

Assessment of competition at Stansted airport

1. The CAA has asked us to consider the CC's draft paper on the *Assessment of Competition at Stansted Airport*, which differs from the CAA's own initial thinking to an extent that appears to lie well beyond a normal level of disagreement that might occur when two, independent authorities address a complex factual situation.
2. In what follows we seek to identify and understand the sources of these major differences, with a view to facilitating development of the most appropriate approach to regulation in the specific factual context of Stansted airport.

General overview of the issues

3. It seems to us that there are two distinct, but related, issues that each of the CAA and the CC is required to address:
 - The strength of competitive constraints on Stansted airport, and in particular on Stansted pricing, as indicated by available evidence and by convincing reasoning based on analysis of that evidence.
 - The appropriate form of regulation to be applied, *in the light of the findings in relation to the strength of competitive constraints*.
4. We stress both the distinction and the linkage between the two issues because:
 - Even in the event of finding that inter-airport competition is not well established and that retention of some form of price control is warranted, that alone is very far from sufficient to conclude that one or other variant of *cost-based regulation* is appropriate.¹
 - Indeed, once a market is open to competition and once, in consequence, there is a non-trivial probability that an efficient regulated undertaking might not be able to price so as to recover those costs, including recovery of a normal return on capital, there are compelling reasons why a looser cap should be introduced.² Specifically, a traditional RAB-based price control,

¹ We use the term *cost-based regulation* to refer to methods of setting price-caps based upon calculations which, in estimating capital costs, make use of the concept of a normal rate of return on capital or, alternatively, of the cost of capital. These concepts refer to *average* or *mean* rates of return, whereas a price-cap sets a *maximum* value for prices. *Cost-based regulation* in this sense encompasses some (but not all) implementations of incentive regulation of the RPI-X type, since the incentives flow from the pre-determination of caps for the whole review period, whilst the resetting of caps may be heavily cost-based.

² Competition does not guarantee cost recovery, and nor should regulation; but there is an upside to competition that, in appropriate circumstances (i.e. when there exist competitive pressures sufficient, in

incorporating an allowance for a normal, or average, rate of return on capital, can be expected to restrict and distort the competitive process in such circumstances.

- In the latter circumstances, the competition assessment should inform the regulatory determinations.
5. Whilst we believe that these points are uncontroversial statements about best-practice regulation, they do appear to have become conflated in the CC's documents. In particular, we are very surprised by the apparent lack of concern in the competition assessment about the potential anti-competitive effects of an inappropriate approach to Stansted charge determination. As the CC itself states in its *Emerging Thinking* document, issued in connection with the Market Investigation into BAA airports: "*The catchment areas of the London airports all extend into central London. Thus, Westminster was the most important district for Heathrow, Gatwick, Stansted and Luton, and the second most important district for London City.*" (Paragraph 149(a)) It follows immediately that inappropriate regulation of Stansted is capable of distorting choice for a large number of Londoners, and of having material effects on the operators of Luton and London City airports.
 6. Given these general points, we have a number of much more specific things to say about the sources of the divergences between views expressed in the CC's *Assessment of Competition* paper (henceforth the ACP) and the CAA's initial views on the future regulation of Stansted airport. These are set out below, and they lead to the unavoidable conclusion that the ACP's economic analysis simply fails to address the relevant factual context, being at some points heavily influenced by models that are at odds with the available evidence, and at other points (for example, in relation to the estimation of short-run marginal costs) resting, unfortunately, on mistakes of statistical inference.
 7. These failings matter because the competition analysis appears to be pointing the CC toward a predilection for the retention of a conventional RAB-based approach to price control, which in our view would restrict and distort the development of competitive market processes in relation to the operation of Stansted airport. Among other things, this could be expected to have adverse implications for the future investment programmes at the airport and at other UK airports. Particularly given the great uncertainties facing air transport markets, we believe that such restrictions and distortions could prove particularly harmful at the current time.

some circumstances, to lead to below normal rates of return), regulation should also match. Otherwise the effect of regulation will be to deny an efficient undertaking the prospect of earning a normal return on capital *on average*.

