

**BRIEFING NOTE 1:
THE DEFINITION OF THE
REGULATORY TILL;
PRINCIPLES AND
EFFECTS**

**A Briefing Note for the
Competition Commission**

Prepared by NERA

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EXECUTIVE SUMMARY

NERA was asked by the Commission to examine alternative approaches for determining what should be in the regulated till and to assess what might be the consequences of applying them.

The main conclusions to be drawn from our analysis can be summarised as follows.

- The discussion in Section 2 suggests that it is preferable to determine the scope of ex-ante regulation of airports by reference to the market power of airport operators, rather than by appeal to the concept of essential facilities.
- The discussion in Section 3 indicates that the CAA's case for excluding non-aeronautical activities from the scope of the regulatory till may not be soundly based. The supernormal profits currently observed in commercial (non-aeronautical) activities at all the regulated airports are unlikely to reflect increasing costs of supply. Also, an initial examination of market conditions for the services concerned suggests that they may well reflect market power as well as locational rents, although it is beyond the scope of this paper to assess the extent of any potential supernormal profits.
- The existence of supernormal profits in itself would suggest that general competition policy legislation has not been entirely effective in discouraging or preventing the abuse of this market power. It would follow that the exclusion of all non-aeronautical activities from the scope of ex-ante economic regulation under both single till regulation and the CAA's preferred version of the dual till approach, could lead to some loss of economic efficiency through the airport operator's ability to set super competitive prices for the relevant outputs. The appropriate remedy for this would be to extend the scope of economic regulation to cover some or all non-aeronautical outputs, as well as the core aeronautical outputs. The precise scope of regulation would, in principle, be determined after a detailed analysis of competitive conditions in each of the relevant markets. Such an extension would require amendment to existing legislation, which, as noted above, restricts the scope of regulation to "airport charges".
- By comparison with the single till approach, application of dual till regulation at congested airports, such as Heathrow and Gatwick, would lead to some increase in aeronautical charges, and there would be some allocative efficiency benefits as prices moved closer to marginal costs. However, prices would probably remain far below market clearing levels, leaving allocation of capacity primarily dependent on administrative processes and the operation of internal markets within major airline users of the facilities, as currently.
- Application of the dual till approach at less congested airports, such as MA and STAL, would also result in higher aeronautical charges than under single till regulation. The resulting prices might be above the competitive (LRIC) level during

the early stages of the airport investment cycle, but would probably lie closer to efficient prices on average. Paradoxically, therefore, application of the dual till approach may have more to offer in terms of allocative efficiency benefits when applied to less congested airports, where there is scope for significant capacity expansion within the existing runway configuration, than if it is applied at congested airports.

1. INTRODUCTION

Airport operators such as BAA and MAL supply a variety of services to airlines and other airport users. The core outputs are the set of aeronautical services, consisting of the provision and operation of runways and taxiways to enable takeoffs and landings, aircraft parking areas, and passenger and freight accommodation and handling facilities. Airport charges, which typically differentiate between the several dimensions of aeronautical output, are levied on airlines in respect of these services.

Airport charges¹ at BAA's London airports and at Manchester airport are currently subject to a price cap applied under the so-called single till approach to charges regulation. Under the single till regime, the maximum permitted level of airport charge, expressed as a rate per passenger, is set so as to allow the airport operator to earn a reasonable rate of return on all airport assets, after taking account of the expected level of revenues from activities undertaken by the airport operator (or the operator's agents) other than those covered by airport charges.

These other activities include, first, the provision of on-airport commercial services, such as retailing and catering, banking, office accommodation, and aircraft fuel supply and maintenance. For many of these commercial activities, the role of the airport operator is essentially that of a landlord, or infrastructure manager, accruing revenues in the form of rental, leasing and concession payments.

Airport operators (or their agents) also provide what may be referred to as access services, including car parking, access roads and public transport infrastructure and services. Some of these access services, such as the use of public roads, may be unpriced. In other cases, the output may be priced, through car parking charges or public transport fares, but the rental may nevertheless accrue to the airport operator through rental or concession payments, or, in the case of public transport facilities, in the form of infrastructure charges.

