hardly a “solution” to the potential inefficiencies here.) Whether existing movement limits are binding for the exercise of such market power is an empirical question. So are the basic welfare trade-offs between dead-weight losses from monopoly (“tolerated imperfect market”) and the costs and errors of economic regulation (“imperfect regulation”).<sup>4</sup> The credibility of threat of (re) regulation, demand conditions (low price elasticity), and the capacity for “deep” price discrimination all shape the trade-off and the efficiency outcome. At one extreme, the exercise of monopoly power may involve small inefficiencies but large transfers to the operator/and possibly to the government (via initial bids). In this case the sole focus on efficiency is likely to be grossly insufficient for real policy judgments. A wider perspective, especially if it can be illustrated with empirical evidence, would assist government consider the breadth of the issues, earlier rather than later.

### III. Some Aspects of the Overall Approach

20. The PC Draft Report on Price Regulation of Airport Services provides a useful and timely contribution to deliberations on the most suitable institutional framework for airport infrastructure in Australia. The report is comprehensive and analytically based and this facilitates engagement on its draft findings and recommendations.

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<sup>4</sup> The impression tends to be given in the PC-ADR that the working hypothesis is that economic regulation of airports gives a worse efficiency outcome than unregulated monopoly. But no firm “test results” of this central hypothesis is set out.

21. There are important areas where the draft report could be strengthened so that its contribution to informed debate on policy development is expanded. In terms of general style, it tends to be coloured by underlying assumptions/conditions that are neither recognized nor explicitly stated. These call for more adequate specification, justification, and/or empirical evidence. Where evidence is weak, sensitivity testing of conclusions to key parameters and possibly assembly of new data may be instructive.
22. The core theme of the report is the policy balance between perceived regulatory failure and market failure should, in effect, favour the latter. At Sydney, the market failure is manifested as congestion and the exercise of monopoly power. The PC “favours” an institutional arrangement of oversight only as the superior policy approach to these circumstances. The PC is forthright in stating explicitly that this conclusion is based on *its judgment*. The PC appears silent on a parallel key policy question of how this balance, even on the assumptions made by the PC, would be affected if the congestion element in this equation were to be targeted by separate policy tools. Is it the recommendation of the PC that if Sydney KSA was not subject to (excessive) congestion then oversight is (still) the optimal regulatory arrangement?
23. The central recommendations regarding “light-handed” regulation may be seen as proposing an “innovative policy experiment”. There can be high merit in such experiments and the PC is to be commended for entertaining a real test of airport regulatory policy. But, the economic, financial, and political stakes are high – especially in the current economic climate and international environment. Therefore, to justify the responsible introduction of such a major national “experiment”, it is highly desirable that the “experimental design” is derived from a systematic assessment of alternatives and an ex ante stab at the expected costs and expected benefits --- including the impact on the privatization of KSA.
24. Under the PC’s proposed light-handed approach, what ensures that the veracity of “audited information, including operating and capital expenses.....” will be greater under oversight than under cost-based or incentive regulation? Are the incentives for gaming and inefficient rent-seeking demonstrably lower? In a similar vein, what are the specific criteria by which the performance outcomes of the proposed approach will be judged at the end of the five-year probationary period? Plainly these criteria should be specified in detail and declared publicly, well before privatization.
25. The PC ADR solicits views on “guidelines for good behaviour by airports” to help the design of oversight/monitoring. In the absence of explicit specific criteria it is not clear what this request entails. Should not a solid definition and assessment of what constitutes “good” airport operator “behaviour” – and alternative institutional contexts to shape it -- lead rather than follow recommendations on the “socially best” institutional context?
26. There is an on-going similar experiment being conducted on Australia’s doorstep in New Zealand. Moreover, the NZCC has made a serious effort to carry out a detailed quantitative cost benefit analysis of this experiment (including the costs of litigation, etc). While the PC Report describes the NZ situation, it does not appear to have examined in depth this valuable and innovative comparative institutional assessment and considered its lessons for airport regulation in Australia.
27. The thrust of the PC-ADR tends to be dominated by one issue, namely aircraft movement *congestion* at Sydney’s KSA airport. Plainly congestion is an important issue, but the

emphasis appears excessive. The pivotal role given to this issue, especially in its short-run context, is compounded by the proposition that the “best solution” to the congestion problem is to raise user charges: this is really a “hypothesis”. But its acceptance and adoption throughout the report provides the basis for moving to the policy prescription that the “best”(most efficient) mechanism to achieve such price increases (including a high degree of price discrimination) is to *facilitate* the exercise of market power by the airport operator, i.e., deregulate airport aeronautical charges. This “conclusion” could well be valid but its substantiation in the PC-ADR is not convincing on the chain of logic and evidence as presented. An important and unfortunate gap in the assessment, from a policy standpoint, is the limited comparative analysis of the benefits and costs (including implementation and reliability costs) of the policy options as noted.

28. There are several areas where the economic analysis is incomplete in probing the real complexities of the structure and environment of the air service industry. For example, on the welfare outcomes of monopoly pricing, vertical relationships (especially airport-airlines market and gaming structures). Other examples are indicated in the comments on land valuation and congestion pricing above.