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Civil Aviation Policy and the Privatisation of British Airways

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PREFACE

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SUMMARY AND RECOMMENDATIONS

1. The Regulatory Scene

British Airways (BA) operates within a regulatory framework (see sections 3.2 and 3.8) which is only partly under the control of the British Government. Privatisation of BA will not, of itself, affect this regulatory framework. If competition is desired, on the grounds that it will foster efficient performance of the industry, it is possible for the Government to increase it; though it is constrained by its overseas partners. There are several options such as dual designation, domestic deregulation, route transfers and airport price changes which may affect competition. We discuss the most desirable pattern of changes at the end of this chapter. These changes would be desirable whether or not BA were privatised.

The general case for privatisation of BA lies with its potential effect on productive efficiency (see 2.1). At present it is not a very efficient airline, and there is considerable scope for improvement (see 4.4). A privately owned airline, oriented towards profit, has a more direct incentive to improve efficiency than a government airline. The extent to which privatisation actually achieves this objective depends on how effective the new management is, and the extent to which it actively seeks profit. If the airline is insulated against takeover, a private management's performance may be no better than that of the public management. Privatisation may therefore yield advantages even in the absence of changes in the regulatory framework.

The gainers from the expected improvement in efficiency will be the Government, and ultimately the taxpayer. Few of the benefits of improved efficiency will be passed directly onto the customer in the form of lower fares or better services, at least in the immediate future, as a result of regulatory agreements made with overseas governments. Improvements in efficiency will be largely reflected in increased profits and the UK Government will receive a price for the airline which is based on possible and expected improvements in productivity and profit performance (see 2.1). If the market is unduly pessimistic about this at the stage of buying, then the new owners will gain as actual performance outstrips expectations.

Regulation, by excluding or reducing competition, is valuable to the airline (see Chapters 2,3, and 7). To maximize the overall benefits from operation of the industry, it is desirable that competition also be maximized. This will reduce profits and reduce the price received for the airline. To the extent that the Government has the option of

increasing competition, it will be reducing the price it receives. From Britain's overall viewpoint, it is desirable that competition be encouraged, even though this means a lower price received.

To this end, it is of crucial importance that regulation be liberalised *before* rather than *after* BA is sold (see 2.2). If this happens, the Government takes the loss. Since selling BA involves selling an airline *and* rights to regulated routes, it will be very difficult for the Government to remove regulation and lower the profits of the owners to whom it has sold the airline. This is especially true if the regulatory changes are not expected, but it is still true if liberalisation is foreshadowed at point of sale. The new owners will always have an incentive to oppose deregulation. Unexpected deregulation after sale could correctly be regarded as a breach of contract which imposes a loss on the buyer (see 2.2). It may be feasible for the government to introduce some competitive incentives short of complete deregulation, without reducing the financial benefits of privatisation, by introducing a system of franchising or leasing routes; we discuss this possibility further below.

The regulatory framework may change over the foreseeable future. It may become possible for regulation of air routes from Britain to Continental Europe and elsewhere to be liberalised, as other countries change their attitudes and objectives (see 3.2, 3.8). Britain may take advantage of this and agree to liberalise. It has not always done so in the past. A statement of intent cannot commit the government to liberalisation, but the more clearly it is understood the better. It may weaken the bargaining power of an airline which profits from regulation and will naturally seek to maintain it.

If the Government wishes to encourage competition in the airline industry, now is the time. It may be too difficult after privatisation of BA. It ought also to state its intentions on regulation for when its partner countries alter their policies. If competition is to be encouraged, and the benefits that it brings secured, liberalisation must come before privatisation. If complete de-regulation is considered infeasible on the current time-table for privatisation then competition *for* the market should be encouraged by making routes transferable, ideally through franchising or leasing routes; BA should be sold on this basis. We discuss the proposals made in the recent White Paper at the end of this chapter.

2. The Performance of British Airways

BA is not one of the more efficient international airlines. This has been true for some time, and it has been indicated by a number of

studies (see 4.2). It has improved relative to other airlines over the past few years, though it remains a weak performer. Its improvement over the past three years has been good, though hardly spectacular (4.3). Overall productivity has increased much less rapidly than one partial aspect of productivity, labour productivity. The much publicised view of a dramatic improvement in efficiency is not borne out by the evidence. What this implies is that there remains considerable scope for increases in productivity; privatisation may result in this opportunity being taken up.

A major factor in BA's recovery has been the exchange rate (see Chapter 5, 10.2). When Sterling rose, the airline was badly hit - hence the poor performance around 1980-81. The subsequent fall in Sterling relative to the US Dollar helped BA significantly. This is what could be expected of an export industry, but it is something that tends to be neglected in favour of more specific factors which influence performance. This highlights how vulnerable to exchange rate movements an international airline is.

Privatisation may affect the airline's wage/employment policy (see 6.2). The objectives of employees may not change, but the objectives of management will. They may be less inclined to accede to demands which increase costs. This of itself is not necessarily a good nor a bad thing. There is some evidence, though, that when airline wages are higher than for comparable work in other industries, inefficient practices develop when potential employees seek well paid, but scarce, airline jobs.

Cross-subsidisation has existed and probably still exists within BA's operations. (see 7.3, 7.4). Regulation creates potential profits; actual profits are less than they might be because costs are higher than is possible. Some routes are perhaps quite profitable, yet the airline itself has been barely so. The explanation is that some routes have been loss-makers. It is very difficult to judge from outside just how profits and losses are distributed. Routes are not always independent, and there may be routes which currently incur losses but which may earn profits in the future. Notwithstanding this, it is possible that BA is still serving routes on which it is never likely to make a profit. On some routes, it may be operating with too great a level of capacity and market share. Already the airline has been cut back, and this has improved profitability. There may be a case for further cuts, and this may become essential if some airline markets, such as the European market, are liberalised.

BA's current profitability is quite high, and there are reasons to expect it to continue so over the immediate future (see 10.3). In the

longer term, the position of British airlines look good, whether or not there is liberalisation in Europe. If BA is able to improve its productivity substantially, to match or exceed that of other international airlines, its future looks good under most conditions. If it is not able to improve efficiency by much, it may find it difficult to survive with its present size and routes in a deregulated environment. Whatever the environment it faces, it is likely to have a fluctuating profit performance because of its sensitivity to general economic conditions and the exchange rate (see 10.4).

As an enterprise BA looks quite valuable (see 8.1). Its assets are probably accurately measured in the current cost (CCA) accounts - these give a more optimistic picture than the (misleading) historic cost accounts. Its main assets, aircraft, have a ready market. This might not be so if there were an immediate sale of all assets, but that is unlikely. If the airline were to reduce size over a couple of years, it would not find it difficult to dispose of aircraft at prices close to replacement cost less depreciation. (Even in the recession prices of secondhand aircraft did not tumble. Excess aircraft were stored instead). With its aircraft and its routes (less easily negotiated, but still valuable), BA would at least be attractive to a patient asset stripper, if not as a going concern (see 8.3). With its current asset and debt structure, the balance sheet is not very much affected by exchange rate changes (see 8.1). Profits, and thus the value of the firm, are however.

As a package, BA is quite attractive. It does have scope, however, to improve its overall performance. There are questions about performance which are difficult to answer from outside. The most important of these concerns the existence of loss-making routes (see 7.3). It may be that BA is still too large, and that it should reduce or cease operations in some markets. It is likely to remain a volatile profit performer, and its long term profit performance is highly conditional on the regulation it faces, as well as exchange rates.

3. Preparing British Airways for Sale

There are several re-arrangements which can be made to the structure of BA before sale. These include injecting capital and writing off debt, allowing or disallowing past losses as offsets against taxation, changes to the superannuation scheme, breaking it into separate airlines, and transferring routes. In general, there is no economic case for doing things one way or another. Appropriately done, the *expected* net price received for the package of assets and liabilities will be the same (see 13.1).

Because of information gaps or transaction costs, there may be a case for structuring British Airways in a particular form. It may be easier to sell if it has a debt/asset structure similar to that of other private international airlines, (and therefore the new owners do not need to restructure debt and assets after purchase). There may be a case for selling BA in parts, or transferring routes (by selling them). This should be possible without affecting the overall price. If done badly, however, the price could be affected. For example, if routes which are best operated together are separated, there may be an efficiency loss which will be reflected in the price (see 12.1). The timing of the net receipts from the sale will be affected as well. For example, if losses are allowed as offsets against taxation, the Government will sell the airline for a larger sum, but it will receive less in taxation revenues later (see 13.1).

Various possible structures of BA can be offered for sale. Appropriately adjusted, they will all tend to yield the same overall price. These adjustments are not too difficult to determine. For example, if routes are to be transferred, they should be sold. Sometimes arranging the structure in a particular way may be seen to affect the price. The problem is that it is not possible to forecast in which direction they will do so. Thus it is possible to take a pragmatic approach. It does not matter if one or another structure is adopted, so far as overall price is concerned. The issue can be resolved with reference to other criteria. If buyers are expected to find one package more attractive than another, it would be sensible to offer the more attractive package.

4. Civil Aviation Policy

There are several options the Government has open to it, within current international constraints, to increase competition (see 3.8, Chapter 12). It can allow competition in domestic markets. It can relax regulation in those markets for which Britain is the more restrictive partner. It can encourage indirect competition between different airlines on slightly different routes. Where its partners allow, it can permit dual designation. When capacity is controlled this involves allocating some of BA's capacity to another airline. In such a case, this will achieve little increase in competition. Where capacity is not controlled, there may be an increase in competition (as there has been on the Hong Kong route). However, while there are a lot of changes possible, there are many routes for which Britain must acquiesce in tight regulation.

Most, though not all, of BA's routes form part of a consistent network stretching from a hub, London Heathrow (see 12.1). It would be possible to divide BA into component parts. If this were done on a route (or regional) basis, the result would be non-competitive airlines. They would lose economies of integration through, for instance, being able to offer passengers a through service between two points other than London. They can remedy this by forming interlining agreements (see 12.1). This would mean that a horizontally integrated firm was being replaced by firms linked by contracts. There would be no gain in competition, and possibly some loss in operational efficiency. Other ways of dividing up BA could result in more than one British airline on certain routes - but this would lead to operational inefficiency, and it would achieve no more than dual designation could accomplish. It would be subject to the same international constraints. It might be argued that it is desirable to have several airlines 'strong enough' to take on a particular route. However, it is probably the case that there are already sufficient independent airlines willing and able to take up any opportunities.

The possibility of predatory pricing is always present if there are one or two airlines much larger than the rest. It would be difficult to remove the risk by restructuring BA - it will remain big, and will continue to have access to advantages, such as profitable, non-competitive routes (see 12.3). Current CAA regulations are very unlikely to be able to control it. There may be a case for tighter restrictions on predatory pricing, which would substantially increase the risk of penalties if caught (though not necessarily proven). If the smaller airlines are regarded as financially weak, the best solution would be for them to form links with stronger, non-airline companies (which some have). Predatory behaviour is unlikely to be controlled effectively by weakening the dominant firm in the industry. It is probably best handled directly, if, by the nature of the problem, crudely.

When competition *in* the market is not possible, competition *for* the market may be the next best alternative. Thus, it would be desirable to induce airlines to compete for routes, or groups of routes (see 12.2, 12.5). The obvious way would be to auction franchises to operate routes for specific periods. This is rather different from the current practice, but the proposal should not be dismissed merely for this reason. In fact, many of the supposed difficulties are imaginary. For example, if it is not too difficult to define distinct routes in order to transfer them, it should not be too difficult to sell or auction them. Naturally most airlines will object to paying for rights to earn profits

which they currently obtain free.

The objectives of such a system should be:

- (i) to achieve transferability of routes so that the airlines best suited to serving them have the chance to do so
- (ii) to increase competitive incentives toward greater efficiency
- (iii) to achieve such an increase in competitive incentives without reducing the government's overall receipts from privatisation (any reduction in the price received for BA should be matched by the flow of receipts from the franchises)
- (iv) to minimise the stake which airlines (in particular BA) have in maintaining the present regulatory structure.

It may not be necessary to sell or auction routes to achieve efficient transferability (see 12.2, 12.5). If BA has a route it is unsuited to serve, it will do better by selling it to another airline. If it does not seek to maximise profit, it may not do so - it may hang on to loss-making routes. In times when it is financially stretched, it may be forced to sell routes - as US airlines have done. Transferability of routes may not always achieve actual transfer when that is efficient. BA will still have a stake in maintaining the status quo. Transferability is, however, a desirable step along the way. It is a simple and straightforward step towards a more efficient airline industry. Route licences may not be property now but they ought to be.

Arbitrary route transfers, as proposed by the CAA, are undesirable for a number of reasons (see 12.4). They may be efficient transfers to the airline best suited to serving them, or they may be inefficient transfers. The CAA does not have the information to determine which transfers are desirable. The method of allocation, through hearings, is a socially wasteful method (see 12.4). Allocating monopoly routes to additional airlines gives them all a stake in continued restriction of competition. It is difficult to see how transfer of monopoly routes will increase competition. A gift of a valuable profit earning opportunity will add to the financial strength of independent airlines (if they have not spent all the potential profits at the route allocation hearings).

BA does have an unfair advantage in competing with other British airlines. This arises from its having privileged access to London Heathrow, at lower than market prices (see 11.1). This enables it to attract traffic through easier access and better connections. Its advantage is considerable - it may be equivalent to an implicit subsidy of the order of £50 million p.a. If other British airlines are to be able to compete with BA, either directly or indirectly, this

imbalance must be corrected. This can be done by giving equal potential access to London Heathrow to all.

This is not feasible with the current pricing policy at London Heathrow. It is desirable that the prices for using Heathrow reflect the scarcity of capacity, and that capacity be allocated to the airlines which value it most. There are several ways of achieving this (see 11.3). The theoretically most appealing, but perhaps least practical, would be to divide capacity into slots and auction these. Alternatively, present arrangements could be continued, but the margin in prices between Heathrow and Gatwick could be raised to such an extent that Heathrow capacity was no longer scarce, and any airline prepared to pay the price could use Heathrow. This can be achieved partly through lowering Gatwick's prices as well as by raising Heathrow's. Some airlines would have to pay more, but others would pay less. It would be desirable to eliminate the current discrimination against large aircraft. In general, long haul flights (including US flights) may pay less or more, though short haul flights would pay more. The current structure, as well as level, of charges at Heathrow worsens the allocation problem.

Both these solutions may result in certain airlines paying more to use Heathrow. This may be considered undesirable, especially if there is a possibility of some retaliation. Another alternative which requires minimal change and which does not harm existing users (see 11.3) is to define clear property rights, for a specified period, short or long, and make them fully transferable. Any airline then using Heathrow will take account of the price it could obtain for a Heathrow slot if it shifted to Gatwick. Airlines which wish to use Heathrow will be able to do so at a price. This policy may be seen as a gift to current users; but this is what the current policy amounts to. An efficient gift is preferable to an inefficient gift. In selling BA with its airport slots, the Government would recoup the value of its gift. This approach has one weakness in comparison with the options proposed in the previous paragraph; giving BA defined property rights for its access to slots strengthens the existing incentive to oppose any change to the allocation of capacity at Heathrow.

In fact, most of Britain's independent airlines would not wish to use Heathrow. They are likely to opt for the lower price of Gatwick. They would not be as able, as BA is, to take advantage of the connecting advantages of Heathrow. However, if airline competition is to be effective, one of the competitors must not be given preferential access to a valuable resource. Efficient allocation of Heathrow's scarce capacity is a precondition for this. Only when

airline inputs are efficiently allocated can competition amongst airlines be equal.

Perhaps one of the most serious problems which becomes apparent is that of information. There is not sufficient information available to the public to enable anything like an accurate assessment of the value of the firm which the Government proposes to sell. There are some assets about which little is known. BA's rights to fly certain routes are valuable, but it is not possible to determine just how much so. To do so requires information about route profitability; much of this should not be regarded as commercially confidential. Our study, in Chapter 7, illustrates the principles, but it is based on inadequate data. If a firm is to be sold, its assets should be specified and then their earning potential measured. With a substantial proportion of BA's assets, this is not the case.

Another aspect of the importance of information concerns future regulation and the precise conditions under which BA can operate its services. There are very many options, concerned with airport pricing, rights to routes, and overall regulatory policy, which will affect the value of BA. Some of these, such as the question of route transfers, are being considered. Many are not, however, and it is possible that the Government will privatise BA without being specific about many of them. At present, it is even difficult to determine the Government's overall regulatory policy. It appears to favour more competition, but how much competition is it going to allow? Ideally, the Government should be as specific as possible about the various policies over which it has discretion which will affect the value of BA.

In summary, to encourage efficiency in the airline industry, it is desirable to allow competition and free access to markets. Where airport capacity is limited or British capacity on routes is restricted, this is not possible. To put all airlines on an equal basis, and encourage a situation where those most efficient in using a right or resource in fact do so, it is necessary to make access to these rights or resources as unrestricted as possible. This can be done, by the various methods we have suggested, if rights to use airports or fly routes are defined and made transferable (at a negotiated price). This is a straightforward step, which does not worsen the position of airlines, their passengers or the taxpayer, but which would allow maximum competition within the constraints that must be accepted.

The recent White Paper goes a limited way towards achieving this. It is, however, rather unspecific, and it proposes a structure within which there will be a fair degree of scope for ad hoc regulation, and this scope will tend to be used notwithstanding overall policy.

Agreed one-off route swaps are better than arbitrary transfers, though they fall short of transferability. The controls over predatory pricing are likely to be ineffective should the problem arise. There are two important limitations of the White Paper.

- (i) it does not address the airport problem (although this is subject to a consultation process at present). This is one area over which the government has considerable discretion, and which it could use to encourage competition and efficiency.
- (ii) it does not provide any specific proposals in relation to the rights which a privatised BA may, or may not, continue to hold over the provision of services on regulated routes.

PART A: BACKGROUND

2.

PRIVATISATION, EFFICIENCY AND REGULATION

1. Privatisation and Efficiency

It is often claimed that privatisation will make British Airways a more efficient airline. In this section we examine whether it will, and whether it is the only way to achieve this result. We also comment on who is likely to benefit from privatisation.

It is useful at this stage to distinguish two aspects of efficiency. By productive efficiency we mean that production of a given level and quality of output is taking place at minimum possible cost. A firm seeking maximum profit will have an incentive to achieve productive efficiency. By allocative efficiency we mean that the level and quality of output is chosen to yield maximum overall benefit. In practice, pricing policy is important in achieving allocative efficiency. It is desirable that prices be set equal to marginal cost. If prices are set above marginal cost, as they might be under monopoly or regulation, too little of the output will be produced.

The Public Economics literature is reticent about the problems of securing productive efficiency (that is, production of a given output at minimum cost) in a public enterprise such as BA. For the most part, it assumes that it has been achieved, and concentrates on the problems of allocative efficiency. This contrasts with the popular view that public enterprises are inefficient (in a productive sense) and that private enterprises are (at least moderately) efficient. Economists have only recently devoted significant effort to measuring the productive efficiency of public and private enterprises. For a discussion of these issues, see Gravelle (1982).

Doubts about the performance of public enterprises arise when considering the incentive structure for managers and workers. The private firm of traditional economics, which maximises profit, has a clear incentive to be productively efficient - profits can only be maximised if costs are at their minimum possible level. It must be recognised that private firms need not be profit maximisers. The management of the large corporation may pursue several objectives (see Williamson, 1965; Marris, 1966). It is disciplined, however, by the threat of take-over (Marris, 1966); even if it would like to pursue objectives other than profit, it would be unsafe to do so at too great a cost to profit. Productive inefficiency in a private firm is possible, and does exist. It is most likely to be present in a large firm which is

difficult to take-over.

By contrast, the management of a public enterprise may have little direct incentive to minimise costs. It may not be rewarded if it achieves high profits through low costs, and it may be in its interest to increase the size of the enterprise, to keep the workforce docile and to bestow benefits on particular groups of customers. In a number of cases the public firm will possess considerable market power, and it will not be forced to become efficient by the presence or threat of competition. It is possible for a public enterprise to become quite inefficient, and to remain so for a long period. This has been recognised, and attempts have been made to address the problem. For example, profit targets have been tried in the UK.

The simple case for privatisation is thus one of efficiency. By transferring an enterprise to private operation, there may be a much greater incentive given for productive efficiency, and this will probably result in greater efficiency being achieved. This need not be so if the private enterprise is large, and shielded from competition and take-over.

It is also possible that there may be other ways of making public enterprises more efficient. This might be achieved through different incentive structures for managers and workers. This is not an area which has attracted the attention of many economists or administrators in western countries, though it is a crucial issue in socialist countries (as well it might be). There are great difficulties in devising appropriate incentives and penalties. Formal reorganisations, which distance the enterprise from the government, seem to achieve little. Statements that the enterprise must cover costs, and that it will not be 'bailed out' in the event of losses, must be credible threats to be effective. Usually they are not credible - when losses mount, a 'capital restructuring' is undertaken which will 'eliminate the need for future government support'. These operate for a few years whereupon losses again mount, and there is a further request for support, so that the problem can be solved 'once and for all'. BA and its predecessor airlines have been the recipients of successive 'never to be repeated' subsidies. Notwithstanding this, it is possible for a government to take a rigid line on covering costs. However, this need not guarantee productive efficiency, as the enterprise may simply use its market power, if it possesses it, to push prices up to levels at which the inflated costs are covered.

Airlines around the world are either publicly or privately owned. Most, though by no means all, international airline are publicly owned. There seems to be no overriding case for one or other form of

ownership. Airlines are basically not strong natural monopolies (though we do identify less important aspects of natural monopoly in some operations in Chapter 12 below). Their impact on income distribution is not likely to be important. It is possible to cross-subsidise one group of travellers at the expense of another with either a public airline or a regulated private airline. There may be some perceived external benefits from operating airlines, such as national prestige or defence, but these are consistent with private or public ownership.

It is difficult to explain how public ownership of international airlines came to be the norm. Perhaps in earlier times there were doubts concerning the reliability, safety and viability of private airlines. Given the regulatory structure which developed after World War II, national airlines and governments became closely interrelated. Governments would give and receive rights which were of value to airlines. Government wished to internalise the effects of their policy decisions by owning the airline that gained or lost. The current view is that it is possible for airlines to be reasonably competitive, or regulated, and for government objectives to be achieved either through public or private airlines. Thus the case for privatising an airline will hinge on whether it will have the incentives to perform more efficiently when no longer in the public sector.

It is likely that a privately owned BA will be able to achieve greater productive efficiency than it has, until recently, as a public firm. BA's performance has, for a number of years, been considerably worse than it might have been (see Chapter 4). Its performance has recently improved. There are several reasons for this. First, there has been the impending privatisation; this has given an incentive to managers who wish to remain with the airline to cut costs. Secondly, the airline made large losses a few years ago - most enterprises seek to cut costs after periods of loss-making. Thirdly, its operating environment has changed; for example, the fall in Sterling has helped it greatly (see Chapter 5). Fourthly, in a period of economy-wide recession it may be possible to make changes in the workforce which would be impossible in good years. Finally, the present Government may have taken a more rigid stand against losses than previous governments. All of these factors may have some explanatory power. It is likely that a privately owned BA would have a direct incentive to complete the process of achieving efficiency, and to keep operating efficiently in the future.

Granted this, there may be limits to the achievement of efficiency for an airline such as BA. It may be that some inefficient practices are

too well established to be removed except over a long period. Recent improvements in efficiency may be less enduring than they seem. For example, if costs have been cut back at the expense of quality, there may be a delayed impact on revenue. Management may actually have become too oriented to cost cutting, and it may be less adaptive to changing circumstances.

Perhaps the most serious doubts about the thoroughness of the pursuit of efficiency arise from the fact that BA, as a private firm, is still going to be a very peculiar firm. It will not be just like another building or trucking company. It will be Britain's main 'flag carrier' internationally, and it will continue to be highly regulated. It will need to ask the Government for favours, and it will be expected to grant them in return. Governments are bound to continue to impose commitments on it which will limit efficiency. It is to be hoped that it has now passed from the stage of being a convenient dumping ground for the unsaleable products of the aerospace industry, such as Concorde. However, it will remain under some pressure to fly unprofitable routes and to desist from using its full commercial freedom.

It will probably continue to be the dominant British firm in the industry. As such, there is a danger that it could become a flying British Leyland. If it is poorly managed, it may be able to gain special protection from take-over on the grounds of 'national interest'. Governments will be nervous about the consequences of a financial collapse of the main international airline, and they will accede to requests for subsidies (or, more likely, for limiting competition). The private sector is not short of firms which have used their uniqueness to become long term corporate welfare recipients. This may or may not be likely but it is one reason for doubts concerning the wisdom of selling it off as a single, dominant, entity.

Subject to these qualifications we shall take it as a working hypothesis that BA could become, within a few years of privatisation, a moderately efficient airline, with a performance comparable to other large efficient airlines (such as Air Canada and Pan American). As pointed out above, things could go badly wrong, or potential improvements may simply not be achieved. It should be noted that other international airlines, like Pan American, are subject to the same constraints which limit their ability to achieve maximum efficiency. This efficiency improvement *might* be possible under public ownership; all we are assuming is that it *will* happen under private ownership.

Privatisation can be expected to change the airline. It can be

expected that the new owners will devise approaches to running the firm which will lead to their objectives being fulfilled. To this end, the nature of the output may change. In particular, the route network could change, as unprofitable routes, or groups of routes, are dropped. If there are fewer profitable new routes to be developed, this may mean some contraction in size, and selling off of assets. The new owners may also choose a new capital structure for the firm.

If privatisation does achieve an improvement in performance, who will enjoy the benefits? The main beneficiaries will be the Government/taxpayer and the new owners. If the airline is sold efficiently at a price which reflects its expected value, then possible increases in efficiency will increase expected profits, and thus the price paid. This would be the case if there were competitive bidding for the airline. The new owners would gain if the efficiency improvements and profitability were higher than expected; they could also lose. It is unlikely that the Government will sell it for much above the expected value; no one would buy it. It is quite possible that a poorly advised government might devise a method of privatising the airline which would yield less than the expected value. This would happen if some assets, such as the rights to fly certain routes were *given* away, as has been recently suggested. Then the taxpayer would lose, and the recipient of such rights would gain.

The consumer is unlikely to be a specific gainer or loser. Privatisation is, of itself, unlikely to affect most of the prices charged. Many of these prices are the outcome of regulation, and cannot or would not be changed unilaterally by BA. In situations where it possesses some element of monopoly power, it is likely to be using it already, and it will not have much scope for further increases. Privatisation, with a keener pursuit of profit, will not induce BA to lower prices, except if there were cases of prices being set by mistake at above the profit maximising level.

2. Privatisation and Regulation

It is becoming appreciated that privatisation does not mean either more or less competition, or more or less regulation, (see Beesley and Littlechild, 1983; Forsyth 1984). The regulatory and competitive framework is a quite distinct question from that of the ownership of the enterprise. Regulation can change in a variety of ways, or not at all, at the time of privatisation. Regulation however does affect the value of the enterprise and, for this reason, the relationships between regulation and privatisation should be discussed.

BA is subject to much national and international regulation. Much of

this regulation has the effect of reducing the competition it faces in many markets. While it is true to say that BA 'competes' with several dozen airlines, on many markets it competes with only a handful, often only one. On most of its domestic routes, it competes with none. This regulation which restricts competition enables prices and profits to be higher, and thus increases the value of the firm. When BA is sold, it is an airline *plus* regulation which is being sold. The price depends on the regulation expected to be in force.

It should be recognised from the outset that the British Government cannot change much of this regulation unilaterally. It can alter regulation of domestic air transport, but international air transport is regulated by countries jointly, and by industry trade associations such as IATA. It does have some influence on regulation, however; in some cases changes in a particular direction would be welcomed by Britain's partners, and it can persuade others to accept some change. Other countries can, and do, change their attitude to regulation, and Britain will have to decide whether to accept the proposed change or not.

Conditions will vary, route by route. In general, there will be some limitations on entry, there may be capacity controls, and there may be limited pricing freedom. On some routes, entry and capacity controls will create a strong degree of monopoly, and the potential for considerable profit for one efficient airline. The less the regulation, and the more competitive the market, the lower the potential for above-normal profits. (By 'normal' profits we mean profits sufficient to pay interest charges and yield a return on equity expected for the type of firm.) The regulatory framework on some routes (e.g. domestic routes) can be changed more or less immediately, whereas on others (e.g. some European routes) it will be difficult to change for a long time.

Expectations about the form of regulation will determine the price that the Government obtains for BA. This is so regardless of whether the Government makes any announcements about its intentions, or changes regulation before it sells. This means that it is possible for the Government to impose large windfall gains or losses on the new owners at the expense, or for the benefit, of taxpayers. If it wishes to avoid this, it will lock itself in to a particular form of regulation before selling BA.

Suppose the Government sells BA without any change to regulation or comment on future policy. The price that it receives will probably be based on the expectation that regulation will remain as it is. Suppose then that it decides to liberalise regulation. This will mean

that consumers gain, but that BA will lose out. The new owners will have paid for something which the Government then takes away. Usually, governments are unwilling to impose substantial losses on identifiable groups (especially those which are well placed to fight the change). In the short term, we can regard it as unlikely that a government will sell an asset to private owners for say £1500 million, and then take action which wipes, say, £500 million off its value. It would effectively be a breach of contract. It has been suggested that the Government could get the best of both worlds by selling BA at a high price, and then liberalising regulation at BA's expense; this seems to be too much of a smart move.

In the long term, the Government's freedom of action will still be limited. Even when the date of sale is well passed, and BA is regarded as part of the private sector, it will still be the case that liberalisation of regulation will impose a loss on a single large, dominant, private corporation, which can be expected to resist it. It is instructive to note that with most of the deregulations which have recently taken place in Britain, the US (airlines) and Australia (financial markets) there have been no major, expected, losers. While some parties have opposed deregulation, few have expected to lose heavily from it, and some of those have been offered some compensation. Consequently they have not been too averse to it being tried. This will not be the case with regulatory liberalisation of the British airline industry, since there will be one, dominant loser, and the losses may be substantial as the profits which flow from regulation are, in some cases, high.

It has been suggested that regulatory liberalisation is easier when the affected firm is privately, rather than publicly, owned. Liberalisation involves a transfer from firms to consumers. Is it easier for a government to bear a loss itself, or to impose one on a private firm? It would seem that the latter is difficult, since the loser will fight hard to change policy, and there will be political costs which it can impose on government. Governments, when operating in markets, are often unwilling to allow rules of the game which operate against their financial interest. However it is part of the business of governments to provide benefits for the community, or sections of it, at financial cost to themselves. They are, after all, willing to allow some of their own enterprises to operate at a loss in order to achieve some perceived social benefit. Accepting lower airline profits as the price of a more efficient airline system, and lower fares for its electors, is the type of decision that governments frequently make. We would suggest that a government can impose a loss on itself more easily than it can impose a loss on a small, defined group in the private

sector. While a government may be unwilling to change regulation in a way which imposes most of the losses on to one or a few firms, it is likely to find it easier to do so if it absorbs the loss itself rather than if it imposes the loss on someone else (especially someone with whom it has concluded a contract).

Regulatory liberalisation is easier, certainly in the short term and probably in the long term, if the Government, rather than its commercial partner, is the loser. This does not mean that it must continue to own BA - the important issue concerns its commitment to liberalisation. If it commits itself, and this commitment is believed, it will obtain a lower price for BA than it would have done under a commitment to the status quo. When it fulfils its commitment, the new owners will not have lost, as they will be in the position which they expected when they made their bid. The Government will have borne the losses from liberalisation itself. There is still a conflict facing the Government; it will wish to obtain a high price for its enterprise, but if it liberalises regulation, it will obtain a lower price. This may be difficult to accept, but if the expected benefits from competition outweigh the loss on selling price, then from the overall community point of view, it is worth taking the loss.

There is, however, a further issue, concerned with the nature of the Governments's commitment. If the Government actually makes the regulatory changes before it sells BA, the new owners will be faced with a *fait accompli*. They will still have an incentive to seek tight regulation, with the extra profits it brings. It would, however, be difficult for the Government to grant it, for this would involve granting one company extra profits at the expense of its many customers. The Government's partner, the new owners, cannot legitimately complain if they are not given an unexpected bonus.

It may be difficult to liberalise all regulation before it sells BA. This is not true of domestic regulation, but it is true of some international regulation. It cannot change the regulation of routes to, say, Germany, though it can state what it would be willing to do if Germany were to wish to change the regulation of UK - Germany air transport. It is desirable that Britain state its likely attitude to regulatory change in the future. The difficulty is that intentions may not be enough.

Suppose that the new owners have paid a low price for BA in the expectation of regulatory liberalisation. They still have a strong incentive to fight for the status quo. When an issue of a possible liberalisation arises, it is in their interests to block it. They will naturally claim that things were more difficult than they anticipated,

or that they had not anticipated liberalisation of this particular route when they made their bid. The Government is still in the position of imposing a loss on a private firm, in order to achieve benefits for the wider community. The fact that it announced its intentions to do so makes it only a little easier. The problem with regulation is that it is always easier to keep to the status quo, or make small changes, than to make large changes which mean substantial profits or losses for particular firms. This is so regardless of whether more or less regulation is regarded as desirable.

Government commitments are rightly regarded as flexible. Over time policy can change, and firms (and other groups) which can gain continually seek to change policy to their advantage. If a government announces its intention to liberalise regulation when possible, will it be believed? People, including potential purchasers of a firm, realise that it will be difficult for the government to change things when the time comes. The price paid may reflect expectations about regulation quite different from the announced policy. To make a policy credible, the Government must be seen to be committing itself to incurring a loss should it deviate from the policy.

It is difficult to see how the Government can do this in the case of future civil aviation policy. One possibility might be to issue long term licences to airlines to fly on routes even though currently they would not be permitted to fly them. For example, if the government issued a 15 year licence to British Caledonian to fly the London-Dusseldorf route it might have little effect at present. If, however, Germany changed its policy in favour of more competition, in say seven years time, it might be difficult for the Government to revoke the licence.

Another possibility would be to announce that the rights to provide services on regulated routes will become transferable (ideally through franchising or leasing) at a specified future date.

It may be argued - correctly - that this discussion implies some asymmetries in options. The results from the Government liberalising before sale, and from it promising the same liberalisation after sale, should be the same in so far as purchase price and bearing the loss of liberalisation are concerned. But a promise by a government is unlikely to be fully believed. There will be an incentive for an unregulated private firm to seek regulation, just as there will be an incentive for a regulated firm to oppose deregulation. However, it is probably easier to stay with the status quo. A regulated firm opposing deregulation is more likely to be successful than a deregulated firm seeking regulation.

In summary, changing regulation involves imposing a loss or benefit on the regulated firm. If regulation is to be liberalised, BA will be the main loser. It is probably easier for a government to absorb a loss itself, occasioned by a policy to create greater community benefit, rather than impose it on the people to whom it sold an enterprise. This means that it is desirable for the Government to change regulation before it sells BA, rather than after; otherwise the change probably will not happen. However, there are limits to the regulation which can be changed.

Where there is a possibility of future change it is desirable that the Government commit itself as strongly as possible to change. This is difficult in the airline case, but some possibilities exist, including the issuing of provisional route licences.

Regardless of overall policy adopted towards regulation, it is not possible for the Government to turn BA into a company like just another building or trucking company. Unless international aviation is totally deregulated - which is extremely unlikely - BA will continue to have a particular relationship with the Government. Negotiations with other countries will affect its operations and performance, and it will be the Government which will undertake these negotiations. The Government will be under continual pressure to protect and enhance BA's position. Often this will be in the nation's interest, but it need not always be. It may well be better to allow other airlines to serve a route, and remove BA. It may be desirable for Britain to constrain BA from taking full advantage of a situation so that non-aviation benefits can be gained.