A flawed approach to the relevant economic issues

8. At paragraph 5 of the ACP it is made clear that the intended exercise is that of a preliminary working paper, designed to share provisional thinking and to stimulate comment on the methodology and conclusions, and that the paper is potentially subject to change in the light of responses. This initial health warning is entirely appropriate, since, as we will demonstrate below, the paper as it stands is fundamentally flawed in both its methodological approaches and conclusions. If the CC's final conclusions were reliant to any significant degree on this material, we think that those conclusions could reasonably be described as resting on manifest failures of fact finding and of reasoning.
9. The problems are obvious right at the very start of the paper. For example, in paragraph 3 it is stated that: "*Our review of this evidence concludes that the only non-BAA airport that could be considered an effective substitute for Stansted by airlines and their passengers is Luton. This tells us two things. First, that, as competitive constraints on Stansted are weak, any price cap is likely to be binding. Secondly, the only non-BAA airport that might be affected by any distortions to Stansted's pricing is Luton.*"
10. A number of points can be made immediately, including:
 - There is no reason to restrict substitutability considerations to non-BAA airports. As a simple matter of fact, both Heathrow and Gatwick are substitutes for Stansted on the classic economic definition of substitutability (higher price for A implies higher demand for B at any given price of B). The paper appears to conflate the market definition exercise³, which should principally be concerned with demand substitutability, with the assessment of market power exercise, where a range of other factors will typically also be considered.
 - It is a manifest *non sequitur* to claim that, if Luton airport were the only major, single source of competitive constraint on Stansted's pricing, this would tell us that the overall constraint on Stansted's pricing is necessarily weak and that any price cap is likely to be binding. The theoretical reasoning here is clearly deficient: the own price elasticity of demand over any relevant time horizon is simply the sum of all possible cross-elasticities, which are

³ The substantive content of the market definition exercise is the collection and analysis of information about demand-side (principally) and supply side substitutability. This is to be distinguished from the final 'naming' of the relevant market(s) in a competition assessment, a decision which carries no new information content and to which any soundly based economic assessment will be invariant (see the CC's working paper on market definition, paragraph 44: *An assessment of an individual airport's market power ... is independent of market definition*). Roughly, the 'naming' doesn't or shouldn't matter because it has no information content, but the information about substitution patterns that is gathered in the course of the market definition exercise matters a great deal.

many and diverse in nature.⁴ And because the substitution possibilities are many, the sum of the cross elasticities can be large, even though no single cross-elasticity term is large ('mony a mickle maks a muckle'). The approach in the ACP can be compared with that set out in the CC's working paper on market definition, issued in connection with the Market Investigation, where, consistent with economic principles, it is stated that "... *we are seeking to take into account all constraints on airports.*" (Paragraph 45, our emphasis.)

- Even more compelling as an objection to the reasoning is the fact that the ACP's conclusion directly contradicts the available evidence. First, for the important business sector the evidence indicates the existence of a significant catchment area overlap from non-BAA airports other than Luton, particularly from London City. Second, it is a matter of fact that, until very recently, the price cap at Stansted has not been binding and that the airport's accounting rate of return has been relatively low in relation to relevant comparators, notwithstanding that inter-airport substitutability in the past may well have been lower than now – for example because LCC route networks, which have been important in stimulating airport demand, were less highly developed. If the paper's arguments concerning substitutability were correct, it is to be expected that the Stansted cap would have been binding over all recent years; and it hasn't been.
- It is also a *non sequitur* to conclude that the only non-BAA airport that might be affected by any distortions to Stansted's pricing is Luton. Elementary network economics suggests that the effects of any distortion in charging at a node in an air transport network⁵ (in this case Stansted airport) are likely to be distributed across the entire network of actual and potential connections (i.e. routes) and nodes, which for current purposes can be considered to be at least as wide as pan-European air transport. We will explain why this is the case later in this note.
- The ACP's analysis, being extremely static in nature, also ignores competitive dynamics. Current regulatory pricing decisions can affect future investments including those by potential new entrant airports (e.g. by expansion of existing aerodromes such as Southend or Manston) or by those currently viewed as providing relatively limited substitution possibilities (e.g. Norwich) but

⁴ Strictly speaking, this only holds for compensated demand functions. For Marshallian demands the relationship is: $E_{ii} = -\sum_j E_{ij} - E_y$, where E_{ij} is the elasticity of product i with respect to price j and E_y is the income elasticity of demand. The point is the same, however: E_{ii} , the own price elasticity of demand, which is a measure of the pressure of substitution possibilities on pricing, can be much higher than the single highest contribution from any single substitute.

⁵ A network is a set of nodes and connections. In air transport, airports are nodes. There are no physical connections, such as wires and pipes, but a direct connection between two nodes will exist if airlines operate that particular route. The connection assets in this case are therefore the aircraft that serve a particular route. Since aircraft are (spatially) mobile assets, the structure of an air transport can change quite quickly as aircraft are redeployed, unlike say the structure of an electricity or gas network.

which, in future, might be expanded so as to offer more competing products and services (i.e. more routes and higher frequencies).⁶