The single till mechanism does not directly constrain the level of the concession fees, rentals etc. Instead, it "taxes" supernormal profits earned in providing the services, and applies the tax receipts to moderate airport charges. The rate of tax on supernormal profits is set such that the total revenue from aeronautical and non-aeronautical services is equal to the airport operator's expected total costs, including a reasonable return on capital.

¹ Defined in Section 36 of the Airports Act ,1986, as

(a) charges levied on operators of aircraft in connection with the landing, parking or taking off of aircraft at the airport; and

(b) charges levied on aircraft passengers in connection with their arrival at, or departure from, the airport by air.

During the current review period, the categories of charge levied covered by this definition at BAA's London airports have been the charge on landing, the charge on departing passengers, and aircraft parking charges. At Manchester, the set of regulated charges is made up of the runway charge, the passenger facilities charge, the passenger security charge and aircraft parking charges.

According to the CAA, the single till framework encourages inefficient use of aeronautical facilities by airlines, especially at congested airports such as Heathrow and Gatwick, because the resulting airport charges are (very substantially) less than the marginal costs. It also distorts investment incentives, in the provision of both aeronautical and non-aeronautical activities.

The CAA therefore wishes to impose a price cap on airport charges, but to apply a dual till approach in determining the level of charges. Under this approach, the price cap would be set so as to allow the airport operator to earn a reasonable rate of return on the assets used to supply core airport monopoly services, which appear broadly to correspond to the aeronautical services covered by airport charges.² As at present, the CAA recommends that the charges set by the airport operator in supplying non-aeronautical activities should remain unregulated, other than through the provisions of the Competition Act, 1998. However, the airport operator would retain in full any “surplus” profits from these activities, which would have been used to moderate airport charges under a single till framework.

This briefing note assesses the CAA’s proposals by reference to two alternative approaches to determining the scope of ex-ante economic regulation. The first approach would be to define the set of regulated activities as the *essential facilities* that must be provided in order to operate the airport. The second approach would be to restrict the scope of regulation to activities where the airport operator, or its agents, enjoy *market power*.

The note goes on to examine how the CAA has applied the market power analysis to justify the exclusion of non-aeronautical activities from regulation. Finally, we compare the effects of applying the CAA’s dual till methodology regulation with those of the existing single till approach at congested and uncongested airports.

Single till regulation has sometimes been advocated by airlines, and, on occasion, by other parties, for example, by the US Government, in the context of the international arbitration on airport charges at Heathrow in the early 1990s, on the grounds that the aeronautical and non-aeronautical services supplied at airports are joint products. This argument is entirely without substance, since, apart from the demands for takeoffs and landings, none of the outputs supplied by airport operators are either demanded or supplied in fixed proportions. On the demand side, the relationship is typically one of complementarity, such that demand for one type of output is negatively related to the price of another output, with the strength of the complementarity varying widely across the set of outputs, and generally flowing from aeronautical to non-aeronautical services. On the supply side, the airport operator’s cost function is characterised by the existence of common costs. Under these conditions it is

² In the case of Heathrow the CAA also envisage that certain surface access assets, which BAA is obliged to provide as a condition for planning consent for Terminal 5, should be included in the calculation of the incremental costs used to determine the price path commitment (PPC) of the price cap. However, it also appears that the costs of a similar facility at MAL will not be included in the aeronautical asset base.

possible, at least in theory, to estimate separate marginal costs for each output, and to determine efficient prices for the several outputs, including efficient departures from marginal costs if application of marginal cost-based prices leads to under or over recovery of the airport operator's total costs.

2. DEFINING THE REGULATED TILL

2.1. The Alternative Approaches

2.1.1. Essential facilities

The essential facilities approach asserts that economic regulation should be applied to all of the activities undertaken by an airport operator that are essential for the operation of the airport. In addition to the core aeronautical services, the set of essential facilities covers the provision by the airport operator of a wide range of ancillary services, to airlines, passengers and other airport users. Airside, these services would include facilities for aircraft refuelling and light maintenance. In, or adjacent to, passenger terminals, essential facilities would extend beyond the provision of check-in areas, baggage handling and passenger holding areas, to include at least basic catering services (both “airside” and “landside”), car parking, public transport access facilities, and inter-terminal people mover systems. Whilst many of the services in question would be integral to the operation of the airport, some, such as long term car parking might be supplied from off-airport locations.

