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The airport–airline relationship

The relationship between the airport operator and airlines is clearly fundamental to the success of any airport business. The sweeping changes which have occurred within the airline industry mean that airlines, more than ever before, are trying to control their costs in order to improve their financial position in an ever increasing competitive and deregulated environment. This is having an impact on the aeronautical policies of airports and their regulation. At the same time, demand is outstripping capacity at a growing number of airports and so the traditional mechanism for allocating slots has had to be revisited. All these issues are considered in this chapter.

The structure of aeronautical charges

Aeronautical charging traditionally has been relatively simple, with most revenue coming from a weight-based landing charge and a passenger fee dependent on passenger numbers. Many airports still generate their aeronautical revenue in this way. At other airports charging practices have become more complex and more market based. This reflects the increasingly commercial and competitive airport environment and the contemporary challenges faced by airports such as the growing pressure on facilities, environmental concerns and rising security costs.

Landing charges

Most airports have a weight related landing charge based on maximum take-off weight (MTOW) or maximum authorized weight (MAW). The simplest method is to charge a fixed amount unit rate (e.g. US\$X per tonne) regardless of the size of the aircraft. A fixed unit rate will favour smaller aircraft types since tonnage tends to increase faster than aircraft capacity or payload. It will also benefit airlines which have high load factors or seating capacities. This simple method is used at many airports throughout the world including the USA and Australian airports, most of the German airports, Aer Rianta, Brussels and Copenhagen. Some airports have a unit landing charge which declines as the weight of the aircraft increases such as Manchester airport. At other airports, for example Amsterdam, Kuala Lumpur and the Italian, Spanish and Indian airports, the unit rate increases for larger aircraft. At a few airports, for example in Greece, the variable rate successively increases and decreases as the weight of the aircraft rises.

This charging mechanism uses 'ability to pay' principles, since airlines using larger aircraft are in a better position to pay higher charges. Some costs such as runway wear and tear do increase with weight and also larger aircraft require vortex separations, which can reduce the number of aircraft movements during a certain period. Overall, however, there is not a strong relationship between aircraft weight and airfield cost. A flat rate landing charge for all aircraft types may be more appropriate, particularly at congested airports. This is because the cost of occupying the congested runway is movement related and independent of aircraft size. Each aircraft movement will consume the same resource.

Very few airports have adopted a movement-related charge which clearly will tend to be very unpopular with airlines flying small aircraft types. Notable exceptions are Heathrow and Gatwick airports which have a fixed runway charge at peak times. Other airports have not gone this far, but have made an attempt to charge the smallest aircraft more to encourage general aviation traffic particularly to move away from congested major airports. For example, Frankfurt airport has a minimum landing charge set at 35 tonnes, Düsseldorf at 32 tonnes. Vienna airport has a large fixed movement element in its landing charge as well as a variable fee. In the USA most airports tend to stick to a very simple fixed unit rate. One such airport which was experiencing acute runway congestion in the late 1980s was Boston Massport. As a result of this, the airport attempted to introduce a movement-related element into its landing charge, but was forced to abandon such a policy when its airline and general aviation customers questioned the legality of this in the law courts.

BAA plc's fixed landing charge for all aircraft only applies to peak early morning and evening flights in the summer. Some other airports also have differential landing charges by season or time of day to reflect peaking of demand. For example, at Athens airport airlines pay a 25 per cent surcharge on landings from June to September between the times of 1100 and 1700. Toronto, Mexico City and Brussels airports have higher charges in the early morning. Some of the Spanish airports, namely Menorca and Ibiza, increase their landing fees slightly in the summer months.

Sometimes charges for ATC or terminal navigational facilities will be incorporated into the landing charge. At other airports, the airport operator may levy a separate charge. Typically this charge will be, like the landing charge, related to the weight of the aircraft. Clearly there is no logical cost rationale for this since each aircraft movement, regardless of the size of the airport, imposes the same costs on the ATC infrastructure. Alternatively, the airline will pay the air traffic control agencies direct and the airport operator will not be involved in the financing of ATC services at all.

At some airports, for example, many of those in France and Italy, domestic, European or short-haul services pay a reduced landing fee. This is not a cost-related charge since the cost to land an aircraft is independent of its origin. Instead, it tends to exist to support local and regional services, which are comparatively expensive to operate. Sometimes such services will have a social role in linking together regional communities and so in effect the discount will be an unofficial subsidy. A few airports, for example Brussels and Macau airports and those in Spain and Portugal, offer a volume discount on the landing fee. This will naturally favour the established home carrier at the airport and European airports particularly have been subject to considerable criticism from having such a policy – particularly from the European Commission who in 2000 was threatening court action (Jane's Airport Review, 2000). The International Air Transport Association, the airline organization, is strongly opposed to such practices (IATA, 2000a).

A growing number of airports have noise-related surcharges or discounts associated with their landing charges as a result of increasing concerns about the environment. Some of these are based on airport or country specific aircraft acoustic group classifications as is the case with airports in France, Switzerland and Belgium. Elsewhere more standard ICAO 'chapter' classifications are used. (These classifications are based on the level of noise which aircraft make and the areas on the ground which are affected by the aircraft noise. There are currently three classifications: chapter 1 aircraft which are banned from airports, chapter 2 aircraft which are due to be banned in 2002 and chapter 3 aircraft which are the quietest aircraft). This is the practice at the German and London airports and those serving the cities of Amsterdam, Stockholm and Oslo. Airports may adopt different subclassifications within the chapter 3 group. Most airports in Germany have chapter 3 'bonus' or 'non-bonus' aircraft, whereas at London there are 'minus', 'base' and 'high' categories. Sometimes there is a separate noise tax as well as is the case at the French, Italian and Korean airports and at Sydney. There may be a cost rationale for such charging when the noise related revenue is used for noise protection and insulation projects but this is not often the situation.

At a number of airports such as Brussels, Manila, Oslo, Seychelles and those in Germany, the landing charges are higher at night, and at some airports such as Amsterdam and Manchester, chapter 2 aircraft are banned at night. In addition to noise disturbance effects there are increasing concerns about the impact that aircraft emissions are having on the environment (see Chapter 10 for a fuller discussion). As yet this has not been reflected in airport charges, with the notable exception of Zürich and Geneva airports in Switzerland and the Stockholm airports of Arlanda and Bromma which introduced emissions charges in the late 1990s.

Passenger charges

Passenger charges are the other main source of aeronautical revenue. These charges are most commonly levied per departing passenger. At most airports there tends to be a lower charge for domestic passengers to reflect the lower costs associated with these types of passengers. The French airports have three types of charges, namely domestic, EU and international. Aer Rianta airports have transatlantic, international and domestic charges, while Johannesburg airport has domestic, regional and international charges. The charges at Athens airport vary with distance, while in Spain and India neighbouring countries are charged less. As with the landing charge in some cases, there may be political or social reasons for keeping down the cost of domestic travel as well. Historically, such policies are often maintained to subsidize the national carrier which has a large domestic operation. It can be argued, however, that domestic passengers have less potential for generating commercial revenues and hence do not justify the lower passenger charge. Pakistan airports have different fees for passengers who are travelling first, business or economy class. With an increasing emphasis on airport safety in recent years, particularly the requirement for airlines to screen 100 per cent of hold baggage, security charges have become more popular. The passenger charge traditionally was considered to cover security costs but now a significant number of airports have separate security charges, very often levied on a per passenger basis.

A number of airports charge a smaller fee for transfer passengers (e.g. Amsterdam, Helsinki, Vienna and Copenhagen), or waive the fee completely in certain circumstances (e.g. Dublin, Rome, Milan, Stockholm, Brussels and Athens) to encourage this type of traffic. A lower transfer charge can be justifiable on cost grounds as such passengers will have no surface access requirements, will not have associated meeters and greeters, and very often will not need check-in, security and immigration facilities either. On the other hand, transfer passengers still require facilities such as baggage handling and may require special facilities in order that a rapid transfer is achieved. Some other airports also have differential charges to reflect peaking, such as East Midlands, Manchester and Luton airports in the UK which charge more in the summer. Passengers at London City airport pay more in the morning and evening peak times.

Other charges

There are also a number of other charges which tend to be fairly small compared with the landing and passenger fees. First, there is the parking charge which is usually based on the weight of the aircraft or, sometimes, on aircraft wingspan as in the case of Singapore, Malaysia, Oman, Malta and some US airports such as Boston, Houston and Miami. There is normally an hourly or daily charge with, perhaps, a rebate for using remote stands. Most airports have a free parking charge, typically ranging from one to four hours to allow the airline to turnaround at the airport without incurring any charges. A few airports, such as BAA plc's London airports, Frankfurt and Hong Kong, have no free parking charge to encourage the airlines to minimize turnaround time. BAA plc's

airports charge per quarter hour and during peak times each minute counts as three. For those airports which have a twenty-four hour charge, such as Amsterdam, Düsseldorf, Manchester, Vienna and the Canadian airports, there is clearly no incentive for airlines to make the most effective use of the apron space.

There may be other charges for certain facilities or services which airports choose to price separately rather than including in the landing or passenger charge. For example, at the French and Italian airports and at Athens there is a lighting charge. At other airports, there may be an airbridge fee typically charged per movement or based on the length of time that the bridge is occupied. Sometimes, as an alternative to the passenger charge, there are cargo charges based on the weight of loaded or unloaded cargo as is the case at the Spanish and Swiss airports. There may be a lower fee for all-cargo aircraft, as is the case at Amsterdam and Brussels airports, or a higher charge as at Belfast International or the airports in Cyprus. There may be additional charges related to services such as fire-fighting, storage facility, hangar use and other airport-specific activities (Hague Consultancy, 2001).

