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The Airport Industry in a Competitive Environment: A United Kingdom Perspective

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1. INTRODUCTION

The paper provides an overview of UK airports from the perspective of a business enterprise. Its object is to show, through the medium of the UK industry, that effective competition between airports is possible and that a competitive industry can be financially viable. In the UK case viability is achieved at all levels of output, thus refuting the suggestion that high fixed costs are a significant barrier to positive returns, particularly for airports of limited output. This viable industry operates for the most part in the private sector of the economy and it has evolved without the imposition of a strategic plan. It is competition that has driven the dynamics of the industry, an industry that in its symbiotic relationship with the airline industry has been an economic success story helping to produce strong economic growth in the service sector of the UK economy.

The structure of the paper is as follows: the following section provides a snapshot of the UK airports industry from which it is evident that economies of scope are important[1]. This is followed by a section on the ownership structure of the industry, drawing attention therein to the market for corporate control (with its implications for productive efficiency). Section 3 outlines the relationship between airports and airlines stressing the recent development of long-term contracts which are important for understanding the current nature of competition. Section 4 places competition in a spatial setting by summarising recent analyses of hinterlands or catchments from which the individual airports attract traffic; it is shown that most of these catchments overlap to form a chain of competition. Section 5 analyses the financial performance of the industry; its conclusion is that airports at all levels can operate without subsidy and, overall, the industry's profitability is similar to that for the non-financial sector of the UK economy. Section 6 concludes the paper by arguing that governments should encourage competition in the market for basic airport services, if necessary by restructuring and by unbundling concentrated ownership. Economic regulation, even when well designed, is very much a second-best solution.

2. SIZE AND DIVERSITY

In spite of its relatively small area, the UK in general, and England in particular, have a surprisingly large number of airports with scheduled passenger services; in 2007 there were about 40 such airports. Their size distribution, with reference to passenger numbers, is bi-modal with four large airports with numbers in excess of 20 million and the remainder with less than 10 million passengers. There is one major transfer (connecting) hub, London Heathrow, which of course is a supreme example of its genre. I could continue to cut and

slice the data on UK airports countless ways and possibly bore you in the process. Instead, can I refer you to the comprehensive airport data on the UK Civil Aviation Authority's website.[2] I am more interested in the 'airport' as a business entity, or enterprise, operating as the UK airports do within a competitive market economy with economic regulation limited to three co-owned London airports; this gives the analysis of the data a particular slant.

I have already referred to passenger numbers and it is a common practice to use this as the defining characteristic of an airport's size, but to do so tends to diminish the fact that airports are in most cases multi-product entities supplying to the market a bundled group of services (OFT, 2006). Apart from handling passenger traffic, other activities include shipping airfreight (including mail), providing for air-taxi services and general aviation, acting as a base for flying training, aircraft maintenance, flight testing and corporate jet activity, and providing for a large number of other specialist aviation services. Further complexity is added because the activities of the airport company can extend beyond the supply of airport services *per se*. The property assets within the airfield boundary might also serve non-aviation-related activities. At the smaller airfields, it is not unusual to find former hangars and similar obsolete or stranded assets used for storage or as units for light industry.

Looked at in business terms, a more appropriate measure of firm size is turnover. **Table 1** ranks selected UK airports by turnover in 2005/6. (There are probably another dozen relatively small airports exceeding the minimum turnover threshold shown, £5mn, for which financial data are not readily available). The range of turnover is huge, as one might expect, and, although there is a high correlation between this statistic and passenger numbers for medium and large airports, there are, nevertheless, cases where financial turnover relative to passengers is disproportionately high; Nottingham East Midlands, Cardiff and London City are examples. For small airports the relationship between passengers numbers and turnover is less close[3] and a further indication of this is the relative proportion of Air Transport Movements, those with a passenger focus, to total aircraft movements which for these airports is often less than half (see Table 1, columns 3 and 4).