The analysis of substitutability

11. The starting point for analysis of substitutability among airports should be the fact that airports are multi-product enterprises that provide services to, and receive revenues from, a number of different users, the most important of which are airlines and passengers. Since the rationale for regulation derives chiefly from the airside services provided to airlines, rather than from the retail services provided to passengers, it is natural to focus attention on the former. However, it is also appropriate to recognise that we are dealing with a situation that exhibits some of the features of what are nowadays called ‘two sided markets’. The two customer groups, airlines and passengers, impose ‘cross-network effects’ on each other, and these cross-effects in turn have economic implications for the airport operator (who performs what is sometimes called the ‘platform’ role).
12. To illustrate, potential passengers derive benefits from a larger set of routes offered by airlines at a particular airport, which will make them more inclined to use that airport; whilst airlines derive benefits from a larger set of passengers located within easy travelling distance of a given airport, which will make airlines more inclined to use that airport. The airport operator will compete with other airports by, among other things, seeking to promote these cross-‘network’ effects⁷, since the cross-effects are clearly to its own direct benefit, given that it derives revenues from both groups.
13. It is a major deficiency of the ACP that it fails to notice the elephant in the room here. Network effects (of different types) are almost completely absent from the substantive analysis, yet they are central to any understanding of airline and airport markets. Stansted is simply one node in an extensive, international air transport network.
14. To be clear, the point here is not that the relevant substitutions are completely ignored in the ACP, in the sense of not being mentioned at all. It is rather that there is failure to recognise their economic significance, and hence an absence of the requisite fact finding and subsequent analysis. For example, confronted with the CAA’s views concerning inter-airport substitutability across Europe, the ACP, at paragraph 64, expresses scepticism on the basis of an abstract, economic argument that is, quite simply, wrong. The next paragraph (paragraph 65) states that the authors could find no evidence of any such significant constraint, and yet past statements of both BAA and airlines indicate that parties believed that BAA

⁶ Our reading of the evidence is that there is already significant *business* traffic substitutability between Stansted and London City.

⁷ The word network tends to be used in a looser sense in much of the relevant economic analysis, meaning little more than groups of economic agents, the sizes of which are associated with externalities of one sort or another.

pricing at Stansted was a material factor in stimulating the development of routes to and from Stansted. This is a failure of fact finding.

15. To see the significance of network characteristics for the analysis of substitution patterns, start by considering a route offered at a particular airport. This might be viewed as the basic ‘product/service’ available to passengers. If more than one airline offers the same route from the same airport, or if a similar route is offered from a neighbouring airport, the relevant products/services might be grouped together and ‘named’ as a relevant market (e.g. air transport between the London area and the Paris area).
16. The central thrust of the analysis in the *ACP takes the products/services on offer as a given*, and this leads to an emphasis on evidence concerning the willingness of passengers to switch between different airports offering similar routes. In contrast to this textbook *assumption* (that the products available are givens), the factual reality is that the most important competitive dynamic at an airport such as Stansted is the process by which airlines *discover* what products and services are wanted, and what investments are appropriate in order to provide them. As even a casual inspection of the network evidence will show, the sets of products on offer (the routes available at different airports) are in a constant state of flux, with additions and subtractions occurring continuously.
17. By way of a limited illustration, confined to Stansted only, the following table is taken from the CAA’s “No-Frills Carriers: Revolution or Evolution?”, CAA, CAP 770:

Table 5.1 Changes in routes from Stansted

Year	New routes	Dropped routes	Net change in routes
1996	6	-2	4
1997	5	-8	-3
1998	16	-3	13
1999	21	-3	18
2000	23	-8	15
2001	18	-13	5
2002	18	-13	5
2003	27	-11	16
2004	19	-13	6
2005	18	-7	11

Source: UK Airport Statistics

18. The underlying substitutions can take place at a ‘whole network’ level (see further below), which for current purposes can be approximated by the pan-European route network. As the Low-Cost Carriers (LCCs) have rolled out their (still expanding) fleets, they have continually reassessed their operating margins and return-on-capital for the various markets or routes across Europe. The general market situation is dynamic, with operating margins fluctuating across the routes/markets, and this leads to both short and long-term adjustments in the

- allocation of the aircraft to routes and bases, depending on the pattern of marginal returns. For this reason, demand-side *passenger* substitution between airports (with a given route pattern) could be highly limited yet an airport could be subject to strong competitive constraints.
19. A particular market (route) can be weak, thin and to an extent self-generated by carriers, in the sense that, if the product/service/route were not available, many end consumers of the relevant air transport services might simply substitute any one of a large number of alternative uses of leisure time for, say, a planned trip abroad.⁸ And for a route to be made available at a particular airport, the yield from aircraft deployment to that route must be greater than from deployment to the best (in financial terms) alternative route, which, to repeat, may be anywhere within a relatively wide international network.
 20. We are of the view that it is only when this factual context is clarified and understood that it is possible to understand the development of Stansted to date. The rapid demand expansion at Stansted up until 2007, whether measured in terms of pax or ATMs, has been driven by the innovative activities of low-cost carriers in developing new products/routes/services. Moreover, BAA's own pricing conduct at Stansted has been explicitly based upon the view that low airport charges are a significant factor in promoting this growth -- which is just another way of saying that airport demand is relatively sensitive to price (sensitive enough to lead to pricing below the allowed cap).
 21. The ACP paper offers no convincing alternative account (to considerations of price sensitivity of demand) of below cap pricing at Stansted in earlier years. Paragraph 26 makes reference to documentary evidence that 'strategic reasons' have figured in recent pricing decisions, and intimates that such (unexplained) strategic reasons are, or may be, the explanatory factor (rather than just one of a number of explanatory factors). This is highly opaque reasoning, since what is meant by 'strategic' is undefined: pricing low to build demand could be described as 'strategic' in the sense of being part of a well-developed, sustained policy/strategy, but this is presumably not what the ACP has in mind, which is likely closer to some sort of notion that pricing might influence future regulatory decisions.
 22. If this latter notion is, as we suspect, what the authors have in mind, it seems to us that the strategy would only makes sense if applied for a relatively short time period prior to the end of a price-control period – otherwise the opportunity cost (in terms of foregone revenues) would likely not be recouped by the (necessarily