The principal activity currently undertaken by airport operators that would not be in scope to economic regulation based on an essential facilities approach would be airport retailing, including duty free and other types of retail outlet, and banking services. The provision of such services may offer benefits to passengers, and, on the supply side there may be economies of scope in offering such services alongside other, essential, services. However, it is difficult to argue that retail services are in any way essential to the operation of the airport.

2.1.2. Market power

The CAA’s proposals for reforming the framework of economic regulation of airports are based on the more familiar approach to defining the scope for ex-ante economic regulation, based on analysis of the market power enjoyed by the airport operator or its agents in supplying different types of services. Market power may result from natural monopoly conditions on the supply side, or from the existence of regulatory or other barriers to entry. Exercise of market power by an unregulated airport operator may result in allocative efficiency losses through excessive pricing by the airport operator or its agents. However, economic regulation may also introduce inefficiencies of its own, especially in relation to investment decisions. Assessing the case for regulation thus involves weighing the pros and cons.

In the context of airports, it is widely agreed that airport operators enjoy market power in the supply of core aeronautical services, a more restricted set of activities than those defined above as essential facilities. There is more dispute about whether or not airport operators and their agents enjoy significant market power in supplying non-aeronautical activities. The CAA claims either that airport operators do not enjoy market power in relation to non-

aeronautical activities, or that if they do, the resulting costs of extending regulation to these activities outweigh the benefits of doing so.

2.2. The Two Approaches Compared

Application of either approach would result in a significantly different framework for economic regulation compared to the existing single till method, under which, as noted above, non-aeronautical activities are not directly regulated, but supernormal profits earned in supplying them are taxed, and the proceeds are used to cross-subsidise airport charges. Assuming that regulation continued to be applied by means of a cap on revenue yield from the set of regulated activities, then under the essential facilities approach, the cap would take account of revenues from all essential activities. Under the market power approach, the revenue cap would take account of revenues from all activities where the airport operator was judged to enjoy market power. In each case, the cap would be set so that an efficient airport operator would earn a reasonable rate of return over the quinquennium either on the assets used to supply essential facilities, or on the assets used to supply services where market power considerations applied.

Revenues from both the aeronautical till and from regulated non-aeronautical activities would contribute to the common costs of the airport. However, the resulting pattern of mark-ups (or mark-downs) from marginal costs applied by the airport operator might not be the same as under the single till. For example, at uncongested airports, charges for aeronautical services might be marked up more strongly than under the existing single till, to exploit the relative price inelasticity of demand for aeronautical activities.³

The main practical problem in applying the essential facilities approach lies in defining the precise scope of what is and what is not “essential”. Whilst there may be a wide measure of agreement that *some* provision of catering and refreshment services in passenger holding areas is indeed essential, it is not clear that the multiplicity of outlets observed in large terminal areas at all of the regulated airports would be deemed essential. Similarly, some provision of parking facilities on or close to the airport is essential, but what overall level of provision is essential is difficult to specify, other than in terms of what is actually supplied by the airport operator and other parties.

Of course, there are practical problems in defining the scope of the regulated till by reference to market power. Market power is not a precise concept, and its application may require difficult judgements to be made. However, careful application of what is, by now, a well-established empirical methodology, based on the definition of relevant markets, and an assessment of the competitive constraints operating in the relevant market, should lead to more robust and defensible conclusions than those emerging from attempts to pin down the concept of essential facilities.

³ This tendency would be moderated by the effects of demand complementarity between aeronautical and non-aeronautical services.

The theoretical problem with the essential facilities approach is that it may lead to the inclusion in the regulated till of services deemed essential to airport operation, but with respect to which the airport operator does not enjoy market power. Such an outcome could involve a deadweight welfare loss, since there would be no potential benefits of regulation to set against the costs it may impose.

There thus appear to be both practical and theoretical reasons for favouring an approach to defining the regulated till on the basis of an analysis of market power rather than by reference to the concept of essential facilities. The following section of the briefing note therefore focusses on issues in the application of the market power approach.