But, small airports are of greater significance than their size suggest. In a competitive airport environment (about which I will more to say later) they are a source of competition for the larger airports. The industry is dynamic and rapid growth from a small base is not uncommon; Liverpool, for example has experienced exceptional growth during the last decade which has had repercussions for other airports in its region. A competitive challenge has also come from newly established civil operations at former military bases using the stranded assets of the defence 'industry' (Doncaster, Newquay, Manston) and at airfields located alongside aircraft manufacturing plants (Belfast City), as well as from the occasional new airport on a greenfield site, such as London City and Sheffield City. But there has been exit from the industry as well and the latter example is a case in point.

3. OWNERSHIP AND CAPITAL MARKETS

Until little more than 20 years ago, virtually all runway and terminal assets at UK airports were owned by the public sector, (although the private sector often played a major role,

through concession agreements in the running of the airports or, more typically, parts of them). The transfer in 1987 to the private sector of all the share capital of the British Airports Authority, a corporate enterprise owned by central government, was the first important change of ownership in the UK industry. This transfer, by flotation of shares on the London stock exchange, established BAA plc, (confusingly referred to as a public quoted company) with a substantial capitalisation. Between 1993 and 1999 many local government owned airport assets were also sold. This was a period when strict controls were imposed on local government spending on airport assets so that, to expand such airports, private capital was needed, but further privatisations have occurred since removal of the capital spending constraints (See **Table 2**). Unlike the public flotation of BAA, disposals by local governments to the private sector took the form of trade sales, that is, sales to existing trading entities.

The majority of the financial transactions have been outright sales to the private sector but with some exceptions. Local government retains a majority share in Newcastle-upon-Tyne airport; a minority share in Birmingham airport and a tiny share in Blackpool airport; whilst London Luton airport is a 30 year concession agreement. The latter commenced in 1998 and recent events suggest that this approach is not without its problems. The concession holder, ACDL, has now decided not to pursue earlier plans for major investment citing as a reason the limited period remaining before the end of the concession agreement, (although central government's support for, arguably, premature expansion of near-by London Stansted has probably complicated matters). Not all airports have been sold to the private sector or introduced private equity capital. Manchester (UK's fourth largest) which belongs to a consortium of local governments in North West England is a significant exception. The UK airport industry is thus a mixed private-public sector industry but one currently dominated by the private ownership of assets.

An important feature of the market in UK airport assets (and indeed the assets of the privatised utility industries in general in the UK) is that it is a market with a global reach, the final impediments to which disappeared in 2006: when BAA was privatised the government capped the amount of shares that any one shareholder could hold to 15 per cent but, following a ruling by the European Court of Justice that this restriction impeded the free movement of capital in the European Union, it was removed. The take-over of BAA soon followed when a consortium led by Ferrovial, the Spanish construction, infrastructure and services group[4], outbid Goldman Sachs, the US investment bank. Another Spanish led consortium has an interest in Belfast International and Cardiff airports as well as holding the Luton airport concession; Macquarie Airports, an investment trust which is part of the Australian bank of that name, owns Bristol airport; a New Zealand investment group has an interest in two smaller airports; Copenhagen airport (in which Macquarie also has an interest) holds the minority stake in Newcastle airport and private equity groups have been involved in the two most recent privatisations of local government airports, Leeds Bradford and Exeter. Both these latter sales took place at a price of about 30 times earnings (before allowing for interest, tax, depreciation and amortization). This suggests high expectations by the purchaser that substantial cost efficiencies can be achieved and/or strong market growth is attainable.