⁸ This is not an uncommon situation in economic markets. Consider, for example, the demand to watch Middlesborough football match, at the Riverside stadium. If ticket prices are raised, the bulk of the substitution is unlikely to be toward neighbouring clubs (Darlington and Hartlepool). Rather it will likely be to other uses of leisure time. The lack of effective competitive constraint from Darlington and Hartlepool football clubs does not however imply that there is a good case for cost-based regulation to protect consumers, or that supernormal returns will potentially be available.

speculative) higher revenues later.⁹ Yet BAA priced below caps for an extended period.

23. In the light of all that is known and that has been said about the drivers of Stansted demand growth in the past, including what has been said by BAA and by the airlines, we would be surprised if confidential documents pointed toward attempted gaming of the regulatory regime as being a major factor in pricing decisions. In this context, we note that the use of documentary evidence can be particularly prone to what psychologists call ‘confirmation bias’ – the selective reading of evidence to support a preconceived view of the world – against which one protection is a second reading of the evidence by someone with a critical or sceptical eye.

It works in practice, but does it work in theory?

24. The economic thinking in the ACP appears to place heavy reliance on the textbook model of perfect competition and, even where it is explicitly recognised that the model might not be appropriate, there appears to be a reluctance to abandon it, on grounds that it provides an acceptable approximation (see paragraph 123, for example). In our view, however, the model is completely inappropriate, and there is no basis for assuming that its propositions can be relied upon to form even approximate expectations.
25. The most obvious failure has already been noted. The model assumes products are givens, whereas the factual reality is that the discovery, introduction, and withdrawal of products has been, and is, central to Stansted economics. In short, the model abstracts from the market dynamics, which the evidence on the growth of Stansted indicates are key determinants of outcomes.
26. The second most obvious failure is that the ACP ignores the fact that airports offer spatially differentiated services. As the CC’s working paper on market definition says, at paragraph 44, “*The importance of geographical location for airport competition means that there is a continuum of substitution possibilities depending on distances and other airport characteristics.*” It also means that, because of product/service differentiation, a competitive price, even as defined by the equilibrium of static economic models (i.e. before considering dynamics and out of equilibrium possibilities), is not characterised by the equality of price and short run marginal cost, as the ACP seems to suppose.

⁹ It is interesting to note the similarity of the alleged pricing conduct to patterns of predatory pricing in competition law cases, whereby prices are held below cost for a period in order to induce above cost prices in later periods. The analysis of allegations of predatory pricing is generally undertaken with great care because, among other things, it is well recognised that it is much easier to make such allegations than to substantiate them. In the ACP, there is no analysis of the likely magnitude of the hypothesised ‘strategic’ effect, and hence of its likely significance relative to other factors that BAA must have taken into account when setting charges. The casual nature of the reasoning therefore contrasts with the rigour that is normally applied by competition authorities when assessing predation.

27. If, therefore, the CC wishes to explore the *theory* of competitive constraints on airports – for example to understand better why BAA has not priced up to the cap over recent years – the minimum necessary framework must include aspects of the theory of product selection. In what follows, we simply indicate a few salient points from static theory in order to illustrate some of the reasons why the ACP's economic analysis of competition is unsafe. Since static points suffice, we do not need to address the dynamics of product discovery, although any reasonably comprehensive analysis of competition would do so.
28. Key points of the economics of scheduled air transport services include the following:
- The determination of a route schedule requires the commitment of aircraft. For so long as the schedule is fixed, the allocation of the aircraft is fixed. The relevant costs (capital costs of planes, crewing, minimum fuel costs to fly the schedule, etc.) are therefore also fixed within the relevant time period.
 - If and when the route schedule is open to change, the fixed aircraft costs become avoidable fixed costs. Since routings can be changed reasonably quickly (e.g. in summer for a winter schedule), avoidable fixed costs are a significant factor in airline markets even over relatively short time durations of a year or less.
 - Another way of putting this is to say that there is high supply side substitutability between alternative route-markets. This substitutability creates substantive economic linkages among routes/markets in the wider network. Alternatively, and equivalently, it can be said that aircraft are geographically mobile assets, and that it is this physical mobility across geographies that connects the various route-markets in the network.
 - Looking at a single route/market in isolation, the fixed avoidable capital cost of the aircraft will in the short term be an opportunity cost: the value of the craft in its best alternative route.
 - Airlines will price against *very* short run avoidable costs – by which we mean costs that are avoidable *for a given schedule*. The resulting net revenues can then be compared with the fixed costs that are avoidable *if the schedule is changed (aircraft are redeployed)*.
 - In equilibrium, routes will be operated where, and only where, net revenues exceed the fixed avoidable costs.
 - If airport charges at a particular airport (network node) are increased this will, other things equal, reduce the profitability of routes using that airport. Marginal routes will become loss making, and will tend to be withdrawn.