Ground handling and fuel charges

Airlines incur three types of charges when they use an airport. First, they pay landing and passengers and, sometimes, other airport fees, which have already been discussed. Then there are ground-handling fees which the airport operator may levy if it chooses to provide some of these services itself rather than leaving it to handling agents or airlines. Finally, there are the fuel charges which are levied by the fuel companies which are normally independent of the airport operator. There are a few notable exceptions, such as certain Middle Eastern airports like Abu Dhabi where the fuelling is provided by a government agency. Hence all services at the airport can be offered to the airline in one overall package.

It is rare to find published data relating to handling and fuel charges. These are usually negotiable and the agreed prices will depend on various factors such as the size of the airline, the scale of its operation at the airport in question and whether other airports used by the airline are served by the same handling and fuel companies. Further complexities occur since there are a variety of ways of charging for activities such as ramp handling, passenger handling, apron buses, aircraft cleaning, ground power, pushback and so on. In some cases there may be just one or two charges that cover everything, whereas elsewhere there may be a multitude of individual fees.

Government taxes

There is one final charge which airlines or their passengers sometimes experience at an airport – government taxes (see Table 5.1). This income does not directly go to the airport operator but does impact on the overall cost of the 'turnaround' from an airline's point of view (Pagliari, 1998).

Sometimes these taxes may have a travel-related objective as is the case with a number of taxes in the USA or in Australia where some of the tax directly funds the national tourist board. In Norway there is a tax to help finance

Table 5.1 Main aeronautical charges at airports

Charge	Common basis for charging	Income to airport operator?
Landing	Weight of aircraft	Yes
Terminal navigation	Included in landing charge or based on weight of aircraft	Sometimes
Airbridge	Included in landing charge or based on aircraft movement	Yes
Passenger Security	Departing passenger Included in passenger charge or based on passenger numbers	Yes Yes
Parking	Weight of aircraft per hour or 24 hours after free period	Yes
Ground handling	Different charges for different activities	Sometimes
Fuel	Volume of fuel	No
Government taxes	Departing passenger	No

national transport links. Elsewhere such taxation is just used as means of supplementing general government taxation income from other sources. Mexico City has a tourist tax on international arriving passengers and a number of other countries such as Malta, Jamaica and Pakistan impose a tax on departing passengers. The Republic of Yemen has a 'Development Tax', a 'Tourism Tax' and a 'National Aid Tax'. In the UK, a departure tax which goes directly to the treasury, was introduced in 1994. This has been greeted with considerable opposition, especially from the new breed of low-cost carriers who complain that it is too large in proportion to the fares that are being offered. For example, in 2000 fares as low as £30 were on offer by low-cost carriers such as Ryanair and easyJet to European destinations with a third of this (£10) being the airport tax. If such a tax has to be levied, the low-cost carriers feel it would be fairer to base it on a percentage of the ticket price (Gill, 1998). As a compromise in 2001, a differential tax system with different amounts for economy and business-class passengers was introduced.

The level of aeronautical charges

It is very difficult to compare the level of charges at different airports because of the varied nature of the charging structures. To overcome this problem, comparisons have to be made by examining the representative airport charges for a Boeing 737 on an international route (Figure 5.1). A sample of twenty-four airports from around the world has been chosen. The costs are divided between aircraft-related costs which include landing charges as well as ATC and airbridge charges, if these exist; passenger-related costs which include passenger charges and any security charges; and government taxes. The data was not sufficient to allow ground-handling and fuel costs to be added. Only published charges were used, so the figures do not take account of any discounts that may be available.

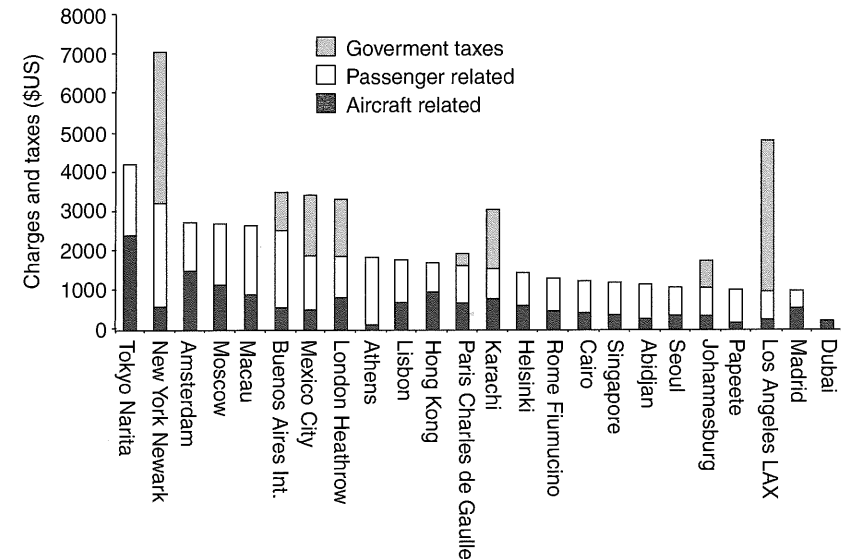


Figure 5.1 Aeronautical charges and taxes for an international B737 turnaround in 2000 at world airports
Source: Cranfield University.

There is a wide spread of charges (excluding taxes) ranging from less than US\$300 dollars at Dubai airport to over US\$4000 at Toyko Narita airport. Dubai has not increased its charges for many years. Charges at Narita airport have always been relatively high since it opened in 1984. Charges at the new Hong Kong Chek Lap Kok airport were also expected to be high and double the cost of the old Kai Tak airport – but were reduced because of airline pressure and the 1990s Asian crisis. Singapore has relatively low charges in spite of having a good reputation for service as was illustrated in the IATA Global Monitor (see Chapter 4). The situation changes somewhat when government taxes are included. Newark then becomes the most expensive airport and Los Angeles takes second position. Low airport charges may also be compensated for by relatively high handling charges as is thought to be the case, for example, at Madrid airport (Air Transport Group, 1998).

The impact of aeronautical charges on airline operations

In recent years airport charges have become subject increasingly to scrutiny from the airlines – particularly from the new breed of low-cost airlines in Europe. A more competitive airline environment and falling yields has forced airlines to focus on major cost-saving initiatives such as outsourcing, reductions in staff numbers and pegging the level of wages. These are all internal costs over which the airlines have a considerable degree of control. However, airlines have also been looking at their external costs such as airport charges, and

demanding that airports adopt such cost-cutting and efficiency saving measures themselves, rather than raising their charges (Doganis, 2001).

In spite of this growing concern over the level of charges, airport costs generally represent a relatively small part of an airline's total operating costs. They are least important when long-haul operations are being considered, since the charges are levied relatively infrequently. Airport charges are the most significant for the charter and low-cost carriers as these airlines will have minimized or completely avoided some of the other costs which traditional scheduled airlines face. Most low-cost airlines operate short sectors which means that they pay airport charges more frequently. It is hardly surprising that it is this type of airline which has been most active in attempting to bring down their airport costs by negotiating incentive deals at airports or operating out of secondary or regional airports which have lower charges.

Accurate international figures illustrating this are difficult to obtain because many airlines do not now report the passenger fee as an airport charge and very often the airport charges may be combined with some other cost item. Figure 5.2 does, however, show the situation for UK airlines. Only landing and passenger charges are shown and so these figures do not represent the total turnaround costs for the airlines. British Airways, with a mix of long and short haul flights, has the lowest share of costs at around 8 per cent. This share is more than double for British Midland, which has a range of domestic and European services. These charges account for around 13–15 per cent of all costs for carriers with short-haul and mostly domestic services, such as British Regional and Brymon. A similar situation exists for easyJet although the charges would be much higher if its airport charges, for example at Luton airport, had not been heavily discounted. For the charter airlines of Britannia and Airtours, the airport charges represent around 20 per cent of total costs.

However, in a general sense, it is difficult to see how airport charges can have a major impact on airline behaviour. For most airlines the impact on demand,

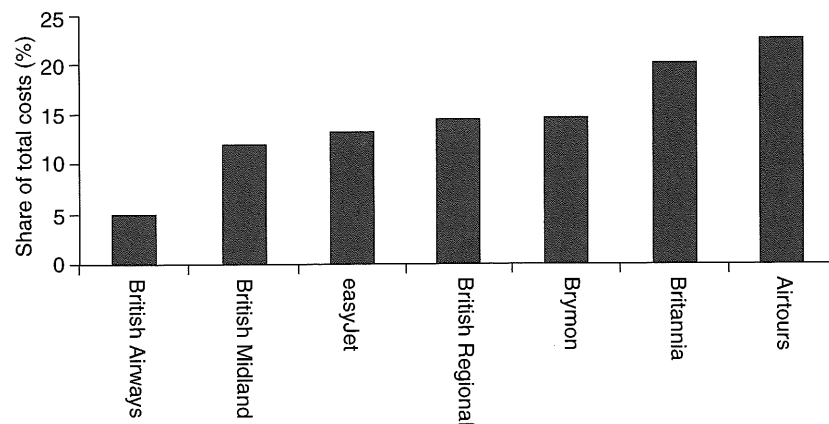


Figure 5.2 Landing and passenger charges as a share of total costs for UK airlines, 1998

Source: CAA airline statistics.

and on other costs which might be incurred if operations were changed to avoid certain airports or airport charges, would outweigh the impact on costs due to the airport charges. A recent study of UK traffic has suggested that a 50 per cent increase in all airport charges would only result in a 7.5 per cent reduction in total demand – although clearly the effects will differ according to both airport and traffic characteristics (DETR, 2000).