The market for corporate control generally in the UK is a very active one and this characteristic applies equally to the market in airport assets. Ownership by unquoted private companies (BAA plc was the exception) has not prevented several of the airports changing hands since they were first transferred to the private sector, some several times (see **Table 2**). It would be reasonable to suppose, therefore, that as a consequence much of the industry

is subject to capital market disciplines which bear in particular upon its productive efficiency: the acquiring firm will aim to increase the profitability of the airport taken over, securing a good investment return by improving the airport's operational efficiency. And, in so far as the remaining (corporatised) public sector airports find themselves competing in the market for air transport services with (for-profit) private sector airports, competition for private sector airport assets in the global capital markets will have had the effect of increasing the productive efficiency of the sector as a whole.

4. COMPETITION FOR CONTRACTS

It was expected that liberalisation of European air transport, the final phase of which was completed in 1997, would lead to a much more competitive air transport market throughout Europe. Not anticipated was the role that the Low Cost Carrier (LCC) would play in driving these market reforms, nor the profound effect the carriers would have on the airports industry. The consequence has been to greatly increase competition between airports and to increase the bargaining power of the airlines. The catalyst in this transforming process has been the introduction of formal, specific (long-term) contracts between the airport and downstream airline customers. These vertical supply contracts, arguably, should rank alongside the use of on-line internet booking systems and the introduction of cheap one-way fares (which undermine the ability of the legacy carriers to price discriminate), as a major innovation in contemporary civil aviation. The privatised UK airport industry has played a key role in their introduction.

Vertical supply contracts between airport and airline have long been a familiar feature of civil aviation in other parts of the world, such as in Australia (long term leases on terminals) and, especially, in the United States (gate leases and 'majority-in-interest' clauses giving airlines some control over capital expenditure). But the focus of contractual developments in Europe since liberalisation, initially in the UK and then more generally, is novel; it has been a focus on negotiated *charges* for the long-term use of basic airport infrastructure.

The traditional relationship between airport and airline user has had at its core a posted tariff of charges (the most important of which are generally structured to reflect aircraft weight) together with associated 'conditions of use'. The interesting feature of this traditional approach is its informality: users do not need a contract with the airport but in paying the published tariff they also accept the 'conditions of use' (Condie, 2004, Graham, 2001). Under this arrangement the airport is, in effect, assuming the long-term traffic risk. This was not of concern to airport owners when air services were subject to general regulatory controls on route entry and thus operated in a less competitive, stable, environment. But liberalization of aviation has increased the risk of airport assets being stranded by the opportunistic behaviour of airlines that are now free to change routes and switch airports at will. Consequently, there is now an incentive for the airport to establish with its downstream airline customers negotiated long-term[5] contracts for supply that achieve a better balance of risks. These contracts are not dissimilar to those that exist in other industrial sectors faced with similar economic circumstances; the shipping and ports industry for example[6].

Besides specifying charges, the negotiated contract usually covers issues such as the quality of service the airport is to provide, for example minimum turn-round times; the amount of marketing support the airline is to receive; and a commitment by the airport to future investment, the nature of which is sometimes specified in detail. Conversely, as part of the agreement the airline commits to basing a certain number of aircraft at the airport; to roll out, per schedule, a route network; and sometimes to guarantee a minimum level of traffic, effectively take-or-pay contracts[7]. The average charge paid by the airline in these contracts is usually much less than the average that would result from the use of the published tariff. Payments are also structured in such a way that traffic risks are shared, for example by using a per passenger charge only. The published tariff is, of course, still used for charging those airlines for which a negotiated contract is less suitable or inappropriate.

The negotiated contract has led to a fundamental change in the nature and intensity of competition between most UK airports. Although airports still compete to attract linking air services provided by airlines based at other airports, the prime competitive focus has shifted to encouraging airlines (and associated entities such as express freight carriers) to establish an operating base at which aircraft would be positioned overnight, and to develop from this base a route network. The effect of this has been to greatly increase the bargaining power of many airlines vis a vis the airports.