3. APPLYING THE MARKET POWER APPROACH TO DEFINING THE REGULATED TILL

3.1. Introduction

The available evidence, reported in BAA 34 and MA 75, indicates that the rates of return being earned by BAA and MA on commercial activities (which broadly correspond to non-aeronautical services), computed after allocating airport assets between aeronautical and commercial activities, persistently and significantly exceed the airport operator's cost of capital⁴. Despite this evidence of persistent supernormal returns, which would suggest that general competition policy was ineffective in restraining exercise of market power, the CAA proposes to exclude commercial activities from the scope of regulation, so that the dual till approach would be applied only to airport charges. Under its proposals, therefore, any supernormal profits earned in supplying non-aeronautical services would be retained in full by the airport operators. With the removal of the cross-subsidy from non-aeronautical services, airport charges would increase, to enable the operators to earn a reasonable return on aeronautical assets. The overall level of airport operator profitability would also increase.

In support of its proposals, the CAA argues that it is justified in excluding the non-aeronautical activities from the scope of regulation primarily because it believes the apparently high levels of profitability may not result from the exercise of market power by the airport operator. The CAA also suggests that, even if the airport operator does enjoy some degree of market power, this is not sufficient to merit application of ex-ante regulation to the activities. The CAA contends that ex-ante regulation introduces its own distortions, and can be satisfactorily controlled through general competition policy legislation.⁵

In this section, we examine two lines of argument that have been advanced in support of the proposition that the apparent existence of supernormal profits in non-aeronautical activities may not signal that airport operators are exploiting market power.

- First, Yarrow⁶ has suggested that supernormal profits in what he refers to as the secondary market, which broadly aligns with non-aeronautical activities, are the result of decreasing returns to scale in the production of airport services, even though the secondary market itself is competitive.

⁴ BAA 34 (Table 5) reports ROCEs on commercial activities in the period 1996/96 – 2000/01 for HAL ranging from of 14.5% to 22.3%; for GAL, from 65.9 to 70.2 %; and from 20.9% to 25.9% for STAL. MA75 (Table 5) shows commercial ROCEs for MA plc over the same period ranging from 35% to 62%.

⁵ Another line of argument deployed by CAA in the Heathrow hearing (Transcript p50), is that even if market power is abused, demand elasticity for the facility (short term car parking) is very low, so that there is no serious loss of allocative efficiency. Exactly the same argument could, of course, be applied in the context of airport charges regulation.

⁶ Undated Note on *The Single Till Principle in Airport Regulation*.

- Second, as proposed by the CAA, and, most recently, by the Australian Productivity Commission (APC)⁷, in a draft report on airport regulation, the apparent supernormal profitability enjoyed by airport operators reflects the existence of locational rents.

3.2. Decreasing Returns to Scale

Yarrow suggests that, in the case of airports, site constraints and other sources of economic rents give rise to increasing long run marginal costs. We believe there are several potential difficulties with this line of argument.

First, we note that while some authors assert that airport operations are subject to diminishing returns to scale at some point, we are not aware of any substantial empirical support for the proposition that either airport operations in total, or non-aeronautical services supplied by airports, in particular, are subject to decreasing returns to scale. Recent analysis of airport total cost functions by NERA (for CAA) indicates rather that airport operations are subject to broadly constant returns to scale. The panel data set from which these results were obtained covers airports operating at very widely differing scales, as measured by passenger throughput, including BAA's South East airports. However, it can be argued that panel data of this kind may not reveal possible decreasing returns to scale at any individual site arising from site constraints.

Yet even if there were site constraints, it seems likely that any resulting decreasing returns to scale would be confined mainly or exclusively to the provision of aeronautical services, where there may be significant costs of complexity in adding new aeronautical infrastructure to existing runways, taxiways etc. Such problems should not arise in supplying retail etc services.

Another difficulty is that supernormal profitability in non-aeronautical activities are observed even at airports with relatively modest levels of throughput (5 mppa and upwards), in situations, such as at MA and STAL, where site constraints are not a serious impediment to further expansion. At these locations, we would expect airport operations, including the provision of retailing and other commercial activities, to be subject to constant, or even increasing, returns to scale.

3.3. Location Rents

A clear statement of the location rent argument is contained in a recent draft report by the APC on airport regulation.

⁷ See <http://www.pc.gov.au/inquiry/airports/draftreport/index.html>

.... non-aeronautical profits may reflect “quasi-rents” accruing to location rather than to market power per se. Economic rent is the payment made to a factor above that needed to keep it in its current use. If the factor has some alternative uses, at the margin it may earn no rent (payment to the factor will just reflect its value in an alternative use), though it may earn infra-marginal economic rent.