BA, as the main international airline, is likely to remain close to government. This special relationship will mean that it is difficult to force it to operate fully as an individual private firm. Pan American, which is in a similar situation (though it is less dominant) has been colloquially described as an 'arm of the State Department'. It may be a good model for assessing the likely relationship of BA to the Government. It will not be possible to make BA a purely private, and unregulated, firm.

Appendix: The Efficient Markets Approach

The approach taken in this report is one of assuming that the markets which are involved, such as the share market, labour market and foreign exchange market are *efficient* markets. This really means that prices will be set such that it is not possible for someone to buy or sell at these prices, with access to no better information than others, and make a guaranteed profit. If this were the case, prices would change.

For example, if markets are efficient, if BA is valued by the market at £x million when it owes £1000 million in debt, then it will be worth £x + £1000 million if this debt is written off. This would imply that whoever buys the firm can borrow or pay back debt. Doing so may not be entirely costless when large sums are involved, but the proposition will tend to be true. More particularly, it may be admitted that capital markets are not perfect when large sums are involved, but it may still be the case that £x + 1000 million is the *best estimate* of the value of the firm with debt written off (it may turn out to be more or less).

There is a widespread belief, supported by empirical evidence, that markets like the share and exchange markets are reasonably efficient. The labour market may not be so efficient, but it is not so important for the questions we examine. The efficient markets notion is hardly an economist's theoretical curio; it derives its strength from practical observation. It would be possible for those who deny its application to a particular market to become extremely rich very quickly if they were correct. Several deny that markets are efficient, yet they are unwilling to risk their own resources to gain the profits which they claim are there.

Examples of this type of thinking can be found in some of the propositions that are casually advanced about selling BA. Some argue that unless some of its debt (say £500 million) is written off, and the balance sheet is restructured, the firm would be 'unsaleable'. Presumably the new owners would be unable to raise equity and retire debt no matter how cheaply they obtained BA. The other line of reasoning is that if the Government puts £500 million into BA to retire debt, it will add much less, say £250 million, to its selling price. Clearly both these views cannot be right. In fact neither adds up. It is likely that if £500 million is put into BA, it will sell for about £500 million more.

In this report, efficient markets are taken as a working rule. It is to be considered the best guide for action, in the absence of better analyses of the way markets work. There are reasons why results may not be exactly as indicated. Uncertainty is present - about performance, interest rates and yields, and other variables which affect the value of the firm. Information is not free, nor is it evenly spread about (those who know more may make a killing). There are costs in making transactions; it may be easier to retire a £100 million loan than to raise it. To this end, certain financial structures or packages of the airline's assets may be regarded as better than others.

These differences should not be expected to be very great. If those

with expertise in the field point out that there may be costs in packaging the firm in one way rather than in another, then the cheaper alternative should be accepted. There may be savings in transactions and information costs through doing something in a particular way. For this reason, we take an agnostic view on such questions as whether BA's debt should be written down before sale. In the main, it does not matter, though there may be some practical arguments in favour of doing things one way rather than another.

Taking a view such as this means that several issues must be resolved with reference to criteria other than their impact on the selling price (because they will have little effect on this). These issues include aspects of the superannuation problem, questions of route transfers, taxation allowances and balance sheet restructuring. These can be important issues, but they are to be settled with reference to how the options affect other objectives. It is possible to transfer routes from BA and obtain about the same price for the routes and airline as for the airline if sold untouched (though not, of course, if the routes are given away). Other considerations will determine the desirability of route transfers.

We stress this approach in this report because it is the way markets, in practice, tend to work. In general, it is not possible to change book entries and add to the value of the firm (sometimes, when this appears to happen, the financial or operating policy of the firm is being changed, and this can affect its value). When analysing the possibilities for the sale of BA, it is probably best to take it that rabbits cannot be drawn out of hats. Unfortunately, discussion of the issues often seems to assume that this is possible. To this extent, this report seeks to correct these illusions. As we stress, there is not a strong case on grounds of likely selling price for selling BA in one package rather than another. If a particular package is regarded for some reason as preferable to others by the capital market, it is the one which should be offered.

3.

ASSESSING BRITISH AIRWAYS' MARKETS: COMPETITION AND REGULATION

1. Regulation and its Relevance

British Airways operates in a large number of markets, and conditions in these markets vary. Perhaps the overriding determinant of market conditions is regulation, and there are no markets in which BA operates which can be considered completely unregulated. Regulation determines how competitive the market is, and may constrain the airline in terms of its choice of prices, capacity and frequency. It is thus a critical determinant of its performance, both in terms of profit and of other indicators, such as operating cost and price. Regulation can change, but, as we shall point out, it is unlikely to do so very much in key markets.

A discussion of regulation and market conditions is essential at the outset. We need to specify the environment in which privatisation will take place in order to assess its impact. It affects current profit and potential profit. The market environment is, to an extent, in the hands of the Government, and we need to examine the possible changes which could be made and what effect they would have on the airline's performance.

Regulation affects profits through creating a degree of artificial monopoly. A private BA might take more advantage of its position than a public BA and actively seek to maximize its profits. It is possible that a public BA may be accepting losses on some routes, and making up for them with profits on others - would a private BA continue to do this? Not all regulation enhances profits - some, such as price controls, will limit the ability of the airline to earn profits.

Regulation can change, and we need to be explicit about the possible alterations. Such changes will affect the profitability and market value of BA. They will also affect other aspects of performance. Here there is the likelihood of clashes of objectives. The best performance from BA, and the British airline industry in general, may be achieved with a regulatory structure which forces profits, and hence the value of BA, to be less than their potential maximum. The Government will necessarily face this trade-off when privatising BA and it must choose just what regulation it wishes to sell, and how to sell it.

In this chapter we look at the type of regulation which exists in a number of major market groups. We also look specifically at price

setting. We then look at which aspects of regulation can be changed. This provides the essential framework for assessing the impact of privatisation, and for identifying the options open to the Government.

2. Markets and Regulation in General

We shall identify a number of major market groups. These are Europe, the North Atlantic, domestic and, 'other' routes. The distinction is made on the basis of the type of regulation which applies, and it should not be too rigidly interpreted. Some routes in Europe may be akin to some domestic routes, or to 'other' routes, and some routes on the Atlantic may be similar, in terms of regulatory conditions, to some European routes. There are some important distinctions between routes in the same group (for example, within Europe, whether or not charter competition is permitted), but the routes are sufficiently similar to be treated as a group. The 'other' group is something of a catch-all category.

Most of BA's routes are international ones and thus subject to regulation by more than one country. The forms of regulation derive from bilateral agreements between the countries involved. There is some multilateral regulation of price, but it is the bilateral agreements which determine the market conditions. Two countries agree to allow airline services between one another, and in doing so they establish the form of regulation. They can choose to have no regulation at all, to have tight regulation, or various forms in between. The Edwards Report (1969) remains a good source on the regulation of Britain's international civil aviation.

Most countries impose entry controls which determine which airlines can serve between them. Many, though not Britain, insist that one airline from within its borders be allowed to serve international routes. Entry controls are usually applied to particular routes, and mostly only one airline from each country is permitted to operate the route. Sometimes two ('dual designation') or more airlines are designated from a country to operate a route. Occasionally, permission is granted to an airline from a third country to carry traffic on this route, though invariably on a quite restricted basis. This is known as 'fifth freedom' traffic - an example would be Air India carrying traffic between London and Paris. 'Sixth freedom' traffic is where a country uses its rights to carry traffic between itself and two other countries to carry traffic between those countries. An example would be Singapore Airlines carrying traffic between Britain and Australia through Singapore. This 'freedom' is more

important on long distance routes. BA is the sole designated British scheduled airline on most of its routes.

On any route, capacity controls may be imposed. These may be quite explicit. For example, capacity controls may be written into the bilateral agreement, and usually, if this is the case, there will be the requirement that capacity be divided equally. Countries may insist on control of capacity even though this is not referred to in the Air Services Agreement. Sometimes, countries adopt ad hoc capacity limitations, through their power to allow or disallow specific flights. For example, while capacity between Britain and the US is not subject to strict control, Britain from time to time seeks to adjust capacity; the recent action by Britain in disallowing, in part, the proposed additional Pan American evening flight to New York had the effect of reducing capacity (and giving an advantage to BA).

Countries may often approve fares and conditions, though they may not regulate them directly. Countries may allow the airlines to set fares, whereupon they approve them. Thus fare setting may be through the International Air Transport Association (IATA), though increasingly airlines have been setting fares directly, thus bypassing IATA. Occasionally, countries attempt to regulate air fares directly in conjunction with their airlines. In 1979, Britain and Australia attempted to regulate air fares between them, but this attempt at formal imposition of fares did not last for long (see Findlay, 1984).

All this regulation can appear to create a significant degree of monopoly power, by limiting competition on many routes to two airlines and then limiting the capacity they may offer. Appearances can be deceptive for two reasons. First, there is a measure of competition between airlines flying different routes. For many travellers, New York - Amsterdam is a substitute for New York - London, given that the trip is really between the US and Europe. This indirect competition is intense on some routes, and virtually non-existent on others. 'Sixth freedom' competition may be a potent form of indirect competition.

Secondly, on some routes, charter competition may be permitted. Some countries, and especially Britain, have chosen to allow a restricted form of competition to the scheduled airlines. Charter airlines are allowed relatively free entry to certain (mainly holiday) routes, but they are not permitted to offer a full scheduled service. Often, for example, they can only offer a return trip including accommodation. They appeal to the traveller who does not require flexibility. In some cases the scheduled airlines can still keep most of the business traffic, and fares can be much higher than charter fares.

While there is a difference in the quality of the service offered, a substantial part of the fare differential is probably due to the fact that charter operations are often competitive, while scheduled operations may be subject to capacity control, with fares higher than minimum possible costs.

BA finds itself facing both indirect and charter competition. The British Government, over the past decade, has been one of the more liberal governments, though this does not mean very much. Over a period, there has been cautious, ad hoc, liberalisation. Governments have been prepared, from time to time, to use most of the regulatory tools available to protect BA, but have been fairly restrained. BA does operate in some very restrictive markets, though it is not up to the British Government to change these unilaterally. Scope for further change does exist. The impact of regulation can best be judged by examining the main market groups.

3. The European Market

European routes are typically highly regulated. They account for a little more than a quarter of BA's revenues. There are few examples of dual designation, and traffic is generally shared by BA and a single foreign partner. The most significant aspect of the regulation is that there is widespread and tight control of capacity. Sometimes, as in the case of France, there is a requirement for capacity control specified in the Air Services Agreement. Some countries take capacity control quite seriously, and are precise and strict in their administration of it. Also, within Europe fares are often set through the IATA machinery. A feature of many European routes is that of pooling, and sometimes an Air Services Agreement specifies that airlines must pool revenues. Pooling is not so much a means of cartelising a market as a means of weakening the incentive for an airline to go against cartel policy.

By far the most important regulatory control is that on capacity. It is the tightness of the capacity control which determines the degree of monopoly power. Capacity control could be lax, and have little or no effect on price or output decisions - this is sometimes the case elsewhere. In Europe, it is capacity control which determines price and profit. This is illustrated in Figure 3.1. This shows two airlines with different costs (average and marginal), C^1 , (airline 1) and C^2 (airline 2). Demand for travel on the route is given by D . If the traffic is to be served by the cheaper airline, it would be possible to charge a price OP^1 , and allow an output OA . Country 2's airlines could not survive without subsidy at this price. A price which would

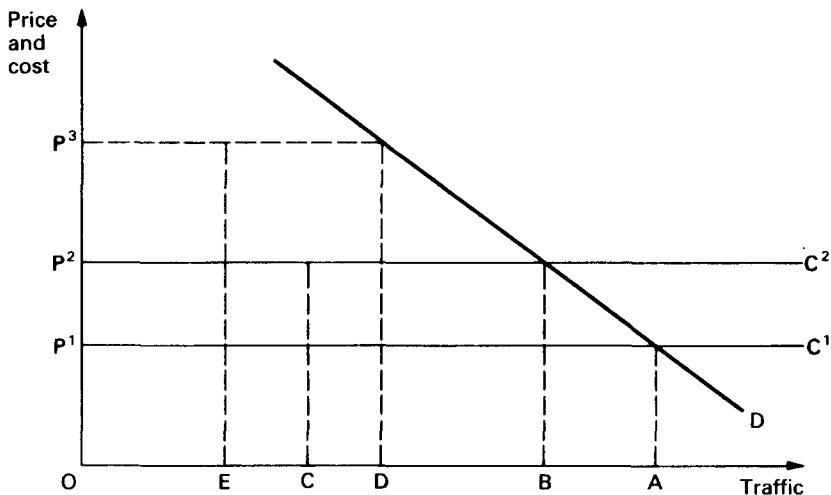


FIGURE 3.1 The Effects of Capacity Control

enable it to cover its cost would be OP^2 . This can be achieved if capacity is limited to OB . If the airlines share capacity and traffic equally, each will supply OC , and airline 1 will earn a profit.

If it is desired that both airlines earn a profit, capacity can be restrict to, say, OD , such that the price is forced up to OP^3 and both airlines earn profits (though with airline 1 earning a higher profit than airline 2). While airline 1 has lower costs than airline 2, it has no incentive to reduce its price, since it does not possess the capacity to handle the extra traffic. (Of course, it is true that load factors are less than 100%, but this reflects not an imbalance of traffic and capacity, but a need to keep load factors well below 100% to enable travellers to obtain flights when they want them).

Capacity can be set tightly, and, after the event, it will seem that it has been closely matched to traffic. Prices will have been forced up, and this enables profits to be earned. This picture is typical, to greater or lesser degree, of the majority of European routes. It is unnecessary to set prices, since their level has been determined by the amount of capacity made available. The matter is made more complicated by the pressure of different fare structures from airline to airline, and one fare structure may be more effective in filling capacity than another. Thus, two airlines subject to the same capacity controls may have different load factors and average fares. The fare for a given quality of service is thus fixed by the capacity controls, as is the trade-off between average load factors (the lower

the load factor, the higher the quality and convenience) and the average fare level.

The pressure of charter competition will affect the demand for scheduled services. This is shown in Figure 3.2. The demand curve will be further to the left, and probably flatter (travellers are prepared to pay more for scheduled service, but the differential is limited). A capacity constraint of OA would have enabled a price OP^2 to be charged without charter competition; now such a constraint would be redundant. The airlines' reaction, through their governments, may be to restrict capacity more, such as to OB, which would enable a price of OP^3 to be charged. It has been observed that prices, and probably profits, are negatively related to the strength of charter competition (Cooper and Maynard, 1972). Casual inspection of the data suggests that this relationship persists. If charter capacity itself is restricted (as is often the case in Europe where charters are allowed, though not usually from Britain), charter fares will be higher, and this, in turn, allows scheduled fares to be higher. When BA does face charter competition, this competition is usually fairly unrestricted in terms of capacity (though not in terms of conditions).

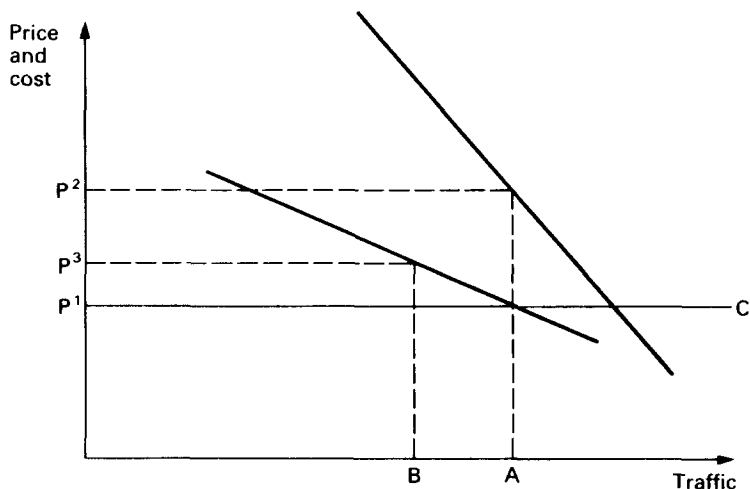


FIGURE 3.2 The Effects of Charter Competition

Comparisons of air fares are tricky and controversial, but it is difficult to escape the conclusion that European air fares are high by world standards. It is necessary to make several qualifications to this statement. Air fare structures differ, and it is difficult to compare like with like (see CAA, 1983). Input costs differ also, and they tend to be

high in Europe (ICAO, 1978; CAA, 1977; Findlay and Forsyth, 1984). Because of pro-rating on longer trips, many travellers in Europe pay less than the nominal fare. Fares from Britain are often not as high as fares for comparable travel from other countries (see Chapter 5). However, when all these allowances are made, fares for an economy trip, such as a non leisure traveller might have to pay, are high in relation to other fares (see ICAO, *Survey of International Air Transport Fares and Rates*, annual) and relative to charter fares. The margin between scheduled and charter fares (the former are often about double the latter) cannot be entirely explained by quality differences (see CAA, 1977 and BA, 1977). Tighter capacity control on scheduled operations enables fares to be set above minimum possible costs.

The higher fares give rise to the possibility of high profits. Such profits need not be achieved; they can be dissipated in higher costs. In spite of their access to skilled workforces, European airlines are not often amongst the world's most efficient. Many perform poorly in comparison with North American airlines (see CAA, 1977; Findlay and Forsyth, 1984). The highly protective system of regulation allows costs to creep up, and this may result in tight capacity constraint yielding low profits, which, after the event, appear reasonable. It is very difficult to measure profits earned on European routes (see Chapter 7).

BA is not afforded the same degree of protection through regulation as some of its European rivals, but it does share some routes on which capacity controls have created considerable monopoly power. Until recently, its costs have been high, and yet, in spite of this, it has probably earned some significant profits on many routes (see Chapter 7): When costs are reduced, as they have been recently, there is no mechanism for fares to fall. Fares, being set by the tightness of capacity controls, are unaffected. The reduction in cost results in increased profits. It is possible that if two airlines serve a route and one earns good profits, capacity controls may be relaxed, and lower prices may be the consequence of lower costs. This is not likely on most BA routes, since it is other countries which are more insistent on capacity control. Since these other countries' airlines are unaffected by improved BA performance, they will rarely agree to the worsening of their position which would come about through relaxation of capacity controls.

It is regulation which makes routes valuable. The potential for above normal profits arises from the degree of monopoly created, usually by capacity restriction or from minimum price plus entry controls.

Without regulation, profits would be forced down to normal levels, and if any airline could serve a route, as in the US, the value of the route would fall to zero. Regulation, by restricting competition and enabling fares to rise about costs, is what makes traffic rights valuable. The right to fly a route, under given restrictive conditions, creates the opportunity to earn monopoly profits, and thus it becomes a valuable asset, which could be bought and sold (see Chapter 12).

4. The North Atlantic Market

In terms of revenue this is one of BA's main markets; it accounts for somewhat less revenue than the European market. The nature of the regulation is a compromise between the preferences of the US (for competition) and European countries (which would prefer to see the 'orderly' regulation typical of internal Europe). The outcome is a much more competitive market than in Europe, though it could hardly be classed as 'perfect competition'.

Entry controls do exist, though they are not as tight as in Europe. Recently, Eastern Airlines has paid another airline for the licence to operate the Miami - London route. There are several airlines operating between the US and Britain, though there is no more than dual designation on any one route. The proximity of cities, for instance Newark and New York, means that different routes are good substitutes. Charter competition is relatively unrestricted. Different scheduled airlines from other countries can, to an extent, compete with the British airlines with scheduled routes on the North Atlantic (British Airways and British Caledonian).

The airlines do still possess a degree of monopoly power, at least from time to time. On the densest route, London - New York/Newark, there are two US airlines and BA, with occasional entry and exit by low fare operators such as Laker, Virgin Atlantic, and People Express, although there is not free entry by such low fare operators. The main scheduled airlines' fares are affected by the strength of competition from the low fare operators, which varies from time to time. The effective monopoly power possessed by the airlines on this route is quite small, and another airline would not pay very much for the rights to fly it.

Significantly, there is no strong capacity control on the route. The competition between nations makes tight capacity controls difficult, though if the US wished to, it could jointly control capacity with European countries. On Britain's part, there is some capacity control through ad hoc approval or disapproval of flights, but this

would not have a major impact on fares. Effectively, price control broke down in the early 1970's. The form of regulation, as summed up in the Bermuda II agreement of 1977, appears quite tight, but, as events have developed, it seems that it has been interpreted quite liberally.

It is difficult to characterise price setting in a simple, neat diagram. Airlines are not necessarily profit maximizers, nor do they necessarily survive without subsidy. Airline costs differ from country to country. It is probably accurate to assume that the two lowest cost groups of operators are: (a) the low fare operators and the more restricted charter airlines; and (b) the major US airlines. All of these are privately owned and obtain no significant subsidies. European airlines probably cross-subsidise their North Atlantic operations from internal European profits, though, in the absence of detailed cost estimates, it is impossible to prove that they do this. Some European airlines incur losses on the North Atlantic, and are not required to cover costs as a whole. Airlines frequently complain that the North Atlantic is a loss-making market. Sometimes they blame this on the absence of capacity controls, but the source of the losses lies elsewhere. If one airline is prepared to incur a loss to maintain a share of the traffic, and others are prepared to keep their share by matching their prices, then airlines as a group are creating the loss-making situation (and they are being allowed to do this by their governments). If each airline left routes on which it incurred losses, the North Atlantic would cover costs. It is difficult to determine whether BA cross-subsidises the North Atlantic routes, but it seems likely that it does so to some extent (see Chapter 7).

A possible model of BA's behaviour on the North Atlantic is that it seeks to maintain market share. US airlines may also do this, though they are constrained not to incur losses. The situation may be as depicted in Figure 3.3. BA faces a demand curve as shown by D. Its level is set by the fares prevailing in the market (with US or low cost airlines being the price leaders). It is quite elastic. BA's costs may be given by C^1 . If it is content with a small market share, it may choose a price OP^1 , and sell OA. It is possible that it will seek a larger market share, which could be achieved with traffic OB. This would necessitate a price of OP^2 , which entails a loss. If BA's costs were as shown by C^2 , it would not be able to earn a profit on the route at any traffic level. The relative positions of D and C^1 , or C^2 will change over time, and if BA wishes to maintain market share, it will be forced to accept variability in profit or loss.

Evidence in favour of this interpretation comes from its pricing

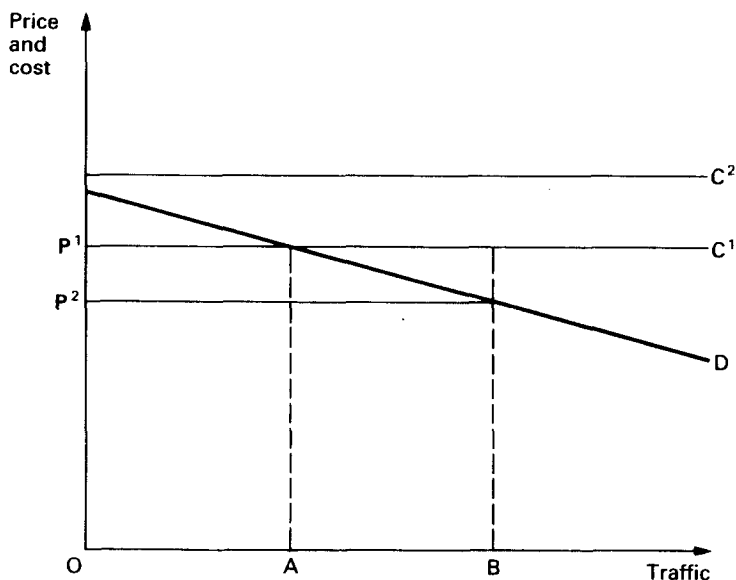


FIGURE 3.2 The North Atlantic Market

policy during the past five years. BA's fares, relative to those of its main US competitors, have remained fairly constant. Its costs did not (see Chapter 5). When Sterling rose relative to the US Dollar, its costs relative to US airlines rose, and as Sterling fell, its relative costs fell. It must have had periods of either high profits or significant losses. Probably in the bad years (1980 and 1981) large losses were incurred, while in the good years (1982 and 1983) either small losses or profits were made. Significantly, BA did not reduce its share by very much when its relative costs were high (even though there was no certainty that this would be a temporary phenomenon).

A privately owned BA would probably not accept losses in the long run. If it found that its minimum possible costs were above revenue, it would allow its fares to rise and market share to fall, until a point was reached where it was earning a profit. There is no reason to expect that BA's *potential* costs are significantly higher than those of its competitors. It pays less for most of its inputs than most of its US competitors, and while it may have higher costs than low fare operators, it is also operating in a higher quality range. If the quality of service it offers is too high, it can reduce the quality with consequent cost savings. While airlines do cross-subsidise their North Atlantic operations, these are the less efficient, not the more efficient ones. The privately owned US airlines probably do not allow much

of a cross-subsidy, if any, for this route and they, along with the unsubsidised low fare operators, are the price setters. BA ought to be viable *in the long term* on the North Atlantic, unless the real value of Sterling rises dramatically, or other European airlines cross-subsidise the North Atlantic to such an extent that every operator is forced to incur a loss.

If BA were able to reduce costs, and there was limited competition (for instance if low fare operators were constrained), under private ownership it would probably maintain the same price and enjoy profits on the route (or eliminate the loss on the route). It could lower its fares and increase market share, but this would probably mean lower profits and possibly induce retaliation. If the main competitive thrust came from efficient and unconstrained low fare operators, it would need to reduce costs to their minimum possible level in order to survive in its market segments. It would probably lose some market share to the low fare operators, but still retain a major share of the route, and cover its costs.

It is difficult to believe that there is much scope for above-normal profit on the North Atlantic, even if low fare operators are constrained, though some may exist. BA probably performs better, in terms of costs, on this route than on others, and the scope for cost reduction is less great. It probably cross-subsidises this route from others, though not necessarily by very much. In the long run, it ought to be able to cover costs on the route, no matter how competitive the conditions are, though it may not be able to preserve its market share. In the short term, with current cost levels, conditions may be more difficult. The possible changes in fare levels in this market are proportionately smaller than in the European market.

5. The Domestic Market

BA is the dominant domestic airline, and the domestic market amounts for about one sixth of its revenue. It serves most of the major routes and on many of these it is the sole operator. The domestic market is, formally, quite tightly regulated, though in practice this regulation is less stringent. The CAA has given consideration to liberalising regulation, and has opted for a policy of ad hoc liberalisation (CAA 1979 and CAA 1984b). This has been shown in its granting British Midland the rights to fly the Heathrow-Glasgow/Edinburgh routes.

Entry controls exist, and these give BA a monopoly on most routes. It competes with surface transport; thus its monopoly power is not

strong. Capacity is not controlled, even on the competitive routes. Prices are controlled, at least formally. In practice, BA has probably been setting its fares itself, subject to some control from the CAA. Fares have been higher than they would have been under competition, though it is difficult to determine by how much. Costs have probably been allowed to be above minimum possible levels. Allowing one additional competitor (and not necessarily the lowest cost one) on to new routes produced significant fare reductions and some quality of service improvements.

A privately owned BA should be able to reduce its costs, at least below those which justify current fares. On monopoly routes, it would be able to earn monopoly profits. In theory, these should be eliminated by CAA fare controls, but the CAA cannot impose these stringently as it has no independent information on what costs on these routes are, or could be. On competitive routes some profits might be earned, though they could be competed away. The current situation is similar to the regulatory system in the US domestic market prior to deregulation. Fares were controlled, and airlines competed away the profits by adding excess frequency (see Douglas and Miller, 1974). The same could happen in Britain. If the domestic market were deregulated, BA could survive, but it would probably need to reduce costs to do so. It might be competing against specialist, low cost operators like Peoples Express in the US. Its costs might be higher, but its network of worldwide services gives it a strong marketing advantage. It might well concentrate on main trunk services. It would not have scope to earn above normal profits.

6. The Other Markets

We cannot be very systematic about the discussion of BA's other routes, as they differ substantially. These routes are mainly long distance, and can be fairly dense, and therefore quite important. In terms of revenue generated, these routes are more important than the North American and European routes; they would amount to more than one third of revenue. It is worthwhile identifying a few cases.

There are some routes which are operated in a similar way to the European ones, being subject to close regulation including capacity control (and pooling may be encouraged). These routes include Japan, South America and South Africa. There are also some short haul routes, including the internal German services. The analysis for Europe can be applied to them, with some provisos. Charter competition usually does not exist, though indirect competition may

(it is possible to travel from South America to London via the US). The capacity constraints can be looser or tighter, depending upon the market. The scope for cost reduction may not be as great as on European routes.

Another major group is the Middle East Group. Capacity controls on these are tight, and there is scope for above normal profits. There are peculiarities, however. The region is politically unstable, and this can mean anything from schedules and routes being disrupted to BA's aircraft being blown up. Also, many of BA's competitors are highly subsidized, so that fare-setting need have little relation to cost. This is a potentially profitable, but risky group of routes.

The routes to South Asia and Australia are perhaps akin to the North Atlantic. There are many competitors. Regulation is often quite liberal, or else it is not very effective. Some countries seek to impose capacity control, and to encourage setting of minimum fares - for example, Australia. Such regulation does have some impact, but it is rather indiscriminate in its effect. To control capacity between Australia and Britain it is necessary to control capacity between Australia and all of South Asia. This Australia attempts to do, though this policy breaks down from time to time. There are periods of fairly flexible capacity on the route to Australia, followed by periods of relative inflexibility. Currently BA's and Qantas' competitors are controlled, though their own capacity is not.

The major difference with the North Atlantic route lies in BA's competitors. BA competes not against American and Canadian airlines with higher input costs, but Asian airlines with lower input costs. Even if it is more efficient it may be at a cost disadvantage. Furthermore, some Asian airlines such as Singapore Airlines and Cathay Pacific are able to match Western airlines' efficiency levels. The result is that they have a long term cost advantage. Unless they are regulated in order to protect BA, it will become more difficult for BA to compete on these routes. We would not expect them to be profitable, though BA may be able to survive in the long term with a reduced market share, through specialisation in particular market niches.

7. Price Setting in British Airways' Markets

It should be clear that we regard the role of IATA in setting prices to be a minor one. This may be at variance with appearances, granted the formal role allotted to IATA, and its overt sense of self-importance. Indeed the formal role for IATA as a price-setter on BA's routes has been declining, as BA and its partners have

increasingly preferred to operate outside IATA when setting prices. The fares which are charged are primarily those which balance traffic demand and capacity. Of course, it is possible for a group of airlines, whether through IATA or not, to attempt to set fares higher than can be sustained by the demand/capacity situation, and these attempts do take place. They are usually unstable, as it is in the interests of one or all or the airlines to break the agreement, and charge slightly lower fares, as has happened.

Fares can be controlled, either directly or through IATA, at levels which permit above normal profits to be earned. They are difficult to control, especially when airlines have an incentive to charge other than the specified fare. It has perhaps been the complexity of the fare structures which have been developed in the past decade which has been a major factor in making it difficult for governments or IATA to control fares.

Air fare structures have become complex for two main reasons. First, airlines have sought to segregate markets, such as business and leisure markets, so that the less price sensitive markets can be charged a higher price. By putting restrictions (such as minimum stays) on tickets, business travellers are dissuaded from using cheaper tickets targetted on leisure travellers. This price discrimination would not survive in a completely competitive market, where some firms would find it in their interest to charge business travellers the lowest price. Secondly, airlines have sought to fill seats by offering lower fares to those who are willing to be less specific and inflexible in their requirements for travel - off-peak and stand-by passengers enable airlines to achieve higher load factors. In addition there may be a quality difference, and consequent difference in cost (e.g. between Super Club and Economy passengers). In the 1970's BA was a world leader in developing new more profitable and more efficient fare structures, such as advance booking fares.

Capacity controls are simple to introduce, and they are effective in determining overall market conditions. It is difficult to regulate a complex fare structure. The capacity controls do not completely determine the fare structure, nor do they necessarily determine any one element in it, such as the 'economy' fare. The load factor is determined by the airline's effectiveness in using its fare structure, and this depends on the nature of the traffic being served (for instance, some peaks in demand are very difficult to spread). Capacity restrictions will determine the trade-off between overall average fares and load factors. Tight capacity controls will mean that both average fares and load factors can be high. On such a route,

revenues can exceed costs.

An aspect of price setting which must not be overlooked is the *charging of different fares for the same service in different countries*. Fares purchased in Britain are often much lower than fares purchased for the same trip in another country. This is a simple example of price discrimination, possibly because the markets are distinct, and because the airlines serving the route possess some monopoly power. Britain is a relatively low fare country, because of the availability of charter fares from Britain but not from other countries, and possible because of its low per capita income (compared with most Western countries). It also reflects the fact that the British Government is less protective towards BA than other governments are towards their own airlines. This fare differential is of some consequence when we are considering the impact on fares and profits of exchange rate changes and productivity improvements (see Chapter 5).

8. The Scope for Regulatory Change

It is generally recognised that the form of regulation affects both the profits and the overall performance of an industry. Britain may not wish to retain the same regulation as applies at present in BA's markets. Its ability to change regulation is circumscribed because nearly all regulatory structures are subject to approval by another government, and the other government may be unwilling to change.

Britain can change its regulation of domestic routes and of the Hong Kong route as it wishes. The difficulty is that these routes only account for a small proportion of the British air transport market.

There are some routes on which a British move in a liberal direction would be welcomed by the other government. The most notable of these are the routes to the US, and some other possibilities include routes to some South Asian destinations. On these routes, the policies of Britain are less liberal than those of its partners. On the US routes, Britain is somewhat restrictive, particularly in respect of the entry of additional airlines. However, the regulation in force, while technically strict, is probably not very effective. A change in Britain's policy to one of complete liberalisation would make some, though not a substantial, difference to fares and profits.

Britain may have some influence with a number of countries. While they may be pursuing moderately restrictive policies, they may be open to persuasion. Commonwealth countries might be subject to influence, especially those which have continued restrictive policies

more through following Britain than for any specific reason. When the US attempted to 'export deregulation' in the late 1970's, it was not regarded as being very successful (see Taneja, 1980). Yet, in spite of its unsubtle methods, it was able to convince a few countries which must have been regarded as unlikely candidates for liberal air service agreements (e.g. Israel and Belgium). Concessions in policy are more likely when Britain has something to offer. Britain may not have much on offer in the nature of additional gateways, but it can be more liberal in granting 'fifth freedom' rights, for example. It can allow domestic cabotage, especially if it deregulates domestic air transport. There is a long history of trading aviation for non-aviation rights, and it may be able to secure concessions in this way.

While the possibilities for change should not be overlooked, it is unlikely that many countries, especially European (see Forsyth, 1983b) and Latin American countries and Japan, would be prepared to alter the form of regulation or its tightness. Britain will have to accept that some routes will be regulated in such a way as to allow fares to be raised above costs, and profits will be earned by efficient operators. Within this framework it will have to operate so that its objectives are achieved as closely as possible.

Some changes in international regulation are possible, but in many, perhaps most, cases they fall short of achieving the degree of competition that Britain might desire. The problem then becomes one of achieving as much competition, e.g. between British airlines or for the rights to fly routes, as is possible within the confines of the regulation. This then becomes related to questions of whether it is possible to foster competition by breaking up BA, or by transferring routes. We consider these issues in detail in Chapter 12.

9. Conclusions

We have outlined the regulatory system facing BA, and how this affects its performance. BA faces some moderately competitive and some tightly regulated markets. This is likely to remain so for some time. The competitive markets may become more competitive, but the tightly regulated markets will stay unaltered. BA's costs have been allowed to rise behind the protection of high fares in some markets. A greater orientation towards profit would result in reduced costs. These might not have much impact in competitive markets, where fares may fall a little, though profits could increase (or losses could be reduced) if regulation were unaltered. In the tightly regulated markets - mainly Europe, South America and Japan - lower costs are unlikely to affect fares. All of any cost reductions here

will accrue as profits. Regulation in these markets has created the possibility of above normal profits - a possibility that has not always been realised.