- From the perspective of ‘other route-markets’, the opportunity cost of aircraft will fall (because planes used to serve the now more expensive airport will have lower value in that use). Routes that were marginally unprofitable now become profitable, so aircraft are redeployed to those routes.
 - The now-more-expensive airport will suffer a loss of demand; other airports, elsewhere in the wider network, will see expansions of demand. That is just another way of saying that airports are substitutes for one another, right across the network.
29. Thus, viewed from the perspective of an individual airport, the supply-side substitutability associated with asset mobility, and the constant reallocations of assets across geographies to which it gives rise, appears as demand side substitutability to the airport operator. If an airline adds or subtracts a route from a particular airport, that will be one more or one less product available to passengers at that airport. It will therefore affect both the airport charges collected by the airport operator, in an obvious, direct way, and also the retail revenues of the airport, since more or fewer passengers will use the airport in consequence.
30. It is a standard result in product selection theory that the number of products available itself will typically have a positive effect on the aggregated level of demand – a proposition that also plays a central role in analyses of two-sided markets.¹⁰ At an airport such as Stansted, for example, the number of routes offered (and also flight frequencies which, for simplicity, we have ignored here but which might be viewed as a measure of product ‘quality’ and which can readily be accommodated as an additional variable in the following demand function) will attract more passengers to Stansted *at given prices*. Denoting total passenger numbers travelling via Stansted as X , we can write $X = X(p, N(p))$, where p is the airport charge, which will feed through into ticket prices, and N is the number of routes/products offered at the airport. N is written as a (decreasing) function of p for the reasons given above concerning redeployment of mobile assets. The more expensive Stansted is, the fewer routes it will attract.
31. If we now consider the effects of a change in airport charges on pax, the result is:

$$dX/dp = \partial X/\partial p + \partial X/\partial N \cdot \partial N/\partial p$$

The first term on the RHS is the impact of a price change on passenger numbers *for a given set of routes/products offered*, which is the classic textbook effect. The second term is the indirect effect of a price change, resulting from (a) the impact on routes/products offered and (b) the impact of the routes/products offered on passenger numbers.

¹⁰ It is also not very different from supermarkets, where, albeit for different reasons, the range of products on offer is a factor affecting outlet demand *at given prices*.

32. The ACP focuses on the first of these two effects. We are of the view that the paper systematically underestimates the relevant effect, for example because, among other things:
- it discounts specific, individual substitution possibilities because they are individually small (e.g. Stansted to Birmingham, air to surface transport, a weekend abroad to a weekend at home) when the appropriate assessment requires consideration of their *cumulative* effect, which is what determines the own-price elasticity of demand (see earlier, in particular 4);
 - it neglects substitution possibilities between Stansted and Heathrow and Gatwick which, even if Heathrow and Gatwick were completely capacity constrained (which they aren't), would lead to loss of business at Stansted, for example through 'chain of substitution effects': higher Stansted price leading to increased demand for Heathrow and Gatwick services, leading to higher airline ticket prices at Heathrow and Gatwick (airport charges are regulated but airline prices are not), leading to substitution from Heathrow and Gatwick services to lower priced airports by *some* Heathrow and Gatwick passengers, who are displaced by switchers from Stansted).
 - it discounts the significance of the finding of a 28% catchment area overlap between Stansted and non-BAA airports for business traffic, which, at a minimum, requires further investigation in light of the potential contribution of business traffic to airline yields (we suspect that substitution between Stansted and London City plays a significant role here); and
 - The UK is a rather small country with a not inconsiderable number of actual and potential airports (in part thanks to WWII) and a high population density, implying that large numbers of people live close to one or other of the (many) boundaries of the catchment areas of airports, as defined by travelling times. Even if there were absolutely no passengers who crossed a catchment area boundary to travel to a preferred airport – which is a standard characterisation of equilibrium in spatial economic models – these conditions suggest that the choices of substantial numbers of passengers could easily be swayed by the competitive activities of airports (as we suspect would soon be discovered, particularly in the London area, if more pro-active policies of encouraging inter-airport competition were pursued).
33. The more fundamental point however is the neglect, in the ACP, of the second, indirect effect of airport charges on passenger numbers, which is all the more surprising in the light of paragraph 7 of the CC's working paper on market definition where it is stated that "*An increase in one airport's charges may induce one or more airlines to shift some or all of their flights (and/or future expansion plans) to other airports.*"¹¹ Given that the expansion of activity at Stansted is so