Peak charges have been introduced by some airports to make the airlines, which are generating the peak demand, pay for the peak capacity infrastructure costs. They have also been used with the intent of shifting some of the peak operations into the off-peak. This is unlikely to occur unless the differential between peak and off-peak pricing is very much higher than current practice. Airline scheduling is a complex task which has to take into account factors such as passenger demand patterns, airport curfews and environmental restrictions, crew availability, peak profiles at other airports and so on. If the airline were to shift operations to outside the peak period, this could well mean that the peak is merely shifted to another time. In effect, these schedule constraints coupled with the fact that charges make a relatively small contribution to airline total costs, mean that demand is fairly inelastic to changes in airport fees. Most peak pricing has very little impact on airline operations other than making it more expensive for airlines to operate in the peak. Moreover the impact on passenger behaviour also tends to be marginal since generally the different airport charges tend to be averaged out.

BAA plc is the only airport operator to have used a peak pricing charging system based on a detailed assessment of marginal costs. In theory marginal cost pricing leads to the most efficient allocation of resources as only the users, who value a facility at least as much as the cost of providing it, will pay the price for using it. In practice such pricing policies are complex and very difficult to implement. In the 1970s BAA plc introduced a peak surcharge on runway movements on certain summer days, and a peak passenger and parking charge based on marginal cost principles at Heathrow and Gatwick airports. It proved to be ineffectual in shifting any demand largely because of the scheduling problems already described, but also because the charging system was so complex that it was very difficult for the airlines to react. While BAA plc has retained the landing and parking peak charge, it has abandoned the more complex peak passenger charges. The airport operator faced widespread opposition from the airlines, particularly the US carriers, to such charges which were considered discriminatory. Also the airports are now effectively full in most hours and so the concept of the peak hour has become far less relevant. BAA plc claims that the new policy takes into account both economic pressures and the preferences of its airlines (Toms, 1994). In general, IATA remains opposed to peak pricing as it feels that it could lead to discriminatory practices and could be ineffective in addressing capacity problems (IATA, 2000c).

It is equally as difficult to influence an airline's choice of aircraft as it is to shift their schedules by using pricing mechanisms. At many airports the typical fee surcharge for a chapter 2 aircraft is about 20–25 per cent of the normal landing fee, which will be probably represent around 1 per cent of an airline's costs in most circumstances. This will be too insignificant alone to alter a carrier's choice of equipment (Dennis, 1996). To have any meaningful impact the surcharge probably has to be at least double the equivalent chapter 3

charge, as is the case in Germany. Between 1995 and 2000 Amsterdam airport increased its surcharges for chapter 2 aircraft between 50 to 100 per cent every six months. In 2000 for a 120-tonne aircraft the chapter 2 landing surcharge was 6075 Dutch guilders per landing compared with a basic runway charge (landing and take-off) of 2290 Dutch guilders. As a result chapter 2 aircraft at the airport have reduced from 15 per cent in 1999 to 0.6 per cent in the same year although, clearly, some of this fleet replacement might well have happened without such a charging policy – particularly with the banning of chapter 2 aircraft within Europe from 2002 (see Chapter 10) (Schiphol Group, 2000).

An airport charging policy probably has its greatest impact on airline operations when new routes are being considered – especially when being operated by low-cost airlines or on short regional sectors. This is due to the existence of airport incentive schemes or discounts. These are most likely to be offered at smaller airports which want to encourage growth and provide inducements to airlines which might otherwise not choose to use the airport. Such discounts have, in many cases, been a critical factor when low-cost carriers are selecting suitable airports for their operations.

One of the most popular methods is to waive or reduce the landing fee in the first few years of operation so that the airline only pays for the passengers it carries. If demand at the start of a service is initially low, the airline will pay very little. This means that the airport will share more of the risk when the airline is developing the route. At Norwegian airports discounts on both landing and passenger charges are available for new international services. In the first year of operation, there may be nothing to pay with the discount tapering in the second year to 70 per cent of the first year's discount and to 40 per cent in the third year. More sophisticated approaches include that of Belfast City airport which introduced a dual charging process in 1993. Airlines themselves could choose to come under a conventional charging structure or be charged an inflated passenger fee but with no landing charge. Of course, incentive schemes are not always popular with all airlines – particularly the full-fees paying ones who may be unhappy about effectively subsidizing the new carriers.

Between 1994 and 1999, Aer Rianta, the Irish operator had one of the most complex published discount schemes in existence (Table 5.2). The airport operator gave discounts on new routes and growth on existing routes, which reduced over time. In the initial years, airlines could be paying as little as 10 per cent of the standard landing and passenger charge. Various airlines, especially Ryanair, benefited significantly from this scheme – particularly because of the short-haul nature of their services and the price sensitivity of their leisure passengers. Aer Rianta terminated their discount scheme at the end of 1999, largely in preparation for the demise of EU duty- and tax-free sales. This was greeted with considerable opposition from Ryanair. Similarly easyJet in 2000 appealed unsuccessfully to the UK CAA to intervene when Luton airport announced that it would be charging easyJet its published, rather than discounted rate. Eventually easyJet's charges per passenger were increased from the original discount fee of £1.60 to a much higher compromise discount fee of £5.50 in 2001.

A particular area of concern for airlines as regards charging policies is cross-subsidization within an airport group under common ownership. This

Table 5.2 New growth and new route discounts available at Aer Rianta airports, 1994–9

<i>New growth – landing and passenger fees</i>	<i>Discount rate (%)</i>					
	1994	1995	1996	1997	1998	1999
94/3 growth	80 ¹	70	60	50	40	30
95/4 growth		80	70	60	50	40
96/5 growth			90	90	70	70
97/6 growth				90	90	70
98/7 growth					90	90
99/8 growth						90
New route – passenger, landing and parking fees	80	80	90	90	90	90

Note: ¹ passenger fees only.
Source: Aer Rianta.

typically occurs when a large international airport provides financial support for a smaller airport, usually serving primarily domestic services. Operators of airport groups argue that the individual airports need to operate as a system to make the most efficient use of resources and to produce cost savings. The airlines tend to be strongly opposed to such cross-subsidizing and argue that if the smaller airports really need financial help for social or economic reasons, that they should be supported by government funds instead (IATA, 2000e).

Another important issue is the pre-financing of future airport infrastructure through airport charges. A fundamental principle of the cost recovery policy in ICAO guidelines on airport charges is that charges should not be levied for any facilities until they become operational. The recommendations do, however, allow for airports to make a reasonable return on assets to contribute towards capital improvements. Pre-financing has traditionally not been an acceptable principle for a number of reasons. First, there is no guarantee that the airlines paying the charges will actually be the airlines which will benefit from the new infrastructure. Also there may be no certainty that the airport charges will be efficiently spent to provide new facilities. Moreover, the airlines tend to be fearful that they will pay twice for the infrastructure, both before it is built and once it is operational (IATA, 2000d).

In spite of these airline concerns, some airports have introduced fees for pre-financing purposes. The most notable example is the USA where PFCs go towards future development projects. A similar situation exists at some Canadian airports. In Greece higher passenger fees have been levied, in spite of airline opposition, to pay for the financing of the new Athens airport. Elsewhere, for example in the UK, the regulator takes into account the fact that some pre-financing will take place when setting the appropriate level of charges. Airports argue that self-financing in certain circumstances can provide a useful, cheaper source for funding investment in addition to loans and equity which can also be used as security for raising extra finance (ACI, 2000a; 2000b).

Airports claim that pre-financing also avoids large increases in airport charges when the infrastructure comes on stream as was experienced at Narita and Kansai airports in Japan or was initially proposed at the new Chek Lap Kok airport in Hong Kong – but was not fully implemented because of fierce opposition from the airlines.

The International Civil Aviation Organization has acknowledged that, with the growing commercialization within the industry and diminishing dependence on government sources for financing, pre-funding could perhaps be considered for the future. This would only occur if there was adequate economic regulation, effective accounting practices and prior consultation with users to ensure that such financing was considered fair and appropriate (ICAO, 2000a). The ICAO Conference on the Economics and Airports and Air Navigation Services (ANSConf 2000) therefore recommended that countries could consider pre-funding through airport charges but only in specific safeguarded circumstances.

The airport regulatory environment

Airports are subject to a number of different regulations at both international and national level. Many of these are technical regulations related to the operational, safety and security aspects of managing an airport. Airports are also increasingly becoming subject to environmental regulations which may, for example, restrict aircraft movements due to noise considerations or limit airport infrastructure development. These environmental issues are discussed in detail in Chapter 10. Then there is economic regulation with the main focus being on charge or tariff control. Other economic aspects of operation such as handling activities and slot allocation are also regulated in some areas of the world. Overall the economic regulatory interest in airports seems to be increasing at a time when, ironically, the airlines business is being progressively deregulated.

On a worldwide basis the 1944 Chicago Convention, which established an international regulatory air transport system, provides a basis for airport charging. Article 15 gives international authority for the levying of charges by ICAO member states and specifies that there shall be no discrimination between users, particularly from different countries. The International Civil Aviation Organization also produces more detailed guidelines which have an overriding principle that charges should be cost related. These also recommend that the charging system should be transparent and non-discriminatory and that consultation should take place between airport operators and their customers if changes are proposed (ICAO, 1992). Such principles, which are due to be revised as a consequence of ANSConf 2000, are only guidelines and are open to different interpretations. In spite of this, these guidelines have generally led to fairly similar overall pricing regimes being adopted by most airports, being broadly related to average cost pricing combined with some market or ability-to-pay pricing.