Britain can liberalise conditions on some important routes, but these tend to be the less regulated routes anyway. To do so, it needs to relax capacity controls; it is these that are the effective controls in most markets, and which create monopoly power. We suggest that Britain's interests are best served by a liberal policy, though BA's profits would be less under this than a more regulated system. Thus there arises a conflict of interest for the Government, in that obtaining a good price for BA conflicts with adopting a policy which is in Britain's overall interest.

PART B: PERFORMANCE

4.

EFFICIENCY AND PRODUCTIVITY GROWTH OF BRITISH AIRWAYS

1. Introduction

Many of the arguments about privatisation centre around efficiency and productivity; hence this is a central section of the report. The long term prospects for British Airways depend on how efficient the airline is, and on what scope there is for further improvement. We look at the two main aspects of the question. First, we examine how BA compares with other airlines in terms of efficiency. Then we consider how rapidly BA has been improving its efficiency. Together, these aspects determine what scope there is for further improvement.

2. International Comparisons of Airline Efficiency

Several comparisons of airline efficiency have been made, and all have their limitations. However, they all indicate that BA is (or at least, was, prior to 1981) not a good performer. Several of these were reviewed by the CAA (1977). Some were based on comparing ratios of output to various types of input, for instance the McKinsey study. These indicate that European airlines, and BA in particular, performed significantly less well, by most indicators, than North American airlines. Some studies, such as the Taussig Report (US Department of Transportation, 1977) and the Anglo American Study (reported in BA, 1977) make specific reference to BA. The Taussig report indicates significant differences between selected US airlines and BA, but does not correct for a number of important factors such as input costs (with the exception of labour costs). The Anglo American Study indicates that even when allowance is made for input cost differences and for operational factors, BA is still less efficient than US airlines, though the margin of difference is less than would be expected given some simple comparisons.

Rather more thorough are the studies by Pearson (1976) and the CAA (1977, Appendix 2) following on from Pearson. These relate indicators of productivity to the factors which would be expected to affect them, such as traffic density and stage length. To the extent that productivity is higher or lower, for a given airline, than would be predicted from the relationship between productivity and its determinants, a measure of the airline's efficiency is obtained. In

most of the measures of efficiency, the components of BA (Overseas Division and European Division) perform poorly. In particular, the European Division is at or near the bottom of the sample of airlines for most indicators, though the Overseas Division is around the middle. Significantly, British Caledonian performs much better which suggests that it is not just factors peculiar to Britain which explain BA's weak performance.

The CAA is ambivalent about the results it obtains, though it does not propose any better measures. It finds that its own measures do not correlate particularly well with Pearsons's. This may not be surprising, since the way in which the determinants of productivity were related to it were not specified in any *a priori* or theoretical sense; in short, both studies were more ad hoc than need be the case. The CAA also doubted that regression techniques and the use of residuals could be used to estimate efficiency differences. Its doubts here are ill founded, since given an appropriate model, residuals can be interpreted as due to efficiency difference as well as unexplained factors. There is a considerable literature on the measurement of efficiency in firms, and while no one method is ideal, there are a number of methods which are legitimate, though their results must be interpreted with due caution.

Another productivity study is that by Morrell and Taneja (1979). This explains differences in productivity in producing net output in terms of a number of operational and network variables. There is a difference between European and North American airlines in productivity, though this is ascribed to differences in networks. The impact of the network variable is very large, and it could be due to a false correlation, since the network characteristics of European airlines are different from those of North American airlines.

The preferable approach from the standpoint of economic analysis is to estimate either a production function or a cost function which would allow for the quantities and prices of all inputs, and would allow for the characteristics of output, including load factors, traffic densities and network variables. Cost functions have been estimated for US airlines (see Caves, Christensen and Thretheway, 1983). Two studies of international airlines costs' have been undertaken by Mackay (1979) and Findlay and Forsyth (1984).

The Mackay study estimated a cost function for 21 airlines across the world for 1974 and 1975. Three input cost variables - the price of labour, fuel and landings - were included, along with output and the characteristics of output. The study indicated that BA had the highest margin of actual over predicted cost for both years - in 1974,

25.4% and in 1975, 26.5%. (Delta Airlines and Air Canada had the greatest negative margins, of about 8-10%).

Findlay and Forsyth (1984) used a sample of 34 international airlines for 1980. Data were obtained for input prices covering all airlines' expenses; five categories of input (cockpit crew, other employees, fuel, capital and equipment, and other purchased goods and services) were distinguished. Several output characteristics were included in the cost function, including load factors, stage length, aircraft size and the proportion of traffic which is international. A skill variable (proportion of the country's population between 12 and 17 years undergoing education) was included, the rationale being that an airline (e.g. BA) based in a country with a high general level of skills would find it easier and cheaper to operate than one based in a country with generally poor education. Alternatively, the skill variable could be seen as a measure of the quality of labour. Two models were estimated - one where economies of scale were allowed to be present, and another where constant returns to scale were imposed. This follows several US studies of airline costs which indicate constant returns (for example, Caves, Christensen and Thretheway, 1983).

In the economies of scale case, the actual cost for BA to produce its output was 1.67 times the cost which would be predicted given the cost function and assuming that it was of equal efficiency to the most efficient airline in the sample, Canadian Pacific. In the constant returns case, the actual cost is 1.60 times the predicted case (as would be expected, since in the economies of scale case, BA's predicted costs are low because it is a large airline). In the first case, BA ranks 33rd most efficient, and in the second, 30th most efficient (out of 34). By contrast, British Caledonian's costs are 1.13 and 1.29 times their predicted level, and the airline ranks with the most efficient.

Several caveats must be made when interpreting the results of productivity cost studies. Results can depend on the precise functional form used, and it is not possible to determine, *a priori*, which form is better, nor is it often really possible to choose between forms on statistical criteria. It is also dangerous to read too much into observations of specific airlines - there may be special factors which would make them appear to be good or poor performers. This said, there is considerable consistency between the results of studies undertaken at different times, using different though comparable techniques. Certain output characteristics, such as stage length, and certain input prices, such as that of labour, always seem to be important.

In these studies, where airlines can be identified, BA turns out to be a poor performer. British Caledonian by contrast is a good performer. This suggests that the poor efficiency of BA has not been due to some specifically British factor, such as inefficient work practices. Indeed, since BA has first choice of routes, and British Caledonian is allowed to operate the left-overs, one might expect that BA would be more efficient than British Caledonian (though it may also be required to operate less rewarding routes for political reasons). Other studies, such as the 'Cascade' study which related BA's costs to charter airlines' costs also indicate that BA has higher costs, even when generous allowance has been made for most factors (see BA, 1977).

Up to 1980-81, BA's costs were significantly higher than they need have been. Better management, better utilisation of inputs and less political pressure could have resulted in costs being lower. Perhaps it is not reasonable to expect BA to be as efficient as the most efficient airlines in the world (mainly North American airlines) but it ought to be able to match the performance of other British or European Airlines. This suggests that costs could be lowered and either fares lowered, or profits increased. In some markets (e.g. the North Atlantic) the former would happen, whereas in others (Europe) the latter would. It suggests that under regulation, BA could be highly profitable. Increasing BA's efficiency to the levels that can be expected of it may still take some time. The process of improvement has begun and it is appropriate to evaluate the productivity change so far.

3. The Recent Productivity Performance

There are several ways of assessing productivity improvement, but some are distinctly better than others. We are interested in seeing just how much more efficient BA has become over the past few years. Attention has been concentrated on the reduction in the labour force and on the growth in labour productivity. At the same time, BA's overall financial situation has turned around sharply, and there is a natural tendency to link the two trends. Certainly, the impression given is that BA's efficiency has increased substantially. In this section we examine this view.

Consider labour productivity, or output per unit of labour. It is true that this has been increasing more rapidly recently than before. For example, if labour productivity is measured in terms of Available Tonne Kilometres per employee, it can be calculated that productivity has increased by about 9% per year over the past three years. This does seem very good, and in comparison with other

industries it is a high rate. To put it into perspective, however, we should note that high rates of increase of labour productivity are typical of airlines. In BA itself, the growth in the previous three years was 7.9% per year, and in the previous seven years was 4.7% per year. Between 1968 and 1978, BA productivity improved by 7.1% pa (see Pryke, 1981, p 135; this was a lower rate than for several other airlines). Thus, the recent productivity performance has been good, though not very much better than in previous years, nor than that of other airlines.

Productivity growth should also be seen in the context of the productivity of other airlines. For example, in 1981-82 BA's labour productivity was below that of other European airlines, such as Air France, Lufthansa and British Caledonian, some of which were in turn quite modest compared with labour productivity of US airlines (calculated from ICAO, *Fleet and Personnel*, 1981 and CSO, *Financial Statistics*, 1981). By 1983-84, BA still had not caught up with these other airlines' 1981 labour productivity levels.

While most attention is given to labour productivity, it is not necessarily a reliable measure of efficiency. Labour is only one input in the production of airline services, and it rarely accounts for much more than one third of total costs. Other inputs such as fuel, aircraft and purchased goods and services are important as well. What is more, there is scope for substitution between some of these inputs. For example it would be possible for an airline to increase its *labour* productivity, yet reduce overall productivity if it substituted more expensive contract services for labour inputs.

Typically, we would not expect improvements in the productivity of certain inputs to be much under the control of an airline, at least in the short term. Fuel use is mainly determined by aircraft type; fuel productivity can be improved over time with the introduction of newer technology aircraft. (Though, of course, the airline chooses the aircraft type). Granted this, we would normally expect overall productivity growth to be much less than the growth in labour productivity. To get some impression of the overall improvement in BA's performance we estimated changes in total factor productivity. This involved giving all inputs a weight, reflecting their importance in the production process, and calculating an index of overall factor input (essentially the cost of the inputs if input prices were to remain constant). Such measures have been undertaken for airlines and many other industries, sectors and whole economies. Usually, productivity growth in the airline industry is found to be relatively rapid. Since it is rarely possible to standardise for inputs perfectly

(yielding an indicator of the amount of inputs of the same quality), it will be the case that when the quality of inputs improves, productivity will be seen to rise. The airline industry uses more productive aircraft over time, and so much of its productivity improvement is due to technological advances by its suppliers. *Differences* in the growth of productivity over a period or between airlines might be attributed in part to the airline and its management, however.

Another way of looking at productivity change is to examine whether the real cost of producing output falls. If costs rise less rapidly than would have been expected from the change in input prices, productivity improvement has occurred. In this case, it is necessary to estimate a separate airline cost index, as airline inputs may have risen at different rates from say, the RPI or the GDP deflator. Again, a fall in the real price of producing airline services may be due to greater management efficiency, or simply to the fact that newer aircraft are being used.

Several productivity indexes were constructed; these are described in the Appendix to this chapter. In Table 4.1, fixed weight productivity measures are given. The second column shows more variability than

TABLE 4.1 BRITISH AIRWAYS' PRODUCTIVITY 1972-73 TO 1983-84:
INPUT PER UNIT OF OUTPUT AS PERCENTAGE OF
PREVIOUS PERIOD (1978-79 WEIGHTS)

	1	2	3
1977-78 on 1972-73	88.6	80.6	92.6
1978-79 on 1977-78	99.1	83.3	96.9
1979-80 on 1978-79	92.2	85.3	90.6
1980-81 on 1979-80	94.4	104.1	100.8
1981-82 on 1980-81	99.0	94.9	97.0
1982-83 on 1981-82	98.5	97.5	97.9
1983-84 on 1982-83	98.5	99.0	98.5

Output measures

Column 1 Available Tonne Kilometres (ATK)
Column 2 ATK x Scheduled Overall Load Factor
Column 3 Adjusted Output, Y

Source: As described in Appendix

the first because of the variability of the load factor. The third column gives perhaps the best indicator of long term movements, the first of short term movements. In the five year period to 1977-78 productivity growth averaged about 2%. Year to year productivity growth varies after then - it was high in 1978-79 and 1979-80, although in the latter period the load factor fell sharply. In the past three years, productivity growth has been fairly consistent, at about 1-2% per year.

In Table 4.2, the inputs over which the airline has less control, fuel and landings, are excluded from the input index. These are also the inputs for which we have least information. The rate of productivity improvement is shown to be greater, although it still has the same pattern between years. Fuel productivity would have increased during the period, but this would not have been picked up because of the indirect estimate of fuel input. To the extent that fuel input grew less rapidly, and fuel prices more rapidly, than is estimated in Table 4.1, overall productivity growth in Table 4.1 will be slightly underestimated.

TABLE 4.2 BRITISH AIRWAYS' PRODUCTIVITY 1972-73 TO 1983-84:
INPUT (EXCLUDING FUEL AND LANDINGS) PER UNIT OF
OUTPUT AS PERCENTAGE OF PREVIOUS PERIOD
(1978-79 WEIGHTS)

	1	2	3
1977-78 on 1972-73	88.4	80.5	92.7
1978-79 on 1977-78	98.8	92.4	96.2
1979-80 on 1978-79	89.1	85.4	87.7
1980-81 on 1979-80	94.6	100.4	100.5
1981-82 on 1980-81	97.1	93.9	96.0
1982-83 on 1981-82	97.8	96.7	97.0
1983-84 on 1982-83	98.5	98.6	98.2

Output measures

Column 1 Available Tonne Kilometres (ATK)
Column 2 ATK x Scheduled Overall Load Factor
Column 3 Adjusted Output, Y

Source: As described in Appendix

In Table 4.3, productivity change is estimated using a Tornquist index. As can be seen, the results are similar to those for the simpler

input indices, but they should be directly comparable to those of US studies (such as that by Caves, Christensen and Thretheway, 1981).

TABLE 4.3 BRITISH AIRWAYS' PRODUCTIVITY 1972-73 TO 1983-84:
INPUT PER UNIT OF OUTPUT AS PERCENTAGE OF
PREVIOUS PERIOD (TORNUST INPUT INDEX)

	1	2	3
1977-78 on 1972-73	88.0	76.7	92.9
1978-79 on 1977-78	98.5	92.0	96.0
1979-80 on 1978-79	92.7	87.4	90.7
1980-81 on 1979-80	94.0	100.4	100.3
1981-82 on 1980-81	97.7	93.8	96.1
1982-83 on 1981-82	98.3	97.5	97.6
1983-84 on 1982-83	98.8	99.0	98.6

Output measures

Column 1 Available Tonne Kilometres (ATK)
Column 2 ATK x Scheduled Overall Load Factor
Column 3 Adjusted Output, Y

Source: As described in Appendix

An alternative way of estimating productivity is to compare the input price index with a cost index. This gives a measure of the extent to which the real cost of producing the service is falling. This is done in Table 4.5. As is to be expected, Table 4.4 (in which the input price index and RPI are given, along with the change in cost per unit of output, ATK) is quite comparable to Table 4.1. If input prices rise more rapidly than the RPI - which they do during most of this period, using the RPI to deflate cost per unit output would yield an underestimate of productivity change.

The productivity growth rates of BA are typical of those for the airline industry. Deakin and Seward (1969) estimated a productivity improvement for British Air Transport (including Airports) of 5.47% per year between 1952 and 1962 (see p 107 of their study). For the US, Kendrick (1968) found productivity growth between 1958 and 1966 of 4.4% pa for all airlines, and 3.2% pa for trunk airlines. Caves, Christensen and Thretheway (1981) estimated productivity growth for US trunk airlines at 3.5% per year between

TABLE 4.4 CHANGE IN INPUT AND OUTPUT PRICE INDICES 1972-73
TO 1983-84 (1978-79 WEIGHTS)

	Input Price Index	Output Cost Index*	RPI
1977-78 on 1972-73	232.9	203.8	213.0
1978-79 on 1977-78	115.4	114.5	108.3
1979-80 on 1978-79	118.9	110.4	115.8
1980-81 on 1979-80	118.6	111.9	116.3
1981-82 on 1980-81	116.9	114.7	111.5
1982-83 on 1981-82	110.6	109.7	107.1
1983-84 on 1982-83	106.5	104.9	104.7

* Total Cost per ATK

Source: As described in Appendix

TABLE 4.5 BRITISH AIRWAYS' PRODUCTIVITY 1972-73 TO 1983-84:
INPUT PER UNIT OF OUTPUT AS PERCENTAGE OF
PREVIOUS PERIOD (1978-79 WEIGHTS)

	1	2	3
1977-78 on 1972-73	87.5	79.3	91.5
1978-79 on 1977-78	92.2	92.9	96.6
1979-80 on 1978-79	92.9	88.6	91.2
1980-81 on 1979-80	94.4	100.6	100.3
1981-82 on 1980-81	98.0	94.5	96.8
1982-83 on 1981-82	99.2	98.4	98.5
1983-84 on 1982-83	98.5	98.5	98.2

Output measures

Column 1 Available Tonne Kilometres (ATK)
Column 2 ATK x Scheduled Overall Load Factor
Column 3 Adjusted Output, Y

Source: As described in Appendix

1972 and 1977 (i.e. prior to deregulation). Over the past seven years, productivity growth in BA has averaged 3.2%.

What is perhaps more surprising is that over the past three years, the rate of productivity improvement has been less than for the previous three years. Using ATK as the output indicator, annual productivity growth 1977-78 to 1980-81 was 4.1% yet from 1980-81 to 1983-84 it fell to 2.3%. This has been the period of BA's recovery. This indicates that the recovery was not founded on the airline becoming substantially more efficient - rather, it was based mainly on improvement in yields.

In fact, BA's performance over the last few years has probably been better than would seem from these figures. The period was one of contraction, especially for BA but also for the whole airline industry. It is usually more difficult to increase productivity in a period of contraction than in one of expansion, when more can be squeezed out of existing capacity. It has not been possible to make the same estimates of productivity change for other airlines, but it is likely that their performance over recent years has been modest and BA may have caught up with them somewhat.

Another aspect which should be considered is that overall efficiency improvements need not show up as increases in productivity. A notable feature of BA's recovery has been that unprofitable routes have been pruned. This may increase yields yet not increase input productivity - it is nonetheless an important aspect of efficiency.

4. Summary: Productivity, Efficiency, and the Scope for Improvement

In the first part of this chapter it was shown that BA has been one of the less efficient of world airlines. This was true up to and including 1980-81. This is a conclusion based on the results of a number of different studies, employing different methods and differing in the comprehensiveness of their coverage. It is difficult to measure the exact scope for improvement, but it was certain to be quite significant.

The general impression is that BA has increased efficiency dramatically in the last few years, and that this has been responsible for its turnaround. This impression is heightened by the labour productivity improvements, which, taken on their own, look impressive. They are quite misleading, however. Labour productivity has been increasing slightly more rapidly recently, but only slightly. There is evidence that this increase in labour

productivity has been bought at the expense of greater expenditure in other inputs, such as contract services or aircraft. This is what can be expected of an airline which has just undergone a substantial re-equipment programme, which BA has. Newer, more modern aircraft require fewer people to service them. This switch from labour to other inputs is probably quite desirable, but it means that it is dangerous to concentrate on labour efficiency.

Overall productivity improvement has been modest, and perhaps more modest in the past three years than in the previous three. There have been genuine improvements, for example in route structure, which do not necessarily show up as productivity increases, and the increases which have taken place have been during a very difficult period. In this period, BA has probably performed better than other airlines.

The result is that BA is still not an efficient airline by world standards. The evidence is that it was a long way behind in 1980-81, and that it has caught up a little since then. It is amongst the poorer performers in Europe, and any comparison with North American domestic airlines would still indicate a wide gap. When demand expands, productivity could increase fairly rapidly, if inputs are not allowed to increase too rapidly in response. These international comparisons indicate (as would comparisons with British independent airlines) that there is still significant scope for a reduction in costs. This would involve reductions in several inputs, including purchased goods and services as well as labour. Given the institutional structures within which BA operates, it may take time before these reductions can be achieved.

Appendix: Measuring Productivity Change

In order to study BA's total factor productivity, we considered five separate inputs: labour; fuel; landing and airport charges; capital inputs (including depreciation, interest and lease costs); and other purchased inputs. Productivity change was estimated for each year between 1977-78 and 1983-84, and for the five years 1972-73 to 1977-78. Data were taken primarily from the BA accounts.

The average number of employees for a year was taken as the labour input, and average staff costs per employee was taken as the labour price. Fuel use was not available, so it was assumed to be dependent on stage length and aircraft size according to the following equation:

$$F = B.S^{-0.08} A^{0.74}$$

where: B = Constant

F = Fuel Use

S = Fuel cost per aircraft kilometer

A = Average Aircraft Size

$R^2 = 0.89$

t values on co-efficients:

S: t = 3.06

A: t = 16.63

This was estimated from data on fuel use for US aircraft in 1978 published by the US Civil Aeronautics Board (1979). Fuel price was estimated by dividing fuel cost by estimated fuel use. The landings input used was scheduled passengers carried. This is a distinctly imperfect indicator, but the more likely indicator, passenger flights, is also imperfect. Airport landing charges depend on *passengers* more closely than on *flights*, since they are partly directly related to passengers (as at Heathrow) and partly indirectly related through weight charges. If larger aircraft are used over time (which they are) average fees per flight will increase even if charges are not increased. Price was estimated by dividing landing fees and en route charges by this amount. The capital input was estimated by using the CCA estimate of Total Net Assets, and applying a depreciation rate of 10.5% pa, and real interest rate estimated by subtracting inflation from US nominal rates. The depreciation rate was estimated from the rates of depreciation of BA's aircraft as reported in *Lloyds Aviation Register* 1983, and is similar to the depreciation rates used in the US. This was deflated to real terms using the RPI. The price of the capital input was estimated from the depreciation charges as estimated, and interest charges, at actual interest rates, divided by the estimate of capital input. The other goods and services expenditure was estimated by taking the residual of total costs after subtracting expenditure on all other inputs. The price index was the RPI, and the quantity was estimated by dividing the expenditure by price.

Two input indices were estimated. One involved simply taking 1979-80 prices as weights. 1979-80 was not mid-period, but it was after fuel prices had risen, and prices in 1979-80 were fairly typical of prices in the subsequent periods (the ones in which we are mainly interested). We also estimated productivity using a Tornquist index, as used by Caves, Christensen and Thretheway (1981); this does not

impose constant weights. It is consistent with a Translog Production Function.

The results are summarised in Tables 4.1-4.3. Three output measures were used. In Column 1 the measure is Available Tonne Kilometres (ATK), and in Column 2, the measure is ATK multiplied by the *scheduled* load factor. This gives an approximation to Tonne Kilometres Performed (TKP), if nonscheduled load factors move with scheduled load factors (overall load factors are not published). Finally in Column 3, a weighted measure of output, y , is derived.

This gives a lower weight in output to long stage lengths (which are cheaper, per kilometre, to serve), larger aircraft size, and higher load factors (an increase in load factor of 5% will normally result in a less than 5% increase in cost). The equation for y used was

$$y = \text{TKP} \cdot S^{-0.1} A^{-0.25} L^{-0.5}$$

where:

S = Aircraft Stage Length (Scheduled)

A = Aircraft Size (Scheduled)

L = Load Factor (Scheduled)

The coefficients were chosen as representative of the results of a number of studies of the dependence of costs on these variables.

The results using y would normally (but not necessarily because of the extra variables) fall between the results using ATK and TKP. It can be argued that the results of Columns 1 and 3 are the most reliable. When looking at short term movements, the first column is the most useful, as it measures output in terms of capacity provided, which for a given year would be related to the expected demand. If demand is higher or lower, it may be difficult to adjust capacity immediately. Thus, in high demand years, the load factor rises - productivity measured by TKP would rise, but this would be due to factors mainly outside the control of the airline. Over the longer term, load factors, stage lengths and aircraft sizes may alter, and these will affect costs. To obtain a measure of productivity, it is desirable to standardise for these, and this is done in Column 3. Thus, Column 1 provides the best measure of period to period changes in productivity, whereas Column 3 gives a better indicator of change over a period of a few years.

HOW EXCHANGE RATES AFFECT BRITISH AIRWAYS

1. How Exchange Rates Affect Airlines

Of all enterprises, airlines are one of the most exposed to the risks of changing exchange rates. Since they purchase inputs on world markets, sell on world markets and borrow funds from several countries, they are directly affected by exchange rate changes. In the period of exchange rate stability, up till about 1970, airlines operated in an ordered environment, and had to concern themselves only with occasional devaluations or revaluations. Since 1970, most major countries have opted for flexible exchange rates, and in the period of substantial, but differing, inflation rates since then there have been big swings in exchange rates. These have sometimes posed major adjustment problems for airlines.

Exchange rate changes will alter the value both of assets possessed by an airline and of debt owed by it. Both these effects are discussed in Chapter 8. While these aspects are important, they are not as important as the problem which exchange rates pose in the purchasing and selling decisions of the airline. Swings in exchange rates can substantially alter overall competitiveness, and it will be shown that this is particularly true of British Airways (see Forsyth, 1983a).

Airlines typically purchase inputs in a number of countries, and in different currencies. In fact, it is not so much *where* inputs are purchased, or output is sold, nor *in what currencies* they are bought or sold, which is important. The important question is *how and where the prices are set* - whether they are set in specific countries, or in world markets in general.

Some airlines appear to attempt to balance revenues received and costs incurred in particular currencies. For example, they may regard a balance of US Dollar receipts and expenditures as desirable. As long as currencies are freely convertible, there is no particular merit in this, since any imbalances can be readily corrected in foreign exchange markets. Receipts in a weak currency, i.e. one which is depreciating, may give rise to adjustment problems (i.e. it may be necessary to raise fares often) but they can be handled readily.

It may seem more prudent to balance *where* receipts and expenditures occur. Thus an airline may seek to obtain a high proportion of its revenue in the US, if, as is often the case, a high proportion of its expenditure is incurred there (say, because of aircraft purchases). By

doing so, it may seem that it is reducing its vulnerability to exchange rate changes. This policy makes more sense than the last, though it is only, at best, approximately correct. If an airline purchases inputs in the US, it does not follow that if the US revalues, its costs will rise. What is more, even if it does earn substantial revenue in the US, it does not follow that this revenue will rise when the US revalues.

The important distinction to make is *how* prices are set. Here, the distinction made in the literature on international trade between tradeable and non-tradeable goods (and services) is useful. A tradeable good is one which can enter trade, and the price of which is determined on world markets. At the limit there will be goods whose prices cannot be substantially influenced by one country. Other goods may be priced on world markets, though one country may be a dominant supplier, and thus it will have some influence over price (the US for aircraft, for example). Non-tradeable goods cannot enter trade, and their prices are set within the domestic economy. Unskilled labour is often, though not always, a non-traded service.

Airlines purchase a mixture of tradeables and non-tradeables. Non-tradeables purchased at home include labour, contract services and services specific to the country, such as advertising. They purchase some non-tradeables at destination countries. The main tradeable they purchase is fuel, and this has an international price (taxes and subsidies on fuel may differ between countries, but fuel price movements are much the same between countries). Some skilled labour (pilots) is partly tradeable, and aircraft are tradeable. The impact of exchange rate changes on airline costs depends on what inputs are tradeable, and which are not.

Suppose a country, other than the US, revalues. The prices, in domestic currency, which its airline pays for non-tradeable inputs stay unchanged, but the prices in all other currencies rise. The prices it pays for tradeables, such as fuel and aircraft, stay unchanged in foreign currency terms, regardless of where they are purchased. If purchased at home, the home price falls by the amount of revaluation. Overall, the airline's costs have risen when expressed in Dollars, though by less than the amount of the revaluation, depending on how big a proportion of total costs is represented by tradeable inputs. Table 5.1 demonstrates this.

If a country is a dominant supplier of an input, as the US is for aircraft, the situation is a little different. The price of aircraft will be the same throughout the world, but it may be effectively set in the US. When the US revalues, the foreign currency price of aircraft will rise, not only for US airlines, but also for all other airlines which buy

TABLE 5.1 IMPACT OF A REVALUATION OF STERLING

	Sterling Value	
	£1 = \$1	£1 = \$2
Costs		
Traded Input – price set in Dollars (\$100)	100	50
Non Traded Input	100	100
	<hr/>	<hr/>
Sterling Cost	200	150
Dollar Cost	200	300

US aircraft. The US airlines lose out relatively only to the extent that they purchase US nontradeable inputs.

The significance of this is that exchange rate changes affect the relative cost structures of airlines. In this respect, airlines are no different from any other suppliers of goods and services - revaluations harm exports, whereas devaluations help them. Other things equal, an airline is unambiguously in a worse competitive position if there is a revaluation, since its costs will have risen relative to those of its overseas competitors.

Fortunately, other things are not always equal. Exchange rates alter in response to different rates of change of prices in different countries. If a country's prices rise by 20%, and those of all other countries by 10%, a 10% devaluation will be required to restore that country's trading balance. The airline of the country is neither better nor worse off as a result of these changes. It pays more for its non-tradeable inputs, but the same price when converted to other currencies; thus its cost structure is unaffected. Some airlines are based in low inflation countries, such as Germany or Switzerland. What they gain through lower inflation they lose through systematic revaluations of the home currency. (For an analysis of exchange rate movements and how they affect different industries see Kruger, 1983).

By no means all exchange rate changes are related to inflation. In the period since 1970, there have been substantial real currency realignments. It is not necessary to discuss the reasons for these

changes, which may reflect shifts in trading performance, monetary factors, or 'overshooting'. It suffices to note that significant changes do occur. For example, in the early 1980's, Sterling rose in spite of a relatively high British inflation rate (see Forsyth and Kay, 1980). This meant a real exchange rate revaluation, which was a major problem for BA. It is safe to predict that changes in real exchange rates will continue, though their magnitude and direction cannot be forecast scientifically. This implies that the relative costs of airlines based in different countries will change.

The scope for an airline to adjust in response to a change in relative costs depends on the structure of the markets in which it operates. This will determine its ability to alter prices. The source of its revenue is unimportant, except that it may be correlated with market structure. If, for example, most of its revenue is home-based, this may increase its room for adjustment, as most of its competitors may be facing exactly the same cost pressures. The position of British charter airlines is a case in point - they mainly compete with each other, and not very directly with overseas airlines.

Suppose an airline operates in a competitive market with a number of overseas airlines. When its currency experiences a real revaluation, it will face a rise in costs relative to those of its competitors. Prices, however, will be set internationally, and there will be no scope for the airline to raise prices in line with costs. If it was just covering costs, it will now have to obtain a subsidy for these markets, or leave them.

Fortunately for most international airlines, they do not always operate in competitive markets. Frequently they operate in joint monopoly markets, where prices are set with one other airline from the other country. Price control may be backed up with capacity controls, usually on the basis of equal sharing of capacity. Prices may be set to maximize profits, or they may be set such that the higher cost airline will cover its costs. A revaluation will lead to an adjustment of fares such that the airline of the revaluing country is not unduly harmed. It could gain.

Suppose that Britain revalues by 20% and that BA's costs fall by 10% in Sterling terms, and rise by 10% in terms of other currencies. One solution would be to lower Sterling fares by 10%, and raise fares in the other country's currency by 10%. This amounts to a situation where the whole of BA's cost increase is passed on to consumers. The other country's airline will gain a profit, and BA will be relatively unaffected. The other country's government may not like its citizens paying more to accommodate BA.

A more likely course of action is that each country agrees to keep the fare constant for traffic originating at home; this will mean that the fares to and from Britain will be different. Both airlines will make extra profits on British originating traffic, though the British airline will make losses on the traffic originating in the other country. The size of these profits and losses will depend on how much BA's costs have been affected by the revaluation. The overseas airline makes profits on the British originating traffic, but is unaffected as far as its home originating traffic is concerned. If each airline has a 50% share of each traffic, traffic levels are equal and there is no change in them, BA would be unaffected, and the overseas airlines would earn additional profits. A British devaluation would produce the opposite result. In some markets, such as the North Atlantic market, overseas originating traffic may dominate, and it is possible for the policy of constant air fares in home currency terms to result in a loss for the revaluing country's airline, because the profit on home sales is less than the loss on overseas sales.

It may seem that airlines can insulate themselves from exchange rate movements if they keep prices in home currencies constant, something which they can do in a cartelised environment. There is a catch to the argument however. In this case, it has not been possible to *avoid* a change in relative position. What has happened is that the airlines of the other countries, which are 'not revaluing', are making higher profits. These are the airlines of the countries which are devaluing relative to Britain. If Britain devalues, these countries will be revaluing, and their airlines will be doing less well. The same rules, that revaluations do not affect profits, does not appear to work for them. All that has happened is that prices were set such that one country avoided the change in financial situation. Either the revaluing country's airline loses, or other countries' airlines gain, or both. There will always be a change in relative performance when a country alters its exchange rate; it is possible that some, perhaps all, of the burden of adjustment may be shifted to other countries. When Sterling changes relative to other currencies, will the burden of adjustment always be shifted from BA to other countries' airlines? This is unlikely; BA will probably face some alteration in its position.

To analyse this question adequately, it would be necessary to develop a model which explains, in a many-country world, how air fares are set, and how the prices of tradeable inputs are determined. It is possible to construct models where, because of the presence of collusion, an airline can isolate itself from change, or even profit from a revaluation. This is a polar case, however, and there is no *a priori* reason to expect that it will apply to many practical situations.

No amount of collusion and price fixing can alter the fact that one airline's financial position will have altered relative to the position of others.

In practice, BA operates in some fairly collusive markets, where the scope for sharing adjustments exists, and in some fairly competitive markets. The likely consequence of a revaluation will be that costs in Sterling terms fall, though by less than the amount of the revaluation, but rise in terms of other currencies. In competitive markets, the fares and yields in other currencies will stay constant, but in Sterling terms they will fall by the amount of the revaluation. In collusive markets, fares and yields will fall, and if the airline is able to induce its partners to absorb all of the change in profit, yield will fall by the same proportion as costs. There is no strong reason for believing that BA is the one airline in the world which can induce its partners to absorb all adjustments, so it can be expected that it will lose out somewhat in these markets too.

Overall, the impact of a revaluation on an airline is likely to be a decrease in yields, but a smaller decrease in unit cost, and thus a deterioration in the airline's financial performance. Certainly BA's fortunes appear to be related to the exchange rate; when Sterling was high, it incurred large losses, and when Sterling fell, its profitability improved dramatically. Other factors have been at work during this period, and not all changes can be attributed to exchange rate changes. It is necessary to examine the data to see how consistent they are with this analysis.

This analysis suggests that there is little airlines can do when faced with a deterioration in their relative position due to exchange rate movements. If they operate in collusive markets, and they are not maximizing profits already, then they can raise prices (in world terms). Apart from this possibility, their profitability will fall. They can attempt to obtain inputs from different countries, or they can seek to earn revenues in different markets. However, if they were operating efficiently beforehand, they will have no scope to do this. They can protect themselves from short term unanticipated fluctuations through the use of forward and futures markets, but these provide no solution to the problem of longer term changes in relative costs which come about through exchange rate changes.

2. Exchange Rates, Airline Costs and Yields

In the last few years, there have been substantial changes in the value of Sterling in terms of other currencies. It is common to quote the Sterling/US Dollar exchange rate; this is probably the most important

single exchange rate between Sterling and another currency, but during this period, the relationship between Sterling and other major currencies changed in different directions. In Table 5.2, exchange rates between Sterling and five other currencies - those of the US, Netherlands, France, Germany and Italy - are given. These countries were chosen because their airlines are some of the major competitors of BA.

In nominal terms, Sterling had in 1982 returned to the same position vis-a-vis the US Dollar as it had occupied in 1977, but in the intervening years it had risen and fallen sharply. Relative to the German Mark and Netherlands Guilder, there has been little change, but Sterling has appreciated relative to the French Franc and the Lira.