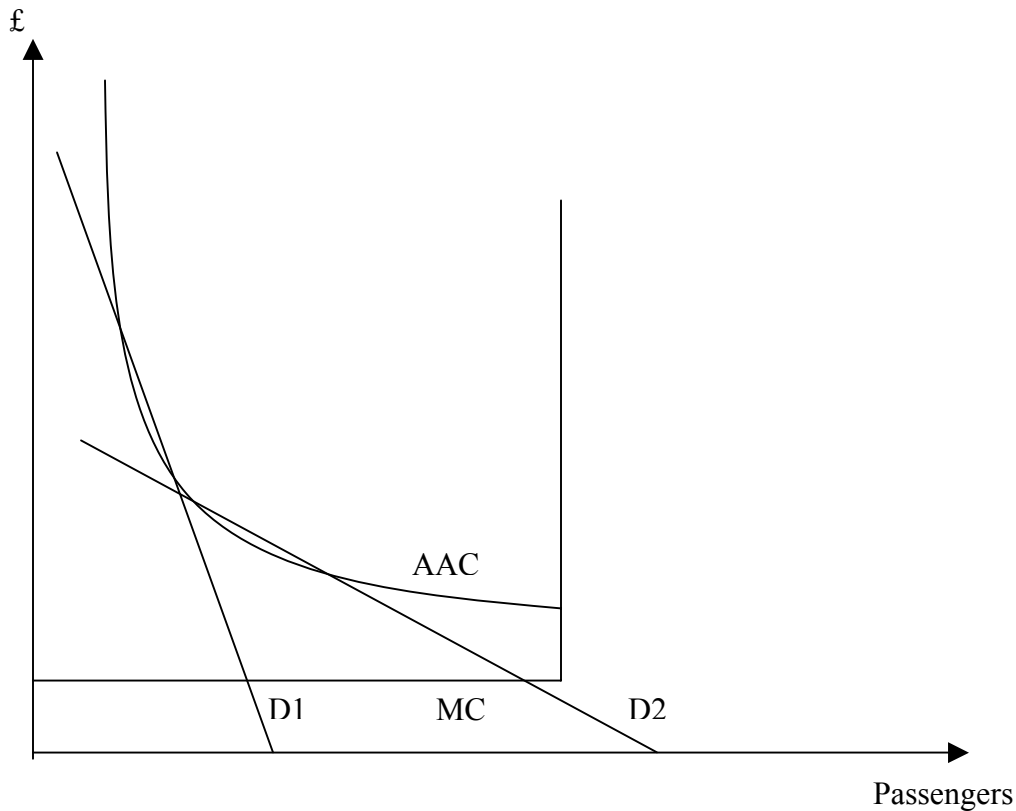
¹¹ The reference to expansion plans is important here because it indicates, correctly, that the relevant measurements are to be made relative to a counterfactual in which there is no increase in the relevant

- closely associated with the innovative activities of the LCC's in opening up new routes and increasing flight frequencies, and that available evidence points to the sensitivity of route/product decisions to relative route profitabilities across a wide network, there is simply no basis for a dismissal of the relevant facts.
34. Such an approach also appears unwise in the light of unfolding events. For example, a *Guardian* article of 18 July contained the following statement:
- “Ryanair is also withdrawing planes from Basel, Palma, Salzburg and Kraków and Rzeszów in Poland between November and December, as a protest against the landing fees at those airports.*
- The airline will make a 14% reduction in flights at Stansted this winter, from more than 1,850 a week to just under 1,600. As a result, it will carry about 900,000 fewer passengers through Stansted than last winter. The number of planes based at Stansted will fall from 40 to 28.”*
35. Around the same time it was announced that Ryanair would be introducing five new winter routes from the end of October, including one between Luton and Biarritz, indicating that contraction of services is by no means universal at the current time.
36. We do not suggest that the CC base its fact finding on newspaper articles, but there is obviously a problem in reconciling what is currently being reported (in more than one article) with the conclusion at paragraph 65, that, in relation to the switching of aircraft and routes between airports *“We do not find evidence of any significant constraint.”* – a conclusion that is, in any case, already surprising in the light of the well known histories and business models of the LCCs, and of airport pricing across Europe designed to attract the business of LCCs.

Analysis of pricing

37. The diagram below illustrates some of the above reasoning in terms of a familiar diagram in the theory of monopolistic competition. Although this alternative (to models of perfect competition) is static in structure, and although it therefore necessarily fails to capture the typically more important dynamics of competitive processes, it at least provides a much better first base for economic thinking in a context where, quite obviously, the relevant products/services provided by airports and airlines are locationally differentiated (which can be accommodated by the analysis) rather than homogeneous (as assumed in models of perfect competition).

airport charges. This counterfactual may, depending upon market circumstances, be characterised by expansion or contraction of routes offered and of service frequencies.