Airport charges can also be subject to the international obligations of bilateral agreements. For example, the UK/US bilateral air service, Bermuda 2, states that airport charges must be related to costs and should allow only reasonable profits. In addition, the European Commission has been proposing

to introduce an airport charges regulatory framework for the whole EU. The first proposal appeared in 1985, and since then there have been several different attempts to seek approval for such legislation. The latest proposal has three basic principles (European Commission, 2000a):

- 1 *Non-discrimination by flight origin* – unless justified by cost differences.
- 2 *Cost related* – to ensure that overall the charges cover the total internal costs and external costs incurred because of the presence of the airlines. Pre-financing would only be allowed when there is an official decision regarding any future development of the infrastructure.
- 3 *Transparency* – achieved through consultation of airports and users, regarding both the way the charges are calculated and their actual level.

The airports have, in principle, been opposed to the Commission's plans. They claim that there is no need for such regulation since airports are adequately regulated by their own national governments and that competition and lower fares are exerting downward pressure on airport charges. Only when an airport has considerable market power, and consumer or trade law does not provide sufficient protection, do the airports generally consider that regulation might be necessary. There has been discussion about a self-regulation code of conduct to be developed jointly by the airports and airlines (Gethin, 1998). By contrast the airlines are in favour of the proposals, although they also want provision for a more effective actual mechanism to regulate charges and incentives to encourage airports to increase productivity and reduce costs (Clayton, 1997). A considerable amount of effort has been exerted by all interested parties in discussing the proposals – especially related to how to define cost-relatedness, what costs should be used as a basis for charge setting and the whole issue of self-financing. Eventually the draft directive on airport charges was adopted by the European Commission in 1997 and this should have enabled it to proceed through the European Parliament and the Council of Ministers (ACI-Europe, 1998). By 2000 little progress appeared to have been made, a particularly difficult area being the charging for airport networks (e.g. in Spain, Sweden, Finland, Portugal and Greece) and the whole issue of cross-subsidization.

In addition to international regulation, there can also be some kind of control at a national level. The degree of control varies considerably at different airports. Most airports still under public sector ownership usually need to seek government approval before changing their charging level or structure. In some cases this may be just a formality. At the other extreme it may be the government's responsibility to set charges – perhaps after receiving recommendations from the airports. In Italy, airport fees are considered as taxes and there are actual laws associated with them. Elsewhere the level of charges may be automatically linked to the consumer price index, as is the case at Brussels airport. In 1999, the ICAO reviewed the situation at seventy-six member countries throughout the world. Fifty-seven per cent of countries stated that charges were determined by the airport operator with government approval, and a further 16 per cent of airport operators determined their charges independently. For the remaining countries, the government was directly responsible for setting the level of fees to be charged (ICAO, 2000b).

Regulation of privatized airports

The basic principles

When airports with considerable market power are privatized or even just commercialized, there are often serious concerns that they will abuse their monopolistic situation. This has resulted in new regulatory frameworks being established at a number of airports. This has involved using regulatory authorities which are already in existence or creating new bodies specifically for this purpose. While the regulatory systems at different airports vary, their common purpose is to allow the regulated airports a reasonable rate of return on capital while providing the correct incentives for an efficient operation and an appropriate investment policy. In choosing the most suitable regulatory system, consideration has to be given as to the best incentives to encourage appropriate investment, the treatment of commercial revenues and the maintenance of standards of service. A suitable review process also has to be established.

In general there are four key ways in which organization with monopolistic characteristics can be regulated:

- 1 Rate of return (ROR) regulation.
- 2 Price cap regulation.
- 3 Default price cap.
- 4 Reserve regulation.

The ROR mechanism, or so called cost based or profit control regulation, is the traditional mechanism which has been used extensively, for example in the USA and Australia, to regulate natural monopolies. The aim is to prevent regulated companies from setting prices that bear no relation to costs. A certain rate of return is established and price increases can only be justified when an increase in costs is incurred. While such a system can ensure that the prices are related to costs, it provides no incentives to reduce costs. The operator will be guaranteed a certain rate of return irrespective of efficiency. Costs inefficiencies can be built into the cost structure which can be passed on to the consumers through increased prices. Such a system can also encourage overinvestment. To ensure that this does not occur, the regulator has to scrutinize carefully the financial operations and development plans of the regulated companies.

To overcome these shortcomings, alternative regulatory systems have been sought. In the 1980s, price cap regulation began to be used – for example in the UK where a number of the state utilities such as gas and electricity, were being privatized (Helm and Jenkinson, 1998) This type of regulation was considered to be more favourable as it can provide the regulated company with incentives to reduce costs while simultaneously controlling price increases. It works by establishing a formula which provides a maximum price which can be set. Typically the formula will be adjusted for inflation and an efficiency factor:

$$\text{Price cap} = \text{CPI} - X \text{ or } \text{RPI} - X$$

where CPI is the consumer price index, RPI is the retail price index and X is the efficiency gain target. Costs which are beyond the control of the company can be excluded from the regulation:

$$\text{Price cap} = \text{CPI} - X + Y$$

where Y is the external costs.

Since there is no cap on the profit levels, unlike the ROR method, any efficiency gains which the regulated company can make in excess of the required X will directly benefit the company. Such a method tends to be simpler to administer as companies can change their level or structure of prices as long as they still conform to the price cap without any justification from the regulator – which would be the situation with the ROR system. Opponents to such a system, however, argue that price cap regulation is not actually an effective alternative to cost-based regulation since the regulator will take into account the rate of return of the company, as well as other factors such as operational efficiency, planned investment and the competitive situation, when setting the price cap. Thus the regulated company may still have an incentive to overstate the capital expenditure needed, which will only be discouraged by careful scrutiny of the regulator. In spite of this shortcoming, price cap regulation has been the most popular approach adopted for privatized airports.

A 'default' price cap system works by having a price cap which is available to all users. However, individual users are permitted to set up alternative contracts with the airport operator outside the price cap condition if both parties are agreeable. Independent arrangements could therefore be established relating to levels of service quality, forms of price setting and any specific infrastructure developments. Any users wishing for a different level of service could, in theory, negotiate this with the airport operator. These contracts could have different duration for different users. This process could also allow for direct contracting for terminal facilities or up-front payment for specific facilities. Such an approach has yet to be used but would clearly lessen the direct regulatory involvement (CAA, 2000a; 2001a).

A further type of regulation is the 'light-handed' approach or reserve regulation. Here the regulator will only become involved in the price-setting process if the airport's market power is actually abused or if the company and its customers cannot reach agreement. In this case it is the threat of regulation, rather than actual regulation, which is used to provide an effective safeguard against anti-competitive behaviour (Toms, 2001). Sometimes, with so-called 'shadow' reserve regulation, there may be a predetermined regulatory model which will become effective at this stage.

When airports are regulated using price caps, decisions have to be made as to which airport facilities and services are to be considered under the pricing regime. There are two alternative approaches, namely the single till approach when all airport activities are included, and the dual till approach when just the aeronautical aspect of the operation are taken into account. With the single till concept growth in non-aeronautical revenue can be used to offset increases in aeronautical charges. Therefore, for the airport regulator the setting of the price cap will be a complex process which will involve a thorough investigation of both the aeronautical and non-aeronautical areas of operation. Within the airport industry such single till practices, when commercial activities are used

to reduce aeronautical charges, are widespread. The single till principles are accepted by the ICAO in its charging recommendations (ICAO, 1992). The rationale for the single till is that without the aeronautical activities, there would be no market for the commercial operations and hence it is appropriate to offset the level of airport charges with profits earned from non-aeronautical facilities. This is the justification which the airlines use in favouring such a system which is clearly likely to bring the lowest level of actual charges for them (IATA, 2000g).

However, some major concerns about this approach have been voiced (Starkie, 2001). As traffic increases, the single till principles will tend to pull down airport charges. This may encourage growth and have the effect of increasing congestion and delays at the airport. The busiest most congested airports are likely to be in the best position to significantly offset commercial revenues against airport charges. Yet it is these airports which need to manage their limited capacity the most. Bringing down the airport charges for such scarce resources makes no economic sense. In addition, the airport industry argues that using commercial revenues to offset aeronautical fees prevents these revenues from being used to help finance capital investment, or to aid the development of better commercial facilities. There is less incentive to develop commercial operations to their full potential (ACI, 2000c).

By contrast, the dual till concept treats the aeronautical and non-aeronautical areas as separate financial entities, and focuses on the monopoly aeronautical airport services. In this case the *X* factor is established by just considering the aeronautical revenues and costs rather than the total airport operation. This is a difficult task because of having to allocate many fixed and joint costs between the aeronautical and non-aeronautical areas. At the London airports it has been calculated that the transfer from a single till to a dual till approach could mean that airport charges would have to be increased by 35 per cent (Monopolies and Mergers Commission, 1996). The method does, however, provide airports with incentives to develop the commercial side of their business which effectively are uncontrolled, unlike with the single till approach when any development in the commercial areas may well be accompanied by a reduction in aeronautical charges. Clearly there is a major logical argument in not including commercial activities within the regulatory framework since they cannot be considered as monopoly facilities.

While there is widespread evidence of single till practices, there are a few signs of a shift towards a dual till approach. For example, the South African government has stated its intention of moving away from the single till and it has been proposed that Sydney airport should transfer from a single to dual till system. Hamburg is also to be regulated by dual till principles. Elsewhere, in Switzerland for example, the government has proposed that only a certain share of commercial revenues should offset airport charges. In the UK, a considerable debate of the merits of the two systems has taken place prior to the airport regulatory review in 2001 (CAA, 2000b).