TABLE 5.2 EXCHANGE RATES 1977-1983

Value of £ sterling in other currencies

Year	US (\$US)	Netherlands (Guilder)	France (Franc)	Germany (Mark)	Italy (Lira)
1977	1.75	4.28	8.57	4.00	1540
1978	1.92	4.15	8.65	3.85	1628
1979	2.12	4.26	9.03	3.89	1763
1980	2.33	4.62	9.83	4.22	1992
1981	2.03	5.03	10.94	4.56	2287
1982	1.75	4.67	11.48	4.24	2364
1983	1.52	4.33	11.55	3.87	2302

Source: CSO *Financial Statistics*, average daily telegraphic transfer rate.

This table does not say much about relative costs. If these exchange rates had merely reflected differential inflation rates, then airlines based in different countries would not be differentially affected. It is thus necessary to correct the exchanges rates to allow for different inflation rates in these countries. This is done in table 5.3. Inflation is measured in terms of movements in the Retail (UK) and Consumer Price Indices. These are not ideal as measures of costs to a firm, but they give a fair picture. The base period is taken as 1977, and exchange rates for subsequent periods are adjusted by the relative movements in prices. The table thus shows the exchange rates which would have been obtained if all countries had the same rate of

inflation as Britain. For example, by 1980 Britain had inflated more rapidly than the US; if the US had inflated as rapidly as Britain, the exchange rate might have been 2.48 rather than 2.33. Because Britain has had a relatively high rate of inflation (except as compared to Italy), the effective revaluation was greater. In real terms, Britain has revalued relative to all except the US, and by a substantial amount relative to the Netherlands, France and Germany. Since 1980, there has been little change relative to the European countries, but Sterling has fallen a lot relative to the US Dollar.

TABLE 5.3 EXCHANGE RATES ADJUSTED FOR INFLATION 1977-1983

Value of £ sterling, at constant inflation rates, in other currencies

Year	US (\$US)	Netherlands (Guilder)	France (Franc)	Germany (Mark)	Italy (Lira)
1977	1.75	4.28	8.57	4.05	1540
1978	1.93	4.32	8.58	4.06	1571
1979	2.17	4.82	9.12	4.47	1681
1980	2.48	5.80	10.37	5.43	1849
1981	2.19	6.62	11.40	6.92	1988
1982	1.93	6.29	11.63	5.94	1915
1983	1.70	5.96	11.15	5.50	1727

Source: Table 5.1 and CPI data from *Department of Employment Gazette*

Another way of looking at this information is to convert price indices into common currency terms. In Table 5.4 all price indices are converted into US Dollar terms. The result is a table which shows the combined effects of inflation and exchange rate changes. For example, the table shows that the price in US Dollars of a bundle of goods purchased in the Netherlands would have increased from 100 in 1977 to only 115.5 in 1983. This gives a measure of the cost pressure that firms operating on international markets, such as airlines, would have faced.

Prices in the UK relative to those in the US were, after adjustment, very high in 1980. After then, the US Dollar started appreciating. The UK position relative to that of other European countries continued to worsen in 1981, and it was only by 1983 that a clear improvement had become evident. The prices facing a British firm in

TABLE 5.4 CONSUMER PRICE INDICES IN US DOLLAR TERMS
1977-1983

Year	US	UK	Netherlands	France	Germany	Italy
1977	100.0	100.0	100.0	100.0	100.0	100.0
1978	107.6	119.8	118.1	119.0	118.5	116.6
1979	119.8	149.2	132.3	139.6	135.5	136.6
1980	136.0	193.2	142.9	159.6	143.8	160.7
1981	150.1	188.0	121.8	141.4	123.2	145.6
1982	159.2	176.4	119.9	130.0	120.1	141.8
1983	164.4	159.8	115.5	122.9	117.9	142.5

Source: Exchange rates as for Table 5.1
CPI as for Table 5.2

1980 and 1981 were a lot higher, when compared to competitors' prices, than they were in 1977 or in 1983.

The prices faced by airlines for their inputs do not vary simply with consumer prices. The prices for some important inputs, such as fuel, alter in a rather different pattern. Fuel is a tradeable with an internationally set price (apart from taxes). Airlines buy other inputs on international markets, but a high proportion of these would come from the US. An airline input cost index was constructed - it is given in Table 5.5. The following inputs were indentified: fuel, given a weight of 0.2 (its share of total costs in 1977); domestic purchases (including labour), given a weight of 0.5; and tradeable inputs, given a weight of 0.3. No really adequate fuel price index is available. One was estimated from fuel prices paid by major US airlines. While the actual prices paid by airlines in other countries would differ, the movements in the prices would be similar. The price index for domestic purchases was taken as the CPI or equivalent, and for tradeable inputs, the US CPI was used. The resultant index is shown in Table 5.5. While far from perfect, it gives an indication of how relative input costs have changed over the period.

The changes are not as dramatic as those in table 5.4; the fact that airlines use tradeable inputs such as fuel means that movements are dampened. The relative position of British based airlines worsened considerably by 1980 and 1981, but has improved since. The position vis-a-vis the US was about the same in 1983 as it was in 1977; however that vis-a-vis the European airlines was still

TABLE 5.5 AIRLINE INPUT COST INDICES IN US DOLLAR TERMS
1977-1983

Year	US	UK	Netherlands	France	Germany	Italy	Non-UK Composite
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	107.9	113.6	113.2	113.6	113.4	112.4	110.0
1979	127.9	142.6	134.1	137.8	135.7	136.3	131.9
1980	157.8	186.4	161.2	169.6	161.7	170.1	162.2
1981	177.8	196.8	163.7	173.5	164.4	175.6	174.6
1982	182.0	190.6	163.3	167.4	162.4	173.3	175.3
1983	179.7	177.4	155.3	159.0	156.5	168.8	171.2

Source: Table 5.3 and US Civil Aeronautics Board, *Long Term Fuel Expense, System Trunks and Locals*, March 1983 and *Recent Fuel Trends*.

significantly worse in 1983. In column 7, a composite index of Britain's competitors' costs is given. This was constructed using weights of 0.52, US; 0.07, Netherlands; 0.20, Italy; 0.11, France; and 0.1, Germany (these were based on the relative shares of total air passengers to and from Britain in 1976. From CAA *Annual Statistics*, 1976). While this is a rough index with little precise meaning, it suggests that in 1980 and 1981 BA's input prices, compared to the 1977 position, had risen about 15% above those of its competitors. This is a very large and significant worsening in competitive position.

The same information is summarised in Sterling terms in Table 5.6. It can be seen that BA's relative position reached its worst position in 1980, since when there has been a consistent improvement. To illustrate the pressure that BA was under, an index of its revenue yield is also given. In Sterling terms, its yield increased slowly until 1980, and since then it has increased rapidly. It fell behind the cost index considerably around 1980, since when it has caught up. In fact, it is not necessary for yields to match input cost index increases for airlines, since airlines normally enjoy productivity improvement.

It will become clear that BA was not held to the same revenue yield increases as other airlines during the revaluation period. In a completely competitive environment it would have been unable to increase its yields more rapidly than other airlines - this is what would be expected under the noncompetitive model. This would take the form of the Sterling prices of given trips rising relative to their

TABLE 5.6 COST AND YIELD INDICES 1977-1983

(IN STERLING TERMS)*

Year	UK Input Cost Index (1)	Composite Input Cost Index (2)	Ratio (1):(2)	BA Yield Revenue/TKP
1977	100.0	100.0	1.00	100.0
1978	103.3	100.0	1.03	102.7
1979	117.3	108.5	1.08	106.0
1980	139.8	121.6	1.15	117.3
1981	169.6	150.5	1.13	132.7
1982	190.2	175.0	1.09	151.7
1983	204.3	197.1	1.04	165.3

Source: Table 5.4, and British Airways, *Report and Accounts*, 1983-84.
Yield figures for year ended March following year.

- * The cost index used in this table differs in some years from that in Table 4.4. That in Table 4.4 is to be regarded as more accurate, as it is based on prices actually paid by BA. The index here is a simple index calculated for a number of countries on the same basis (as we have less data on other airlines than on BA). The index above is lower in 1980 than that in Table 4.4 - this reflects the fact that wages grew more rapidly at that time than general prices, and possibly that BA's scope for using tradeable inputs is less than assumed. If the input cost index from Table 4.4 were used it would strengthen the points made in this chapter.

price in the foreign currency. This is confirmed in Table 5.7, which also suggests that relative air fares alter as exchange rates alter. Information is presented for economy fares to and from a number of cities (peak economy fares are given). In 1972, before there were major changes in parities, the fares to and from London were fairly comparable. By 1977, Britain had devalued, and fares from London were uniformly less, and often significantly less, than the fares into London (which were set in the other currencies). By 1980, the pattern was reversing itself. Ex New York and Toronto fares were lower than Ex London fares. By 1981, the pattern was altering - Sterling was falling relative to the US Dollar but still rising relative to several European currencies. The ratio of UK to foreign fares in European markets was lowest around 1981, and in the North American market, in 1980. By 1982 and 1983, fares Ex London had fallen relatively in all markets, except the Paris market (France was devaluing).

TABLE 5.7 FARES TO/FROM LONDON (VARIOUS YEARS, £ STERLING)

		1972	1977	1979	1980	1981	1982	1983
New York	TO	93.00	196.00	208.00	223.00	285.00	350.00	367.00
	FROM	99.00	222.00	161.00	176.00	314.00	344.00	418.00
Paris	TO	14.20	34.50	44.50	42.50	50.50	54.00	62.00
	FROM	15.61	41.62	47.84	44.13	49.29	52.00	59.44
Rome	TO	43.25	105.50	117.50	138.50	159.50	181.00	194.00
	FROM	46.49	118.40	127.00	148.32	171.94	202.43	263.95
Singapore	TO	232.55	382.00	317.00	563.00	609.50	772.00	803.00
	FROM	255.10	640.30	477.70	532.40	663.70	804.80	860.50
Sydney	TO	316.65	514.00	550.00	706.00	771.00	850.00	911.00
	FROM	332.60		508.80	720.00		1029.00	1157.00
Tokyo	TO	297.40	502.50	616.00	776.50	788.50	828.00	870.50
	FROM	327.00	686.00	666.00	722.00	885.00	875.00	1058.00
Toronto	TO	93.25	221.00	248.50	330.50	344.00	363.00	422.00
	FROM	102.50	239.00	188.59	232.36	342.22	336.32	465.43
Frankfurt	TO	23.60	49.00	62.50	75.00	81.00	84.00	96.00
	FROM	25.70	74.90	80.20	87.50	88.00	98.40	116.70
Amsterdam	TO	21.35	37.00	47.50	56.50	62.50	65.00	74.00
	FROM	16.79	52.60	57.20	61.90	60.70	68.40	78.70

Source: ABC World Airways Guide, various years.

This table suggests that official prices in each currency do not change as much as exchange rates when the latter alter. Actual prices charged may alter more. This is in spite of a high underlying rate of inflation; difficulties in changing actual prices cannot be an explanation. It is most likely to be the result of a systematic policy to protect the revenues of the airlines of revaluing countries. If they have a disproportionate share of the traffic originating at home, their revenue yield will rise relative to that of their competitor. This is only possible if the markets are moderately collusive (a constant or relatively unchanging ratio of home to overseas fares, as exhibited on the Paris route, is no evidence of competition however).

It is worth noticing the differences between markets as well. Between 1977 and 1980, the main revaluation period, fares in Sterling to and from most of the markets selected rose significantly - as one might expect, given the cost increases that BA was facing. In the all important New York market, this was not the case; here, fares increased in money terms quite slowly (in fact, Ex New York fares fell). This is perhaps the most competitive of the markets selected. BA and other British airlines would have been unable to push yields up to cover the costs of revaluation.

BA's main competitors on the North Atlantic were the US airlines, Pan American and TWA. It is worthwhile examining how their Atlantic yields and costs varied during the period. This is done in Table 5.8. Revenue yields and unit costs are given in US cents and

TABLE 5.8 REVENUE YIELDS AND UNIT COSTS, US AIRLINES
ATLANTIC OPERATIONS, 1978-83

Year	1 Rev. Yield/ RPM (US cents)	2 Cost/ RPM (US cents)	3 Rev. Yield/ RPM (pence)	4 Cost/ RPM (pence)	5 Index 3	6 Index 4
1977	7.40	6.94	4.24	3.98	100.0	100.0
1978	7.40	7.08	3.89	3.69	91.7	92.7
1979	7.08	7.00	3.34	3.30	78.8	82.9
1980	7.93	8.18	3.41	3.51	80.4	88.2
1981	9.98	9.32	4.43	4.60	104.5	115.6
1982	9.28	9.26	5.31	5.29	125.2	132.9
1983	9.98	9.33	6.58	6.16	155.2	154.8

Source: US CAB *Financial and Traffic Results, Atlantic Operations, US Combination Carriers*, various years.

in pence. Like most international airlines, the US airlines suffered a cost squeeze in 1980 (not as severe as BA's) which lasted until 1982. The US airlines' revenues and costs, when converted into Sterling terms, fell quite substantially even in money terms in 1979 and 1980. This is an indication of the type of competition that BA was facing. Its competitors' costs, yield and probably fares, fell in Sterling terms - this would make it difficult to keep up its fares and yield. BA's drop in yield would have been lower, since it was more dependent on British originating traffic, but it would still have lost out relative to its costs.

The position of BA can also be compared to that of world airlines in general. This is done in Table 5.9. Revenue and cost per TKP and

TABLES 5.9 REVENUE YIELDS AND UNIT COSTS, WORLD AIRLINES AND BRITISH AIRWAYS 1977-1982 (STERLING TERMS)

<i>World Airlines</i>				
Year	Revenue/ TKP 1	Cost/ TKP 2	Revenue/ ATK 3	Cost/ ATK 4
1977	100.0	100.0	100.0	100.0
1978	94.5	94.2	100.0	99.4
1979	91.9	95.9	98.8	102.5
1980	101.3	107.5	104.8	110.8
1981	120.1	127.7	125.3	132.9
1982	139.9	147.9	145.8	153.8
<i>British Airways*</i>				
(for year ended March following year)				
1977	100.0	NA	100.0	100.0
1978	102.7		109.1	108.6
1979	106.0		119.2	125.1
1980	117.3		124.7	138.9
1981	132.7		145.4	152.5
1982	151.7		166.7	159.9

Source: ICAO *Aviation Statistics of the World*, 1982 and British Airways, *Report and Accounts* 1982-83

* For British Airways, Col 1 for scheduled operations only, cols 3 and 4 for total operations.

ATK are given for world airlines and BA in Sterling terms. It is clear that patterns are different. Yields and costs fell in Sterling terms from 1977 to 1979 and since then they have increased very rapidly. For BA however, costs rose rapidly to 1980, and yields rose more rapidly than those of other airlines, but still less than costs. Since then, costs have risen less rapidly to 1980, and yields rose more rapidly than those of other airlines, but still less than costs. Since then, costs have risen less rapidly, and yields have more than caught up. This table reflects the combined effects of a number of factors, including the recession.

It is possible to correct for the effects of the recession on BA. Suppose that BA's revenue per ATK relative to costs per ATK were the same as that for world airlines in general (i.e. it made profits and losses in the same periods as world airlines). This does not allow for the *differential* effects of the world recession in different countries and different airline markets. Taking BA's actual cost per ATK, the revenue would then be as shown by column 3 of Table 5.10. The difference between actual and adjusted revenue per ATK shows the impact of factors other than the recession. It suggests that BA performed similarly to other airlines until 1979. In 1980, its actual revenue position was significantly worse than for other airlines. By 1981 its position was better, and by 1982, very much better. Put

TABLE 5.10 COST AND REVENUE/ATK BRITISH AIRWAYS 1977-82
(IN PENCE)

Year	Cost/ ATK	Revenue/ ATK	Adjusted Revenue/ ATK	Overall Load Factor (Scheduled Flights) %
	1	2	3	%
1977	16.18	17.02	17.06	57.9
1978	17.56	18.57	18.50	61.6
1979	20.10	20.19	20.30	64.6
1980	22.49	21.23	22.38	60.7
1981	24.66	24.74	24.49	63.0
1982	25.94	28.37	25.88	63.5

Source: British Airways, *Report and Accounts*, 1982-83 and ICAO *Aviation Statistics of the World, 1982*. Adjusted as in text.
Figures for year ended in March of following year.

another way, virtually all the improvement in BA between 1980-81 and 1982-83 can be ascribed to factors other than the recession, which affected all airlines. There are several factors which explain the performance of BA in the years since 1977. There was the DC 10 grounding, the competitive situation (the presence, then absence, of Laker) the Sterling revaluation and subsequent devaluation, and productivity growth in BA.

The loss in 1980-81 can be attributed partly to the competitive environment but mainly the exchange rate, as can much of the turnaround since then. The DC 10 grounding affected BA in 1979-80. BA's performance in this year was about the same as that of other world airlines. We would expect it to be worse, because the exchange rate had started to rise by then. However, this was possibly offset by the positive effects of the DC 10 grounding. BA did not operate any DC 10's but many of its competitors did. During this year, BA enjoyed a temporary, but significant increase in its load factor. Were it not for this, its performance would have been worse, and it is likely that it would have recorded an operating loss. It is difficult to be sure how important this factor was.

It is difficult to assess changes in the competitive situation. The turnaround had commenced by 1981-82, though Laker was competing on the North Atlantic for most of this year. It is unlikely that much of the downturn in 1979 and 1980 can be attributed to Laker, which had been operating since September 1977 (see Banks, 1982, for a history of Laker's operation). It is undeniable that Laker had some impact on fares at the lower end of the market, but its impact on overall fares and yields may have been less. For the whole period, the really significant competition for BA in most market segments came from the US airlines, with over 50% of the traffic. In markets other than the North Atlantic, competitive conditions changed (for example, the Australia route became less competitive), but it is unlikely that these changes, which were not all in the same direction, could have explained much of the changes in fortune of BA.

While on the North Atlantic - BA's major market - there was some alteration in the competitive position (as indicated by the presence of low fare airlines), this was probably of much less significance than the position vis-a-vis US airlines. In 1980 BA's competitive position worsened, but by 1982 it had significantly improved. This was, however, mainly because of changes in the competitiveness of its main rivals, due to exchange rate changes. Exchange rate changes may be underrated by airlines because they manifest themselves as

changes in competitive conditions in individual markets. Because they can sometimes be partly insulated against (e.g. in some European markets) their impact differs across markets. In summary, after allowance is made for the various factors affecting BA's performance over the past few years, the evidence is very consistent with the view that a major part of the crisis in 1980-81 and the subsequent turnaround can be ascribed to changes in exchange rates.

Other British airlines would have been affected too. Those operating on the North Atlantic would have done poorly at the same time as BA: Laker went bankrupt. Other British airlines would have fared differently. The charter airlines would not have lost (they could have gained) from the revaluation, because they operate in markets where there is not much foreign competition and would have profited from the additional British travel. BA and Laker were the most exposed to the revaluation, and they suffered the most.

The evidence, summarised in the tables, also suggests that the improvement in BA's environment continued into 1983. There has been a continuing improvement in performance shown by the results of the 1983-84 year, and this will be due in part to the further change in the exchange rate position. This will not be as important an influence as it was between 1980-81 and 1982-83, but then BA's improvement in the last year has also been less spectacular.

It should be no surprise that airlines, being providers of internationally marketed services, should be vulnerable to exchange rate movements. While an airline can through its borrowing in different currencies, and dealings in forward markets, hedge on its asset/liabilities position to reduce risks which arise from exchange rate changes, there is relatively little that it can do in terms of reducing its exposure to input and output price changes. Exchange rate changes mean its costs relative to those of its overseas competitors change. There is little an airline can do about this, since its ability to switch its purchases from one country to another for non-traded inputs is quite restricted. It has been suggested that there is some room for manoeuvre on the pricing side, and that the airline may share the adjustment with its competitors. In the face of relative cost increases, it may be able to secure relative yield increases, which will be a partial offset. The airlines of revaluing countries, subject to competition from other countries' airlines, will lose, and those of devaluing countries will gain.

6.

LABOUR MARKET ISSUES: WAGES AND SUPERANNUATION

1. Privatisation, Regulation and Wages

An alteration in the objectives of a firm or of the environment within which it operates may produce a change in employment policy, and in wages paid and employees hired. A good example of this arose in the US airline industry. Deregulation meant that many new airlines started up, and these were able to write new contracts with employees. Usually these airlines employed non-union labour. The result was that the market power of labour was reduced, and there appears to be evidence that real wage rates have been reduced. The changes have probably not yet worked themselves out, and the consequences of deregulation for employees of the industry may become very significant. It is important to examine whether privatisation, and the changes in regulation which may accompany it, will have an impact on the labour market.

Privatisation, without any change in regulation, is unlikely to alter the objectives of unions. It is also unlikely to weaken their power within the labour market. If employees are strongly unionised now, they will continue to be. They will be dealing with the same number of firms (possibly a few more, if British Airways is divided into separate airlines), with the same degree of market power in product markets. Any changes in outcomes which will come about will be as a result of changes at the firm level.

A private firm's attitude towards the labour market may differ from a government firm's. The incentive to earn profit is greater, and the incentive to avoid unpopularity will probably be less. Effectively we are dealing with a bilateral monopoly - a game between the union and firm. The union can impose costs on the firm, through strikes, or through higher pay. It is possible that a government firm will be more sensitive to strikes than a private firm, which may be more concerned about the rates of pay it faces. In short, under some fairly plausible assumptions about objectives, the private firm may combat strikes more strongly, and secure lower rates of pay. For some advocates of privatisation, this may be the major benefit.

It must be noted that, from a national point of view, reducing wages in the airline industry and in BA is not necessarily a good thing. It will involve a transfer from employees to owners and consumers, and to the extent that the tougher policy is anticipated before sale of BA, the gains to the owners will be transferred to the Government and

the taxpayer through a higher sale price. This distributional change may be judged desirable or undesirable.

If wages in BA are significantly higher than those which the employees would enjoy if there were a free market in labour, (i.e. the unions possess and exercise monopoly power), the size of the industry, and employment in it, would be inefficiently low. A reduction in wages would enable efficiency gains through an expansion of the industry and employment in it. It is difficult to know how big these allocative efficiency gains would be, though they could be significant if demand for air travel were elastic (and it probably is, though it is also regulated). Secondly, there would be a loss if there was 'rent seeking'. This is where there is a restricted number of high paid jobs, and potential entrants waste resources (say by undergoing unnecessarily long training periods) to gain these jobs. This almost certainly happens in some sections of the airline industry. Use of monopoly power invariably creates costs; weakening this power will reduce these costs.

It is difficult to obtain information on the likely impact on wages of privatisation. Over time, BA appears to pay the same or slightly more for its labour than the private British airlines, according to ICAO statistics (*Fleet and Personnel*, various years). These are average statistics however, and they may be consistent with various different interpretations - for example, it may be that BA has more employees at senior levels or flies large aircraft. Comparisons may not tell us much about what could be expected if BA were sold, as it is by far the largest employer in the industry, and it may be the price leader. If it were sold, and adopted a tougher line on pay, it is possible that wages in *all* British airlines might fall as well.

Regulatory changes could also alter the balance in the labour market, as was the case in the US. However, it seems unlikely that the types of changes that could or would accompany privatisation would make for large changes in the labour market. In the US, the impact was mainly through new airlines setting up. Currently it is easy to establish new airlines in Britain, and operate in the extensive charter market. Easier access to the routes which Britain does control would probably not spawn many new airlines. If a major impact was to be made on the labour market, it probably would have already have happened with the growth of the charter market (it is possible that the existence of the charter sector has moderated wage growth in the industry through weakening the monopoly power of unions).

Privatisation may affect wages and working practices (initially the latter more than the former). It is likely that it will put downward

pressure on wage levels. The main consequences of this will be distributional rather than in terms of efficiency. The main beneficiaries would be consumers and taxpayers and, to the extent that the change was not foreseen, the owners of BA. If wages are at above market levels, there may be some efficiency gains. If efficiency gains are to be substantial, it is most likely that they will be achieved in the improvement of working practices.

2. The Superannuation Liability

The BA pension scheme is something which many consider to be a large liability which will detract from the value of the airline. Pension plans are widespread in the public and private sectors, but the BA scheme is a generous one. In the future, there may be large payouts. Granted that certain obligations have been incurred, it is desirable to measure them, and assess whether they affect the value of the firm. It should be noted that when private sector takeovers are being evaluated, it is rare for the pension liabilities to be given much attention. Perhaps this is because they do not much affect the value of the firm; the same may be the case with BA.

Some details of the scheme, from the 1982-83 BA *Annual Report*, are relevant here. It is a funded scheme, with contributions from employees and employer. The proportions of salary contributed by employees ranges from 5.75% (female general staff) to 8.5% (pilots) and by the employer from 12.65% (female general staff) to 32.3% (pilots). The employer's contribution in 1982-83 was £63 million, which represents 15.3% of salaries. The actuarial valuation of current and future liabilities at September 1982 was £2371 million. The contributions at existing rates were judged to cover the growth of these liabilities.

In the main, even very generous superannuation commitments do not necessarily constitute a liability to a firm. Superannuation is part of an overall remuneration package for the employees. As such, it is difficult to separate it from other aspects of remuneration. Employees make a contract with the firm taking into account the various forms of remuneration. An attractive superannuation scheme will make them willing to compromise on other aspects of remuneration, such as basic salary. Some forms of employment are noted for good superannuation benefits but relatively low salary, while others must offer higher base salaries to make up for the lack of, or poor, superannuation. An enterprise which is committed to generous superannuation is not necessarily committed to generous remuneration. There is no such thing as a 'typical' superannuation

scheme in the private sector, and even if BA's scheme is generous by private sector standards, it need not create any commercial disadvantage.

The important question is whether BA is offering overall remuneration which is more generous than it needs to. If it is, it need not be committed to do so in the future. In order to qualify for the superannuation benefits, employees must stay in the firm. While it may not be able to reduce superannuation benefits, it can reduce wages (i.e. in times of inflation, not increase them in line with prices). Rather than lose the benefits, employees will accept lower salaries, until such a point where overall remuneration is neither more nor less generous than it needs to be to secure the services of the employees. This is consistent with any form of organisation of the labour market, including strong unionisation.

It is quite possible that BA is paying its employees the remuneration necessary to secure their services, and no more. If it had a less generous superannuation scheme, it would have to pay higher salaries. If this is so, the superannuation scheme is of no more consequence than other perks that might be enjoyed in a firm, such as company cars or the rights to low price air travel (such as BA's employees also enjoy). It is not necessary to estimate any liability which accrues because of this, nor is it necessary to include some superannuation liability, since no real liability exists.

Suppose that British Airways is paying above market rates for its labour services. There are two ways in which this could happen. It may be that employees are effectively unionised, and that labour rates are what BA needs to pay, given this unionisation, to obtain labour services. Alternatively, BA may be paying more than it needs to, and it may be offering a generous superannuation scheme as a gift to its employees. If the first is true, when privatised it will pay the same wage rates unless the union negotiates a lower rate, since it has to. It may change the balance of cash and superannuation. BA will be at a disadvantage as compared to airlines that can obtain their labour more cheaply. If the second is true, it can be expected that a private BA will reduce remuneration to the level needed to employ the required labour. This might be done by reducing either superannuation benefits or cash wages.

Suppose, as has happened in several US airlines, that there is a distinction made between 'old' and 'new' employees. The 'old' employees may be paid better and/or have more generous superannuation than the new employees. A private firm would pay the latter a remuneration which is just sufficient to secure their

services. The 'old' employees may have market power which enables this situation to arise.

In both these cases BA, perhaps because of its history, may be constrained to pay more for labour in the future than the market rate of remuneration, or more than other airlines. This will reduce its profits, and to this extent, it will be a liability. However, the constraint is on overall remuneration, not superannuation as such, even though the additional payment above the market wage may take the form of generous superannuation. The remuneration package could be rearranged to include more cash and less superannuation. This liability will be taken into account when profit projections are made giving BA's likely actual payments for labour - it will not be necessary to make a special estimate of it to subtract from assets.

It may be that superannuation is not a good way to pay employees. There are tax advantages, but superannuation may be perceived by employees as being less valuable than cash. The fact that private superannuation schemes are less valuable than government schemes, in spite of tax advantages, may be evidence of this. If so, a private BA may wish to alter its remuneration policies, and rely more on cash. It should find it easy to do so, since, by assumption, employees prefer cash. The superannuation scheme could not be regarded as a liability, since it can be replaced at no additional cost (perhaps even at a saving).

Accrued pension rights, are of course, liabilities. In a well funded scheme, they would be matched by assets, and we may assume this to be true of the BA scheme. They represent commitments, which may or may not have been wise, which the firm has entered into to pay certain people. Future pension rights are not like this because they do not commit the firm to pay any more than it otherwise would (unless the scheme is inefficient and unpopular and yet it is impossible to persuade employees to accept cash instead).

Liabilities arise only when there is an unavoidable commitment by the firm to pay more for something than it otherwise would pay. Such a commitment would reduce profits, and reduce the value of the firm. It is probably reasonable to presume that a private, profit-oriented, BA will not offer, or commit itself, to pay more for labour services than it needs to. To the extent that BA has already been committed to pay more, and it cannot avoid this commitment, its future profits will be less, and it is less valuable as a firm. However, such commitments cannot be attached to any particular form of remuneration, such as superannuation, unless it is impossible for one

form of it be traded off as against another. In the case of BA this is clearly not the case; the superannuation scheme is currently being altered.

It may be sensible to alter remuneration policies, by offering more cash and less superannuation. Does it make sense to buy out pension rights, as BA is doing at the moment? It may, but only to the extent that it is extinguishing a liability. Thus if accrued pension rights are reduced by a cash payment, future payouts are unambiguously reduced. In general, this will not be the case for future pension rights, to be earned by employees by service with the firm, since these rights are not a liability (any more than future cash wages are a liability).

The main features of BA's scheme for buying out pensions rights are, in outline, as follows:

- (i) employees joining BA after 1st April 1984 were not allowed to join the existing Airways Pension Scheme (APS) but were required to join the New Airways Pension Scheme. The new scheme differs in several respects from the APS; in particular, there is a limit on the extent to which benefits are indexed for inflation
- (ii) existing BA employees were provided with the option of staying in the APS or joining the new scheme
- (iii) employees switching to the new scheme were given a cash payment in respect of their accrued pension rights (or alternatively were allowed additional pensionable years) to compensate for the less generous indexation provisions in the new scheme.

The payments offered by BA to buy out pension rights therefore had the effect of extinguishing a liability (in respect of accrued pension rights).

ROUTES AS ASSETS: REGULATION, PROFITABILITY AND CROSS-SUBSIDISATION

1. Introduction

Regulation often, and especially when it is of the kind affecting British Airways, creates monopoly situations, and thus monopoly profits. The rights to earn these profits are consequently valuable, although they may be ill defined. At present, BA is the gainer through possession of these rights, and a substantial measure of the value of the airline can be attributed to regulation. In this chapter we seek to outline the issues involved in determining the value of these rights, and to show how this value can be roughly estimated.

The data necessary for an accurate route-by-route study of profitability are not available publicly. Data are required about prices and yields, costs and traffic; none of these is published. It is possible to make estimates of these, but they could be subject to substantial error. It is worthwhile undertaking some analysis of routes in order to illustrate the nature of the issues. The results give a broad picture, which is no doubt inaccurate in particular detail, but is probably more useful than the even less precise estimates on which much current discussion is based.

The very fact that we are forced to rely on such inadequate information is a serious source of concern. The Government proposes to sell (or give away) assets worth hundreds of millions of pounds, yet it is unwilling to state exactly what these rights are, or provide anything like sufficient information for them to be valued by potential buyers or the public. The likelihood of significant errors, with BA being sold for too much or too little, is thus increased. BA's two main assets are its aircraft and its routes - about the former we know as much detail as is needed, but about the latter, very little. It might be objected that information about route profitability is confidential commercial information, which would be of value to BA's competitors. In fact, on most of the regulated routes which matter, BA has no competitors. It has commercial agreements with partners who know BA's profitability. It is curious that Air France and Qantas know far more about these BA assets than the potential buyer or the owner, the taxpayer. In this respect, the Government is acting like a used car salesman who assures you that the car runs well but will not show you the engine.

It is also curious that the CAA should propose giving away some of BA's route rights without using the information available to it to

show how valuable these assets are. Clearly it is important that information on route profitability, of the kind the CAA collects, should be made available. The calculations we have done here are illustrative; they should be regarded only as an imperfect substitute for an analysis based on adequate information. The results here can however be relied upon to give a very broad impression of the extent of cross-subsidisation and its significance. We look first at the analytical issues involved in putting a valuation on regulation. Then, using a simple framework, we estimate the profitability and value of a group of major routes. Details are given in the appendix. An interpretation of these results, and the qualifications to them, are given in the third substantive section of this chapter.

2. The Price of a Route

A route will command a price if it is possible to earn above the normal rate of profit on it. If it is open to any airline to serve the route, above normal profits will be eliminated. In general, in the absence of regulation, monopolisation of an air route is not possible. Thus, regulation is a necessary condition for a route to become valuable. For example, there is no value on the rights to fly domestic routes in the US since they are freely available. Regulation is not a sufficient condition, however.

Some form of entry control is necessary for a route to become profitable. (In this chapter we use 'profits' to mean above-normal profits, and 'profitable' in the sense of the opportunity to earn above-normal profits). On most international routes that BA serves there are restrictions on entry. The main exception is routes to the US; however even on these entry is not completely free (especially from the UK). Thus Air Florida was recently able to sell its rights to the Miami-London route for \$3.5 million (*Aviation Week and Space Technology*, July, 1984). Entry control on its own is not a sufficient condition for profit, though if it is tight - and it usually is - it will make collusion easy. Two or four airlines, from two countries, possibly with similar cost structures, will find it easier to collude than fifteen from as many countries. In the airline case, collusion may be overt, and pooling agreements make breaking away from the cartel difficult. Examples do exist where collusion is tacit, and no formal agreements are entered into, though prices are kept up. Actual profits depend on the strategies of the different players in the game; for a given airline, these will be determinate. Some of BA's routes can be approximated by the limited entry plus collusion model, for example the route to Australia. Fare and capacity regulation of BA and its main rival/partner Qantas is currently minimal, though entry

is difficult for new competitors, and existing competitors are subject to capacity control.

On other routes, regulation is more detailed. Fare regulation, with entry control, need not ensure profits (it did not in the US prior to deregulation) but it will if collusion takes place between firms. Capacity regulation is frequently practised, especially in Europe, and it is the most effective way of securing profits. When capacity is limited to below the level that would obtain without regulation, fares will be forced up above costs - profits are the result. No collusive behaviour between airlines is necessary. Capacity limits may be ineffective if demand is below capacity at the competitive price.

In each of these cases, potential traffic and revenue are fairly well specified - they are most distinctly specified in the capacity control situation. Costs are not specified, and thus actual profit is not. BA's costs may be, and probably are, above the level that could be attained by an efficient firm. The price the route would be valued at in the market would be determined by the profits an efficient firm would make on it. On particular routes, BA may be the most efficient airline already. It is probably a potentially efficient airline on most of its routes. Potential profit will be greater than actual profit.

On any route there is a range of possibilities. Actual profit may be positive or negative. There may be scope for profit, but higher costs may result in a loss being incurred. Regulation may create scope for profit on routes which would be served at only normal profit by an efficient BA. It may also create the possibility of a profit where an efficient but unregulated BA would incur a loss (and so cease to serve the route). These are routes which BA is not suited to serve - perhaps local routes, or perhaps, more importantly, routes for which airlines from other countries have an advantage. Routes to South East Asia might be counted amongst these. Regulation may make it profitable for an inefficient airline to serve a route where an efficient airline would incur a loss in the absence of regulation; or regulation may lower the loss on a route which should not be served. In sum, regulation will normally create potential profits on routes which an efficient BA should serve, and lower the losses (or create profits) on those which an efficient BA should not serve.