Airports typically act as landlords to providers of retail services, maintenance facilities etc. Airport revenue from these activities accrues as rentals and/or royalties to the scarce factor – in this case, designated airport land – which core-regulated airports, in turn, lease from the owner, the Commonwealth Government.

Provided airports do not constrain artificially the provision of space for non-aeronautical facilities, profits earned from providing such space will reflect locational rents that, in turn, reflect the inherent scarcity of land proximate to an airport. An airport’s ability to raise prices through artificial scarcity will be constrained by the ability of concessionaires to locate, and consumers to purchase, elsewhere. For example, any monopoly profits (that is, in excess of location quasi-rents) earned from car parking are likely to encourage off-airport providers and substitution by airport users to other travel modes. Monopoly retail rentals will drive concessionaires to relocate because uncompetitive rentals cannot be passed on to consumers (who, in turn, have a range of choices where to buy these goods and services).(see previous ref, Appendix C1).

In assessing these arguments, we begin by acknowledging that *some* of the apparent supernormal returns earned by airport operators may indeed reflect the undervaluation of land (relative to its opportunity cost) in airport accounts. However, it also appears that even if land assets were properly valued, there may also be scope for a profit-seeking airport operator to earn supernormal returns in the provision of non-aeronautical services.

Two conditions appear to be necessary for such an outcome.

- First, the supply of space in which to locate retail, parking etc services should be variable in the long run. Casual observation would suggest that airport operators do have considerable discretion regarding the density of retail and parking operations that is permitted even within any particular terminal, and also in terms of the possibilities for reconfiguring and expanding terminal capacity in general in response to growth in demand.
- Second, the operator must face a downward sloping demand curve for space at a particular airport, expressing the relationship between willingness to pay for space, whether in the form of concession fees or rentals, and the volume of space provided for each type of non-aeronautical services. If the airport operator was a price taker, there would be no incentive, in the words of the APC, to constrain the provision of space artificially.

Whether or not the airport operator enjoys market power will depend upon competitive conditions in the downstream markets concerned, which can be assessed by applying the SSNIP test to define the relevant market, and then to consider the competitive conditions in the market thus defined.

We now present an initial a priori assessment of market conditions with respect to the following set of outputs, which account for the majority of non-aeronautical revenues at the regulated airports:-

- retailing, split between duty free and other;
- catering; and
- car parking , split between short and long term.

3.3.1. Retail: duty free

It is possible to substitute a purchase on the return leg of a trip for one on the outward leg (but not vice-versa) or to buy from the more limited product range available from airline duty free. However, the purchases are also often impulse buys, made by infrequent and ill-informed purchasers. The former characteristic, in particular, has led competition agencies in the UK to adopt quite narrow market definitions, for example, in relation to the ice cream market, where a separate market for so-called impulse purchases has been applied. In the circumstances, it would be difficult to argue against the proposition that the relevant geographic market for duty free sales extends beyond the individual international passenger terminal.

3.3.2. Other retail

Although there is probably a significant element of impulse purchase, which might offer some opportunities for super-competitive pricing, the relevant market for clothing and luxury goods retailing sold through on-airport outlets almost certainly extends beyond the individual airport terminal, and probably well beyond the airport.

3.3.3. Catering

Demand for catering services is heavily time and location specific, and the relevant market might well not extend beyond the individual terminal, or even the separate airside and landside areas, since the possibilities of substitution between the two are either limited, or non-existent (for non-flyers).

Whilst this would suggest that a monopoly supplier of catering services within the airside or landside areas of a terminal would be able to price supercompetitively, there are typically several catering etc suppliers located within each area. However, although the range of outlets may offer a choice between a sandwich and a hamburger, it may well not offer a choice of sandwich or hamburger supplier. Airport operators are thus able to control

market structures to promote some diversity in the product offering, whilst minimising the extent of head-to-head competition.

3.3.4. Short term car parking

Again, a good case can be made for arguing that the relevant market here would be the short term parking areas immediately adjacent to each terminal, or, at the widest, the set of short term facilities across the airport. It is unlikely that actual or potential competition from off-site facilities would act to constrain a monopoly on-airport supplier (given the time and inconvenience involved in accessing terminal from off-airport facilities). Nor is it credible that competition from other modes (taxi, public transport) is a significant competitive restraint. As with the provision of catering services, the airport operator is able to regulate market structure and conduct by awarding car parking concessions to a single operator, or, if there is more than one concessionaire, by requiring all concessionaires to set common prices across the airport.