In addition to establishing whether a single or dual till approach is to be adopted, the regulator must also decide how the 'price' element of the formula is to be set. The main choice is whether to use a revenue yield or tariff basket methodology. The revenue yield formula means that the predicted revenue per

unit (usually passengers, in the case of airports) in the forthcoming year will be allowed to increase by the CPI – *X* or RPI – *X* percentage. With the tariff basket definition the weighted average price of a specified 'basket' of tariffs or charges will be allowed to be raised by CPI – *X*. Both methods have their drawbacks, and their relative strengths have been fiercely debated by regulators and the industry. The tariff basket approach tends to be simpler since it operates directly on charges and is independent of any forecasts. Companies might, however, be encouraged to put the largest increases on the faster-growing traffic since the weights used in the tariff basket are from a previous period. With the revenue yield methodology, an artificial incentive may be created to increase passengers to inflate the denominator in the definition. This could lead to the setting of some charges below the marginal costs of the corresponding services. In general the tariff basket approach is considered to give airports greater incentives to move to a more efficient pricing structure (CAA, 2000c; Monopolies and Mergers Commission, 1997).

It is common practice to set the price cap in relation to the average costs, which will include consideration of any proposed investment programme, additional costs related to improvements in the quality of service and a reasonable rate of return. There has been some debate, however, as to whether industry benchmarking could have a much more active role in this process (CAA, 2000d; CAA, 2001b). Industry best practice could, in theory, replace an assessment of accounting costs as the basis for setting the price cap. This has already been used by the utility regulators for both England and the Netherlands (Burns, 2000; Kunz and Ng, 2000). This would mean that the regulatory control would be independent of any company action inappropriately influencing the key variables used in the regulatory formula, such as inflating the asset base. Alternatively benchmarking could be used much more as a cross-check to internal methods of setting the price, estimating investment costs or assessing the scope for efficiency and service quality improvements.

The adoption of such 'regulatory benchmarking' is fraught with difficulties because of the extensive problems of comparability associated with such an exercise, the subjective nature by which some of the associated problems are overcome and the lack of general consensus as to the optimal method of benchmarking (see Chapter 3). There is also the fundamental issue that such an approach assumes high costs are in fact the result of inefficiency, whereas in reality they may be due to a number of other factors. Only a very detailed assessment of the benchmarking data may be able to identify these factors (Shuttleworth 1999; 2000).

Another area of major concern within any regulatory framework is often the quality of service. When the regulation does not formally establish service standards or require an appropriate quality monitoring system, there may be little incentive for the airport operator to optimize quality. In reducing the service standards at the airport, the operator could be able to soften the blow of the price control. This could be overcome, in theory, by ensuring that there are measures of congestion and delays to assess the adequacy of the airport facilities and by assessing passenger and airline feedback to determine the operational efficiency of the airport. In practice as discussed in Chapter 4, defining service dimensions and attempting to adopt a standardized quality

level is extremely difficult – particularly given the different expectations of different types of airlines and passengers. The default price cap mechanism can, in theory, overcome some of these problems.

In Australia, the regulatory framework does include some formal service quality monitoring and reporting. At BAA airports service quality comes under close scrutiny during the review process, although there are no explicit regulations. The review of service quality at London airports has played a major role in encouraging airports to consider entering into service-level agreements with their customers. The airlines are, understandably, in favour of some formal regulatory process to guarantee that service levels are maintained. This, and all of the other regulatory requirements, argue the airlines, should only be agreed after close consultation with the airlines and there should always be an independent review process. Table 5.3 summarizes the airlines views about the airport regulation.

Table 5.3 IATA's criteria for airport economic regulation

- 1 The starting base charges to be set at an acceptable level
- 2 The airport to be motivated to improve its productivity
- 3 Airlines to share the benefits of traffic growth and improved productivity
- 4 Commercial revenues to be taken into account
- 5 All charges to be regulated
- 6 The regulation to be transparent and simple to understand and administer
- 7 An effective and meaningful consultation process must be established
- 8 There must be an independent regulatory review process

Source: IATA (2000f).

Regulation examples

In the UK both BAA plc London and Manchester airports have been subject to single till price cap regulation since 1987/8. The price cap is reviewed every five years after an extensive assessment of the airport's operations, financial performance and future plans has been undertaken. The revenue yield approach has been adopted at these airports. Initially the price cap was the same at all airports, being RPI – 1 (Table 5.4). During the second five-year

Table 5.4 The X value used for the UK airport price caps

Airport	X value (%)				
	1987–91	1992–3	1994	1995–6	1997–2002 ¹
Heathrow and Gatwick	1	8	4	1	3
Stansted	1	8	4	1	-1
	1988–92	1993–4	1995	1996–7	1998–2002
Manchester	1	3	3	3	5

Note: ¹ The normal five-year charging period has been extended to six years because of the timing of decisions related to the possible development of Terminal 5 at Heathrow.

Source: Centre for the Study of Regulated Industries (1999).

review period in the early 1990s the price cap was far more restrictive, particularly for the London airports. For 1997–2002, the London airport formula did not take account of the loss of EU duty- and tax-free sales in 1999. Instead, a compensatory 15 per cent increase in charges over two years following abolition of sales was allowed. At Manchester, the abolition was considered when setting the value of X. These airports can allow most increases in security costs to be passed straight through to the airline. Initially 75 per cent of costs were permitted to be passed through with this percentage rising to 95 per cent after the first five-yearly review. A major impact of this single till regulation at the London airports has been that the commercial aspects of the business have been considerably expanded which has simultaneously led to a substantial reduction in real charges to airline users. At Manchester airport, airport charges still remain comparatively high which is one of the key reasons for the more restrictive price cap for the 1998–2002 period.

The regulatory framework for the privatized Australian airports is fairly similar to that adopted by the UK airports, in that there is a CPI – X formula which also has a security element – but in this case 100 per cent of the charges are allowed to be passed through to the airlines (Table 5.5) The Australian airports use the basket tariff rather than the revenue yield approach. As in the UK, the price cap has been set for an initial five years with the belief that maybe another price cap will not be needed after this – although this will be reviewed before any change in the system is introduced. The Australian regulatory framework has more formal conditions relating to relating to airport access and quality of service monitoring which do not apply to the UK airports. Other airports which have adopted a similar price cap regulatory mechanism include those of Argentina and South Africa. In the first two years after private participation in the South African airports, aeronautical charges were allowed to increase at the same rate as inflation before an X value to increase efficiency was introduced.

At Vienna airport a slightly different approach has been adopted taking into account both inflation rates and traffic growth patterns. The regulation is applied

Table 5.5 The X value used for the Australian airport price cap for five years after privatization in 1997/8

Airport	X value (%)
Adelaide	4.0
Alice Springs	3.0
Brisbane	4.5
Canberra	1.0
Coolangatta	4.5
Darwin	3.0
Hobart	3.0
Launceston	2.5
Melbourne	4.0
Perth	5.5
Townsville	1.0

Source: ACCC (1998).

directly to the charges. There is a sliding scale which protects revenues when there is slow growth, while requiring productivity gains to be made when traffic growth is high. When there is a loss in traffic or no growth, the charges can be increased in line with the CPI. When the annual traffic growth is up to 7 per cent the sliding scale is used with the permitted charge increases being less than the CPI. If the growth is between 7 and 11 per cent, no increase is allowed. Above growth of 11 per cent, the charges must decrease (WDR, 1998).

Elsewhere, the Scottish airports in the UK and the major New Zealand airports are examples of reserve regulation practice. At Auckland and Christchurch airports, the privatization legislation allows for the airports to review their charges every three years and they are not subject to any formal price regulation. The legislation also calls for the regulator to conduct periodic reviews to assess whether price controls are necessary – this relies on general competition law and the threat of further heavy-handed regulation. The Bolivian airports are a rare illustration of airports which are subject to shadow pricing. There is a view that given the fact that airports are operating in an increasingly competitive environment that they should no longer be considered as monopoly providers and consequently in the future more governments will move towards a more reserved or light-handed approach (ABN AMRO, 2000). The Mexican airports are unusual in that they are regulated by the dual till principle. There are no examples of airports using default price cap mechanism although there has been considerable interest shown for such an approach in the UK. A number of the other privatized airports have a more relaxed regulatory regime. In Copenhagen, for instance, there is a set of guidelines which stipulates that the company is allowed to alter its charges in line with costs subject to the company ensuring that it continues to improve the efficiency of its operation.

Slot allocation

The steady rise in air traffic in recent years has put increasing pressure on airport capacity, particularly runway capacity, throughout the world. While timely capacity addition might theoretically provide a solution to this problem, in many cases environmental, physical or financial constraints have meant that in practice this has not been a feasible or desirable option. Instead, attention has been focused on more short term solutions to provide some relief for the shortage of capacity both by consideration of capacity or supply-side approaches and by the assessment of demand management options. In a climate of growing environmental opposition to new developments, such solutions may be politically more acceptable. Supply-side options aim to make more efficient use of existing capacity by improving ATC services and ground-side facilities, and thus provide for incremental increases in traffic. Demand management techniques consider the most appropriate mechanisms for allocating airport slots. Airport slots are usually defined as an arrival or departure time at an airport – typically within a 15- or 30-minute period. They are different from ATC slots which are take-off and landing times assigned to the airline by ATC authorities. There is a view, however, that the definition of a slot should be more broadly defined to take account of all the resources necessary to operate

at the airport. Thus the slot would not only be defined by a time period for arriving or departing, but also by the stand, gate and terminal capacity that is needed and the share of environment capacity which is used (PricewaterhouseCoopers, 2000).