In other countries, especially within Europe, regulation serves as a protective device - not simply as a device to increase profits. The home country airline is enabled to be larger and serve more centres, than would be justified on the basis of relative costs. Input costs facing Britain's airlines are somewhat lower than those of the US and European airlines, and thus it is likely that regulation, as a form of

protection, is not needed as much. Nevertheless, it should not be considered that British airlines, and BA in particular, would be the most suitable airlines for all BA's routes. In the absence of protection, some of BA's routes may be inherent loss makers which can better be served by airlines of other countries.

Widespread and tight regulation need not mean that profits are high. They can be dissipated in higher costs, and the routes served can be ones which an efficient BA would avoid (along, possibly, with other airlines). It is possible that the North Atlantic may be an inherent loss making route, not because British airlines are unsuited to serving it, but because airlines of other countries may receive subsidies for serving it. A private BA might reduce its involvement in such a difficult market. Already BA has cut out many loss making routes, but there may be more of these left. A profit oriented management would eliminate all of these. The value of the airline and its routes would depend on the potential profitability of the profitable routes, but not the losses of the unprofitable routes which would cease to be served.

3. A Route-by-Route Study

It is desirable to get some idea of the pattern of profits and losses on BA's network. Information on specific routes is very scarce. To circumvent this problem, we have developed some general rules about costs and fares, which when applied to known characteristics of routes, can give us a rough idea of the likely profitability. Thus we use some cost and fare functions, and allocate total traffic to BA according to the number and type of competitors on a route.

The approach we used was simple, and is described in detail in the appendix. We made an estimate of the relationship between yield per passenger (based on the economy fare and a minimum cut price fare) on each route and the length of the route. The cost per passenger for a given distance was assumed to bear the same proportion to average yield for this distance as total cost did to total revenue. Actual yield may, of course, be higher or lower. Two groups of routes were analysed separately - the Intercontinental routes, and the European and Gatwick routes. BA publishes aggregate data for these divisions. An estimate was made of BA's traffic, and profit (or loss) was calculated by multiplying the profit margin by traffic. Separate estimates were made using operating costs alone, and using operating plus capital costs, taken from the CCA accounts. The estimates were made for 1982-83.

Several objections to this method are obvious. For example, costs do not depend only on distance. They depend on market density, quality of service and load factors - variables about which adequate information is not available. The actual yields for a route depend on the whole fare structure, and the number of passengers travelling on each fare. Pro rating of European segments of long distance trips means that the amount received by the airline for a connecting passenger is well below the economy fare. Nevertheless, the economy fare is a starting point and the minimum fare a first step at measuring revenue dilution.

Tables 7.1(a) and 7.1(b) show considerable variation in estimated profit per passenger between routes. Most routes earn profits on an operational basis, but when total costs are considered, the majority lose (which is consistent with the overall loss). The costs of some short routes, such as Paris and Amsterdam are no doubt overestimated by the use of a linear cost function (as described in the appendix) and they may not in fact be loss-making routes. In addition, the loss incurred on some dense routes, such as New York and Paris, would be overestimated, since costs on these routes would also tend to be overestimated. Some routes are estimated to be profitable; the routes to Italy and Scandinavia, and to Tokyo. It is difficult to conclude other than that the North Atlantic and Hong Kong are loss-making routes.

Tables 7.2(a) and 7.2(b) (showing total profit) do not alter this impression. Several of the profitable routes (Harare, Oslo) are relatively small, whereas many of the larger routes were loss-making. The route estimated to be most profitable was that to Tokyo. Estimates of route profitability may be interesting in themselves, but their main importance is in giving some background to the discussion of the value of regulation. Some routes are able to yield profits in a year in which BA made overall losses mainly because of the regulation which is in place. The value of regulation is best discussed with reference to individual routes. Take, for example, the Tokyo route, which we estimate to be the most profitable single route out of those which we considered. It is estimated that it could yield £13.9 million per year in profits. Suppose that the regulation enabling this is expected to last (a) 5 years, or (b) 10 years, and that the cost of capital to BA and potential buyers of the route is 12% p.a. The value of the route would then be (a) £49.6 million or (b) £77.1 million. This is but one route, albeit one of the most lucrative. Other routes would be worth less, though still significant, amounts. For example, the route to Harare would be worth (a) £4.0 million or (b) £6.2 million. This was one of the routes proposed by the CAA for transfer from

TABLE 7.1 (a) ESTIMATED PROFIT PER PASSENGER: EUROPE (£)

	Yield	Operating Cost	Operating Profit	Total Cost	Profit
Athens	150	137	+ 13	160	- 10
Stockholm	126	92	+ 33	108	+ 17
Malaga	115	102	+ 13	120	- 5
Lisbon	113	97	+ 16	114	-
Rome	108	92	+ 16	108	-
Oslo	106	80	+ 26	94	+ 12
Vienna	105	83	+ 22	98	+ 7
Copenhagen	96	70	+ 27	82	+ 15
Milan	92	70	+ 22	81	+ 10
Zurich	74	61	+ 13	71	+ 3
Munich	72	68	+ 4	80	- 8
Geneva	65	59	+ 6	69	- 5
Hamburg	61	59	+ 2	69	- 8
Frankfurt	56	54	+ 2	64	- 8
Dublin	51	45	+ 7	52	- 1
Brussels	48	40	+ 8	47	+ 1
Amsterdam	40	41	- 1	48	- 8
Paris	38	40	- 2	47	- 9

Source: IFS calculations, as described in appendix. (Note that figures may not add up due to rounding).

TABLE 7.1 (b) ESTIMATED PROFIT PER PASSENGER:
INTERCONTINENTAL (£)

	Yield	Operating Cost	Operating Profit	Total Cost	Profit
Tokyo	554	336	+ 219	394	+ 160
Melbourne	554	516	+ 29	605	- 61
Sydney	533	518	+ 14	609	- 76
Los Angeles	391	315	+ 76	370	+ 21
Harare	389	304	+ 85	357	+ 32
Johannesburg	354	323	+ 30	379	- 26
Bombay	297	277	+ 20	326	- 28
Kuwait	264	215	+ 49	257	+ 11
Hong Kong	271	337	- 66	396	- 125
New York	217	236	- 19	277	- 61

Source: IFS calculations, as described in appendix.

BA. When considering these broad estimates of the profits made on individual routes it is worth noting that in the recent White Paper (Cmnd 9366) the loss of some South American routes coupled with the gain of routes to Jeddah and Dhahrain is estimated to yield B.Cal. £18m per annum in increased profits.

The same type of analysis can be applied to European routes. Suppose that regulation is expected to last for only five years, and that afterwards competition is the norm. Routes such as Stockholm and Rome would be worth £6.6 million and £1.1 million respectively. Malaga would be worthless. Currently it is estimated to make a small loss, though BA need not serve it. If BA were able to improve its European division's efficiency to the level of the Intercontinental division, or if the routes were transferable to other airlines which could achieve this level of efficiency, profits would be higher.

TABLE 7.2 (a) ESTIMATED TOTAL PROFIT: EUROPE

	Estimated Number of Passengers (000's)	Total Profit (£ million)
Amsterdam	971	- 7.9
Paris	821	- 7.0
Dublin	326	- 0.4
Frankfurt	234	- 1.8
Brussels	222	+ 0.3
Zurich	182	+ 0.5
Geneva	168	- 0.8
Athens	142	- 1.4
Milan	141	+ 1.5
Rome	140	+ 0.3
Copenhagen	129	+ 1.9
Oslo	117	+ 1.4
Munich	117	- 0.9
Stockholm	106	+ 1.8
Hamburg	102	- 0.8
Malaga	72	- 0.4
Vienna	61	+ 0.4
Lisbon	40	-

Source: IFS calculations, as described in appendix.

TABLE 7.2 (b) ESTIMATED TOTAL PROFIT: INTERCONTINENTAL

	Estimated Number of Passengers (000's)	Total Profit (£ million)
New York	497	- 30.1
Los Angeles	176	+ 3.7
Hong Kong	167	- 20.8
Johannesburg	159	- 4.1
Tokyo	87	+ 13.9
Sydney	73	- 5.5
Kuwait	66	+ 0.7
Melbourne	54	- 3.3
Bombay	52	+ 1.5
Harare	35	+ 1.1

Source: IFS calculations, as described in appendix.

It would be difficult to put an overall value on the regulation faced by BA. In principle it would be possible, but any calculations would be subject to too many qualifications. In total, the regulation is likely to prove very valuable, however. As an illustration, no more, suppose that efficiency in the European division were raised to that of the Intercontinental division, but that fares were not reduced on any European route. All European routes would then earn profits on our estimates. Total profit from the sample of European routes examined would be £52.7 million. If these routes are typical, total profits on Europe would be £138.7 million per year. At a real cost of capital of 12%, these would be worth £493.7 million with a 5 year horizon, and £767.6 million with a 10 year horizon. In fact, BA might not be able to keep fares constant, so that the European regulation may not be quite so valuable. However, regulation on Intercontinental routes, which creates such lucrative routes as that to Tokyo, would surely be worth more than zero.

In terms of the overall value of regulation, results depend critically on expectations of how BA will perform, and how regulation will be maintained. Results are thus not very reliable, though they indicate that regulation, in total, may be very valuable to BA. Assessments of the value of routes are least reliable when individual routes are being considered. The interrelationship of routes, both on the demand and operations side, is a problem which we recognise. However, it is possible to be fairly precise about the nature of the regulation, and how it can be expected to change over the next decade. It is also possible to estimate the costs of serving a route, and the revenue that can be obtained from it. Individual airlines do this all the time, and no doubt the independent airlines have made estimates of their potential profitability on the BA routes which the CAA proposed to transfer. The value of an individual route is not very dependent on the degree to which BA can improve its efficiency; it is determined by the costs which would be incurred by the airline best suited to serving the route. Moderately reliable estimates of the value of individual routes could be made with better data than is publicly available; such estimates would have a clear policy relevance (especially when transfers are proposed). Thus it is desirable that they be made, at least for the routes subject to dispute. Aggregate measures of the value of regulation are difficult in practice. When applied to the case of BA, the indications are that its value could be high relative to that of its tangible assets. They are important for the valuation of the firm, even though it must be recognised that they would have a wide dispersion. An investment in BA is, to this extent, a risky investment.

4. Why British Airways is not More Profitable

The evidence presented above suggests that there are routes on which BA makes substantial losses, but that there are others on which it makes substantial profits. In other words, BA gains much from regulation, but some of these gains may be dissipated. Some routes are possibly quite profitable. Others perhaps would not be profitable for any airline paying British input prices. Regulation is likely to increase profits in some cases, and to protect British airlines (i.e. BA) in others. The evidence is that BA does not use regulation to maximise profits overall, though it may be maximising profits (minimising losses) on each individual route.

Cross-subsidisation probably does take place, but one should be cautious when interpreting the results in this way. There are several reasons consistent with long run profit maximisation for profits on

one link in a system to be negative. First, it may be the case that profits vary from year to year, and that the apparently loss-making routes in 1982-83 may have potential for profit in the long run. Secondly, a route-by-route analysis may not be adequate in view of network effects. Traffic on a loss making section may feed into a profitable sector - thus profitable traffic may be lost if the loss making sector is not served. There may be economies in operating two or more routes together (e.g. London-Sydney and London-Melbourne) and costs on a route-by-route basis may be overestimated.

It is also possible that costs may be systematically underestimated for high yield routes. On high yield routes, costs may be higher for some reason, and the higher fares may reflect this. This happens between divisions - European costs are higher than Intercontinental costs. This may be the case now, if costs have been allowed to rise where revenues are high, but it need not be the case in the long run. It is doubtful whatever the higher fares on, say, the Tokyo route are warranted solely by inherently higher operating costs.

Notwithstanding these considerations, it is quite likely that cross-subsidisation does take place still within BA. To this extent, current profits could be greater even at the present level of costs if loss-making routes were eliminated. If costs were reduced, and there may be some expectation that they will be, the group of loss making routes would be smaller. It would be a sensible policy for BA to continue to operate those loss making routes which can be made profitable within a reasonable period. The remaining routes would be ones which, even under current regulation, would not be worth serving in the long run. As regulation protects, the group of routes which would not be worth serving would be larger if regulation were removed.

Regulation makes BA more profitable. However it does not add to BA's profits an amount equal to the individual profits of the profitable routes, since profits are used to finance losses elsewhere. Indeed, the implicit contract offered to BA may be, or may have been, one where it was expected to serve loss-making routes, and in compensation it was given conditions under which it could earn profits on other routes. This approach may survive privatisation, and many examples of cross-subsidisation within regulated private firms exist. If the objective is efficiency, then it should not; an efficient private firm could expect to keep the profits from profitable routes, and not serve unprofitable ones. Likewise the regulatory system ideally would not convert unprofitable into profitable routes, but if it does, it is desirable that profits be kept by the firm rather than used to

subsidise other unprofitable routes.

Regulation, in total, may not make BA highly profitable under its current costs. Through its effects on potential profits it makes many routes highly valuable. Under current regulation, a more efficient BA would be able to keep much of any cost saving as profits - regulation thus considerably enhances the value of BA but it has another effect through making it possible to serve too many routes. While much work has already been done in pruning BA's network, it is probably the case that some routes cannot be served profitably under current regulation, and even more if the protection of regulation were removed.

Appendix: Measuring Profit on Routes

The starting point for estimating yield on a route was the economy fare (or weighted economy fare when there is a peak and off peak differential). Fares actually charged are both higher and lower than the economy fare, and in addition there is revenue from freight. As freight and mail usually account for a small proportion of total revenue (around 10%), they were not analysed separately. The average revenue per passenger is usually below the economy fare - in other words, fare dilution takes place. This may be more marked in some markets than others. It was assumed that average revenue was proportional to the average of economy and cut price fares. Data for economy and cut price fares were obtained for 1984 from *AZ Worldwide Cut Price Air Fares* (1984) and actual economy fares for September, 1982 were taken from the *ABC World Airways Guide*.

Thus:

$$\hat{P} = m \frac{P_A + P_B}{2P_B} P_E$$

where \hat{P} = Estimated average revenue per passenger, 1982

M = Calibration factor

P_A = Cut price fare, 1984

P_B = Economy fare, 1984

P_E = Economy fare, 1982

The calibration factor, m , was determined as follows. First, the relationship was examined between the length of a route, D , and an

uncalibrated estimate of average revenue per passenger,

$$F = \frac{P_A + P_B}{2P_B} P_E$$

This was done separately for a sample of European routes and a sample of Intercontinental routes. These regressions yielded the following results (t values in brackets):

$$\begin{array}{lll} \text{Europe} & F = 29.35 + 0.058D & R^2 = 0.89 \\ & (14.24) & \end{array}$$

$$\begin{array}{lll} \text{Intercontinental} & F = 118.15 + 0.029D & R^2 = 0.65 \\ & (8.362) & \end{array}$$

From these equations one can calculate an uncalibrated estimate of average revenue per passenger on a route of average length. Actual average revenue per passenger on all routes in each division is known. Dividing this by the uncalibrated estimate, yields the calibration factor which ensures that our estimated average revenue per passenger, \hat{P} , is consistent with overall average revenue per passenger. This factor was 0.936 for European and 0.958 for Intercontinental routes.

This method uses linear revenue equations. In fact, the evidence is that yields and fares are not exactly linear with distance. However, the errors introduced by this are limited by our subdivision into European and Intercontinental categories. The linear form was preferred because it was necessary to make use of several arithmetic averages.

Costs were assumed to vary according to distance. It was assumed that the cost functions were a multiple of the revenue functions derived above (i.e. long and short haul routes have the same average profit margin) - no data on costs, route-by-route exist. Costs depend on other variables, such as load factors, route densities and aircraft sizes, but it was not possible to allow for these. Two cost levels were allowed for. The first includes operating costs only, and the second includes depreciation, interest paid and interest imputed on equity. These were allocated to Intercontinental and European divisions proportionately.

The cost functions used were:

Intercontinental: Operating Cost

$$C = (118.15 + 0.029 D) (0.958) (0.885)$$

Europe: Operating Cost

$$C = (29.35 + 0.058 D) (0.936) (0.863)$$

where C = Cost per passenger

The multiples, (0.855) and (0.836) are the ratios of operating costs to total revenue for each of the categories. To arrive at Total Cost, Operating Costs are multiplied by 1.174 (ratio of Total to Operating Costs).

No data on BA's traffic were available. However, the ICAO publishes data on total passengers by origin/destination between city pairs for some reporting airlines (i.e. the data are not complete). Where there were only two airlines, usually BA and its overseas partner, it was assumed BA obtained 50% of the traffic. When there were additional airlines, not from the two countries, it was assumed BA obtained 40% of the traffic. These are conservative estimates.

Profits were estimated for 28 major routes. These routes account for about 30% of Intercontinental passengers and 38% of European passengers served by BA. The estimated cost per passenger was subtracted from estimated revenue per passenger to determine the profit margin, and this was multiplied by the estimated number of passengers to determine profit. The results are shown in Tables 7.1(a) and (b) and 7.2(a) and (b).

There is considerable scope within BA for a reduction in cost. This is particularly true of the European Division. Cost per ATK in the European Division is much higher than in the International Division, though these estimates need to be adjusted. Factors such as load factors, aircraft size and stage length affect costs. Suppose that the cost function is given by

$$C = ByS^{-0.25}M^{-0.24}L^{-0.5}$$

where C = Total Cost

y = Output (TKP)

S = Aircraft Stage Length

M = Average Aircraft Size

L = Load factor

The parameters of this equation were chosen with reference to empirical studies. This equation is the same as that used in Chapter 4 except for the stage length parameter. This is - intentionally - quite unfavourable to the intercontinental division. Thus the estimates are conservative. Even so, when costs are adjusted according to this

equation, European costs are found to be 1.325 times Intercontinental costs. If they could be reduced to the level of Intercontinental costs, appropriately adjusted, costs on each European route would fall accordingly. The result would be a pattern of enhanced profit on each European route as described in the Chapter.

8.

BRITISH AIRWAYS' FINANCIAL STRUCTURE

1. Assets and Liabilities

There are two major reasons for analysing the assets and liabilities of British Airways. First, the net value of the assets gives some indication of the underlying value of BA - that is, what the fleet and property is worth were they to be sold. The second reason is to see what light the financial structure throws on BA's future performance.

Table 8.1 presents the historic cost and current cost balance sheets in simplified form for the last two years. These show that the net worth of BA on an historic cost basis on 31 March, 1984 was £127 million (1983: minus £121 million) while current cost accounts show a net worth of £839 million (1983: £626 million). The current cost figures are preferable in principle as they should reflect the current value of the fleet, but, as is discussed later in this chapter, there are reasons to doubt the accuracy of the measure. However, in theory, the assets could be sold, and liabilities discharged, to yield some £800 million. In practice, companies that are sold as a unit in difficult conditions often realise much less than the replacement cost value of the assets. The market valuation will mainly reflect the value as a going concern - that is it will be the current value of the income stream that these assets can earn. As we shall see, there is no reason why this value should not be *greater* than the cost of the assets.

At 31 March, 1984 BA had borrowed £901 million. This breaks down as follows:

	<i>£million</i>
Guaranteed US Dollar loans	445
Other US Dollar loans	327
Lease finance (Sterling)	129
	<u>901</u>

Of this total, £62 million will fall due for repayment in 1984-85 and the balance after that (some £839 million). It is, however, likely that BA will pay this off before its due date. In 1983-84 BA paid back £132 million before the money became due. These loans bore interest rates of 12% on average, a figure that has been remarkably stable for the past five years. This implies that the *real* interest rate (after deducting inflation) has varied considerably, as Table 8.2 shows.

TABLE 8.1 SUMMARISED BALANCE SHEET 1983 AND 1984

	Historic Cost £ million		Current Cost £ million	
	1984	1983	1984	1983
<i>Assets</i>				
Fleet	1009	875	1557	1402
Property	169	124	313	320
Equipment	85	80	102	103
Investments in related companies	20	20	23	21
Current assets	511	573	511	573
	1794	1672	2506	2419
<i>Financed by</i>				
Current liabilities	768	720	768	720
Loans (1 year +)	853	982	853	982
Other Liabilities	46	91	46	91
	1667	1793	1667	1793
Net worth	127	(121)	839	626
<i>Represented by</i>				
Capital	180	180	180	180
Reserves	(53)	(301)	659	446
	127	(121)	839	626

Source: BA Report and Accounts, 1982-83 and 1983-84

TABLE 8.2 REAL RATE OF INTEREST ON BRITISH AIRWAYS'
BORROWINGS

	Excluding currency fluctuations %	Uncovered US Loans US \$million
1977-78	- 6.4	
1978-79	0.4	94
1979-80	- 4.7	126
1980-81	- 4.2	246
1981-82	1	392
1982-83	5.2	445
1983-84	7.4	472

Source: BA Report and Accounts, various years.

These interest rates do not reflect the effect of currency fluctuation on BA's balance sheet. Of the total Dollar borrowings of £772 million - some 86% of total borrowings - £445 million are guaranteed as to interest and capital by the Government. The guaranteed loans were taken out when the exchange rate stood at £1 = US\$2.22. The Government appears to have lost some £290 million since 1979-80 on the capital alone. BA claims that this loss is not a subsidy from the Government, arguing that these loans were borrowed on behalf of the Government as part of the Treasury Exchange Cover Scheme. BA was given a Sterling equivalent for the Dollars and the Treasury could have kept the Dollar proceeds avoiding any loss. It would, however, be possible to claim that this loss borne by the Government was an effective subsidy if one believed that BA would still have borrowed in Dollars if it had not had the option of the exchange guarantee. As BA has a history of significant US borrowing at uncovered rates (as Table 8.2 shows) - perhaps related to the purchase of Boeing aircraft - this view may be plausible.

To a degree, BA may have just been fortunate to receive what turned out to be a subsidy after the event. Some of this amount was, however, an intended subsidy. In 1979, 1980 and 1981 Britain's inflation rate and interest rates exceeded those of the US. The exchange rate rose and fell, but at this time some fall in Sterling was *anticipated*, reflecting the differential in US and UK interest and inflation rates. A firm might, for instance, borrow at 14% in Sterling or 12% in Dollars, but expect to lose 2% through devaluation of Sterling if it borrows in Dollars. If the interest rate margin is taken at

a conservative 2%, this would represent an anticipated subsidy of £10 million per year on borrowings of £500 million (which is about the level of BA's guaranteed Dollar borrowings).

At first glance the situation looks precarious. But it must be remembered that if the price of aircraft is set in the US and not on world markets, an increase in the strength of the Dollar increases both the liability of the loan and the value of the aircraft. If all of the aircraft were bought with Dollar loans, then a change in the value of Sterling would alter both the value of the liabilities and the value of the aircraft by the same amount, leaving the net worth of BA unaffected. This implies that the ratio of interest and liabilities to capital is unaffected - but the ratio of interest payments to profit need not be constant, and indeed will not be unless all of the income is received in Dollars.

As we shall see when discussing BA's accounting policies, the accounts now reflect this dual effect of altering exchange rates. These effects are quantified in Table 8.3 which shows the Government's losses on guaranteed exchange rate and other Dollar loans while ignoring the effects on the valuation of the fleet. This table shows that exchange rate movements have had a significant effect on the cost of BA's borrowing. The accounts suggest that only a very small part of the potential losses on borrowing and on operating revenues has been covered by forward purchase of foreign currency. The 1983-84 accounts state that US\$54 million of forward contracts mature in 1984-85 but that only US\$10 million of this has been purchased against Sterling.

TABLE 8.3 PROFITS/(LOSSES) ON FOREIGN CURRENCY BORROWING

	£ million			
	Variable Exchange Rate	Fixed Exchange Rate	Closing Rate £/\$	Closing Variable Rate Loans \$ million
1979-80	4	9	2.16	126
1980-81	2	15	2.24	246
1981-82	(68)	(129)	1.83	392
1982-83	(67)	(159)	1.49	445
1983-84	(13)	(28)	1.44	472
1984-85*	(39)	(83)		

* Forecast based upon cost of US dollar loans at 31.3.84 with exchange rate at £1 = \$1.30.

Source: BA Report and Accounts, various years.

If we accept that changes in the exchange rate affect both assets and liabilities, we may quantify the effect of a 1 % change in the exchange rate on the net worth of BA. Assuming 80 % of the assets to be Dollar denominated (the fleet accounts for 79 % of current cost assets), and ignoring any effects on current assets and liabilities (other than loans), a 1 % increase in the strength of the Dollar relative to the Pound increases the value of the balance sheet at 31 March, 1984 by 1.5 %. This is because the value of the aircraft far exceeds the value of the exposed foreign currency borrowings. This estimate excludes any impact on profits which a rise in the Dollar will have.

There is one potential liability which is not quantified in the accounts - this concerns the Laker court action. BA considers this action unfounded. Other airlines are also involved. It is quite possible that they will wish to settle out of court; if they do, it would probably be dangerous for BA not to do likewise. It could face a long and expensive case, the results of which would be uncertain. It would be prudent to allow for this in the accounts.

The break up value of BA is quite high. Its assets are primarily aircraft, property and routes. The first are quite negotiable. From time to time there is a glut of aircraft, but they can be stored; there is a well established second hand market. Aircraft can be sold at something like their replacement cost less appropriate depreciation. Depending on the stage in the economic cycle, they may be sold for more. Property (e.g. terminals) is sometimes specialised, but there is often another airline which will wish to purchase it. At present, UK routes are valuable, but difficult to negotiate. There are ways, however. If, for example, BA became unviable it would still be possible to create a smaller airline with the profitable core, and the best routes, which could be sold readily. When airlines go bankrupt, creditors lose, but not a high proportion of their investment. To this extent, airlines are a good investment and lenders are willing to accept high gearing. Thus the break up value of BA is high. In addition, if it were to choose to reduce the scale of its operations, as it has over the recent years, it would not have much trouble in selling surplus assets.

The next two sections of this chapter discuss valuation problems in the context of the financial structures of other large companies in the United Kingdom, and of overseas airlines. Finally we examine the changing policies that have been adopted in accounting for BA.

2. Valuing British Airways

Potential investors in BA are interested in the balance sheet for the

following reasons:

- It indicates the value of the assets in replacement cost terms;
- When compared with the profit and loss account it shows the return on capital being earned;
- The degree of gearing indicates whether the company faces potential danger if earnings decline.

Investors would begin their evaluation of BA by comparing BA with other companies. Normally there would be other companies in the same industry. In BA's case there are no comparable firms - save D & A Newman Industries (which is vastly smaller than BA and carries on a different type of business) and British Caledonian (only one seventh of BA's size)

Table 8.4 shows the results for the quoted companies with turnover above £500 million in the latest financial year and which produced CCA accounts. The Stock Market is not known to be overly interested in CCA accounts and ratios, preferring to rely upon the historical cost data. However, in the case of BA the degree of undervaluation of assets in the historical accounts is probably *greater* than that found in other quoted companies for two reasons. First, aircraft last longer than average plant and equipment (12-16 years for BA) and their price is set in Dollars - as Sterling depreciates, the value of aircraft rises. Secondly, there is a low property/total assets ratio in BA, and as many quoted companies revalue property in their historic cost accounts the degree of undervaluation of BA will be greater. A further justification for using CCA ratios is that while

TABLE 8.4 LARGE COMPANY FINANCIAL STRUCTURE

	Return on Capital CAA	Borrowing Ratio CCA	Income Gearing HCC
Average	11.3	0.4	26.8
Standard Deviation	5.5	0.31	22.3
British Airways	15.3	1.07	37.3

Sample: 77 companies with turnover above £500 million.

there is a large difference for any one company between a CCA and a historic cost ratio, the difference between these ratios may be more stable. It may be added that, in theory, the CCA ratios are more relevant and that the market may well have adopted them by a series of adjustments to historic cost profits made when considering individual cases while still not explicitly using CCA information.

BA's return on capital for 1983-84 was very high (nearly one standard deviation above the sample mean) and was 35% greater than that of the average company. This would usually be a signal that further profitable investment is warranted, although it is the marginal, not average return which matters. There is a case for believing that the disparity between average and marginal profitability may be large for BA. If the profits represent the rent from operating limited opportunities on routes then it is likely that additional routes will not be as profitable, or that the potential for increasing routes is highly restricted. In addition, profit is quite variable (see chapter 10).

This situation has in the past proved dangerous for companies which have a highly profitable main source of income that can not be developed with similar returns. Often diversification follows, and usually with decidedly mixed results (Rank Xerox would be an example). While simple theory would not admit of this result, complex reality often provides the temptations - ignoring a tax system that favours retentions, with shareholders indifferent between a certain pay out and retentions invested in less marginally efficient uses; this distortion has been reduced by the 1984 Finance Act.

BA has a borrowing ratio of 1.07 (defined as loan capital and short term borrowings divided by capital and reserves). This compares with an average of 0.4 for our sample and is more than one Standard Deviation away from the mean. The implication of this is seen in the Income Gearing figure of 37.3%, compared with 26.8% mean (and a large Standard Deviation of 22.3).

Investors are concerned with the gearing ratio because it shows the danger of interest payments swamping profits in poor years. Interest payments tend to be negatively correlated with profits and they are a relatively fixed item of expenditure - especially so when there are no 'surplus' assets that can be sold without compromising further the *main* business (i.e. unrelated subsidiaries may be sold without problem, but selling aircraft would further jeopardise profits).

There are however, some points to note. First, 36% of the book value of loans is guaranteed as to both principal and interest. This

reduces the degree to which BA is exposed to increases in interest rates (increasingly counter cyclical). However, new debt is not so guaranteed. In addition, we have shown elsewhere that declines in the value of Sterling are compensated by increases in the value of the fixed assets.

The above points tend to emphasise the importance of the income gearing ratio (defined as profit before interest and after depreciation/interest charges) over the borrowing ratio.

3. Comparative Airline Capital Structures

There are two fundamental problems in making a comparison of airlines' capital structures. First, different accounting conventions, and differing inflation rates between countries mean that recorded asset values, and thus balance sheet ratios, are not consistent. Secondly, many airlines are 'nationalised' industries which do not face the rigours of the market in deciding a suitable capital structure, and which typically do not have much equity capital: state investment takes the form of loans. This also implies that interest rates faced by the airlines may not be market rates.

Table 8.5 summarises the most suitable information. The capital structures are compared on the basis of the ratio of interest payments to operating expenditure, and the total value of long term loans to Available Tonne Kilometres. These two measures show the importance of interest payments in costs, and the ratio of debt to capital.

Some comparisons are in order. Perhaps the best might be with Pan American, which is similar in size to BA as measured by traffic (Pan American is larger, but its aircraft are significantly older). In December, 1982 it had US\$895 million of long term debt, and the market capitalisation of equity, in the December quarter ranged from \$205 million to \$329 million. (Pan American 1982 *Annual Report*, pp 23,39). This is possibly a higher debt/capitalisation ratio than it would like, and it has since reduced it (its share price has increased).

More evidence can be taken from the US airline industry in general. In the 1970's the ratio varied considerably. For the US airline industry in total, the percentage of long term debt plus equity fell from 68.5% in 1970 to 50.7% in 1978 (Taneja, 1981, p177), while the corresponding percentages for Pan American were 76.2% in 1970 and 57.0% in 1978. Pan American appears more highly geared than the rest of the US industry, though not by very much. More

TABLE 8.5 INCOME, EXPENDITURE AND DEBT: VARIOUS AIRLINES (1980-81, US DOLLARS, MILLIONS)

Airline	Income (1)	Expenditure (2)	Interest (3)	(3) as Percentage of (2)	Long Term Debt (5)	(5) as Percentage of (2)	Capacity (Available Tonne Kilometres) (7)	Ratio of (5) to (7) (%)
Air Canada	1802	1741	46	2.6	392	23	5316	7
Air France	2904	2952	101	3.4	858	29	6561	13
Lufthansa	2885	2871	44	1.5	501	17	5842	9
Alitalia	1444*	1610	41	2.5	692	43	2674	26
JAL	3080*	3027	65	2.1	1000	33	8033	12
KLM	1706*	1691	7	0.0	556	33	4076	14
Saudia	1474	1729	-	-	-	-	2970	23
Iberia	1509	1516	55	3.6	701	46	3096	23
Swissair	1407*	1400	-	-	457	33	2496	18
American	3911**	3868	59	1.5	1491	39	9544	16
Braniff	1185**	1292	40	3.1	474	37	3168	15
Delta	3644**	3588	3	-	283	8	8828	3
PAN AM	3586**	3963	113	2.9	1116	28	10523	11
Eastern	3727**	3777	96	2.5	1668	44	8233	20
Northwest	1845**	1843	12	0.1	13	0	6599	0
TWA	3395**	3392	51	1.5	1082	32	8346	13
United	4470**	4617	76	1.6	988	21	12003	8
SIA	1199	1145	38	3.3	1094	96	3343	33
British Airways	4045	4157	164	3.9	1752	42	8243	22

* Part private ownership

** Fully private ownership

Source: ICAO Financial Statistics

recently, the proportion of Non Current liabilities of the total of Non Current liabilities plus equity, for the major US airlines was 63.6% in June, 1982 and 67.6% in June, 1983. Book values may not reflect the true perceived value of the equity. The proportion of debt in the total of debt plus market capitalisation was 68.7% in June, 1982 and 57.1% in June 1983, a more optimistic period (from US CAB statistics).

US airlines operate mainly in unregulated, domestic markets, BA operates in some very predictable regulated international markets (in Europe) and some unpredictable, partly regulated markets (North Atlantic). However it is exposed to exchange rate changes. On balance, its operations are probably somewhat more risky than those of the US airlines. It could expect to aim for a slightly lower debt/equity ratio. Given the estimated values of BA's debt and assets, the present level of debt would be somewhat above the right order of magnitude, though not dramatically so.

These may appear to be high gearing ratios for an industry which has such a volatile profit performance as the airline industry. However, several points need to be noted. Swings in profit and loss correspond to business cycles, and are quite expected; they are not an indication of risk as such. Most of the major assets of the industry are readily saleable, and thus it is unlikely that creditors will lose much even in the event of failure. In spite of periodic crises, creditors have been consistently willing to lend large sums to the industry. The high gearing which gives shareholders a profitable, though exciting, time is likely to stay, and to apply to BA.

It is clear that on both measures BA, in 1980-81 was one of the most highly geared airlines. The American airlines are the only group to be substantially privately owned and publicly quoted, and BA has more debt than any of our sample on both measures. Data for BA for other years are shown in Table 8.6. They reveal that BA's position remained broadly static in 1982-83 and improved in 1983-84. It is, however, unlikely that BA will have improved its relative position by very much in this period.

Table 8.7 shows the market valuation of previously privatised companies. The P/E ratio is calculated after actual tax and minorities and before extraordinary and exceptional items. The P/E ratio depends upon the expected growth in earnings, the likely risk, and the likely future tax liabilities. The market, however, appears to attach considerable importance to the ratio as a yardstick in valuation.

TABLE 8.6 BRITISH AIRWAYS' DEBT RATIOS

	Interest/ Operating Expenditure (%)	Loans (£)/ ATK (at 31 March)	Loans (£)/ ATK
1980-81	3.9	22	9
1981-82	6.0	25	13
1982-83	6.2	22	15
1983-84	6.4	18	13

Source: BA Report and Accounts, various years

TABLE 8.7 STOCK MARKET VALUATION OF PRIVATISED COMPANIES*

	P/E	Yield
Ferranti	26.2	1.1
British Aerospace	6.7	3.4
Cable and Wireless	14.3	2.6
Amersham	16.2	2.5
Britoil	7.2	6.4
Associated British Ports	7.0	6.7

* At 30th October 1984

Source: Financial Times

Table 8.8 gives details of P/E ratios in different market segments while Table 8.9 shows the valuation of BA if one applies various P/E ratios to the group's 1983-84 profits of £181.3 million. (City opinion expects a low P/E, say about 5, reflecting the risk of the company, the uncertain past, and the inexperience of the Board in running a private company). The volatility of BA profits makes this sort of exercise even more hazardous than usual. Comparable profits in 1982-83 were £62.6 million. The important question is what will happen to future profits. At one extreme they may continue at their dramatic growth rate, while at the other they may return to previous levels.