38. The lines D1 and D2 show two possible demand curves for travel on a route with average avoidable cost AAC. As constructed, the demand curves differ substantially. D1 might represent a situation in which there was a very well defined catchment area for the relevant airport, and in which all the other substitution possibilities are also rather limited (as might be the case for certain types of business traffic). D2 might represent demand when passengers find it easier to substitute to alternative airports or where alternative leisure options are reasonably close substitutes.
39. The MC and AAC curves show marginal and average costs per passenger respectively *for a given deployment of aircraft to a route*. Marginal costs can be expected to be low in such circumstances, at least up to full capacity operation of the aircraft, and will include, among other things, airport charges. Average costs will include, as well as marginal costs, the opportunity costs of the aircraft, plus the fuel and crew costs of flying empty planes. These are fixed costs for given aircraft deployments (they do not vary with passenger numbers), but are avoidable over periods during which deployments (routes, frequencies) can be changed. Since, as already explained, the latter can often be varied within periods measured in months, they are *avoidable* fixed costs within the one-year time period frequently used for economic assessments for competition law purposes.

40. Assuming initially that there is no price discrimination (an assumption that will be dropped below, and which is introduced only to highlight relevant discontinuities), as illustrated in the diagram each of the two routes is modestly profitable, and relatively close to the margin of operation. At the margin will lie the familiar tangency equilibrium where price = AAC.¹²
41. It can be seen that, notwithstanding the difference in demand conditions between the two routes, each is vulnerable to an increase in AAC such as, for example, might be caused by an increase in airport charges. Indeed, at the margin, small increases in costs can give rise to quite large, discontinuous changes in passenger volumes due to the withdrawal of the routes as they become unprofitable.¹³ And that is why an airport can be subject to quite strong pricing pressures in circumstances where a fully static analysis, based upon an assumption that products/routes are given, might suggest otherwise (because, for example, the airport is relatively isolated geographically).
42. It is perhaps worth emphasising at this point that the above analysis is intended to be illustrative only, to show how an increase in airport charges can feed through into loss of routes and hence, since some desired services are no longer being provided at the relevant location, to potentially significant loss of airport demand. In practice the process by which the changes takes place will involve commercial negotiations and discovery, and will likely be subject to lags, particularly in circumstances where there are long-term contracts in place between airlines and airport operators.
43. It can also be noted that the fundamental point is unchanged by the existence of price discrimination, which of course is an important business practice in aviation. In general, price discrimination will tend to have pro-competitive effects in that it will help sustain a larger number of routes. If NR is the maximised net revenue yield for a route, it can be noted that NR will be a decreasing function of landing charges, $NR(p)$. The condition for profitable operation of a route is just $NR(p) > FC$, where FC is (total) avoidable fixed. Hence, as p increases, the LHS of this inequality falls and marginal routes will become unprofitable. Again, small changes in price can lead to step changes in passenger volumes as routes disappear or are introduced.
44. The following points about the relevant competitive equilibria for airlines might also be made, *not least because they also apply to airports*:

¹² The illustration is not meant to imply that all or most routes are close to the margin of profitability. That is a matter for empirical determination. Rather the aim is to show how shifts in the AAC curve for a given airport can lead to the introduction or withdrawal of services (airport products).

¹³ Not all of the fall in passenger numbers will necessarily be lost to the airport. Some may substitute to a different route or (if available) to the same route offered by a different airline. The point remains, however, that the loss of a route will have a discontinuous/step effect on demand.

- Absent price discrimination, price exceeds marginal cost, possibly by a substantial amount.
 - In the presence of price discrimination, average revenue exceeds marginal cost, again possibly by a substantial amount (although some subset of passengers may be paying marginal cost, or close to marginal cost).
 - Products are selected (routes are operated) where average revenue exceeds average avoidable cost.
45. The argumentation in the ACP concerning the implications of short run marginal cost (SRMC) for regulatory price determination therefore seem to us to be misguided. It is simply a case of ‘wrong model’. Put another way, given the relevant factual situation, there is no basis for assuming that SRMC provides any sort of guide to some concept of a benchmark ‘competitive price’.
46. In any event, the ACP estimations of marginal cost appear to be based on an overly simplistic statistical method that renders the results meaningless. In paragraph 138 there is a scatter diagram described as *Relationship between total costs and passenger volumes at Stansted, 1990 to 2007*, from which the analysis goes on to use a simple least squares regression of total costs on passenger volumes to derive ‘marginal costs’. Yet it is clear that airport costs must be a function of a variety of factors, none of which, except passenger volumes, has been taken into account in the regression analysis. Some of these factors, such as wage rates, might be expected to have significant time trends, capable of introducing spurious correlations. The results cannot therefore be treated seriously as estimates of ‘marginal costs’. Whilst the ACP carries out a ‘sense check’ on its results to derive marginal costs by other means, in the end it comes back to those simple regression results, apparently on a ‘goodness of fit’ basis (paragraph 144), even though high values of R squared mean little or nothing if the underlying model is flawed.