Alternative slot allocation procedures have to be considered at airports because the pricing mechanism fails to balance demand with the available supply. As already discussed, the current level of charges at airports and peak/off-peak differentials when in existence have a relatively limited impact on airline demand. Peak charges would have to be considerably higher to ration demand or to be the equivalent to the market-clearing price needed to match supply and demand or ‘clear the market’. This is obviously not helped by the widespread acceptance of the single till concept which can pull down the level of charges to below that of the cost of supply (Starkie, 1998).

Currently in all parts of the world except the USA the mechanism for allocating slots is industry self-regulation by using IATA Schedule Co-ordination Conferences. These voluntary conferences of both IATA and non-IATA airlines are held twice a year for the summer and winter season with the aim of reaching consensus on how schedules can be co-ordinated at designated capacity-constrained airports. These airports, which number over 260, are designated at two levels:

- 1 *Schedule facilitated*: demand is approaching capacity but slot allocation can be resolved through voluntary co-operation.
- 2 *Fully co-ordinated*: demand exceeds capacity and formal procedures are used to allocate slots. The most important of these procedures is ‘grandfather rights’. This means that any airline which has operated a slot in the previous similar season has the right to operate it again. This is as long as the airline operates 80 per cent of the flights – the so-called slot retention requirement or ‘use it or lose it’ rule. The airline does not, however, have to use its slots for the same services each year and can switch them, for example, between domestic and international routes. Preference is also given to airlines which plan to use a slot more intensively to make the most effective use of the capacity. For example, priority would be given to an airline which plans a daily service rather than one which is less than daily or a service which operates throughout the season rather than only in the peak.

The most recent IATA scheduling guidelines use level 1, 2 and 3 classifications for fully co-ordinated, schedules facilitated and non-coordinated airports. Each of the fully co-ordinated or level 1 airports has an airport co-ordinator, traditionally the national airline of the country, which manages the slot allocation process. Between 1990 and 1999, the number of fully co-ordinated airports increased by 18 per cent, while for schedule facilitation or level 2 airports there was a higher growth of 63 per cent. In 1999 there were 120 fully co-ordinated airports with more than ten others being fully co-ordinated in the summer months only. Around 80 airports were schedule facilitated. Over sixty of the fully co-ordinated were in Europe, with a further thirty in Asia Pacific and ten in Africa. Many US airports are also capacity constrained but do not come under the IATA Scheduling Committee mechanism (ICAO, 2000c).

Within the EU, slot allocation comes under the regulation number 95/93 which was introduced in 1993. While the IATA co-ordination system is voluntary, the

EU rules are a legal requirement. The IATA system developed primarily as a process to co-ordinate schedules and to avoid unnecessary congestion, whereas the EU regulation has other key objectives such as making the most efficient use of capacity and encouraging competition. However, many of the IATA features have been incorporated into the European law. For example, there are three levels of capacity constraints or co-ordination, namely non-coordinated, co-ordinated (comparable to the IATA schedule facilitation airports and fully co-ordinated airports) and each of the airports uses an airport co-ordinator. In 2000, there were thirteen co-ordinated and fifty-seven fully coordinated airports in the EU (PricewaterhouseCoopers, 2000). Table 5.6 shows the co-ordination status of major airports in the EU.

Table 5.6 Slot co-ordination status of major airports in the EU

Country	Fully co-ordinated airports	Non-coordinated airports
Austria		Vienna
Belgium		Brussels – Zaventum ²
Denmark	Copenhagen – Kastrup	
Finland	Helsinki	
France	Paris – Charles de Gaulle, Orly	
Germany	Berlin – Tempelhof, Tegel; Schönefeld; Düsseldorf; Frankfurt – Main;	Munich
Greece	Athens; Thessalonika	
Ireland		Dublin ²
Italy	Milan – Bergamo, Malpensa, Linate ¹ ; Rome – Fiumicino, Ciampino	
Netherlands	Amsterdam	
Portugal		Faro; Lisbon
Spain		Barcelona; Las Palmas; Madrid; Malaga; Palma de Mallorca
Sweden	Stockholm – Arlanda	Stockholm – Bromma
UK	London – Heathrow, Gatwick, Stansted; Manchester	London – Luton

Notes: ¹ In 2000 Milan Linate was co-ordinated having switched from fully co-ordinated when the new Milan Malpensa airport was opened. This airport is the only major airport to be co-ordinated although there are a number of other medium-sized airports which fall into this category.

² Brussels and Dublin are expected to change to fully co-ordinated in 2000.

Source: PricewaterhouseCoopers (2000).

An important difference with the European regulation is that the co-ordinator must be independent of all airlines at the airport, thus enabling the process to be more transparent and impartial. In a number of countries, such as Denmark, France, Italy, the Netherlands, Sweden and the UK, an independent company has been established. In order for an airport to become co-ordinated, the legislation theoretically requires that a thorough capacity analysis and consultation process must take place. In practice this has rarely occurred primarily because many of the airports were already fully co-ordinated under the IATA system or perhaps because of some legal constraint such as a limit on aircraft movements at Düsseldorf airport.

The grandfather rights system is used with an 80 per cent slot retention requirement. Airlines are allowed to exchange slots with other airlines but not to trade slots. In reality it is generally recognized that a ‘grey market’ in slots already exists. Within this context an interesting decision was made in 1999 by the UK High Court when it ruled that the financial payment from BA to Air UK to ‘compensate’ for the exchange of some highly demanded slots with some less attractive slots did not invalidate the exchange (*Financial Times*, 1999).

The European legislation (Table 5.7), as with the IATA mechanism, aims to encourage new entrants, which are clearly disadvantaged by the grandfather rights system, by giving them preference of up to 50 per cent of any new or unused slots. New entrants are defined as airlines with less than 4 per cent of daily slots at an airport or less than 3 per cent of slots in an airport system, such as the London airports. They are also airlines which have requested slots for a non-stop intra-EU service where two incumbent airlines already operate. Under certain conditions, slots may be reserved for domestic regional services or routes with public service requirements – so called ‘ring-fencing’.

Table 5.7 Key features of the 1993 EU slot allocation regulation

Slots are allocated on basis of historical precedence or grandfather rights
Airlines must use slots of 80% of time – ‘use it or loss it’ rule
There is a slot pool for new or returned slots
50% of slots in the pool are allocated to new entrants
Certain slots can be ring fenced if they are vital for social or economic reasons
Airports are non-coordinated, co-ordinated or fully co-ordinated
Co-ordination status is defined after capacity review and consultation
An independent co-ordinator supervises the allocation of slots

Source: European Commission (1993).

Alternative slot allocation mechanisms

The current scheduling committee system is widely accepted and has succeeded in providing a stable environment for allocating slots. However, there is considerable concern – as pressure on runway capacity continues – that it may not be the most effective mechanism, to manage the scarcity of slots or encourage competition. Critics claim that this procedure gives no guarantee that the scarce airport capacity is used by the airlines who value it most highly, it provides no guide to future investment requirements and is administratively burdensome. Most new entrants are still prevented from competing at airports, especially within Europe, partly because few new slots become available and partly because the definition of new entrant is very limited. There are also a number of issues related to the current structural changes taking place in the airline industry. For example, can a franchise partner gain slots by claiming to be a new entrant with the result of effectively increasing the number of overall slots for the larger incumbent carriers for which it is operating? Should some slots

held by airlines in alliances be given up and reallocated to new entrants for competitive reasons?

There have been lengthy debates discussing whether a better system could be introduced (Reynolds-Feighan and Button, 1999). Various regulatory suggestions have been put forward such as giving preference to long-haul international flights, which normally have less flexibility in scheduling than short-haul flights because of night closures and other constraints. This could potentially have an environmental benefit by switching short-haul traffic from air to surface transport. Priority could be given to airlines which cause the least noise nuisance. Scheduled airlines could be favoured over charter airlines and passenger aircraft could have preference over cargo airlines. Alternatively, frequency caps could be placed on certain services once a daily maximum limit has been reached. Another suggestion is to give priority to larger aircraft which make the most efficient use of slots. The traffic distribution rules imposed at London Heathrow airport in the 1980s were an example of such administrative regulation in practice. These rules restricted access to charter, general aviation and cargo flights – although the charter rule was subsequently relaxed in 1991 (Doganis, 1992).

While such mechanisms can be useful in pursuing some economic, social or environmental objective, they are still likely to be used in combination with grandfather rights. As a result any such system will again share the shortcomings of the traditional system, namely in not ensuring that the scarce runway slots are used by those who value them the most. Therefore, market-based options have also been considered. Within this context, the issue of who actually owns the slot is clearly very crucial. On the one hand, the grandfather rights system, historically giving airlines the rights to use slots for long periods of time, encourages claims of ownership by the airlines. There is no legal sense in this. On the other hand, airports maintain that they have created and own the infrastructure which enables slots to exist, and so the airlines are, in effect, just granted usage rights. Other suggestions are that slots, rather than being considered as a right in perpetuity, should be regarded as long-term concession rights at airports, which have to be handed back after a certain period of time. In reality airlines do view slots as a financial asset which are taken into account whenever airline purchases or mergers take place. There are a number of examples of purchases, for example when BA bought Cityflyer Express based at London Gatwick, and the most important financial asset of the airline being purchased was considered to be its slots. It is difficult to quantify the value of a slot but the 'slot exchange with compensation' between BA and KLM UK provides some guide. It was revealed that BA had paid around US\$25 million for eight daily slots – thus representing around US\$3 million per slot (O'Toole, 1998).