TABLE 8.8 FINANCIAL INDICATORS, VARIOUS INDUSTRIES

	Earnings Yield	Annual Dividend Yield	P/E Ratio
Capital Goods	10.32	4.03	12.22
Consumer Goods	11.25	4.51	10.95
Leisure	10.11	5.08	12.75
Shipping and Transport	8.38	5.37	16.35
Industrial Group	10.8	4.37	11.50
500 Index	11.4	4.74	10.89

Source: *Financial Times*

TABLE 8.9 VALUATION OF BRITISH AIRWAYS

P/E Ratio	Valuation (1983-84 profits)	Valuation (1982-83 profits)
4	725	250
6	1088	376
8	1450	501
10	1813	626
12	2176	751
14	2538	876

In the final analysis, it must be stressed that it is not possible to make an adequate valuation of BA using simple techniques such as P/E ratios. Its profits are variable, and subject to exogenous influences such as exchange rates. Its assets are peculiar - ranging from currently non-negotiable routes to highly negotiable aircraft. Airlines typically have high gearing and this increases the volatility of the net return to equity. To gain an accurate measure of BA's value it is necessary to project profits under the likely scenarios, and discount these by the rates of return the market requires for this type of investment. Simple rules are misleading.

4. Extraordinary Accounts?

BA's accounting policies have changed considerably in the last few

years, making meaningful comparison between years very difficult. Some of these changes have been introduced in order to reduce the stated value of assets to a realistic level. Other changes and charges have been made in a manner that serves to make more dramatic the improvements seen in the last few years.

In 1981-82 £426 million was charged below the line in extraordinary items. This comprised extra depreciation of £208 million and £199 million for severance scheme costs. A further £19 million was provided for no explicit reason. Thus, a net provision of some £10,000 per employee scheduled for severance was envisaged. Only £100 million of these redundancy costs had been incurred in 1981-82 and the balance was carried forward for costs to be paid in completion of 'present schemes'. There is nothing improper about this tactic, and indeed it is a familiar one of making generous provision in advance so that future accounts appear more favourable by comparison. Of the £99 million set aside for future use, £60 million was used in 1982-83 leaving £39 million for 1983-84. It comes as a pleasant surprise to see in the 1983-84 accounts that £33 million of this was written back to profit as an extraordinary item in that year implying that only £6 million was actually required. This serves as a further indication that the redundancy plan is at an end, for the moment at least.

The supplementary depreciation charge for 1981-82 reflected the Board's view that certain aircraft, namely the Tristars (which had recently ceased production), the BAC 1-11's, Tridents and Boeing 707's were included in the balance sheet at more than their worth. In fact the Boeing 707's and Trident fleets were written down to *nil* at the end of the year.

A nil value implies that historical cost accounts will show that there is no depreciation charge involved in operating these aircraft. This is clearly untrue, as depreciation should be provided to enable the airline to operate with aircraft that will eventually replace these fleets. Thus this policy will overstate the profitability of routes that these aircraft fly until they are replaced. A year later BA appeared to be facing up to this problem, but as we shall see, they soon changed course.

Sir John King, as he then was, declared in his Chairman's statement that, "The Board has decided, that in future years, a supplementary charge for depreciation related to replacement costs will be made in addition to the charge based on the historic cost of assets". One potential bi-product of this policy could be that the assets would have no value in the accounts but show a large

depreciation charge! This is merely the result of mixing current and historic cost accounting practices.

In his statement for 1982-83 Sir John noted that, "The means of carrying this out are still under consideration, the Board expects to come to a final conclusion in 1983-84". During this year a supplementary charge of only £2.3 million was made. It would have been more informative to have distinguished between the 'backlog' of depreciation and the revised annual charge; the viability of the airline depends more upon the ongoing costs than the sunk costs of previous indiscretions.

It is interesting to note that the current cost accounts for 1981-82 also showed supplementary depreciation of £421 million which must cast doubt on the claim in 1980-81 that where aircraft will be replaced by different types, the assets would be valued at 'the current cost of the replacement aircraft adjusted to reflect the differences in capacity and technology'. Exactly the same words were used in the next year although there is a discrepancy between the two years of nearly half a billion pounds. It is exactly this sort of problem that current cost accounts are supposed to guard against.

By 1983-84 BA decided that it had gone too far in reducing the value of its assets and reversed this by writing them up. This was done for three main reasons. First, the previous policy did not adjust the value of aircraft purchased with variable rate Dollar loans when exchange rates altered. This change appears reasonable, for we have seen that the price of aircraft is largely denominated in Dollars, and a fall in the value of Sterling relative to the Dollar has the effect both of increasing loan liabilities (when they are not guaranteed) and increasing the Sterling value of the fleet. Previously BA had only provided for the loss arising on its borrowings. While this argument has force it should be noted that to be consistent it should apply to the *whole* fleet (or at least to all US originating aircraft) and not just to the aircraft financed by Dollar loans. Merely adjusting the values of these aircraft (now completely separate from their means of finance) suggests that a prime motive may be to remove the charge from the profit and loss account. The effect of this change is illustrated in Table 8.10. It also follows from this that when Sterling strengthens against the Dollar, the value of the fleet will have to be *reduced*.

The second element of increasing asset values in 1983-84 was to capitalise the interest costs of payments made to manufacturers prior to delivery. This appears quite reasonable as the manufacturer will presumably deduct, at least notionally, the value of the interest on the down payment when calculating the final payment on delivery so

TABLE 8.10 ALTERNATIVE TREATMENTS OF EXCHANGE RATE
MOVEMENTS IN BRITISH AIRWAYS' BALANCE SHEET

	£1 = \$2 (a)	£1 = \$1.50 (b)	£1 = £1.50 (c)
Assets Aircraft (1 × \$200)	100	100	117
	<hr/> 100	<hr/> 100	<hr/> 117
Financed by			
Loans \$100	50	67	67
Retained profits	50	33	50
	<hr/> 100	<hr/> 100	<hr/> 117

(b) = old policy

(c) = new policy (N.B. 117 = previous asset value + change in loan liability)

that the net present value to the manufacturer is the same irrespective of the timing of the payments in the deal.

Finally, BA considered that it was not assigning the realistic residual resale value to aircraft when they are eventually sold. These three changes had a net effect (after related depreciation) on the historic cost asset values of £102 million, as shown in Table 8.11. The current cost net values were also increased by £58 million.

Amidst all these changes in 1983-84 there is no note of the proposed supplementary depreciation which is still in theory required if the

TABLE 8.11 ACCOUNTING POLICY CHANGES TO ASSETS 1983-84

	£ million
US Dollar revaluation	71
Interest on progress payments	13
Residual Values	18
	<hr/> 102

accounts are to reflect the economic costs of operation. Instead of the promised resolution of the problem no mention is made of it. The need for supplementary depreciation is illustrated by the fact that the current cost account charge for depreciation is 65 % higher than the historic cost charge.

The accounts also promise more revaluation to come. The net replacement cost of the specialised use properties has been discovered to be 153 % higher than the comparable net book value. The Board do not consider that the property is in fact worth this amount and have promised to consider what an acceptable economic valuation should be in order to determine how much of the £159 million should be added to the balance sheet.

The profit and loss account for 1983-84 shows only an extraordinary credit of £33.2 million. However, in a new accounting treatment, extraordinary charges appear to have been made (of £20 million) but in a more obscure fashion - they are relegated to note 19 on page 61 of the accounts. Why extraordinary credits and debits should be treated in such a different fashion is not made clear.

Most of these points relate to past policy and what matters is future policy. However, the confusing history illustrates the problems that a company such as BA faces - with large amounts of depreciating assets denominated in a fluctuating foreign currency. It also serves to heighten the uncertainties facing people who will have to decide how much BA is worth. It is to be hoped that the accountants, both internal and external, have now devised a reliable framework that will show greater continuity.

9.

TAXATION ISSUES

British Airways, as a Nationalised Industry, is treated for taxation purposes essentially as is any other company. As a group, BA provided £3.2 million for tax liabilities in the profit and loss account in 1983-84. This was less than 2% of its profit on ordinary activities before taxation. There is, of course, nothing extraordinary about this - many large companies do not currently pay Corporation Tax, and nor will they in the foreseeable future (Devereux and Mayer, 1984). This is because the capital allowances (and previously stock relief) that they can deduct from profit before the tax is calculated amount to more than those profits. In such a situation unutilised tax losses arise which may be carried forward and set against tax in future periods. In BA's case these tax losses amounted to £794 million at 31 March 1984. They peaked at £837 million a year earlier. The Chancellor's 1984 Budget introduced changes to the Corporation Tax regime which limit the amount of an investment that can be claimed as a first year allowance while simultaneously reducing the rates of Corporation Tax payable in years to come. It is likely that these changes will bring forward the day that BA will begin paying mainstream Corporation Tax, assuming investment and profit at least of the same order in future as in 1983-84. It is possible to use various clues in the Annual Report and Accounts to make a forecast of future tax liabilities. The Appendix to this chapter describes the method in detail. In principle the first task is to define the base of assets that may be depreciated for tax purposes, and then to estimate their depreciated value, again as defined for tax purposes. It is important to note that not all of the assets included in the balance sheet may be written down for tax purposes. Examples are leased assets and certain kinds of freehold property. This is not to say that they are not depreciated in the accounts - they are, on the basis that the depreciation reflects a reduction in their value to the company. Depreciation for tax purposes, and depreciation as stated in the accounts are quite separate matters. When this basis for future writing-down allowances has been found, an average rate of writing-down must be calculated. This rate applied to the base, when added to allowances claimed on assets purchased during the year, and after adjustment for assets disposed of during the year, provides the additional amount that may be deducted from profits in calculating tax liabilities. If it more than equals the pre-tax profit, then it may be added to the value of unrelieved tax losses.

With this information it is possible to forecast the future UK

Corporation Tax liabilities of BA. These depend crucially upon future investment and profitability. Neither of these can be guessed with any certainty.

Table 9.1 shows that BA's gross investment fell dramatically in the period 1978-79 to 1982-83 in real terms. All of this investment has been in replacing aircraft; as Table 9.2 shows - the total number of aircraft has fallen by 21%. The decline in total seats available on these planes has not been so dramatic.

The immediate capital investment centres upon replacing the Trident fleet which is rendered obsolescent on 31 December 1985 by

TABLE 9.1 INVESTMENT AND LEASE CHARGES

(£ MILLION)				
Year	Gross Investment (1)	Proceeds from Sales (2)	Lease & Hire Charges (3)	Net addition to assets: Current Value (1)-(2) (1983-84 prices)
1978-79	225	2	24	376
1979-80	291	7	27	413
1980-81	270	30	14.5	300
1981-82	153	17	15	152
1982-83	173	77	12	101
1983-84	253	11	13	242

	Authorised Future Investment (31 March)	Current value (1983-84)
1978-79	951	1601
1979-80	1130	1643
1980-81	596	745
1981-82	486	545
1982-83	397	416
1983-84	239	239

Source: BA Report and Accounts, various years.

TABLE 9.2 COMPARISON OF FLEET: 1980 AND 1984

	1980	1984	Average Age 1984	Approx Cost New US \$m 1983
Concorde	5	6		
Tristar	14	17	5	
Boeing 747	27	28	11	90
737	8	31	3	20
757	-	12	1	38
707	18	-	-	
VC10	15	-	-	
Trident	56	25	15	
BAC 1-11	26	26	17	
Viscount	20	-	-	
HS748	2	5		
TOTAL	189	150		

Source: BA Accounts and industry data.

new noise regulations. These are being replaced by Boeing 737's and 757's. The table also points to the need to replace the BAC1-11 fleet (average age 17 years) and the need, in the not too distant future, to replace the Boeing 747 fleet. British Airways states in the Accounts that operating lives are reviewed annually and that the range for Boeing aircraft is currently 12 to 16 years.

While the age of the fleet indicates the need for significant continuing investment it is difficult to convert the basic requirement into the sum spent on new aircraft, as BA plans to lease a substantial number of aircraft. There are three basic reasons for leasing. First, the lessee can take advantage of the lessor's ability to use the capital allowance to offset his tax. An IFS study has shown that approximately 80% of this benefit is passed on via lower interest rates (Edwards and Mayer 1983). Secondly, operating leases offer greater flexibility than finance leases in that they can be cancelled at short notice. All of the new Boeing 737s delivered in 1984-85 will be obtained on operating leases. Operating leases are thus equivalent to rental charges. While greater flexibility is permitted, it must be remembered that the terms of these leases are likely to reflect this in higher costs than the alternative form of leasing - finance leasing -

which is equivalent to a tax efficient loan scheme. The final (minor) reason to prefer leasing is that it does not affect the balance sheet if the leases are *operating* leases. Finance leases are capitalised and included in the balance sheet. It is often claimed that leasing is attractive for cash flow reasons - that is, the payment can be spread over the term of the lease rather than being required in one large lump. While this may be valid for small companies it is not for BA which should have little difficulty in raising finance at the same *gross* interest rate for both loans and leases. The *net* cost will not be the same when the lessor is paying tax but not the lessee.

To demonstrate the scale of this problem we may note that BA will take delivery of at least 16 Boeing 737's in 1984-85. Costing about \$20 million each, and at current rates of exchange, they have a capital value of £246 million. BA also holds options on a further 15 bringing the total value to £477 million. All of these craft will be leased initially. In addition at 31 March 1984 there were five 757's on order, worth about £146 million.

If we are interested in BA's actual liabilities then clearly the scale of leasing and its potential variability add to the difficulties in forecasting. If tax considerations were the sole influence on the decision to purchase or lease then we would expect BA to lease all planes until it begins to be liable to pay tax (as it can then claim 100% of the allowances rather than the 80% indirectly). However, as we have seen, tax considerations are not paramount and we may expect new leases to be taken on even when BA is paying Corporation Tax. We can also note the BA paid for much of its £250 million of non operating lease investment by internally generated cash rather than with money from new loans. Strictly speaking this is *more* expensive than leasing as BA could have invested those funds and received interest without paying tax on it (ie gross = net) whereas a lease would have cost approximately the same *gross* amount minus 42% (80% of 52%). BA's decision here was presumably declared by the wish to improve the *appearance* of the balance sheet (though the *reality* would have remained the same!).

The second unknown is profit. Table 9.3 summarises profit on ordinary activities before taxation. It appears unlikely that 1984-85 will show any dramatic change - we consider that something above the 1983-84 profit is likely. As it is discussed elsewhere, while BA is still a relatively inefficient airline by international standards (see Chapter 4) it is unlikely that it will improve efficiency by very much in the next few years. It has also been suggested that 1984-85 may be a cyclical peak in demand for air transport. In view of these facts the

TABLE 9.3 HISTORIC PROFIT (LOSS) ON ORDINARY ACTIVITIES
BEFORE TAXATION

	£ million
1978-79	90
1979-80	20
1980-81	(141)
1981-82	(114)
1982-83	73
1983-84	185

Source: British Airways *Report and Accounts*, various years.

best guess that can be made is that BA will continue to make the same profit in *real* terms in the immediate future.

In arriving at the forecasts in Table 9.4 it is also assumed that investment continues at £200 million p.a. in real terms (£242m in 1983-84). Inflation is assumed to be at a rate of 7% p.a., as this appears to be the current consensus of forecasters. The results are not very sensitive to small changes in this assumption.

Based upon these illustrative assumptions, Table 9.4 shows BA's estimated taxable profits or losses to 1997-98 for both the new

TABLE 9.4 BRITISH AIRWAYS: TAXABLE CAPACITY AND PAYMENTS

	Taxable Profit/(Loss)		Tax Payment	
	Old	New	Old	New
1984-85	(722)	(672)	-	-
1985-86	(633)	(487)	-	-
1986-87	(528)	(235)	-	-
1987-88	(408)	12	-	4
1988-89	(247)	246	-	86
1989-90	(126)	250	-	88
1990-91	37	257	19	90
1991-92	177	267	92	93
1992-93	191	278	99	97
1993-94	206	293	107	103
1994-95	221	310	115	109
1995-96	237	328	123	115
1996-97	255	348	133	122
1997-98	272	370	141	130

Corporation Tax system and for the old, pre-1984 Budget system. The tax liability is also shown.

On this basis it appears that BA will be paying tax from 1987-88, whereas under the old system it would not have paid tax until 1990-91. Under both systems taxable profits would end up at the same amount in the long run *with no inflation*, but with inflation the new scheme will produce higher profits before tax than the old system (due to the fact that the residual value of assets carried forward is not indexed). From 1986 the tax rate of the revised regime is 35% compared with 52% previously. It is apparent that the present value of the stream of tax payment now envisaged is greater than that of the pre-1984 tax system at realistic rates of discount. This finding is similar to the general conclusions reached in Devereux and Mayer (1984). Is this another example of the Government shooting itself in the foot? Apart from the effect on BA's internal finances and incentives (which we shall discuss below) this change will clearly reduce the market value of BA. However, if investors and the Government face the same discount rate, then the present value of the increase in the stream of taxes to the government will be *identical* to the reduction in value of the income stream from BA's operations for the investor. This equality does not hold if the discount rates are different. If the Government's discount rate is *lower*, then the change would be profitable for the Government. It would gain more from the prospective tax stream than it would lose from a lower market value of BA. In theory, both the government and investors face the same *pre-tax* discount rate, so tax-paying investors will have a lower post-tax discount rate.

In previous privatisations the Government has withdrawn the tax losses of a candidate for privatisation in return for writing off debt. Exactly similar considerations apply as above with respect to the effect this will have on the valuation of the company. If discount rates are the same then the Government would be indifferent between the alternative of debt and deferred tax liabilities and no debt and earlier tax payments.

What effects would these changes have upon BA's investment policy?

In general the tax changes in the 1984 Budget serve to encourage investment in the short term as firms rush to take advantage of disappearing first year allowances, but to reduce it in the long term as inflation erodes the value of accumulated allowances thus increasing the effective tax rate, and increasing the price of capital. These were said to be the general intentions of the Chancellor.

There are doubts about whether BA is very sensitive to such changes.

BA may be characterised as operating in a profitable cartel where opportunities for developing further routes are severely limited. Thus it may be that the marginal return on capital is higher than the marginal cost. One would expect firms in this predicament to increase investment to exploit all profitable opportunities. If such opportunities are limited in the company's traditional business, then a privatised BA may be encouraged to diversify in an attempt to take advantage of further profitable opportunities. We might expect the pressures on a privately owned company to be greater in this respect than upon a nationalised industry; unfortunately the experience of companies that were diversified has not been entirely happy.

If the unrelieved tax losses were removed then this change may actually *increase* the incentive to invest. As tax paying companies face both a lowered cost of investment (due to capital allowances) and a lowered return (due to tax) the effect of eliminated tax losses is to *increase* the value of the allowance as it can be used now to offset tax rather than later. This arises because capital carried forward is not indexed for depreciation purposes. The effect of this change may also be to encourage diversification - perhaps further into the tour business which might be considered a dubious investment as it is procyclical.

Appendix - Estimating Tax Liabilities

Taxable Profits

We may define taxable profits as follows:

Profit after interest and before depreciation	π
less Writing down allowance on assets in use <i>all</i> year (i.e. excluding sales)	LW
less Writing down allowance on investment during year	MW'
less Tax losses brought forward	N^{-1}
Tax loss/profit	N

If we assume that profit after interest is known then we may proceed to LW - the writing down allowance on assets held all year. It should be noted that some items of expenditure are not deductible in calculation of tax liabilities - e.g. entertainment not for export. We assume these to be small.

Writing down allowance on assets in use all year

BA's accounts for 1982-83 state that 'The amount by which capital allowances claimed in computing the losses carried forward exceeds the aggregate depreciation of the related assets, together with other timing differences, amounts to £506 million' (note 19 page 47). If this is taken to be the amount by which the tax written down value of the assets in the balance sheet at 31 March, 1984 exceeded depreciation in the accounts at this date, then we may estimate LW.

We need to know the written down value of the assets in use all year for tax purposes.

Net book value of assets	A
less Net book value of leases (opening)	(B)
less NBV of prior year revaluations (C-D)	(E)
less NBV of sales during year (G-H)	(F)
	<u>I</u>

C = Gross revaluation

D = Depreciation of C

G = Gross cost

H = Depreciation of G

Leases must be removed as they are not eligible for depreciation for tax purposes by the lessor - this applies both to aircraft leases and to property leases.

To find the extent that assets have been depreciated for tax we can say, (where J equals the amount as stated in BA *Report and Accounts*, 198384, note 19 p 47):

$$K = J + D - F$$

Thus there is available for writing down for tax

$$L = I - K$$

The writing down allowance is then LW where W is the average writing down allowance on the aggregate assets included in L. Currently these are 25% for plant and machinery including aircraft, 4% for industrial buildings and 0% for other buildings. There is no way to define W without imposing values on other variables but we can note that freehold property only amounted to 1.3% of NBV at 31 March, 1984. This suggests that W will be close to 25%, as aircraft are the major asset.

The company will provide depreciation on *these assets* of

$$0 = (I + E) \delta$$

Where δ is the average accounting policy rate of depreciation on these assets.

WDA On Investment During the Year

Net investment = M

Then the WDA = MW' where W' is the average WDA on new investment including first year allowances. We expect $W' > W$.

Depreciation in the books = $M\delta'$ where δ' may be very similar to δ .

We are now able to calculate taxable losses (profits) in 1983-84.

$$\pi = 204.2 + 110 = 314.2$$

$$LW = 53.9$$

$$I = 978 - 227 - 3 = 748$$

$$K = 506 + 0 - 3 = 503$$

$$L = I - K = 245$$

$$\text{let } W = .22 \text{ then}$$

$$LW = 53.9$$

$$MW' = 226$$

$$N^{-1} = 837$$

This predicts losses carried forward of £802.7 million. The accounts for 1983-84 (note 23 p 62) state the figure at £794 million.

From the algebra above we may define J at the end of the period and test the prediction against the result:

$$J^{+1} = J - D' + LW [(I + E) \delta] + MW' - M' - F$$

Where D' relates to revaluations during the year and $\delta = 0.09$ on the basis of the 1983-84 accounts taking NBV at 31 March 1984 and depreciation for assets included in $I + E$ and then taking the ratio of depreciation to this.

The estimated value for J^{+1} is £679 million. The accounts state this to be £659 - 3% out. However, we may have confidence in using this method to make estimates of future tax payments as perfect accuracy cannot be expected.

BRITISH AIRWAYS' PROFITABILITY**1. Introduction: The Paradox**

British Airways is something of a paradox, in that its performance has fallen short of what could be expected given its endowments. It possess large potential advantages. It faces restricted competition in most of its markets, and in many markets the form of regulation is such as to guarantee high prices. It operates a wide network from one of the best hubs in the world. It faces lower input costs than many of its direct competitors, such as airlines in France, Germany and the US. It has received direct and indirect subsidies. In spite of all these factors, its profit record has been poor. It has earned adequate profits in only two or three years out of the past decade.

Some of the reasons for this should be obvious from the rest of this report. In this chapter, we examine its profitability in the recent past, the immediate future, and in the longer term. The value of BA is determined by profits expected in the short and long term, but it is worthwhile looking at the past few years' performance, to see whether there are lessons to be learnt.

2. The Recent Profit Performance

While over the longer term BA's profit has been mediocre, its improvement since 1980-81 has been impressive. In 1980-81 a loss on airline operations of £101.6 million was recorded, but in 1983-84 a profit of £273.5 million was achieved - a turnaround, in three years, of £375.1 million. (This compares with airline revenue in 1983-84 of £2216.7 million). It is necessary to examine the sources of this improvement to determine whether it can be sustained.

It is possible to enumerate a number of factors which may have contributed to the change. These would include the improvement in BA's productivity, exchange rate changes and an increase in airline demand. The restructuring which has taken place in its route structure, and improvements in marketing would have contributed to BA's recovery. So too might changes in market conditions, if these allowed BA to set a higher price for its products. Not all changes have been favourable to BA's profits - other airlines have been improving their productivity, enabling them to charge lower prices when competing against BA.

To provide some measure of the importance of these factors, we concentrate on the airline operating result. To a degree, performance

of BA has been 'improved' by accounting methods - we discussed these in Chapter 8. The airline operating result is not likely to be too affected by changes in accounting policy, but it should be noted, however, that is not entirely unaffected. For example, the depreciation allowed in calculating this result is certainly too low, if the CCA figures are to be taken. This is true both of 1980-81 and 1983-84, and it should not affect the comparison of these two years.

Consider first the improvements in BA's productivity. Productivity growth means that its output can be produced at lower cost. In Chapter 4, various measures of productivity were presented. These all pointed to the same conclusion, namely that the growth in productivity since 1980-81, had been good given the circumstances, though it was not spectacular. It was at about the same rate as in years before, or possibly a little slower. In the three year period we are considering, the load factor rose. This implies that a productivity estimate based on TKP is too optimistic, and one based on ATK is too pessimistic. We take the productivity measure based on the adjusted output measure. According to the different measures, productivity grew such that costs in 1983-84 would be between 92.5% and 93.6% of costs in real terms for the same output, in 1980-81. As a basis for calculation, we assume that costs fell to 93% in 1983-84. If 1980-81 levels of productivity had been the case in 1983-84, BA's total costs would have been £2089.5 million, that is some £146.3 million higher. Productivity improvement can thus account for £146.3 million (39%) of the £375.1 million turnaround. The rest must be explained by other factors.

BA's competitors did not stand still during this period. To the extent they improved their productivity, they were able to charge lower prices, and this would have depressed the yields of BA. A firm must match the productivity improvement of its competitors merely to stay still. We do not have any comparable measures of productivity growth of BA's competitors during this period. We can expect it to be slower than BA's, if only because of the recession. In Chapter 5, evidence was given that input costs rose more rapidly during the 1980-1982 period than actual costs - by about 3.6%. (See Tables 5.5 and 5.9). One should not be too precise in using admittedly rough indicators. A plausible assumption might be that the productivity of BA's competitors grew 3% in the three year period - this is rather less than the trend rate of 2-3% p.a. If other airlines' prices fell by 3% in real terms, we could expect that BA would be forced to reduce its yield by the same percentage. Applied to BA's revenue of £2216.7 million in 1983-84, this would reduce BA's profit by £66.5 million.

This means that we are left with £295.3 million in increased profit to explain.

As explained in Chapter 5, exchange rate movements in this period were favourable to British Airways. Its input costs rose less rapidly than those of its competitors. Since 1980, the biggest change has been against the US Dollar, and the real value of Sterling has changed little vis-a-vis the main European currencies. To gain an estimate of the impact of exchange rates, suppose that only changes against the Dollar matter (in other markets, BA may have been shielded against exchange rate effects by regulation). From Table 5.6 it can be seen that UK input costs fell relative to US input costs by 19.5% comparing 1983 with 1980. Suppose that the UK-US market is competitive, and that US airlines are the price leaders. Suppose also (conservatively) that BA earns one quarter of its revenue in this and related markets. The US revaluation 1980-1983 enabled BA to earn £108.1 million more than it would have if exchange rates had remained steady. This is, if anything, an underestimate, being based on conservative assumptions. It suggests that exchange rate movements have been of a similar, or slightly smaller, order of importance as productivity growth in explaining the profit turnaround. An exchange rate effect of £108.1 million leaves £187.2 million to be explained. The other factors mentioned are difficult to evaluate. Consider route restructuring, which might involve dropping of unprofitable routes. To a degree, this will be captured in the productivity improvement. If routes which are dropped had higher costs than average, dropping them will reduce average costs. If they had lower revenue yields, dropping them will raise overall yield. Thus, as in the 1980-81 to 1983-84 period, revenue yields have increased (partly due to the exchange rate movements) but they need not mean that Sterling fares are being increased for any routes. Evidence presented in Chapter 7 suggested that in 1982-83 cross-subsidisation was taking place. All in all, dropping of the weaker routes could have made a perceptible difference to yields, and to productivity. Given available information, it is not possible to test this, however.

Another factor which is impossible to evaluate is the improvement (from BA's point of view) in competitive conditions on a number of routes. The absence of Laker on the North Atlantic, and the effectiveness of the Yield Improvement Programs on routes to the East and Australia, would have enabled BA to push up its yields. Much of BA's improvement has been through raising revenue rather than reducing costs, and exchange rate changes do not explain all of the increase. It must be recognized that some of the improvement is

due simply to putting prices up when market conditions allow. Along with this, there may have been more effective marketing of BA's product, combined with a greater emphasis on quality control. All of this would have an impact on profit which is difficult to assess.

It is not likely that much of BA's profit improvement is due to increases in world demand for air transport. There is little evidence up to 1982 that international air transport was experiencing an upturn. During the period, BA has contracted substantially - this is primarily due to structural factors rather than demand. Most of the period under review was a difficult trading period for BA. There is evidence that demand was picking up by the end of the period (see *BA Report and Accounts* 1983-84, p. 8) but this would have come too late to affect results significantly.

In summary, we attribute much of the recent recovery in BA's profits to two factors: the growth in productivity, and movements in exchange rates. If anything, the latter is more important. It reflects a recovery from the atypical position in 1980-81, when Sterling, in real terms, had a very high value. The sharp worsening in the few years to 1980-81 was exchange rate related, as was the subsequent improvement. We can move on to the discussion of likely movements in profitability over the next few years, in the light of the factors which have influenced profit in the recent past.

3. Profits: The Immediate Future

The recent past should be a guide to the immediate future. By the 'immediate future' we mean a period of up to about two years from now. Much the same determinants of past profitability are relevant here.

It is useful to focus first on productivity. It has been argued that the scope for productivity improvement has not been exhausted. It would be possible for BA to record the same rate of productivity improvement as it has in the past three years. This may not involve so much reduction of labour, as it need not be based so much on substitution of other inputs for labour as it has been, nor need it take place during a time of such rapid contraction.

There seems to be evidence, from BA's Annual Report, that it regards the task of improving productivity as over. This would be leaving BA as one of the least efficient of international airlines, and less efficient than most of the UK's private airlines. Continued improvement in efficiency will take time; it is not possible to change an existing structure overnight. The result of three years' determined

effort in BA has been significant, and further effort will be needed to take up more of the potential for improvement. Some of this improvement will have a cost in terms of compensation, such as severance pay. It may be that, given BA's history as a public enterprise, future changes may be more difficult to bring about than if the firm had been privately owned.

We consider that there is *scope* for the same rate of productivity increase, of 2-2.5% p.a., over the next two years, as there has been for the past three years. This growth would be independent of productivity improvements which could come about through demand increasing more rapidly than capacity over the period. Whether this scope is taken up depends on management; productivity growth may fall short of what is possible.

Other airlines can also be expected to improve their productivity, regardless of an international recovery. Growth of at least 1% p.a. can be expected. This will tend to put pressure on BA's profit margin. Productivity growth contributes to profitability to the extent that it is greater than that recorded by competitors. In all, it should be possible for BA to increase productivity more rapidly than its main competitors, (and thus catch up with them) over the immediate future.

A world recovery, or at least a recovery in BA's regions, of air transport demand will enhance BA's profits, as well as those of other airlines. It will be easier to achieve increases in productivity, as inputs will not be able to expand as fast as outputs. There are good prospects for increases in air transport demand over the next two years. These increases have already begun. They are related to growth in the UK, US and other economies. US growth has been good, as has that in the UK, though the performance in other countries has been patchy. The one negative factor has been the downturn in UK activity due to the miners strike. Growth in business traffic is already picking up, though this is now a small proportion of total traffic. Some of the lift in traffic from the US to the UK, which is mainly leisure, is exchange rate related. A substantial lift in leisure traffic can be expected to depend not so much on overall output, as unemployment, which is probably more closely related (though inversely) to leisure spending. In the UK, unemployment has been slow to respond to growth in the economy, though it may do so better in future. Some recovery can be expected over the next two years, even though there may be doubts as to how sustained and strong it will be.

One way in which a recovery will help airline profits is through

pushing up load factors. This supposes airlines are sparing in their scheduling of extra capacity. Aircraft orders have been slack, though manufacturers have larger than usual stockpiles of new and used aircraft which can enter service readily. Suppose BA's load factor rises by two percentage points. This might increase costs by about 1.5%, but revenue by 3% (since load factors are currently around two thirds). Such a change would add £37.4 million to BA's 1983-84 profit. An improvement of two points in two years, due to demand increases in quite possible. An increase of more than four points is unlikely - airline service quality would fall off rapidly for changes greater than this. It should be recognized that increases in load factors are only the most obvious of the changes that can take place during a high demand period. Aircraft and personnel utilization will increase, and this will lead to productivity improvement. Though this is very much a guess, we could suggest that a sustained recovery of demand for air transport, of say 8% p.a. for two years, could add something of the order of £50-100 million to BA's profits. Actual demand growth is likely to fall short of this rate however.

If anything, the market power which BA enjoys on its routes can be expected to be reduced. The position on the North Atlantic is becoming more difficult, as new low cost operators enter the market. It must be doubted whether arrangements such as the Yield Improvement Programs can have a long life - by their nature they are unstable. This weakening of market power will have a negative impact on profit, though it is unlikely to be very great.

Regulatory changes over the next two years will not favour BA. It is possible that more domestic routes will be opened up to competition, and there may be more cases of liberalisation as there has been on UK - Netherlands routes. These may be the forerunners of large changes in the future, but they are not likely to amount to very much in the short term. Thus they will not affect BA's profit very much in the immediate future.

Exchange rates can, and probably will, alter over the next few years. They will affect BA's profitability. However, the best forecast of real exchange rates is that they will stay where they are. We take it that the foreign exchange market is an efficient market; most evidence suggests that this is the case, or nearly so. The present price will reflect the expected future price, after making appropriate allowance for different rates of inflation and interest.

The exchange rate is an important, and unpredictable element in BA's profitability. If the US Dollar were to fall substantially, BA's profits would fall, as it would be more affected by competition from

US airlines on its most important single route. BA's exposure to exchange rates is a source of profit instability which cannot be effectively removed by practical means. It is probable that the big swings in the value of Sterling since 1976 have been related to expectations about Britain's terms of trade (eg as affected by North Sea Oil). These expectations, affected by oil discoveries and oil prices, were perhaps more variable than usual. Thus while variability will continue, it is not likely to be as pronounced as it was in 1980, and its effects on BA can be expected to be less critical.

Finally, route restructuring may be a source of increased profit. The estimates in Chapter 7 suggest that in 1982-83 cross-subsidisation was still taking place, though we would caution against the use of these estimates as definite indicators of loss making routes. Perhaps there is not as much scope for rationalisation as there was in 1980-81. The serious problem routes may have been eliminated by now. Further rationalisation may be more difficult, since it may involve routes on which BA has traditionally been a major force. For example, BA may have to examine the degree to which it wishes to participate in North Atlantic traffic, or whether it wishes to continue to operate to Hong Kong. Probably some difficult decisions will be avoided (after all, things might pick up in the long run). The net result will be that there will be some gains in profit through restructuring, but they will be modest.

In summary, our expectations about BA's prospects for the next two years are fairly good. There are some factors such as regulatory changes which will tend to reduce its profitability, but these are not likely to be very large. There is scope for further improvement, in productivity and in route rationalisation, but this scope may not be taken up. BA is doing well at an early point in the general recovery. This is often a period when profits pick up rapidly, for firms in all sorts of industries. If there is a sustained recovery, profits may be expected to increase, though not at the rate of the previous three years. Perhaps the recovery in Britain will remain patchy; this will mean that BA is able to maintain and improve profitability slightly. BA can be helped or hindered by movements in exchange rates. BA's profits will continue to be cyclical, being dependent on economic conditions and exchange rates. At present, it is earning moderately good profits in moderately good economic circumstances.