3.3.5. Long term car parking

A priori analysis of the relevant market for long term parking is more difficult than the analysis for short term parking, because the geographical extent of the relevant market is less clearcut. It is possible that the relevant market may not extend further than the airport boundaries, given the location of the regulated airports in greenbelt areas, or areas where planning permission to develop off-site facilities is difficult to obtain. In the circumstances, a plausible case can be made that BAA, and probably Manchester, each enjoys significant market power in relation to long as well as short term parking provision.

3.3.6. Conclusions

In analysing competition in retail markets, competition authorities employ the concept of a chain of substitution possibilities, to capture the competitive influence of possibly distant locations on pricing conduct by retailers at a particular location. By contrast, the above analysis of the supply of services at airports suggests that the relevant markets for all of these services, bar "other retail" and possibly long term car parking, are marked by a break in the chain of (geographical) substitution possibilities, either within or close to the individual terminal. This seems clearly to distinguish the competitive position of an airport operator, such as BAA, from that of other landlords/retailers/car parking providers located in central business districts, who face competitive pressures from a far more geographically diverse set of suppliers, and to create conditions where the demand curve facing the regulated airport operators is downward sloping. .

Given these conditions, we would characterise an unregulated profit-seeking airport operator as seeking to equate marginal revenues from the provision of additional non-aeronautical capacity with marginal costs, implying some mark-up over marginal costs. The size of the mark-up would depend on competitive conditions in each downstream market, over which, we note, the airport operator also enjoys a measure of control, through its ability

to determine the level of concentration in the provision of on-airport services, allied to its ability to determine final product prices through the terms of concession agreements.

Overly aggressive exploitation of market power in the provision of non-aeronautical activities, such as BAA's conduct in the early post-privatisation period, when it sharply increased certain car parking and public transport access charges, may be effectively constrained through the operation of general competition policy legislation, especially following the Competition Act, 1998. However, less overtly aggressive behaviour, particularly in relation to the underlying supply of space, may be more difficult to detect. Also, airport operators are now more aware of the problems caused if on-airport prices exceed those available off-airport, and are more active in constraining the conduct of concessionaires in downstream markets, for example, by price benchmarking. Such devices certainly restrict the scope for exploiting downstream market power, but, equally, they do not demonstrate that market power in the intermediate market for space, rather than in the downstream market for the final goods and services, is not being abused. They also suggest that suppliers of downstream services would, if not constrained by the airport landlord for "tactical" reasons, enjoy significant discretion in setting prices.

This analysis indicates that the CAA has not demonstrated a robust economic case for excluding non-aeronautical activities from the scope of ex-ante economic regulation on the grounds that neither the airport operator nor its agents enjoy market power in supplying the services in question. If so, the case for exclusion must rest on the proposition that the costs of including non-aeronautical activities outweigh the potential benefits. The CAA's work has identified some potential distortions arising from the effects of existing single till regulation on the provision of non-aeronautical services. However, it has not considered whether similar problems are likely to arise under a dual till regime of the kind sketched in section 2.1.3 above, where the revenue yield cap was applied across a set of regulated activities including some or many non-aeronautical activities.

4. THE EFFECTS OF APPLYING THE DUAL TILL⁸

The effects on the level of airport charges of replacing single till regulation with the CAA's preferred version of dual till regulation, where the cap is applied only to aeronautical activities, and the airport operator retains any supernormal profits from non-aeronautical activities, are explored in Figures 4.1 and 4.2.

We assume a long run cost function characterised by relatively large capacity increments, such that the cost function is scalloped, with constant returns to scale in the supply of aeronautical services in the long run, so that the long run incremental cost, or LRIC, is also constant.⁹ However, the short run cost function is subject to increasing short run returns to scale as each new increment of capacity fills up. Under these conditions, the short run average cost will tend to lie below the long run incremental cost as demand presses on the available capacity.

Figure 4.1 shows the case where the market clearing price exceeds LRIC of aeronautical capacity (the situation at Heathrow and Gatwick). Figure 4.2 shows an alternative case where additional demand can be accommodated if price is set equal to LRIC (the position at STAL and MA).