The simplest of all market-based options is the use of the airport charging mechanism to match demand and supply. However, as previously discussed, the market-clearing price would have to be set at a considerably higher rate than is the current practice with airport charges. An alternative suggestion is to use the auction mechanism as a means of allocating slots. These auctions could be held every six months like the scheduling committees, but this would clearly lead to considerable upheaval and disruption for both airlines and passengers. At the other extreme there could be just one auction, selling the slots rights in perpetuity and then any further changes would have to be implemented

through slots actually being traded. Somewhere in between these two options, slots allocated under long-term lease agreements could be an attractive compromise. Individual slots or a combination of slots could be auctioned at one particular time (Jones, Viehoff and Marks, 1993).

Then there could just be a system of slot trading when airlines are able to buy and sell slots – so-called secondary trading. Officially airlines have so far been prevented from such processes, except with the case of four US airports (see 'Slot allocation' in 'The US experience' section). The merits of such a system is that airlines that value the slots the most can buy the slots. Such a mechanism, however, would be bound to favour the large incumbent carriers as they would be the airlines most able to afford to buy the slots. Any such process would also have to be seen as non-discriminatory to comply with international obligations. There is also the issue as to whether it is appropriate for existing slot holders to make windfall profits from slots for which they never actually bought (Doganis, 1992).

Alternatively lotteries for slots could be held. This might potentially overcome this anti-competitive problem but in practice could cause havoc with airlines' schedules and be very disruptive. Slots obtained at one end of the route might not match up with those at the other end and in general there would be a great deal of uncertainty.

Following the introduction of the European slot allocation regulation in 1993, the European Commission has been considering whether a better system of regulation could be introduced, particularly since there has been very little evidence that this regulatory process has encouraged competition or lessened the influence of the major flag carriers at the airports. This is hardly surprising given that the European regime has largely maintained the grandfather rights system. At the same time, delays and congestion at many European airports has increased. After a long period of review and consultation, the European Commission put forward some proposals in 2000. A major suggestion was that all new slots would be allocated on a ten-year concession basis. Slot trading was also proposed through an auction process and once slots were transferred by auction they would be subject to the concession system. No single airline would be able to buy more than 0.5 per cent of any slots in any one season. The 80 per cent slot retention rule would remain and the definition of new entrant broadened to encourage greater competition among the 50 per cent of new slots. If not enough slots were allocated to new entrants (at least 0.5 per cent), it was suggested that the incumbent airlines would have to give up some slots – on a non-discriminatory and proportionate basis. Another new feature would be consideration of environmental constraints with the possibility of higher priority being given to larger aircraft size or lower priority to services where surface alternatives existed (European Commission, 2000b).

One of the problems with the consideration of slot allocation processes is that often there are too many conflicting objectives. Frequently quoted aims are often to make the best use of existing resources while at the same time encouraging or enhancing competition. But are these two aims, as well as other aspirations, really compatible? For example, it may be feasible to focus on competition but that may cause sudden disruption in schedules. Likewise it may be possible to protect certain routes through ring-fencing but this may not produce the most effective use of the scarce runway slots. Slot trading may

ensure that slots are allocated to those who value the slots the most, but it will always tend to favour the large incumbent airlines. Therefore it seems most probable that, in the near future at least, any new system is likely to use a combination of the different approaches, as has been proposed for the EU, rather than adopting just a single mechanism.

Ground handling issues

Ground handling activities at airports are very important to airlines. They impact both on an airline's cost and the quality of service which they provide for their passengers. Ground handling services cover passenger handling, baggage handling, freight and mail handling, ramp handling, fuel and oil handling and aircraft services and maintenance. Such activities are often divided between terminal or traffic handling, which is passenger check-in, baggage and freight handling, and airside or ramp handling, which covers activities such as aircraft loading and unloading, cleaning and servicing. Sometimes these services are provided by the airport operators, although at most airports they are provided by airlines or handling agents. Historically often the national airline or airport operator may have had a monopoly or near monopoly in ground handling. Some airport operators such as Milan, Rome, Vienna and Frankfurt airport, which have been heavily involved in such activities, earn very significant revenues from such activities – sometimes over half the total income of the airport. In other cases the airport operator will just earn rental fees and perhaps a small concession fee from the airlines or agents which are providing the handling services. Countries in Europe where the national airline has had a handling monopoly include Spain with Iberia and Greece with Olympic.

A study of European airports in 1992 showed 44 per cent of aircraft movements were handled by airport operators, 27 per cent were self-handled by the national carrier, 8 per cent were handled by the national carrier for other airlines, 7 per cent were handled by independent ground handlers and the remaining 14 per cent were self-handled by other airlines. By contrast, in terms of passenger numbers, only 16 per cent were handled by the airport operator, again 7 per cent by independent ground handlers and the rest by airlines (Deutsche Bank, 1999). For operational reasons, it is far easier to have a number of airlines providing traffic handling rather than ramp handling – given capacity constraints of the equipment and space in the ramp handling areas.

Providers of monopoly services claim that providing competition, particularly for ramp handling would merely duplicate resources, lower efficiency and may also cause considerable apron congestion, particularly at airports which are already at full or near capacity. Critics of the situation, particularly the airlines, claim that ground handling monopolies are pushing up prices and, in some cases, reducing service standards (Bass, 1994). In 1993 the European Commission acknowledged that it had received a number of complaints related to ground handling activities at various airports including Milan and Frankfurt and at the Spanish and Greek airports (Soames, 1997). A study in 1997 of airline turnaround costs at a number of European airports commissioned for the AEA found that the nine most expensive airports all had ramp handling monopolies

whereas the next fourteen, in descending order of price, operated in a competitive situation (AEA, 1998).

Within Europe many have argued that air transport cannot be fully liberalized unless the ground handling activities are offered on a full competitive basis. This has resulted in the EU's adoption of the Ground handling directive 96/67. The long-term purpose of this directive is to end all ground handling monopolies and duopolies within the EU by opening up the market to third party handlers, recognizing the right of airlines to self-handle and guaranteeing at least some choice for airlines in the provision of ground handling services (European Commission, 1996). The details of the directive, which provides for phased liberalization of ground handling services, are shown in Table 5.8.

Table 5.8 Key features of the 1996 EU Ground handling directive

From 1 January 1998	Airlines have the right to self-handling for airport terminal services For airports with more than 1 million passengers or 25 000 tonnes of freight, airlines have the right to self-handle for baggage, ramp, fuel and freight services
From 1 January 1999	For airports with more than 3 million passengers or 75 000 tonnes of freight, third party handling is allowed
From 1 January 2001	For airports with more than 2 million passengers or 50 000 tonnes of freight, third party handling is allowed At least one handler must be independent from the airport operator or dominant airlines with more than 25 % of the traffic

Source: European Commission (1996).

The directive does allow for service providers to be limited in the ramp area. Moreover in some exceptional circumstances airports may be granted temporary exemptions on the basis of space or capacity constraints in order to ease the transition from a monopolistic to competitive situation. Many supporters of ground handling liberalization are concerned that such conditions are only prolonging the existence of monopolies at airports. A number of monopoly handlers in countries such as Germany have applied for such exemptions. Frankfurt airport was one such company but only gained exemption from competition in ramp handling in certain areas. Other airports, such as Düsseldorf have been more successful.

It is too early to assess the impact of the directive – particularly since the introduction of the new ramp handler has in many cases, such as at Frankfurt and Vienna airports, been delayed until 2000. Undoubtedly for the airports which have previously provided monopoly services, there will be a loss of market share to the independent handlers. Airport operators still have the right to perform ground handling but these activities must be separated from their main role as airport operator. To compensate for a lesser involvement at their home airports, a number of airports such as Frankfurt and Rome have been actively expanding their handling activities at other airports. The airline share of the handling market might be expected to remain more constant because, although

there might be some shift from monopoly airline handlers to the independent sector, there might also be a shift back to airline handling as a result of an increased number of airline alliance agreements (Mackenzie-Williams, 2000).

The impact of airline alliances of the ground handling industry is a very important issue. In the future ground handlers at airports may achieve economies of scale by negotiating common contracts with all alliance members rather than by consulting with the individual airlines. Some large international handling agents are emerging through a number of corporate mergers and takeovers, encouraged by ground handling liberalization and following the trends of internationalization and globalization in both the airline and airport industry. Swissport which in 2000 provided handling services at 115 airports in twenty countries is owned by SAir group, whereas another global player, GlobeGround, which had contracts at eighty-five airports in twenty-three countries, is owned by Lufthansa. Thus there exists a real threat to independent handlers that these agents will be favoured by members of either the Qualifyer or Star alliances. As yet, however, there appears to be little concentration of the handling business in this way and independent international handling agents such as Menzies (which bought Ogden Aviation in 2000) serving fifty-seven airports in twenty countries and Servisair, providing handling at ninety-nine airports in eleven countries, have also experienced substantial growth (Coleman, 2000). In 1999 the five largest handling agents in terms of revenue were Globegrand (\$707 m), Swissport (\$625 m), Frankfurt airport (\$445 m), Menzies (\$404 m) and Servisair (\$340 m) (Pilling, 2001).

The US experience

Airport use agreements

The relationship between airports and airlines in the US is unique and so is worthy of special consideration. The airports and airlines enter into legally binding contracts known as airport use and lease agreements which detail the fees and rental rates which an airline has to pay, the method by which these are to be calculated and the conditions for the use of both airfield and terminal facilities. A key reason for the existence of these agreements has been because private bondholders have demanded the security of such formal relationship between the airports and airlines before investing in the airport.