4. Profitability in the Long Run

British airlines are well placed in the international air transport market. Being based in Britain, they pay lower labour costs than

most of the airlines of countries surrounding them, in particular, the European and North American airlines. The labour force is as skilled as in these countries. They will have to pay the same prices for fuel and aircraft as other airlines. If they can match the efficiency level of these competitors, they will enjoy lower costs. This cost difference could be the order of 10% against their main European rivals (see Findlay and Forsyth, 1984; calculations for 1980). The cost difference depends on the real exchange rate, which can vary. However, even in 1980, an unfavourable period for British airlines, there was a significant margin of difference in *potential* cost. In the long term efficient British airlines should be very competitive on European and North Atlantic routes. They may not be so competitive on some routes to Asia, where they would be in direct competition with the more efficient Asian airlines.

These advantages are open to all British airlines, not just BA. Up till now, BA's advantages have been lost through lower efficiency. It probably could not have taken much advantage of lower costs, except to increase profits, because it operated in regulated markets where its share was limited. If BA is unable to increase its efficiency fairly quickly, its advantage may be lost to other British airlines. If markets did become more open, it might find itself being supplanted, as were some of the established US airlines when domestic US markets were being deregulated. With work practices and agreements being fixed for some period in the future, it may be difficult for an older airline to match the costs of a new or expanding airline. If routes are kept reserved for BA it should be able to do well. If they are not, it will do well only if it is able to improve efficiency.

Liberalisation of regulation will work to BA's disadvantage, though it will be to the advantage of other British airlines. If routes such as domestic ones are opened to more competition, or routes which are effectively regulated by Britain (some North Atlantic routes) are made open, there is the scope for substitution by other airlines for BA. On those routes where it currently makes a profit, it may be forced to lose market share, and reduce prices, and its profits will fall accordingly. On some routes BA may be incurring a loss - a reduction in market share may increase its profit. These types of changes could come about quickly, as it is possible for the British Government to achieve them more or less unilaterally.

Another likely regulatory change is dual designation on specific routes. Another airline may be permitted to serve on some of BA's routes. Two types of case are possible. One is where a proportion of the capacity permitted for British airlines is transferred to another

airline. Fares remain the same, since the overall capacity constraint is unchanged. BA will lose profit (loss) on variable costs in proportion to the traffic it loses, though there will be some fixed costs of operating the route. The new entrant will make profits which depend on its share and efficiency, which may be greater or less than that of BA (it too will face some fixed costs in the short run). If there is no capacity control (as with US routes) BA will lose market share, but it is possible that the additional competitor will lower prices. It may not - three or four airlines may set the same price as would two. In the initial period after dual designation there will tend to be a reduction in prices, as the new airlines struggle for market share. In the longer term prices could be relatively unchanged, and BA's loss would be limited to that arising from the reduction in its market share. Dual designation is quite likely over the next five years. It may not be introduced on many routes, but it will happen on routes that are busy or profitable. It may thus have a moderately significant impact on BA.

Significant liberalisation of regulation is possible on a range of important routes which BA flies. This is especially true of European routes. There will always remain routes which are tightly regulated, because some of Britain's partners will wish regulation to continue. However there remains the possibility of change in Europe taken as a whole, and this would affect perhaps BA's most important network of routes. Changes are already taking place, and one change tends to lead to another. It is still possible, however, that some governments will hold out, and only make those changes which are necessary to insulate their airlines from more general competition (for example, by encouraging them to offer lower fares where indirect competition is having an effect). The precise future of European regulation is difficult to predict.

The implication for BA of widespread European liberalisation depends on its productivity performance. If it is unable significantly to improve its performance, it will be vulnerable to competition on its traditional routes, especially from other British airlines. To a degree it may lose out to foreign competitors, though this is not likely to be as much of a problem, since it will be able to make up on lower input prices what it loses on efficiency. Because of these two balancing effects, at currency efficiency levels its actual unit costs are comparable to those of its foreign rivals. Without productivity improvement, it will lose out substantially over time. Its formerly profitable routes will cease to be profitable, and other airlines will have a cost advantage.

Suppose, alternatively, that BA is able to match the efficiency performance of other British airlines. It will not then be at a disadvantage; in fact, its name and network will constitute an important advantage. It will lose its monopoly position on many routes, and along with this, some guaranteed profits. It will, however, be able to enter many routes hitherto denied to it, and, along with other British airlines, it will possess a cost advantage on many of these. It could then be expected to perform well, with more traffic, which could yield more even profits than at present. Compared to a situation where it was efficient, yet regulated, it will have lost out - it will not earn monopoly profits on some of its European routes. It would be able to remain large and viable.

The advantage possessed by British airlines depends on the exchange rate. This may, and probably will, fluctuate in real terms, and this will lead to volatility of profit. To a degree this happened as a result of the discovery, and increase in price, of North Sea Oil. It is possible that substantial shifts in Britain's terms of trade will occur, and last. If Sterling rises, in real terms, and for the indefinite future, British airlines will be in a worse situation, in common with other export industries. There would have to be very large shifts in Britain's real exchange rates to eliminate the advantages, in terms of the lower price of inputs, which its airlines possess.

Given the markets it operates in, BA will remain a variable performer in terms of profit. US domestic airlines are subject to big swings in profitability, and they do not have to concern themselves with exchange rate changes to any significant degree. Cyclical swings affect profits, but they do not add much to *risk*. An airline which incurs a loss in a recession can be expected to earn a profit when things improve; and investors in airlines understand this. When an international airline loses out due to exchange rate movements, there can be no presumption that it will recover its position later. What goes up may not come down; real shifts in exchange rates can and do occur. In the short term, as in the long, exchange rates are fundamentally unpredictable, unlike cyclical phases of the economy. Variability of profit due to exchange rate movements is unpredictable, and thus it involves more risk than cyclical variability. Few private airlines are as subject to these risks as BA will be - the most important example is Pan Am.

If BA can continue to improve efficiency, and if regulation remains in place, it should be able to be fundamentally quite profitable. Even under a scenario whereby the UK Government subjected it to as much competition as is possible under current agreements with

partners this should be so. If Europe liberalises regulation, an efficient BA can survive and grow, losing out in some markets, and gaining in others. It would, on average, make no more than normal profits however. If it were not able to improve efficiency above current levels it could survive under regulation, although its profit would fall if the UK removed what regulation it could. In a liberalised environment, it would find it difficult to survive for long in its present form. Whichever of these scenarios applies, its profit will be variable, and if the exchange rate fluctuations of the past decade continue, it will be a risky investment, in the sense that it will be difficult to forecast its short term and long term expected profit.

PART C: POLICY

11. AIRPORT QUESTIONS

1. British Airways and Heathrow

British Airways uses London Heathrow airport for a large proportion of its flights; about 80% of its flights either begin or end there. Heathrow is a popular airport, and it is subject to considerable excess demand. BA has, over time, developed privileged access to it. It is a moderately expensive airport to use, but it is underpriced.

An airport such as Heathrow becomes popular for two major reasons. First, it is close to a major city; other airports such as Gatwick and Luton are further away from London. Secondly, by virtue of its size, it is able to provide good connecting facilities. Perhaps something like 20% of passengers through Heathrow are connecting, that is, arriving on one flight and switching to another. Heathrow's capacity is restricted. Runway capacity is limited to what can be provided by existing runways, though it can be increased gradually with improvements in technology. Terminal capacity can be expanded, though there are limits on space, and the fourth and possible fifth terminal will be increasingly expensive to build. There are also environmental limits on Heathrow's capacity, since more aircraft mean more noise affecting the surrounding residential districts.

Heathrow is underpriced in the sense that many more would like to use it at current prices if they were allowed to. They are rationed away by non-price means. Charter operators are banned from Heathrow. New airlines flying into London, such as Air New Zealand, are sent to Gatwick. The Spanish operations of BA were sent to Gatwick. In addition to this, the airlines using Heathrow, through their joint scheduling committees, limit their use of it to the capacity available. The price that the British Airports Authority could charge and still not have demand less than capacity would be considerably above current levels.

Heathrow is valuable because of its location and size. The opportunity cost of using it is high. Passengers prefer to use Heathrow because of its convenience, and are prepared to pay more to use it rather than the alternatives. Airlines then reflect the passengers' preferences, and wish to use Heathrow rather than Gatwick. Two recent examples illustrate this. First, BA considers that it is at a commercial disadvantage vis-a-vis its rival on the

Spanish routes, Iberia, because the latter is allowed to use Heathrow. Secondly, within a few months British Midland was able to gain a market share on the London-Scotland routes, using Heathrow, exceeding the share that British Caledonian had been able to develop in many years using Gatwick.

The British Airports Authority has a policy of just about covering cost on its operations. Its revenue from Heathrow (including sales of concessions) is a little above its costs (including interest). There is only a minor attempt to ration demand to capacity through pricing. Heathrow's prices tend to be high by international standards, but elsewhere governments often attempt to encourage air transport by giving subsidies to airports. The BAA could charge a lot more to Heathrow users. Airlines currently gain by being able to use the preferred airport at little more than the price of using other airports.

BA is the main recipient of this implicit subsidy. Each time it uses Heathrow, it pays less than the value of the service. It is not intended to discuss who is the legitimate owner of the potential profits of Heathrow - the airlines, the passengers, or the Government and BAA. All that is being noted is that a particular input is being purchased at less than its opportunity cost.

2. How British Airways Gains

If BA is able to buy an input at a price lower than it is worth on the open market, this should be reflected in its profits. Since this implicit subsidy is not available to all, it should enable an equal addition to profits. It is possible to make a rough estimate of the value of the rights to use Heathrow.

Suppose that the average number of passengers per aircraft using Heathrow is 110 (see BAA, 1982-83, p97). Suppose also that passengers were willing, on average to pay £5 to use Heathrow rather than the next best alternative, Gatwick (they would save about £2 on transport costs alone). BA operated 178,000 scheduled flights in 1982-83, and Heathrow handled 250,000 movements in that year. Suppose 100,000 of these were operated by BA. Airlines would prefer to pay £550 per movement more than at present to continue to use Heathrow rather than having to move. The value of the rights enjoyed by BA is thus £55 million/year. While this is admittedly a rough calculation, it suggests that being able to use Heathrow is valuable to BA, and that the gains are significant in relation to operating profit. BA could even earn a good profit if it could close down its operations and simply sell its rights to use Heathrow.

If BA has been given this potential for making profit, how does it use it? It is possible that overall profit is higher than it would be otherwise. It is difficult to track down an amount such as £55 million because it is only a small proportion of revenues and costs, although it is a large proportion of profits. If BA were operating efficiently, it should be earning profit above the level needed to pay capital charges. Some of this profit would be due to use of Heathrow. If all regulation and market power were removed and airlines were completely competitive, its prices would fall in some markets, but to such a level that the profit from using Heathrow still existed. Other airlines with access to Heathrow would also earn a profit.

Suppose that the BA fare on a regulated route is £80, but that the competitive fare for an equal distance would be £50. The difference may appear to be a profit from regulation. Of this, £5 may be profits from using Heathrow. The competitive fare using Heathrow might be £55 (whether or not the airlines have to pay the opportunity cost of using Heathrow). If BA had to pay the economic cost of using Heathrow, it would earn £25 profit on the fare. Use of Heathrow means that the economic (or opportunity) cost of a service is increased, but also that the potential revenue is increased. BA currently does not have to pay the full economic cost, so it is a major gainer.

The pricing at Heathrow which discriminates against larger aircraft also affects the structure of BA's operations. Some services cross-subsidise others. If efficient prices were charged at Heathrow, it is unlikely that all current and short haul services which currently use Heathrow would continue to do so. It might mean that fares rose by £10 or more, and this would persuade some users to switch to Gatwick services. The profits from large aircraft loads could be significant. Even if a full Boeing 747 were required to pay an additional £550 for using Heathrow instead of Gatwick, it might gain an extra £2000 in revenue. These profits and losses would be eliminated if Heathrow charges were set at efficient levels, and any traffic which wished to use the airport could do so. Small aircraft would be discouraged from using it, and short haul fares would increase, while long haul fares would fall slightly.

The 'rights' which BA possesses to use Heathrow are not very clearly defined. It would be safe to assume that it can continue to use Heathrow for most of its operations at whatever charges apply for a particular period. As things stand, rights are no more defined than this. It is not as if it has a defined number of 'slots' for use at Heathrow. It may not, for example, be able to transfer a flight to A

out of Heathrow to Gatwick, and transfer a flight to B from Gatwick to Heathrow. It has little incentive, or ability, to make efficient use of its rights. Its ability to transfer slots to another airline, at a price, is formally non-existent, though in scheduling committee negotiations, it may be able to make valuable exchanges.

BA is the main gainer from the Heathrow rationing system as it stands. It has a direct incentive to keep it operating. To this end, it is willing to suffer loss (for example through transfer of its Spanish services to Gatwick) in order to keep the system working. If no major changes take place in Heathrow's operating system, it can be expected that BA will continue to be accommodating. If the airport's operating and charging policy remains unchanged, BA will continue to gain, and it will be faced with no major problems.

However, Heathrow's operating and charging policy may be changed, especially if it too is privatised. Some changes would operate to the benefit of BA. If rights to use the airport were made more clearly defined and negotiable, it might be able to plan its operations better. If it has a defined number of 'slots' to use at Heathrow, it might choose to transfer some flights from Gatwick to Heathrow, and others in the reverse direction. The economic cost of operating short haul flights from Heathrow would become apparent, and it might wish to shift some to cheaper airports.

The major change would be if Heathrow's policy were changed. Private owners would have an incentive to make Heathrow profitable, and charge at least economic cost. This could be add, say, £55 million or more to BA's costs, and reduce its profit accordingly. It would add an equivalent amount to the BAA's profit. This would make a difference of several hundred million pounds to the value of each body. If an accurate value is to be put on BA, it is essential that the Government state what charging freedom the BAA is to have, under public or private ownership. Under current arrangements, BA has rights to significant profits from using Heathrow - these rights are tenuous, however. Its capital value is significantly dependent upon these rights.

3. Airline Competition and Airport Pricing

The current airport pricing and access arrangements give rise to competitive imbalance in the airline industry. Two airlines may be competing on the same route, say to Glasgow or Paris. One has access to Heathrow, and it can attract more connecting traffic, enjoy higher load factors, charge higher fares, or some combination of these. The other cannot make up this difference. It is true that

Gatwick's charges are less than Heathrow's, but the difference by no means reflects the difference in attractiveness. In general, whenever it competes on the same route as BA, an airline such as British Caledonian operating out of Gatwick does so at a disadvantage. It has to be more efficient, and have lower costs, to compete. This is an artificial impediment to airline competition which could be removed by appropriate airport pricing.

The solution is to raise the opportunity cost to an airline of using Heathrow to a level such that the demand is reduced to Heathrow's capacity. There are several ways of achieving this. It is not necessary for the airport to use its monopoly power. It is not even necessary for airport charges, on average, to be raised. On the other hand, since together Heathrow and Gatwick have an effective monopoly of a necessary input into air services to and from London, they could raise prices considerably. If they could discriminate between flights perfectly, they could appropriate for themselves the profits from regulation.

One option, favoured by many economists, would be to auction the scarce capacity at airports. Capacity would be divided up into a number of 'slots', for which airlines would have to bid. Those which bid most would obtain the slots, and the result would be efficient, in that capacity was being allocated to those which valued it most. Any airline which was willing to pay the price could use Heathrow. BA would have no artificial advantage over its competitors, nor would it be at a disadvantage compared with its competitors when it operated out of Gatwick.

Several arguments can be raised against auctions. First, they might be complicated; for an international airport at the centre of complex route networks, determining bids would be difficult. This is especially true if terminal capacity were auctioned separately. It would probably be best to set fixed prices for terminal use. Secondly, airlines might collude in their bids for slots - this might not affect the efficiency of operation, but it would affect the revenue received by the BAA. Finally, and this is not a conclusive objection, some airlines would be paying more than they do at present.

A simpler solution, which is likely to be nearly as good, would be for the BAA to set prices which it considers would ration capacity. It would not get these exactly right, so there would be some scope for scheduling committees to sort out problems of excess demand at certain periods. All airlines would have access to Heathrow, however. The price for runway use would be the same for all users, since the capacity they take up is the same. Smaller aircraft

would certainly pay more, though larger aircraft might pay less. The additional cost of using Heathrow over Gatwick would be commensurate with its additional attractiveness.

The current pricing structure, which discriminates against large aircraft (which would have less elastic demand), exacerbates the capacity problem. It is possible that a non-discriminatory price structure, which would eliminate the excess demand might even yield *less* revenue, though this is not necessarily likely. It may also be possible to reduce charges at Gatwick, to increase the differential, if there is concern about too much revenue being raised.

Such a policy would mean that some foreign airlines would pay more to land at London (as would BA). The US airlines, hitherto the most vocal about charges, might pay less. Other airlines might induce their governments or airport authorities to retaliate, for example by charging BA more (even though the British policy would be non-discriminatory). Alternatively retaliation might take the form of denial of landing rights in particular cities.

If problems of international retaliation are regarded as likely, there is a third alternative which would achieve efficiency in allocation. This would be simply to define 'slots' for use at Heathrow, *give* them to the airlines, and make them fully transferable and saleable. Thus BA might gain twenty slots for the hour 9a.m. to 10 a.m. on Tuesdays, and it could choose whether to use or to sell them. It would probably use most of them. Slots could be allocated according to current use, or some proportion of current use with some left over for allocation by price. The rights to the slots could be for a short period - say one year - or for a long period - many years. Naturally, the value of the slots would depend on how long they were for. By making slots transferable, and giving them to current users, such users would not lose. On the contrary, they would gain if they sold them. Currently, airlines which only marginally prefer Heathrow stay there, while others which would very much like to use it are barred. Slot transferability, which already exists to a limited extent within the group of airlines permitted to use Heathrow, if general, would eliminate the preferential access enjoyed by some airlines. Formal or informal markets in airport slots develop quickly, and appear efficient (see Koran and Ogur, 1983). BA would gain through being given a defined property right for an ill defined privilege which it enjoys at present. This would be a highly valuable gift, depending on how long the rights were specified for and on the airport pricing policy, but the Government would recoup it in the sale price of BA. It would not recoup anything from foreign airlines; to this extent it

would be no better nor worse off than it is at present. There is, however, one weakness in this approach in comparison with the approaches based on pricing which were suggested earlier; giving BA defined property rights for its access to slots strengthens the existing incentive to oppose any changes in the allocation of capacity at Heathrow.

The Heathrow allocation problem is becoming more serious. In the early 1970's, most scheduled airlines could use Heathrow if they wished. Now even those which currently use it are being forced out, by arbitrary methods. Demand will continue to expand more rapidly than capacity, so the problem will get worse. Typically, it will be BA's competitors which will be excluded from the preferred airport, and thus the competitive imbalance will remain. It could be removed if access to Heathrow were made freely available at a price. Several methods exist for doing this - slot transferability would achieve it with least disruption to current users and least change in airport use charges. Most British airlines would probably choose to continue to use Gatwick. However, they will not be at a competitive disadvantage, since the price they pay for using it would be less than the price of using Heathrow, (including the value of a slot).

12.

PROMOTING AIRLINE COMPETITION: THE IMPLICATIONS FOR BRITISH AIRWAYS

1. Airline Networks

The success of an airline, and the efficiency of its operation, depend to a fair extent on its network. A good network will enable efficient scheduling of aircraft and crews, and it will attract passengers. An airline will be more attractive if it is able to offer services to a wide range of destinations. Many passengers, especially those travelling to or from small cities, do not fly all their journey on the one aircraft - they will change aircraft at a central hub, and fly on. An airline which has a wide range of flights out of a city will attract a disproportionate share of the traffic which is using that city as a transit point.

Operating a good network will also have its costs. Schedules have to have slack built into them so that it becomes possible for passengers to interconnect. There are costs in coordinating baggage and in ticketing. There may be problems in coordinating operations in a variety of different markets. Most airlines, however, except those which concentrate on the cheaper, lower convenience end of the market, seek to devise an attractive range of routes. British Airways, with its worldwide flights, is the most convenient British airline to fly on. Its network is a major selling point. This may appear a strong reason for not altering it when privatising.

It should be noted that *network* not *size*, is the most important consideration. An airline much smaller than BA may have an attractive network, given its market. For example, Southwest, which operates mainly in Texas, is much smaller than BA, yet it has a good network. A small airline based in Manchester might be able to have a good network. On the route to Hong Kong, BA may have an advantage in selling to the market which wishes to go through London to another European city, but Cathay Pacific will have an advantage amongst those who wish to travel further in Asia. For this reason, a good network can be operated at a low scale, and network economies may not necessarily give rise to scale economies.

It may not be necessary for one airline to operate the whole network, since it is possible for passengers to connect. Airlines have well developed connecting facilities ('interlining'), whereby passengers can change from a flight of one airline to a flight of another with little trouble at either the booking or travelling stage; usually, though not always, their baggage will interline efficiently as well. Interlining can

be done by passengers themselves, with no coordination between airlines, when they book two flights separately, and organise the change-over themselves. When there is much interlining traffic, it will be in an airline's interest to establish formal agreements between themselves, and make interlining as simple as possible for the passenger.

Here there is a choice between having horizontal integration - and performing a task *within* the firm - and having a market solution - whereby tasks are undertaken by a number of firms, subject to a contractual agreement (for a discussion of these issues, see Williamson, 1975). Contractual agreements can be very tight, and result in a situation little different from one where one firm controls the whole market. In the airline case, it is likely that an airline flying to point A will prefer to conclude an interlining agreement with an airline which has a good network around A. Thus BA has agreements with airlines all over the world.

This suggests that the case for keeping BA as one unit is not necessarily strong. BA could be broken up into 'BOAC' and 'BEA', and it would be almost inevitable that these airlines would conclude a tight interlining agreement. They might also lease aircraft and crews to one another where appropriate. It might be thought that a high degree of collusion would be needed for efficient interlining; certainly it grew up in Europe under the IATA mantle. The recent US experience seems to contradict this, since non-competitive airlines (e.g. commuter and major airlines) have concluded many agreements. If BA were subdivided, the new 'BOAC' would probably choose 'BEA' as its interlining partner, though there could be some competition from British Caledonian and other British airlines which would limit 'BEA's' market power.

The case for subdividing BA into separate airlines on these grounds is neither strong nor weak. It would make little difference to performance (it may be argued that the merger of BOAC and BEA made little difference to anything but the colour scheme of the aircraft). Separate airlines would not be more competitive, since they would operate in different markets. They would also dominate these markets.

The strength of the BA network poses problems for competition. Any airline which wishes to offer services to/from London, without a network based somewhere else, will find it difficult to match the attractiveness of BA. What this suggests is that, at the network level, airlines are a natural monopoly though not necessarily a *strong* natural monopoly. The extent to which an airline with a good

network can raise its fares above those of its competitors is quite limited. It will be easier for one airline to operate with a particular set of hubs (most likely, one hub) than it will be with several, and over time, one airline will dominate routes emanating from a particular hub. This is clearly borne out by US experience. There are very few examples of airlines operating in similar markets which operate from the same hub, and those which do have quite different route networks. In fact, within the US, there is not very much direct competition between any two airlines. On any given route an airline may have several competitors, drawn from the many airlines in the US. At the *route* level, airlines may be tolerably competitive, or more likely, contestable (see Bailey and Panzar, 1981 and Graham, Kaplan and Sibley, 1983), but at the network level, they may possess a weak natural monopoly.

In general, the chances of ever achieving a situation of two or more, comparably sized, competing airlines based in London are quite small. The airline with more flights and better connections will always dominate, unless others can offer better service in some other way. It may be possible to create two equally sized airlines by subdivision of BA or route transfers, but what would be left would be airlines which did not compete directly with one another. Airline 1 would operate routes A and C, and Airline 2 would operate routes B and D. Close interlining agreements would be necessary to preserve convenience of schedules. It would be difficult to see this as an increase in competition, though there would be two airlines of comparable size and financial resources. This appears to be what the CAA is referring to in its discussion of the 'competitive balance' (CAA, 1984a, Section 5) - it is not really about competition at all.

There is scope for airlines other than BA to develop efficient networks, for example, around Manchester. This is limited, because the amount of traffic going to alternative hubs is much less than to London. Such airlines could compete directly with BA on some routes, though not on the majority of their routes. The key question is whether it would be possible for Gatwick to become an alternative hub to Heathrow.

For the foreseeable future, Gatwick will be a less attractive alternative to Heathrow. If the present pricing system continues, whereby BA is given preferred access to the preferred airport, it will continue to be difficult for an airline based at Gatwick to compete with BA. If an efficient pricing structure is adopted, Heathrow will be relatively more expensive to use, and the Gatwick based airline will face lower costs. To this extent it will be able to compete. Until

Gatwick is the size of Heathrow, it will be unable to compete on interlining/interchange facilities. An airline with Gatwick as its hub would tend to compete in different markets, specifically those which generate less interchanging. This could be quite effective competition for BA, especially for traffic destined for/originating in the London area.

The scope for competition for BA arising from other British airlines is limited by the presence of network economies, and by the benefits of having good schedules. It should not be assumed that there is no scope for competition. Sometimes even airlines with poor networks can be effective competitors, especially when they seek out particular segments of the market. The long term dominance of BA is inevitable, given the dominance of London, and the attractiveness of Heathrow. There is scope for a competing network, based at Gatwick. In the longer term, this network may be in direct competition with BA's network, but it is likely that its market would be biased towards different traffic (especially short haul traffic). Other smaller airlines can develop smaller hubs, and some specialist airlines need not operate a distinct hub based network at all. Rearranging route structures to alter the relative size of airlines will not alter the degree of competition between airlines. It will mean that interchange facilities which exist within an airline will have to be replicated through contracts between airlines. As such there will not be any significant gains to be made from altering the relative size of Britain's airlines, though there will not be any major costs associated with it either.

2. Route Transfers

It is generally thought that the present allocation of routes between airlines is not optimal (see, for example, CAA 1984a, p19), even if BA's dominance at Heathrow is accepted. Some airlines, notably Dan Air, have rather diverse routes, and while BA has a very effective core network, it has several routes which are outliers. Some reallocation of Britain's capacity rights between airlines is desirable, and since BA currently has most routes it is likely to be a net loser.

This is strictly an efficiency argument. It suggests that the overall cost (including convenience costs to passengers) will be reduced if there is a different pattern of networks. This may not mean that there needs to be fundamental changes in any airline's network. While a one-off realignment may be desirable to maintain efficiency, it is necessary for *access* to the route to be competitive, even if the route itself is not.

It may be argued that a privately owned BA, operating in an environment with other private airlines, will have an incentive to achieve an efficient network. If routes were *transferable*, it would have the ability to achieve it. If, say British Caledonian could serve a specific route more cheaply than BA, it would be in BA's interest to transfer the route to it. This could be done for a negotiated sum, or it could be specified that BA would be entitled to a share of the profit, or it could get British Caledonian to subcontract to serve the route, which would still be described as part of the BA network. (This last alternative is often used elsewhere). Profit maximising airlines would have an incentive to sort out the most efficient pattern of networks amongst themselves. When competition *in* the market is not possible, competition *for* the market will be desirable (see Demsetz, 1968). Route transferability or franchising will achieve this.

This would also be a more efficient method of route reallocation than one of arbitrarily transferring routes between airlines. Quite apart from the problems of compensation, it is likely that the best judges of efficient networks would be the airlines themselves. They have better access to the required information. It may not be easy for someone outside the airlines themselves to measure the costs of serving a route which would be incurred by different airlines. It is quite likely that apparently desirable transfers may be inefficient because of factors which are not open to the view of outsiders.

There are several difficulties, however. Airlines may be risk averse in dealing with their competitors. Inter-airline trades will facilitate collusion (you can have this route if you raise fares on that route). Airlines may not be thorough profit maximisers, and they may hang on to routes even though other airlines could serve them better. US experience suggests that airlines are willing to sell international routes when they are in financial difficulties. Perhaps the most fundamental problem is that there are no well defined property rights in flying specific routes.

This means that the value of the route is not clearly defined, nor is the owner. What is the value of a route which is currently tightly regulated, but which may be deregulated in five years time? Airlines may be risk averse about future regulation. An airline will fear that if it allows another airline to operate one of its routes, after a while that airline may apply to the CAA to have the route transferred to it, and it may be successful. After all, who does have the rights to the profits? Routes can currently be transferred between airlines, subject to their agreement. They sometimes are, but it is relatively rare. (For example, BA has been moving out of low density domestic routes).

Leaving it to the airlines will probably result in little reallocation of routes in the short term. Efficient transfers should be possible, and encouraged. It is all very well for the CAA to claim that routes are not property (CAA, 1984b, p16) - the point is, they ought to be.

Route transfers may affect the degree of competition. Suppose that one airline serves London-Jeddah and another serves London-Riyadh. It might be more efficient for one airline to serve them both. These routes may be partly competitive - efficient networks may mean less indirect competition. If there are capacity controls on both routes, this competition is likely to be more nominal than real. Where the airlines can schedule more capacity and set fares as they wish, they may be moderately competitive. The gains from competition would have to be offset against the gains from a more efficient route network. It is only in this type of case that route reallocations will lead to a change in the actual competitive balance.

The problem of achieving efficiency in route networks, both in the immediate future and over the long term is considered further in Section 4. Arbitrary route transfers, however well intentioned, are likely to be inefficient, and add little or nothing to competition. Explicit definition of property rights in routes, along with a policy on regulation, can provide a basis for efficient route reallocation.

3. Market Dominance and Predation

BA, as a large dominant airline, can indulge in predatory pricing if it chooses. When competition on a route appears, it can lower its price in an attempt to force the new competitor out of the market. It is able to do this now, and it will continue to be able to do so when it is privately owned. If there is to be an attempt to make markets competitive, the presence of this power may create problems.

Would a privately owned BA wish to sell at a loss to force competitors out? It can be argued that predatory pricing is inconsistent with profit maximisation. However counter examples to this can be set up (Milgrom and Roberts, 1982) whereby a profit maximiser will seek to establish a reputation as an aggressive competitor who is not worth taking on. In addition, we cannot be certain that BA will be a profit maximiser. While in private hands its primary orientation may be profit, managers with an interest in the size of the enterprise may be able to argue that losses on specific routes were worth incurring given their long term possibilities. In short it is unlikely that BA can be relied upon never to practice predatory pricing. The problem then is one of restricting the practice, and its effectiveness.

The danger may be increased when there is an imbalance in the financial strength of the competitors. Properly managed, BA can be financially strong. It will have access to many highly profitable routes, though this does not mean that it will have resources to squander. If it is sold efficiently (and it may not be), the new owners will have paid for these profits - the capitalised value of the airline will be much higher than the value of its assets. There will be capital to service, and the profits from monopoly routes will be needed to do this. BA will have a large cash flow and a large operating profit. It will have the ability to indulge in predatory pricing, even if it is not wise.

If BA's competitors are poorly financed and marginally profitable, they may be quite vulnerable to predation. However, in the longer term, they need not be so weak. If there are profit opportunities on specific routes, but the existing competitors are unable to make much impact, it may be that new competitors can. Airlines can, and sometimes do, form parts of larger corporations. It is in the interest of these corporations to back airline subsidiaries in seeking profit opportunities. Charter operators are often backed by other firms. The ability of BA to undertake successful predatory pricing is limited by this in the long term.

It is difficult to devise any methods which would eliminate BA's ability to indulge in predatory pricing. Breaking up the airline may appear an attractive possibility. However, if this were done, the parts into which it is broken would still be able to indulge in the practice. They would still be profitable, and have high cash flows and operating surpluses. They would still be large relative to their competitors, and still the dominant British airline in their markets.

An alternative may be to ban BA from operating in markets where it might try to exercise its strength. Thus it might be prohibited from operating in the (potentially) more competitive markets, such as the domestic market, the whole aircraft charter market, or even the North Atlantic market. This would cure the problem, but it might be done at a high price in terms of efficiency. An efficient network for BA requires that it fly domestic segments. An extreme example of the problem arises in Australia, where BA and Qantas are unable to pick up domestic passengers (see p5 of the BA's March-October 1984 Timetable). As a result, many of their flights around Australia are half empty. Given the geography of British air transport, this highly inefficient situation is unlikely to emerge in Britain. It may make sense to separate out the current domestic operations of BA, and then form a British Airways (domestic). This airline would almost

certainly form close interlining agreements with British Airways (international). It may be possible to ensure that a separate airline operates most of its current domestic flights while at the same time not prohibiting BA from taking on domestic passengers. Thus it may schedule some domestic segments of international flights for operational or marketing reasons. Currently it does not appear to do this very much, and most passengers from smaller hubs have to change aircraft at Heathrow.

Thus on the grounds of increasing the competitiveness of the domestic market, it may be desirable to sell the domestic operations of BA separately. BA would, however, still be *allowed* to serve domestic markets, though it would need to establish a network and it would probably not find this worthwhile if it had an interline contract with the main domestic airline. The case for separating charter and even North Atlantic operations is weaker, because the interconnections between markets, at the operational level, are probably of much more significance. Again, it is one matter to sell separate parts of the airline, it is another to ban it from serving markets altogether. There is little to be said for doing the latter.

Predatory pricing is notoriously difficult to prove, and this usually makes it difficult to police. It is hard to distinguish between a price cut which has been made to force a competitor out of the market, and a price cut which has been made possible by cost reductions or changes in the price structure. Any action which is taken may founder on the burden of proof, and sometimes the competitor is no longer present to pursue the action.

It is possible to make predatory pricing more difficult though. If the suspicion of it was sufficient to call forth sanctions, and these sanctions were severe, it would be dangerous to attempt it. Too severe a penalty has its problems to, since it would discourage fare innovation. Perhaps the most satisfactory solution is to threaten severe controls. If firms appear to be indulging in predatory pricing, the attempt will usually be well documented. If this leads to severe penalties, such as loss of routes, firms which might have attempted it will be worse off. The threat of penalties may be sufficient to discipline the market performance of firms. Predatory pricing has sometimes been suspected - it cannot be said that regulatory authorities have tried hard to stop it, however.

While BA will be a large and dominant firm in its industry, there will be no foolproof methods of restricting its ability to indulge in predatory pricing. Separating it into parts may not achieve much, nor may banning it from certain markets. BA's financial power may

not be vastly greater than that of most of its competitors in the longer term. While controls on predatory pricing are difficult to devise, it may be desirable to prepare controls which are in the direction of severity (rather like some US anti-trust laws). Then the threat of controls may produce as satisfactory a result as is possible. It should be noted that airlines are far from unique in presenting opportunities for predatory pricing, and it may not prove to be a serious problem for achieving efficient operation of competitive markets.

4. CAA Policy and Route Transfers

It should be apparent from the analysis so far that we take a distinctly different approach from that advocated by the CAA (CAA, 1984b). The CAA favours a once-off series of arbitrarily decided route transfers from BA. It argues that this will lessen the 'competitive imbalance', and it is implicit in its choice of routes (nearly all non Heathrow routes) that it thinks that these are routes for which BA is relatively less efficient (though it does not say that other airlines might be absolutely better suited to serve them). In general, the policy prescriptions of the CAA document are poorly, if at all, supported by analysis. The view taken is that the CAA knows best about all aspects of British air transport. It gives the impression that it has got things right most of the time in the past, and with a few changes, it will get things right in the foreseeable future.

Possibly the most serious objection to the CAA's approach is that it makes route transfers between airlines difficult, and except in a few cases, unlikely in the future. The suggestion is that a specified set of routes, chosen by the CAA, should be reallocated from BA to other airlines, after normal CAA hearings (a couple of routes are to be transferred directly to British Caledonian, however). After these routes are transferred, the reallocation should cease. As such, it is supporting a continuation of basically the same arrangements as have been in operation since the CAA was constituted. Since then, and indeed, since the Edwards Report, in spite of continual statements about the undesirability of the 'structural imbalance', little change has occurred. This is hardly surprising, considering that change means transferring assets between airlines without compensation.