For the congested facility (Figure 4.1), the price level under single till regulation is less than under dual till regulation (since aeronautical charges no longer benefit from the cross-subsidy from the supernormal profits gained in non-aeronautical activities). Under the dual till, the price is approximately equal to the short run (and long run) average cost of aeronautical services, and this is less than the LRMC, which, in turn, is less than the market clearing price.

⁸ The discussion focuses on the effects on the level of airport charges of applying different approaches. The effects of different models of regulation on investment incentives are considered in Briefing Note 2.

⁹ The LRIC may be thought of as a kind of average of the relevant short run marginal costs (SRMC) over the investment cycle. LRIC will exceed SRMC immediately following the commissioning of major new investments, falling below SRMC as the airport fills up, and falling far below the market clearing price if expansion is hindered by planning delays etc. There has been extensive debate on the relative merits of the long run and short run versions of marginal cost pricing, but public utility pricing policies, both under state ownership and under regulation, have generally been based on the long run variant.

Figure 4.1
Application of Single and Dual Till Regulation at Congested Airports

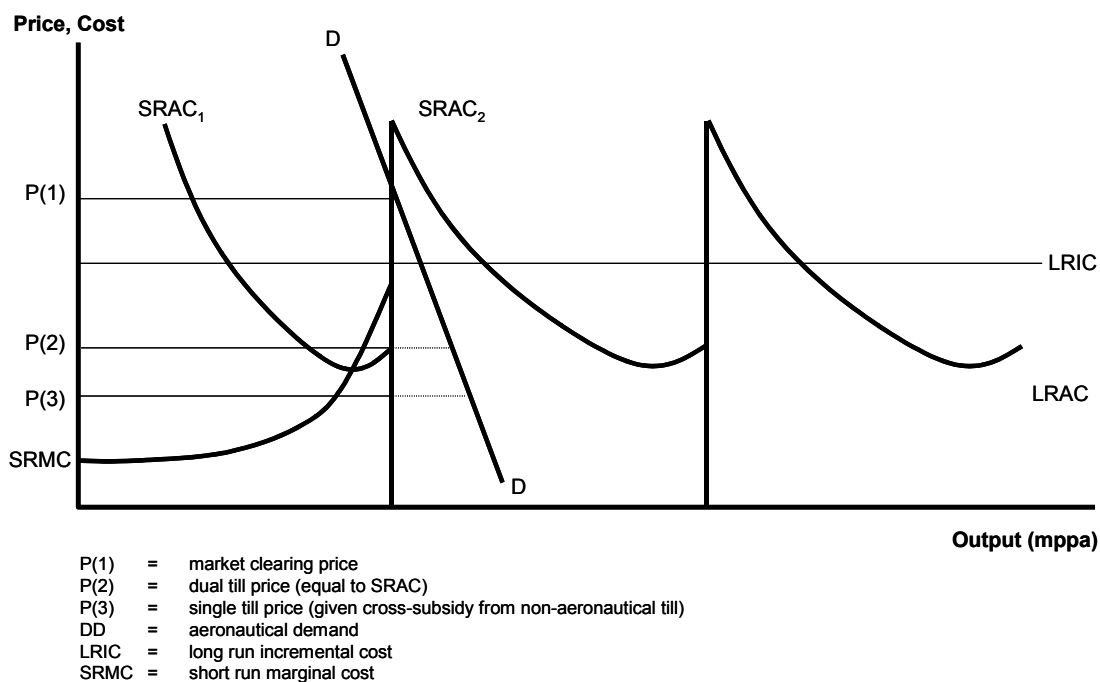
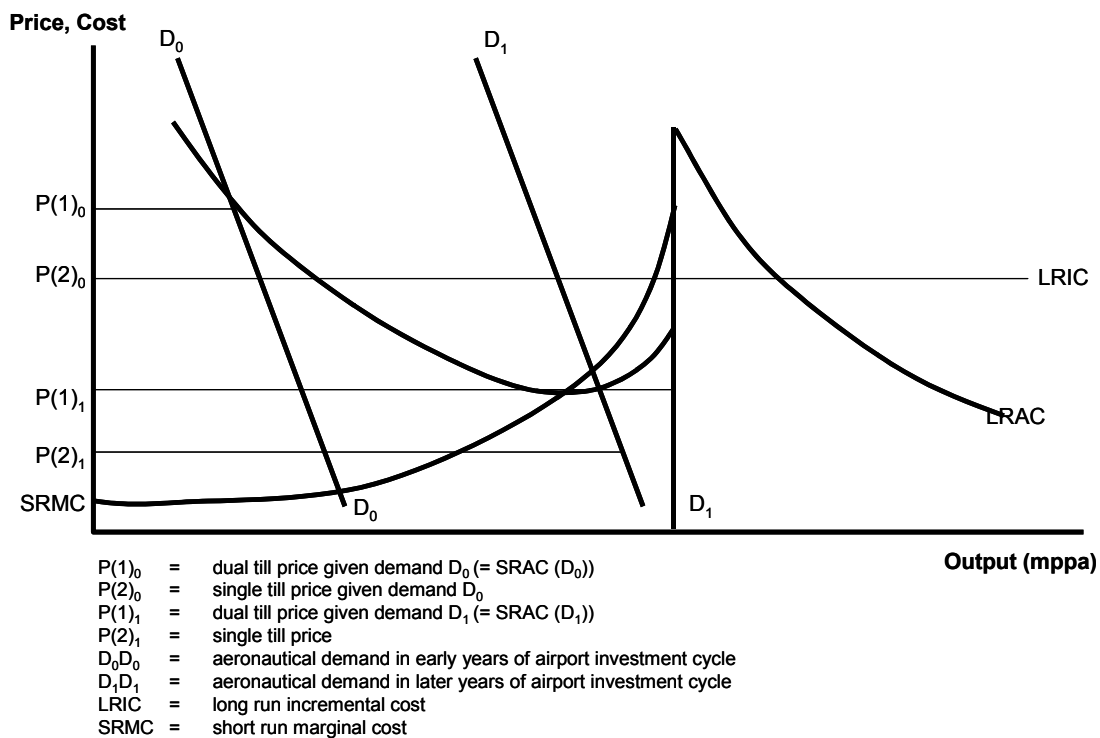