There are two basic approaches to establishing the airport charges: residual and compensatory. With the residual approach the airlines pay the net costs of running the airport after taking account of commercial and other non-airline sources of revenue. The airlines provide a guarantee that the level of charges and rents will be such that the airport will always break even, and so they take considerable risk. By contrast with the compensatory approach the airlines pay agreed charges and rates based on recovery of costs allocated to the facilities and services that they occupy or use. The risk of running the airport is left to the airport operator. The residual approach, therefore, is more akin to the single till practice, while the compensatory approach is more similar to the dual till approach. Airports have applied these two different approaches in various ways to suit their particular needs and some have adopted a hybrid approach,

combining elements of both the residual and compensatory methodologies. A study in 1998 showed that for the large US airports the residual and compensatory approaches were each used by 41 per cent of the airports with the remaining 18 per cent of airports using some kind of hybrid model. For medium-sized airports the relative shares were residual (38 per cent), compensatory (19 per cent) and hybrid (43 per cent) (Federal Aviation Administration/Department of Transportation, 1999).

The use agreements traditionally have been long-term contracts of between twenty and fifty years. In more recent years they have become shorter to reflect the more volatile, deregulated environment. The length of use agreement will normally coincide with any lease agreements which the airlines have with the airport operator. In the USA it is common for airlines to lease terminal space or gates, or even lease or build total terminals – as in the case of JFK airport in New York. The airlines which carry most of the airport's traffic may also play a significant role in airport investment decisions if they agree to the majority-in-interest (MII) clauses in the use agreement. These clauses, which are far more common among residual agreements, typically mean that these signatory airlines have to approve all significant planned developments or changes at the airport. The anti-competitive nature of such agreements can be a problem if other non-signatory airlines are prevented from gaining access to terminal space and gates. As a result there has been an increasing use of 'use it or lose it' clauses in which the control of assets are returned to the airport if the airline does not use the facilities as intended (Federal Aviation Administration/ Department of Transportation, 1999). Capacity improvements which may bring more opportunities for competition may also not be approved by the signatory airlines. As a result some airport operators have tried to reduce the powers of the signatory airlines by requiring MII disapproval rather than approval or have limited the airlines' influence to only major projects. Some airports have discarded MII clauses altogether.

Airport fees and passenger facility charges

The landing fees at US airports are normally very simple, being based on a fixed rate per 1000 lbs. Signatory airlines may pay less. The charges do not vary according to noise levels or peak periods, unlike the practice at some European airports. The level of landing fees tends to be relatively low partly because the airport operator provides a minimal number of services itself. However, there are also a number of government taxes which push up the total amount paid by the airlines and their passengers. There is the air transportation tax, which goes towards the federal aviation trust fund to provide the finance for the airport grants which are available under the AIP. There are also separate taxes relating to agriculture and health inspection, and customs and immigration services.

Unlike most other airports in the world, US airports do not have passenger charges – although some of the costs associated with terminal and gate space which are normally incorporated into the passenger fee may be covered by airline lease payments. United States' airports are not legally allowed to levy passenger charges primarily because of fears that such revenues will be diverted

from the airport to be used for non-aviation purposes. However in 1990, the federal government approved the levying of PFCs. These funds go directly to the airports rather than into central federal funds as with the air transportation tax. This means that airports have greater control over this type of funding. Passenger facility charges are also largely independent of airline influence, unlike revenue bonds which may require guarantees from the airlines. Although the PFCs are legally and constitutionally different from passenger charges levied elsewhere in the world, they have a similar impact on airlines. The initial PFC legislation, allowed for airports to levy a US\$1, US\$2 or US\$3 fee which had to be spent on identified airport-related projects or could be used to back bonds for the projects. In 2000 it was agreed that the maximum PFC could be raised to US\$4.50. Airlines have no veto rights when it comes to PFC-funded projects nor can they have exclusive rights. If PFCs are used by large and medium-sized airports then the airports have to forego up to half their AIP funding.

Passenger facility charges were first used in June 1992. By November 1993 PFCs had been approved at over 150 airports which would generate around US\$9 billion. As of 1 January 1998, 264 commercial service airports – almost half of all such airports – imposed a PFC – with about three-quarters of the seventy-one larger airports imposing such a fee. Between 1992 and 1998, the total approved collections for all airports was US\$21.9 billion (General Accounting Office, 1999). This had increased to US\$24.7 billion by 2000. Large amounts of PFCs have been approved at Denver (US\$2331 million), Las Vegas (US\$1585 million), Detroit (US\$641 million), Boston (US\$599 million) and Chicago O'Hare (US\$484 million). Some PFCs have been approved for a long time (longer than thirty years) whereas others will be used for as little as three years.

Slot allocation

At most airports in the USA there is no formal slot allocation mechanism, such as the IATA scheduling committees, since these would be in conflict with antitrust laws. This means that instead there is open access to the airports, barring any environmental constraints, and airlines design their schedules independently taking into account any expected delays. This can result in considerable congestion at certain times of the day when many flights are scheduled around the same time.

The exception to this practice is at four airports which are subject to the 'high density airport rule'. This rule was introduced in 1969 by the Federal Aviation Administration (FAA) as a temporary measure to reduce problems of delay and congestion at JFK and La Guardia airports in New York, O'Hare airport in Chicago and Washington National airport (now Washington Reagan). The traffic was divided into three categories, namely air carriers, air taxi (now commuters) and other (primarily general aviation), with a different limit on the number of flights during restricted hours for each category. No slot allocation mechanism was defined but the relevant airlines were given antitrust immunity to discuss co-ordination of schedules.

Initially the rule worked relatively well, but the increase in traffic due to airline deregulation in 1978 and other factors, such as a major air traffic control strike,

resulted in a new allocation system being introduced (Langner, 1995). This was the 'buy-sell' rule which effectively meant that after an initial allocation process based on grandfather rights, airlines were then permitted to buy and sell their slots. Airlines were also allowed to 'lease' slots on a short-term basis. This is the only formal secondary trading market for slots in any part of the world. This trading of slots was limited to domestic operations (international routes being more complex because of international regulation) with air carrier slots being unable to be traded for commuter slots and vice versa. Slots used for essential air services were excluded. There was a 'use or lose it' rule requirement of 65 per cent and a slot pool was established for newly available slots. These were to be reallocated using a lottery – with 25 per cent initially being offered to new entrants. International slots were allowed to be co-ordinated through the IATA scheduling committees (Starkie, 1992; 1994).

Over ten years' experience of this slot trading has led to increasing criticism of the system. There have been few outright sales of air carrier slots and very few new entrants. The established airlines have actually increased their dominance at the airports. This has to be viewed, however, within the context of the US airline industry which itself has become more concentrated (Starkie, 1998). As a result of these concerns, in 2000 it was agreed that there would be a phasing out of these slot rules

A new airport–airline relationship

This chapter has shown how the airline–airport relationship is changing, being driven by trends towards greater competition, privatization and globalization within the industry. Airport charges have come under increased scrutiny from both airlines and governments. Moreover, as more airports are being privatized, economic regulation is becoming more commonplace. In short, the airline–airport relationship is starting to become much more to do with the linking of two privately owned international companies, rather than two state-owned organizations operated within the limits of national laws and regulations.

The normal contract between an airline and an airport traditionally is the published airport conditions of use, which describes the services provided in exchange for the aeronautical fees. This is not a formalized relationship as it does not identify the rights and obligations of both parties. For example, there is no agreement as regards the standard of services to expect and no process is identified should disputes between the airlines and airports arise. A number of airlines have therefore been considering a more appropriate, more clearly defined, contractual relationship with the airports which they serve. In the UK, for example, this type of agreement exists between the privately run railway infrastructure and train operators. For the airport industry, the only country which has the rights and obligations clearly defined and incorporated into a legally binding contract is the USA. The US agreements concentrate on the fees and rentals to be paid, the method by which these are calculated and the conditions of use of the facilities. Formalized service standards are not usually incorporated into these agreements. However, outside the USA, the airline industry has been looking at use agreement from a wider perspective, which includes quality of service aspects.

ACI-Europe has identified six types of use agreements which can exist between airports and airlines. First, there is the basic agreement which covers what the airlines receive for the main airport charges or the basic plus agreement which also identifies what additional facilities and services are available at the airport and their cost. Second, there is the facility agreement which is an additional arrangement between one or more airlines relating to just part of an airport. Then there are two types of service level agreements, either a one-way commitment by the airport operator to achieve defined service quality standards or a two-way commitment by both the airport and airlines to reach the required quality levels. Finally, there is the strategic partnership agreement (SPA) which, as the name suggests, is more strategic and covers areas such as future financial investment and rights, and obligations for both airlines and airports (ACI-Europe, 1999; Cruickshank, 2000).

In 1997, IATA set up a working group to develop a generic use agreement or SPA which could be used worldwide and adapted according to local circumstances. The airlines claim that such agreements could clarify the airline-airport relationship by identifying clear rights and obligations, protect both airlines and airports from uncertainty and risk by providing financial guarantees, and provide more financial security, as in the case of the USA, for the increasing number of private airports which are dependent on commercial borrowing. They could also help to minimize the conflict between the two parties – thus, perhaps, lessening the need for government economic regulation (Clayton, 1997; De La Camara, 1998). British Airways has suggested that a use agreement should contain the following elements: duration and termination; services to be provided in return to charges; service standards; additional services, rentals, fees and charges; capital expenditure; insurance and liabilities; security and policing; terminal navigation services; and disputes and arbitration (Monopolies and Mergers Commission, 1997). Such far-reaching SPAs have yet to be adopted at any airport although service level agreements are now being tested at a few airports.

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