If an efficient industry structure is desired, it is necessary to make it possible for an airline which can better serve a route to replace another. Probably the best judges of which airlines are most suited to serve a route are the airlines themselves. Once off, arbitrary transfers need not improve efficiency, and once they are completed, it will not

be possible for any future increases in efficiency, through route reallocation, to take place. Flexibility, not change, is needed to improve efficiency.

The case for specific route transfers is weak. As many commentators have noted, substituting one airline for another on a joint monopoly route (served with one other foreign airline) cannot increase competition. The CAA takes it as obviously desirable that the relative size of BA should be reduced, and that of other airlines increased. It is not apparent why this should be so, or how this would improve the long term viability of independent airlines.

Essentially, what the CAA seems to be arguing for is that monopoly routes should be shared around. This would mean that on competitive routes, cross-subsidisation by one airline, say BA, from monopoly routes, could be met by cross-subsidisation by a competitor, from one of its monopoly routes. The same might apply if a foreign airline were to indulge in predatory pricing against British airlines. It must be questionable whether sharing monopolies around is the best way to handle predatory pricing. It has the disadvantage that it increases the number of British airlines which have a financial stake in continued regulation. Thus, if deregulation of some routes is proposed in the future, *all* British airlines will oppose it. Currently, it is in the interest of most airlines to support some deregulation, as it is their only hope of expansion, and they will not lose financially from it.

The primary objection to the CAA's proposal for route transfers concerns the way they are to be effected. With the exception of a couple of routes which are to be transferred directly to British Caledonian, the CAA proposes to hold hearings to allocate routes to airlines. After this has been done, further transfers will not be made. Even supposing that the CAA has accurately estimated which routes can most efficiently be transferred, there is no certainty that it will award them to the airline most suited for them.

Suppose that it solves this problem correctly. The system of allocating routes through hearings is a highly inefficient one. As the CAA recognises, routes are valuable. Airlines will thus be prepared to spend considerable resources in the attempt to be awarded them. An airline which considers it has a one in five chance of being awarded a route worth £10 million will be prepared to outlay £2 million in trying to obtain it. In the limit, airlines will spend a total of £10 million to gain £10 million. BA, and through it the taxpayer, will lose £10 million through the transfer of the route, and the other airlines, collectively, will gain nothing, in the limit. The monopoly

profits will be wasted, in the form of legal and economic consultants' expenses. This is an example of 'rent seeking', whereby potential operators spend real resources to gain profitable rights which have been artificially created (see Posner, 1975). In fact, not all the profits need be dissipated, but this mechanism will be guaranteed to create waste. It would be far better for the CAA to arbitrarily allocate routes to airlines.

One possible option would be route franchising (see section 5 below). This would involve no rent seeking with its consequent waste; it would be a method which allowed routes to be transferable in the future; and it would not create a vested interest in a route. It would also return the monopoly profits to the taxpayer. The one argument which the CAA uses against franchising (paragraph 97, and Appendix 8, paragraph 5) is a non-sequitur. It states that if a route were franchised, it would have to regulate the route in detail to protect consumer interests. This does not follow - the route is a monopoly, whether or not it is franchised. Exactly the same comment might be made if routes were transferred using the CAA's preferred process. The operator on the route would possess the same monopoly powers, and the same incentive to use them, as with franchising. In fact, there is a genuine point about whether it is better further to regulate a route, which for reasons outside the control of the CAA must remain a monopoly, or whether it is better to leave it as it is. But this has no bearing on the relative attractiveness of different means of allocating monopolies. The CAA thus offers no arguments against franchising of monopoly routes.

It is unfortunate that the CAA has assumed the role of giving away the public's money - a role which it recognises (paragraph 86) without making any serious estimate of the size of the sums involved. Some rough estimates of the impact on BA's revenues are given, but nothing is said about how they are derived. The CAA has data, which are not publicly available, which would enable it to give some indication of the size of revenues and profits on the routes involved. Since these are monopoly routes, there should be no question of commercial confidentiality. If some favoured airlines are to be given valuable route licences, at the ultimate expense of the taxpayer, it is surely desirable that some estimate be made of what they are worth.

A cynical observer, versed in the recent Political Economy of regulation, might not be surprised at the CAA's report. While stating its preference for competitive approaches, it in fact proposes a set of changes which increase, rather than decrease, the discretion which it would have. It does propose incomplete domestic

deregulation, but it also proposes a route transfer process which it would oversee completely. The market participants, consumers and airlines, would not make any decisions; these would all be left to the CAA. It is reasonable to expect that regulators like to regulate, but they may not be good at it.

The CAA states that it is in favour of competitive or market based solutions. Insofar as its recommendations on domestic regulation and dual designation are concerned, these are consistent with that view. However, its proposed scheme of route transfers is inconsistent. Alternative market based systems exist, but the CAA does not even evaluate them. Its proposed process is entirely regulatory, and in the long term it is likely to make market based solutions more, rather than less, difficult to bring about.

5. Selling Airlines, Routes and Networks

The Government has a wide range of options open to it when it sells BA. It can sell it as a whole, or it can break it into separate airlines. Whichever of these it chooses, it has at least five options as to the sale of the physical airline and the routes. First, it can sell the airline along with the routes. Secondly, it can sell the airline but transfer some routes. Thirdly, it can sell the physical airline but sell long term rights to the routes separately. Fourth it can sell the airline, but lease out, on a short term basis, rights to operate the routes. In addition, it can choose between making routes transferable or non-transferable between airlines. Finally it can sub-divide BA and sell it as several separate airlines.

The Government may have several objectives in mind when it privatises the airline. It may wish to ensure an efficient pattern of routes and networks. It may wish to obtain the profits of regulation for itself, or the taxpayer - i.e. it may not wish to give away its assets. Finally, it may wish to encourage competition where possible. Whether or not a substantial measure of deregulation is possible prior to sale, it may wish to limit the financial stake in actual regulation that airlines have. It may view regulation which is in place, but which benefits firms in the industry, as difficult to alter. These could all be regarded as worthwhile objectives.

Some options can be disposed of immediately. We have argued that subdividing BA into several airlines is unlikely to promote competition. Doing so may, but will not necessarily, result in a less efficient pattern of route networks. There is thus a case for maintaining BA intact, though this case is not especially strong. Route transferability would mean that it is possible for the airline

best suited to serving a route to be able to do so. If airlines seek profits, there will be a tendency for the most suited airline to serve the route in fact. There is a strong case for route transferability.

The other packages for selling BA can be evaluated in this framework. Selling BA as a whole, with route transferability, will result in an efficient network, and, over time, the routes less suited to BA being sold to other airlines (equally, BA may purchase some routes). The taxpayer will gain the value of the routes in the initial purchase price. The main objection to this package is that BA will possess valuable route rights, and it will oppose any further deregulation.

If BA is sold, but some routes are transferred, it would still be possible to have an efficient pattern of networks if routes were transferable. The taxpayer would lose however, since some of the Government's assets were being given away. Airlines which gained some of the monopoly routes would have an incentive to support the regulatory status quo. Compared to the previous option, support for regulation would be more widespread.

A third option would involve selling long term rights to some or all of BA's routes separately from the physical airline. Efficient networks would be possible, since routes could be transferred amongst airlines. The taxpayer would do as well as under the first option, since no government assets would be given away. Airlines which purchased routes would have an incentive to protect their investment - they would oppose deregulation.

The fourth option would involve the physical airline being sold separately from the routes, but the latter would be sold only on a short term basis - they would be effectively leased. Efficient networks would be possible, and the taxpayers would gain from the sale of the government asset. The main differences from the previous options are first that the airlines would have no investment in regulation and, secondly competition for the market, when routes are subject to re-negotiation, would provide an incentive toward higher levels of efficiency. To the extent that they were required to pay to operate monopoly routes they have no incentive to support the regulation which created the monopoly. Of the options, this is the only one which achieves all three objectives.

The second option, similar to that favoured by the CAA (see section 4 of this Chapter) is clearly the worst. The first and third are effectively the same, if routes are transferable. If they are not, there is a case for enabling some realignment of routes through selling routes

separately from the physical airline. When routes are transferable, the first option is preferable on practical grounds. It would avoid the complicated problem of selling routes separately, and it would result in the situation, at the outset, of the owners of rights to regulation being concentrated. It would not give a wide range of airlines a stake in regulation.

The choice then narrows to one between that of selling BA with all its routes, but with those routes being rights which it can transfer, and that of selling the physical airline separately from the routes, but also effectively leasing, not selling those routes. The latter has the advantage that it minimizes the effective pressure for regulation, but it involves more practical difficulties. It is worth discussing these difficulties briefly.

In practice, a leasing scheme might involve airlines obtaining rights to operate routes for short, say three to five year, periods. Ideally this would be through auction, though it would be possible for the government to offer specific routes at set prices. Under both systems mistakes would be made, but if routes were transferable, these could be corrected. Airlines would be required to solve a complex bidding problem; this would entail costs. Currently they already solve similar problems, as when they bid amongst themselves for slots at crowded airports. Airlines could end up with awkward networks - but they could correct this in trades with each other after the sale. It is unlikely that BA would be left without most of its routes; it will probably bid most for much of its network. (If BA were left without most of its old routes, this would be an indication that it did not believe it could serve them as efficiently as other airlines). It might be suggested that foreign governments would object to routes to their cities being sold in Britain. They are unlikely to be on strong ground, since it is Britain's right to capacity on specific routes which is being traded. Britain itself has not objected when airlines of other countries have traded the right to fly to London amongst themselves (for instance, when Air Florida sold their Miami-London route to Eastern).

Notwithstanding these points, it must be admitted that it would be difficult to establish a workable system of route franchising or leasing in the short term. It would be impractical to institute one before BA is sold. It should be considered as a possibility for the medium term. The gains from such a system exist, although they are not clear cut. They involve in particular reducing airline investment in regulation, and thus the likely opposition to government efforts to deregulate in the longer term, and the benefits of an increase in competitive incentives. A government which is not likely to give into lobbying

from industry groups is unlikely to find the cost of operating such a system worth incurring.

Since there is a range of options, and each of them can affect the performance of the industry and the value of BA, it is critical that when BA is sold, the precise option being chosen is specified. At present, this appears unlikely - the Government seems to be intending to rest with an ambiguous statement of its intentions. Several issues need to be settled before BA is sold.

First, are routes to be transferred or not? This issue will probably be decided. The next question, of whether routes are to be transferable, will probably not. What is the status of BA's claim to routes - does it have indefinite tenure, does it have the rights to routes for a specific period, or is it the case that routes can be taken from it at some point in the future? To sell an airline with its routes without specifying the conditions or tenure of the routes, is like selling a lease without specifying its term. It is also necessary to specify whether any payments will be required for BA's access to routes.

It is also desirable that the terms of BA's access to airports be specified. Will BA be allowed continuing access to Heathrow under current pricing policies (which cover cost approximately but which make no allowance for the scarcity of Heathrow's capacity). Will slots for use at Heathrow be clearly defined and tradeable? Will capacity at Heathrow be rationed by price? Possibly the Government is not prepared to commit itself on airport policy at this stage, and it may not be possible to commit itself for an extended period. Nevertheless, since airport pricing is an important determinant of the profitability and value of BA, it is desirable for the Government to be as specific as possible about it.

The most important issue about which the Government must announce its intentions concerns regulation. The British Government can, of itself, affect the degree of regulation in a number of markets, and thus the value of BA. What are its intentions? Its current approach appears to be to say that it wishes to encourage competition, but to do very little about it. Perhaps potential bidders for BA will believe its actions rather than its words. If its intention is to avoid clashes with public or private firms, and do little to alter regulation, it is desirable that it make this clear - otherwise it will obtain a lower price for its asset. While it can change much regulation in the short term, some changes will become possible only in the longer term, as other countries change their policies. While it will not be able to commit itself, it would be helpful if it stated its intentions for when these opportunities present themselves.

The recent White Paper (Department of Transport; Cmnd 9366) on Airline Competition Policy is consistent with the approach discussed here though it is distinctly unspecific in providing concrete policy proposals in a number of important areas. It rejects the policy of arbitrary route transfers, and approves a small number of route swaps. Since these are mutually agreed to by the airlines themselves, it may be presumed that they result in a more efficient overall outcome. However the routes are regulated, and prices will remain the same, and it should be expected that the addition to profits of B.Cal will exceed the reduction in profits faced by BA. Such once off transfers are of comparatively minor importance, and the White Paper says nothing about future route transferability.

The White Paper is generally pro competition in principle but it remains to be seen whether in practice actual decisions, for example those covering domestic, and in future European, routes are consistent with encouraging competition. The Government could go further now if it wished to, especially with domestic regulation, and its ad hoc capacity restrictions on the North Atlantic and other routes. There is still scope, under proposed arrangements, for there to be a substantial degree of regulation. It is probable that some of this scope, on control of entry and capacity, will be employed notwithstanding the general policy on competition. When discretion is left with regulators, they tend to use it. The chance has not been taken to remove this potential for limiting competition.

The controls over predatory pricing, which the CAA possesses, are to remain. Their main deficiency is that they require proof of predatory pricing. Since it is virtually impossible to prove predatory pricing, no matter how strongly the evidence points to it, such controls are likely to be ineffective. The fears of smaller airlines may be justified if a private BA were to choose to attempt such a practice. There are two important limitations to the White Paper:

- (i) first it does not fully address the airport problem (although policy on capacity at Heathrow is subject to a consultation review at present). To achieve competition between airlines on equal terms it is important that access to inputs is also equal. Changing airport policy, with regard to the excess demand for the use of Heathrow, will become more difficult if BA is sold with only vaguely specified rights to its utilisation of capacity at Heathrow
- (ii) secondly the White Paper does not provide any specific proposals in relation to the rights which a privatised BA may, or

may not, continue to hold over the provision of services on regulated routes.

Strictly speaking, a government should be able to alter regulation if and when it pleases. To do so however, causes some to gain, and others to lose (possibly heavily). As a practical observation, it is probably desirable for a government to absorb the gains or losses itself as far as is feasible. This means that it is less likely to be swayed from its intended course of action by interested parties. Ever since the Edwards Report of fifteen years ago, Conservative governments have had a policy of altering the balance of the civil aviation industry. Except for some route transfers in the early 1970's, little has happened. If a government wishes to introduce more competition, it should minimize the stake which interested parties have in opposing it. They will not be able to eliminate it, but they will make competition more likely if they reduce it.

13.

SELLING BRITISH AIRWAYS

1. The Irrelevance of the Balance Sheet

Rearranging the Balance Sheet of British Airways prior to selling is like rearranging the deck chairs on, if not the Titanic, the QE2; it should make no difference to the overall price obtained for it. This view contrasts with the often expressed one that it is necessary to 'get the balance sheet in order' before the enterprise is sold. In fact, there is a case for letting the new owners rearrange the assets and liabilities to suit their intentions, rather than undertake complicated manoeuvres which may be reversed soon after sale.

The Government cannot make the expected net profit significantly greater by altering the asset or debt structure before sale, and therefore cannot alter the price. Anything it can do can also be done by the new owners, and they will realise this. If there are changes that might be made which would improve profitability, they will take this into account when making their bid; they will not require the changes to have been set in motion before paying the higher price.

The debt position faced by BA is a concern to many, but it is irrelevant so far as the overall price received by the Government is concerned. Suppose that BA faces fixed interest debts of £800 million. If assets, including intangible assets such as regulation, are worth £2000 million, net of other liabilities, the airline is worth £1,200 million. A sensible buyer will bid up to £1,200 million for it, but no more.

If the debt is written off, the airline is now worth £2,000 million. Again, a sensible buyer would be prepared to bid £800 million more for the airline than before. The Government is now no better off, nor worse off, since it is responsible for £800 million of debt - the net price it receives is the same, £1,200 million. The same is true of altering the asset structure - for example, if it sells £200 million worth of assets, and the Government takes the proceeds, the airline is worth £200 million less.

In fact, with changes in liabilities such as the retirement of debt, the impact on the selling price of the enterprise can be accurately measured. If the Government retires £800 million of debt, this is something which can be precisely assessed by potential buyers, they know that they will face debts worth precisely £800 million less than otherwise, and they can take this into account when preparing their bid. Some liabilities may be difficult to value, such as a possible

liability which could arise as a result of an unfavourable court decision. Most of the proposed rearrangements of BA's capital and asset structure fall into the measurable category. Asset sales, cash injections, debt write offs, taking over superannuation liabilities, all fall into the category of measurable changes in the Government's equity in the airline. Any change in which the Government increases or decreases its equity in the enterprise should alter its selling price by the same amount, and, overall, the Government will neither gain nor lose from undertaking the reconstruction.

This being said, we should note that we cannot be certain that the capital market *will* work efficiently. It is possible that a change might not be fully reflected in the price. There may be more buyers for an enterprise at a price of around £1,200 million than around £2,000 million. It is not quite obvious why this would be so, since the owners of a debtless airline would be able to raise finance more easily than owners of an airline with £800 million of debt. Nevertheless, by taking responsibility for £800 million of debt the Government may add less than £800 million to the selling price. Some argue that the Government did not get its money back from the capital restructuring of Cable and Wireless, even though we can never be certain what price it would have obtained if it had not undertaken the exercise.

If, as a general rule, capital restructuring which increases the market price of the enterprise will not be fully recouped, then the most profitable policy would be to leave BA with as much debt as is possible. However it may well be that a given capital restructuring, e.g. writing off a debt of £800 million, does not affect the capital market in any systematic way. In some cases it may add more, in others less, than £800 million to the value of the enterprise. While it may be possible to forecast that the capital market will make mistakes (for this is what they are), it may not be possible to forecast in which direction it will err. If so, it may be appropriate to assume that a given capital structure will not change the expected overall amount which the Government gains from selling the enterprise.

When the new owners gain control of BA, they can be expected to rearrange the structure of assets and liabilities. They may sell assets, buy others and replace others. They might contract the size of the enterprise, by selling assets and retiring debt; alternatively they may expand it (though the scope for rapid expansion of BA is limited). To a degree, they will restructure BA's debts. It is almost certain that they will want to have a significant amount of long term fixed interest debt on the liabilities side. They may not wish to preserve the

existing structure of debt - for example they may wish to retire some debt in Japanese Yen and increase the debt in US Dollars. It is difficult to know the exact debt structure that the new owners will require. Since restructuring involves a cost, the price the Government obtains will be higher if the capital structure is just right, than it is if it is regarded as inappropriate. However, the Government also incurs a cost in debt restructuring, so it will not gain anything. The amounts involved, basically brokerage, will be small relative to the size of the selling price. There is a considerable chance that the Government will lose. If it makes changes, such as writing off all the debt, which will be reversed by the new owners, it will have incurred costs and lowered the selling price (because buyers will deduct the cost of restructuring from their bid price). Thus the Government can recoup its costs only if it forecasts perfectly what the new owners will want. This is unlikely, and it is possible that it will incur costs in making changes that are not desired. To this extent, the most efficient way for the Government to sell the enterprise would be to sell it as it is, and let the new owners make the changes they desire.

It may be that the capital market is not efficient when large sums are involved. It could be easier to raise £1 billion for a firm than to raise £2 billion for a firm worth twice as much. Retiring debt may be easier than raising loans. Transactions cost exist. It may be that the perceptions of potential buyers are affected by the debt structure of BA, perhaps because they feel it would be difficult to alter it. What we are suggesting is that there is no case for preferring, on grounds of likely overall price, one capital structure rather than another. If however it is seriously considered that one capital structure will be preferred to another, then it may be sensible to offer BA in that form if the costs to the government of changing the capital structure are lower than the expected increase in the selling price. It is not an important issue however.

There are several other aspects of the package to be offered which fit into the same category as financial restructuring. The Government could allow previous losses by BA to be offset against tax or not. If it did it would gain more for the firm, but receive an equivalent amount less (after appropriate discounting) in taxation receipts in the future. BA could be divided into several airlines - as long as the operating and marketing interdependences were not lost and the degree of competition was unaltered, it would receive the same for the one or several airlines. The Government can absorb particular liabilities, such as for accrued pension rights and if it does so, it will obtain a higher price for the airline, but have other payments to

make. If some of BA's routes were sold separately, the overall price for airline and routes would be unchanged (again subject to provisos regarding competition, operations and marketing). It does not matter which package is offered. If one is considered preferable in some way to the others, it should be the one offered.

In summary, there are no ways in which the Government can *systematically* affect the overall price that it receives for BA and its routes. If it could, the capital market would not be doing its job. Rearrangements, such as writing off debt, alter the value of BA but only by the amount that they cost the Government. The most attractive package should be offered, subject to the proviso that the Government should avoid incurring costs to make changes which will be reversed, at a cost, when the new owners take control.

So far as the Balance Sheet and Profit and Loss Accounts are concerned, the most important thing for the Government to do is provide more information. By the standards of public enterprises, the accounts of BA are good. However, as seen throughout this report, there are many areas where additional information is required by outsiders to put an accurate value on the enterprise. Some, but by no means all of this information, would be of commercial value. The Government would achieve much more in terms of obtaining the right price for the airline if it made more information available than if it makes unnecessary changes to the structure of assets and liabilities.

2. The Subsidy Question

BA has in the past been the recipient of numerous direct and indirect subsidies. There is natural concern, especially amongst its potential competitors such as British Caledonian, that the new BA will continue to receive subsidies and thereby retain an unfair competitive advantage. It has been maintained that certain actions, such as debt write-offs constitute a subsidy which will enhance BA's competitive position. It is worthwhile first examining what constitutes a subsidy, and then looking at the different types of arrangement that BA has been subject to, and seeing whether they constitute a subsidy.

A subsidy may have either or both of two major effects. It may make the recipient better off. It may affect operations of an enterprise by affecting the price of some input or output. A fuel subsidy to, say, British Midland would make it better off, and induce it to alter operations, for example by using more fuel intensive aircraft than it might otherwise have used. A promise of a fuel subsidy to a private

BA would not make its new owners any better off. The expected profits would increase, but so would the selling price. A grant of a lucrative route to British Caledonian would be a subsidy which would leave its other operations more or less unchanged, since the prices it faced would be unaltered. It would make the airline more profitable, and thus better off. Perhaps the best example of a subsidy which has no effect on operations would be a once-and-for-all cash grant.

A subsidy which makes the recipient better off but does not affect operations will have no effect on competition. Competitors may feel justly envious, but the recipient will not change behaviour, and thus they will remain unaffected. A cash grant or a route transfer to British Caledonian makes it better off, but it will not affect other airlines (unless there are some network effects). If British Caledonian had an appropriate capital structure and mix of assets, it would not wish to make changes. If it faced some capital constraints, and could not borrow as much as it wished at going rates, the change in wealth might affect its equipment purchases. This in turn might lower its costs, and thus affect its competitors, but this effect would be indirect and minor. In practice it may be difficult to find a subsidy which has no effect on operations at all.

With this as background, it is possible to discuss some of the different forms of 'subsidy' which might be granted to BA, and how they might affect competitors and the new owners. In the past, BA has been the recipient of a number of different forms of subsidy. It has been the recipient of 'public dividend capital' from the Government, which might be better described as "public no-dividend capital". Along with other public enterprises, it has been given a government guarantee when raising loans. This enables it to raise capital more cheaply, since the Government absorbs the risk. In addition, it was argued in Chapter 8 that BA has received some subsidy through government guarantees on the Sterling value of Dollar loans. It has been the beneficiary of periodic debt write-offs. Concorde operating losses have been paid for by the Government. It can be argued that the rate it receives for carriage of mail is above cost, and thus constitutes a subsidy (see US Senate, 1978, p.269). It may enjoy some informal support through preferential access to government business, though this is difficult to test. Preferential access to Heathrow constitutes an implicit subsidy. In return it has been required to undertake some operations which it would normally choose not to do, such as fly British built aircraft. These subsidies could continue after the airline is privatised, though they need not. New forms of subsidy may be given to it, or any other airline.

It has been maintained that a debt write-off, such as may take place, constitutes a subsidy. If the Government makes a debt write-off before it sells the airline, then it will be a subsidy in neither sense. It will not make the new owners any better off, nor will it affect operations. A debt write-off would increase the selling price by an amount equal to the debt. The financing charges to the new owners will be the same; either they must service the debt in the airline, or service the higher debt that they incur in financing the higher purchase price. The prices of the inputs, including capital, and outputs will be unchanged, and the debt write-off will have no impact on operations. Competitors should be indifferent to the capital structure with which BA is sold.

If the Government *unexpectedly* agreed to take over some debt, *after* it had sold the airline, it would make the new owners better off. This would still not affect operations, since the price of finance is still the same, as is the price of every other input. All that has happened, is that the profit has been increased by the amount of debt service charges avoided. If the owners were operating the airline as profitably as possible, they would not alter operations. It must be noted that this good fortune is unlikely to befall the airline. If the debt write-off occurred after sale, but was expected, it would be allowed for in the bid price, and it would neither make the new owners better off, nor affect operations.

Operations would not necessarily be affected even if the Government continued to subsidise BA through capital write-offs after sale. If this were expected, it would again be incorporated into the sale price, and the new owners would not gain, whereas, if it were unexpected, they would gain. In either case, if they were seeking to maximise profit, there would be no effect on operations. This would not be so, however, if the new owners pursued objectives other than profit, for example, if they sought to maximise market share. Under such circumstances a policy of consistent underwriting of losses by the Government would lead BA to alter operations by flying uneconomic routes and charging fares below cost. Competitors would then be adversely affected. This form of blanket subsidy is unlikely, though there are more specific forms of subsidy which may be continued.

Three forms of subsidy which could be given after privatisation are loan guarantees, high rates for the carriage of mail, and preferential access to government business. All of these could be given to other airlines. They all affect operations, as they affect the prices paid for inputs, or obtained for outputs, or the profitability of individual routes. Loan guarantees will mean that the airline can obtain finance

more cheaply than a comparable private company could, because the Government is bearing the risk. High rates for mail would mean a guaranteed profitable supplement to other revenues for a route. Preferential access to government business means that additional traffic, which would not normally come to BA, would be directed to it.

Loan guarantees, which are sometimes given by government to non-government airlines, such as by the Australian government to Ansett Airlines, effectively make capital cheaper. They also enable higher gearing ratios, by eliminating the risk to the lender (though not to the equity holder). They would make capital equipment such as aircraft cheaper relative to other inputs, and result in lower overall costs. The interest saving is probably of the order of 1-2% and on 1983 borrowings of about £1,000 million, it would be worth £10-20 million. Present loans, raised under guarantee, would still have to be guaranteed, but no future loans need be given this subsidy. It has been estimated that the imputed subsidy to BA through high mail rates was £15.9 million (US \$27.4 million) in the year ended March, 1977 (US Senate, 1978, pp 280-281). It would be difficult to estimate the value of preferential access. These subsidies, if continued, would be significant, though small relative to BA's total costs.

If the Government were to promise continuance of these subsidies after privatisation, it would affect the selling price. The selling price would be increased by the capitalised value of the expected subsidies (approximately - some of the subsidies may be passed on to the consumer). The new owner will not gain, nor will the Government lose. The only impact of such subsidies will be on operations, and competitors will lose out to BA. A promise to maintain a subsidy related to operations would make some consumers better off, but would not make BA any better off. Its competitors would be worse off. Unless there is some specific objective in granting a subsidy, such as to ensure that a particular route is operated for social reasons, in which case it should be available to any airline, there is a strong case against granting a subsidy, whether explicit or implicit.

Because its value will be capitalised into the selling price, a promise to maintain a subsidy will be difficult to go back on. If, for example, loan guarantees are promised to the new BA, the owners will have paid for them. They could legitimately object if their commercial partner, the Government, failed to honour the contract. The promise may or may not be legally enforceable, but the buyer will definitely face a loss. For this reason, the Government may be held to a policy which it wishes to change. Subsidies may or may not be warranted,

but it is undesirable to sell the promise of a subsidy, which the Government would be doing if it committed itself to a subsidy before selling BA.

The subsidy question is a complex one. Some changes which may look to be large subsidies to the airlines, such as debt write-offs, are of little consequence, since they do not affect the operations of BA and its competitive position, nor do they give the new owners any financial advantage. Other subsidies will affect BA's operations - these are subsidies on items which it is buying and selling, and which are not of the nature of a once-and-for-all change. These may or may not make the new owners better off - most likely they will not be to the new owner's advantage, yet they will worsen the position of BA's competitors. The Government would be advised not to lock itself into a commitment to continue subsidies by selling a promise of them, which it could be doing when selling BA.

References

Aviation Week and Space Technology , July 30, 1984.

Bailey, E.E. and Panzar, J.C. (1981) 'The Contestability of Airline Markets during the Transition to Deregulation', *Law and Contemporary Problems* , pp. 125-145.

Banks, H. (1982), *The Rise and Fall of Freddie Laker*, London: Faber and Faber.

Beesley, M.E. and Littlechild, S.C. (1983), 'Privatisation: Principles, Problems and Priorities', *Lloyds Bank Review* , July, pp. 1-20.

British Airways (1977), *Civil Air Transport in Europe* , January.

Brittan, S. (1984), 'The Politics and Economics of Privatisation', *The Political Quarterly* , Vol. 55, no. 2, pp. 109-128.

Civil Aviation Authority (1977), *European Air Fares: A Discussion Document*, CAP 409, London: CAA.

Civil Aviation Authority (1979), *Domestic Air Services: A Review of Regulatory Policy* , CAP 420, London: CAA.

Civil Aviation Authority (1983), *A Comparison between European and United States Fares* , CAA Paper 83006, London: CCA, May.

Civil Aviation Authority (1984a), *Consultation on Airline Competition Policy: An Interim Assessment* , CAP 489, London: CAA, April.

Civil Aviation Authority (1984b), *Airline Competition Policy* , CAP 500, London: CAA, July.

Caves, D.W., Christensen, L.R. and Thretheway, M.W. (1981), 'US Trunk Air Carriers, 1972-1977: A Multilateral Comparison of Total Factor Productivity', in Cowing, T.R. and Stevenson, R.E., *Productivity Measurement in Regulated Industries* , New York: Academic Press.

Caves, D.W., Christensen, L.R. and Thretheway, M.W. (1982), *Productivity Performance of US Trunk and Local Service Airlines in the Era of Deregulation* , Working Paper 8229, Social Systems Research Institute, University of Wisconsin, November.

Caves, D.W., Christensen, L.R. and Thretheway, M.W. (1983), *The Structure of Airline Costs and Prospects for the US Airline Industry under Deregulation*, Working Paper 8313, Social Systems Research Institute, University of Wisconsin, September.

Cooper, M.H. and Maynard, A. (1972), 'The Effect of Regulated Competition on Scheduled Air Fares', *Journal of Transport Economics and Policy*, May.

Cambridge University Department of Applied Economics Occasional Paper 17, Cambridge: Cambridge University Press.
Deakin, B.M. and Seward, T. (1969), *Productivity in Transport: A Study of Employment, Capital, Output, Productivity and Technical Change*,

Demsetz, H. (1968), 'Why Regulate Utilities?', *Journal of Law and Economics*, April, pp. 55-66.

Department of Transport (1984), *Airline Competition Policy*, Cmnd. 9366, London: HMSO, October.

Devereux, M.P. and Mayer, C.P. (1984), *Corporation Tax: The Impact of the 1984 Budget*, IFS Report Series No. 11, London: Institute for Fiscal Studies.

Douglas, G.W. and Miller, J.C. III (1974), *Economic Regulation of Domestic Air Transport: Theory and Policy*, Washington: Brookings Institution.

Edwards, J.S.S. and Mayer, C.P. (1983), *Issues in Bank Taxation*, IFS Report Series No. 5, London: Institute for Fiscal Studies.

Edwards, R. (1969), *British Air Transport in the Seventies*, Report of the Committee of Inquiry into Civil Air Transport (the Edwards Report), Cmmd. 4018, London: HMSO, May.

Findlay, C.C. (1983), *Australia's International Civil Aviation Policy and the ASEAN - Australia Dispute*, ASEAN - Australia Economic Papers No. 1, Kuala Lumpur and Canberra: ASEAN - Australia Joint Research Project.

Findlay, C.C. and Forsyth, P.J. (1984), *Competitiveness in Internationally Traded Services: The Case of Air Transport*, ASEAN - Australia Joint Research Project Working Paper.

Forsyth, P.J. (1983a), *Competition in the International Airline Industry under Variable Exchange Rates*, University of New South Wales Centre for Applied Economic Research Working Paper No. 50, August.

Forsyth, P.J. (1983b), 'Airline Deregulation in the United States: The Lessons for Europe', *Fiscal Studies*, Vol. 4, No. 3, pp. 7-22.

Forsyth, P.J. (1984), 'Airlines and Airports: Privatisation, Competition and Regulation', *Fiscal Studies*, Vol. 5, No. 1, pp. 61-75.

Forsyth, P.J. and Kay, J.A. (1980), 'The Economic Implications of North Sea Oil Revenues', *Fiscal Studies* , Vol. 1, No. 3, pp 1-28.

Graham, D.R., Kaplan, D.P. and Sibley, D.S. (1983), 'Efficiency and Competition in the Airline Industry', *Bell Journal of Economics* , pp. 118-138.

Gravelle, H.S.E. (1982) 'Incentives, Efficiency and Control in Public Firms', in Bos, D., Musgrave, R.A. and Wiseman, J. (eds), *Public Production* , Vienna: Springer-Verlag.

International Civil Aviation Organisation, *Financial Statistics* , annual.

International Civil Aviation Organisation, *Fleet and Personnel* , annual.

International Civil Aviation Organisation, *Regional Differences in Fares, Rates and Costs for International Air Transport* , biennial.

International Civil Aviation Organisation, *Survey of International Air Transport Fares and Rates* , annual.

Kendrick, J.W. (1968), *New Measures of Productivity in the US Certified Air Transport Industry* , Washington: Air Transport Association of America, March.

Koran, D. and Ogur, J.D. (1983), *Airport Access Problems: Lessons Learned from Slot Regulation by the FAA* , Bureau of Economics Staff Report, US Federal Trade Commission, May.

Kruger, A.O. (1983), *Exchange Rate Determination* , Cambridge: Cambridge University Press.

Mackay, K.R. (1979), 'A Comparison of the Relative Efficiency of Australian Domestic airlines and Foreign Airlines', *Domestic Air Transport Policy Review* , Vol. II, Appendix A6.1, Australia: Department of Transport.

Marris, R. (1966), *The Economic Theory of Managerial Capitalism* , London: Macmillan.

Milgrom, P. and Roberts, J. (1982), 'Predation, Reputation and Entry Deterrence', *Journal of Economic Theory* , August, pp 280-312.

Morrell, P.S. and Taneja, N.K. (1979), 'Airline Productivity Redefined: A Study of US and European Carriers', *Transportation* , pp. 37-49.

Pearson, R.J. (1976), 'Airline Managerial Efficiency', *Aeronautical Journal* , November.

Posner, R. (1975), 'The Social costs of Monopoly and Regulation', *Journal of Political Economy* , Vol. 33, pp. 807-827.

Pryke, R (1981), *The Nationalised Industries: Policies and Performance since 1968* , Oxford: Martin Robertson.

Taneja, N.K. (1980), *US International Aviation Policy* , Lexington, Mass.: Heath Lexington.

Taneja, N.K. (1981), *Airlines in Transition* , Lexington, Mass.: Heath Lexington.

Taussig, W.M. (1977), *British Airways: An Analysis of Efficiency and Cost Levels* , US Department of Transportation, May.

United States Civil Aeronautics Board (1979), *Aircraft Operating Cost and Performance Report* , July.

United States Senate (1978), Committee on Commerce, Science and Transportation, Hearings Before the Subcommittee on Aviation, 95th Congress, 2nd Session of S3363, *International Air Transport Competition Act of 1978* , Washington: US GPO.

Williamson, O.E. (1965), *The Economics of Discretionary Behaviour: Managerial Objectives in a Theory of the Firm* , Englewood Cliffs, New Jersey: Prentice Hall.

Williamson, O.E. (1975), *Markets and Heirarchies: Analysis and Antitrust Implications* , New York: Free Press.