Implications for the price control

47. Sound assessment of the competitive constraints on Stansted pricing is critical for the determination of any price control that is applied. It is a now well established principle of best practice regulation that, where a regulated firm faces a risk that, because of market pressures, it may not be able to recover efficiently incurred investments¹⁴, price control cannot sensibly be based on strict cost-based calculations of the traditional building block type. The reason is obvious: faced with a risk of earning a less than normal rate of return on capital, there must be some prospect for the regulated firm of being able to earn a greater than normal

¹⁴ There can be a misapprehension that competitive markets will guarantee the recovery of efficiently incurred expenditures. Competitive markets offer no such guarantees: *ex post* returns are typically either above a normal level (over-recovery) or below normal level (under-recovery), rather than equal to a normal level.

- return on capital, otherwise efficient investment will be rendered unprofitable on average.
48. It is perhaps worth stressing that the rationale for setting a price cap at a level above costs is not undermined by a view that it can be expected that, if the cap is set in such a way (above costs), the regulated firm will likely price up to the cap. The ACP seems to lean toward the latter view, and this seems to be influential in determining a preference for the retention of strict cost-based approaches. However, the finding of any risk of under-recovery of efficiently incurred costs arising from competitive pressures is sufficient to underpin a conclusion to the effect that *the price cap should allow for the possible over-recovery of such costs*; and we cannot conceive that the CC could conclude, on the facts, that there is no risk of under-recovery at Stansted. Even if such a view seemed tempting a few months ago, recent developments in airline markets have fully exposed some of the uncertainties about commercial prospects going forward.
 49. The principle – capping above costs – has been influential in a whole series of Ofgem price control decisions associated with market opening, for example in retail electricity and gas markets, and in metering. As soon as prospects for competition emerge, the price cap has been loosened.
 50. The relevant regulatory reasoning can also be found, among other places, in:
 - Ofcom’s public discussion document *Regulatory Challenges posed by Next Generation Access Networks*, November 2006, particularly Section 4 which discusses the implications of asymmetric risk.
 - George Yarrow, Chris Decker and Tim Keyworth, *Report on the effects of maintaining price regulation*, Regulatory Policy Institute and Australian Energy Market Commission, January 2008, which addresses issues surrounding the loosening and removal of price caps in retail energy markets in Victoria.
 - Jerry Hausman, “Regulated costs and prices in telecommunications”, in G. Madden and S.J. Savage (eds.), *The International Handbook of Telecommunications Economics*, Edward Elgar, 2000, which links points about asymmetric risk to real options valuations.
 51. Cost estimations can be helpful to regulators in providing sight of a possible floor value for the regulated price. This is not unlike the use of cost tests used in competition law, such as the AVC, AAC and LRIC tests that are used in predation cases, and the ATC test that tends to be used in margin squeeze contexts. However, the ACP appears to assume that: a) such cost estimates can be used to determine the corresponding competitive price level(s) in a review period, and b) that the regulated price is appropriately set at this (estimated) competitive level.

52. Each of these two propositions is unsafe at best. Competitive prices are prices that are discovered in competitive markets and, absent such markets, there is no very reliable way of estimating them. They can, however, be expected to range both above and below measures of long-run average costs, which include a normal return on capital, to an extent that can be expected to depend upon factors such as the relative significance of sunk costs, entry and exit costs, and the degree of volatility in market conditions; for reasons that are set out in the theory of real options.¹⁵ Given the sunk nature of terminal and runway assets, and given the fact that demand volatility at Stansted is significant, there is no reason to expect that the band in which ‘competitive prices’ might reasonably be expected to move will be particularly narrow.
53. In the relevant circumstances then, the appropriate approach to price control is perhaps best expressed in terms of balancing the risks of error. Moving upwards from a cost benchmark, higher caps will reduce the risk of harm caused by distortions to investment incentives but increase the risk that airport users will suffer from exploitation of market power. This is plainly a difficult trade-off to resolve, and, as we understand it, that difficulty, coupled with a view that Stansted pricing was constrained by a range of substitution possibilities, is one of the reasons why the CAA recommended de-designation of Stansted.
54. In the event, of course, the Government rejected the regulator’s advice, whilst giving indications that the judgment was a close call and there was a possibility that it could be re-visited after the CC’s market investigation (recognising both the existence of some competitive constraints, and of the possibility of adjusting price controls to reflect them). The trade-off judgment is therefore unavoidable for both the CC and CAA, and we conclude with the following two points:
- A strict cost-based determination of the cap will set the cap at too low a level, since it will not permit *on-average* recovery of efficiently incurred costs. In short, it would be a deviation from best-practice regulation that could be expected to have harmful effects on investment decisions.
 - We believe the CAA is broadly right, and acting in line with best regulatory practice in the UK and overseas, in seeking to shift the basis of price capping, possibly in a phased way, away from a fairly mechanistic cost-based approach to an approach that views the cap as providing a safety net or precautionary protection to airport users.

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¹⁵ See A. Dixit and R. Pindyck, *Investment under Uncertainty*, Princeton University Press, 1994.