Prior to liberalization, those airlines now commonly referred to as 'legacy' airlines tended to focus their base operations on a specific geographical market. This was especially true of the so-called flag carrying airlines with their capital-city focus. If they had been required to negotiate commercial contracts with their base airport, and generally the issue did not arise because of the symbiotic relationship between what were usually two public sector entities, the airline(s) would have had little countervailing power unless the city happened to be served by multiple airports with different owners. In contrast, LCCs have no specific interest in a particular geographical market; their objective is to choose locations across Europe that maximize the return on their capital (aircraft) assets. The effect is to increase considerably the countervailing power of such airlines in negotiations; the airline can credibly threaten to take their 'capital on wings' to a different location. The point is exemplified by Ryanair's frequent practice of announcing a short list of airports at which it might base its next tranche of aircraft and then to hold a 'beauty parade' in order to secure best terms. Thus, competition between airports is no longer simply and only a matter of competition between spatially adjacent airports; competition in the new regime takes place over a very wide geographic market which reflects, in particular, the willingness of the LCCs to open new bases throughout Europe.

Once such a base has been established, the airline will have sunk a certain amount of costs but, until at least until the end of its contract period, it will be protected from the airport behaving opportunistically and, as already mentioned, these contracts are usually of long duration. It is also likely that the airport will wish to compete against rivals to attract the basing of future increments of capacity (not already prescribed in an existing contract) and this too will constrain its behaviour. Of course, at the end of the contract period the airline will be in a different position and will face switching costs, but it will have a stable and known environment prior to the contract termination date in which to negotiate a replacement contract or to make other arrangements; this in itself should reduce transitional costs[8]. Equally, at the end of the contract the airport also faces losing a chunk, possibly a large chunk, of its business in circumstances where most likely it is faced with a level of fixed costs

much higher than the (location specific) fixed costs faced by the airline. There will be incentives for both parties, therefore, to negotiate new contact terms and it is not immediately obvious that either the airport or the airline will have the upper hand; the most likely outcome is that the bargaining positions will be reasonably balanced.

In contrast, airlines that established operating bases at a time when negotiated contracts were not available and operate essentially by reference to the published tariff and associated conditions of use, appear more vulnerable to increases in posted charges or other forms of opportunistic behaviour on the part of the airport and there has recently been much discussion between airlines and regulators concerning the size of the switching costs that might be involved in moving flight operations between airports. But what is to be emphasized is that it is the *net* cost of switching that is the important factor and financial inducements, such as marketing support by competing airports which reduce this net cost, should be taken into account. There is no reason to suppose that base airlines currently paying the published tariff and thus supposedly stranded by their switching costs would not be subject to inducements from rival airports. Thus, in so far as those airports strongly associated with 'legacy' airlines find themselves competing with (low cost) airports willing to enter into long-term contracts with airlines, they too have to respond to competition by adjusting prices for their established airline customers.

Manchester airport provides a very good example of this. It is an airport now of very similar size to London Stansted having been in the past much larger than the latter: it also used to be head and shoulders above other airports in its North West region; that is no longer the case. For a time, Manchester shunned the LCCs and declined to enter into negotiated contracts with them. It preferred to continue to focus on serving the legacy airlines (British Airways had a base there) and, in this capacity, it served some long-haul routes as well as many European and domestic services (the latter including an important shuttle service to and from London Heathrow); it was also an important base for inclusive tour (charter) traffic[9]. But in the last 10 years or so it has faced increasing competitive pressures from, first, Liverpool and then more recently from Leeds-Bradford and the new Sheffield-Doncaster airports, so that its growth rate slowed and its overall share of UK passenger traffic stagnated (at around 10 per cent). It was forced to respond and it did so by selectively supporting a large number of airlines in the form of either a reduction in airport charges (or rebates), or by making large contributions to joint marketing campaigns. Between 1998 and 2003, for example, about 75 different airlines received support although this was highly skewed with 20 airlines receiving over 90 per cent of the expenditure. Importantly, to prevent reductions in services, it provided support (to the extent of nearly one-quarter of the total support budget in 2002-3) to airlines (and charter carriers) "…that would otherwise have ceased or reduced services…"[10]