Figure 32.
Application of Single and Dual Till Regulation at Uncongested Airports



Application of the dual till mechanism would therefore reduce the problem of excess demand, but it would not remove it, and in the absence of an effectively functioning secondary market in slots, the allocation of airport capacity would remain primarily dependent on a combination of administrative devices, notably grandfathering, and the operation of internal market mechanisms. Compared to outcomes under the single till, application of the dual till would also lead to further allocative efficiency gains, if the increase in charges was sufficient to cause low value users to exit, and for their slots to be taken by higher value users.

However, it is not clear whether the combination of administrative actions and secondary market operation would ensure that the displaced capacity was taken up by the hitherto excluded users who value it most highly. Factors inhibiting the efficient reallocation of capacity would include:-

- the presence, especially at Heathrow, of state owned flag carriers, whose decision making might not reflect strict economic efficiency considerations;
- the effects of EU legislation on airport slot allocation, giving priority to new entrant operators, who may not value slots as highly as incumbent operators;
- the effects of international air service agreements, which restrict access to designated carriers;
- strategic behaviour by major airlines seeking to exclude or disadvantage potential competitors.

The position is somewhat different in the case of uncongested airports. Here, the impact of moving from single to dual till on the efficiency of capacity allocation depends on where the airport is in its investment cycle. During the early years of the cycle, following the commissioning of major new investment, such as the second runway at MA, or a new terminal at STAL, application of the dual till may lead to an outcome whereby price exceeds LRIC. Conversely, single till prices may be closer to LRIC during this phase of the project (as illustrated in Figure 3.2, where the single till price is shown equal to LRIC).

However, as the airport fills up, prices under the dual till will reduce towards the LRIC level, and will eventually fall below LRIC during the later stages of the investment cycle. The single till price will also reduce over time, possibly at a faster rate than under the dual till if supernormal profits per passenger increase with passenger throughput. On average, over the cycle, prices under the dual till will lie closer to LRIC. However, under both approaches, the cyclical pattern of falling prices would be the opposite to the pattern needed to encourage efficient use at each point of time; a short run marginal cost reflective set of prices would start off low, following the opening of new capacity, and increase over time as congestion, and eventually crowding out, became more serious. Such a pattern of prices would emerge if capacity was subject to an auctioning process.