Because the UK was at the vanguard of air services liberalization and the synergistic LCC revolution, competition between airports to attract airline operating bases soon followed and today there are a large number of such bases in the UK. **Table 3** shows the UK operating bases for four non-legacy[11] airlines, easyjet, Ryanair, Flybe and Jet2 in the summer of 2008. These four airlines have, between them, 32 bases in total spread across 19 airports. It is not an exhaustive list of operating bases in the UK: bmibaby, another quasi-LCC, currently has four, VLM bases aircraft at London City airport, Aer Lingus has just opened a base at Belfast International and, of course, British Airways has a number of bases, but the Table shows those bases most likely subject to negotiated long-term contracts along the lines described above; Gatwick and Stansted are known exceptions as BAA

currently declines to enter into such contracts. The list also indicates that the use of long-term negotiated contracts now extends beyond the type of airline that essentially pioneered the approach.

5. COMPETITIVE HINTERLANDS

The attractiveness of an airport to an airline and thus the contractual terms an airline is prepared to accept in order to establish at it an operating base (or serve it as an end point on a network the hub of which is located elsewhere) depends on a number of factors including those that could affect operating performance and those that bear upon the anticipated average fare yield. The airline will be cognizant of the airport's infrastructure (its runway length, the standard ('category') of its instrument landing system (ILS), terminal facilities), how much spare capacity the airport has, its potential for future expansion and its freedom from operating restrictions. The fare yield will depend upon the presence of potential competitors already at the airport or at a nearby airport, and, of course, upon its perceived attractiveness to potential passengers. This latter, in turn, depends foremost upon the airport's location in relation to a market demand, the extent and depth of which is determined by factors such as population density, income levels, business activity, international trade links, tourism potential and the quality of the transport links, particularly of the regional road network, which will determine airport access times.

Access times are important in determining the overall size of the regional market and the UK CAA has suggested that a significant number of leisure passengers are, in general, willing to tolerate access times of around 2.0 hours to reach a chosen airport (CAA, 2006, 22.17), although, for business travel, 1.0 to 1.5 hours is thought to be more appropriate. Its analysis indicates that a two-hour drive time accounts for around 80 to 90 per cent of passengers using an airport[12]. These statistics are derived from data for the larger (and more leisure oriented) airports in the UK each of which serve a large number of destinations. Consequently, they might draw from a larger than average area of 'catchment'. On the other hand, airports with a smaller volume of passenger traffic might draw most of it from a more restricted catchment, perhaps within 1.0 to 1.5 hours drive time of the airport.

From a competitive viewpoint, the issue is whether and to what extent the catchments of different airports overlap. I have previously pointed out (Starkie, 2002) that airports (and airlines) cannot segment their customer base by residential/business location; that is to say that they do not have the ability to price discriminate between customers according to where the latter are located with respect to the airport. The consequence of this is that even a small degree of catchment overlap might have a potent effect on prices. The point is illustrated in **Figure 1.** This shows stylized catchments for two airports (A and B), that overlap in the shaded area. Within this latter area, air services from the two airports compete directly for customers. However, passengers located at point z (well outside the catchment of airport A and thus captive to airport B) are potential beneficiaries of the price set for customers located in the area of direct competition. Unless it is possible to separate passengers at z into a market separate from those in the overlapping zone, the former passengers when using airport B will also benefit from the competitive price offered to passengers in the overlapping catchment.

The CAA has undertaken detailed analysis of the degree to which airport catchments overlap in both the London and North West (Manchester) regions of the UK. The analysis, based on driving times, reveals that there are extensive overlaps between the various London airports for both the one and two hour 'isochrones' and, for the latter, overlaps with airports outside the London region, particularly with airports located to the north and west. In the case of the North West region, again there is a strong overlap. Manchester is by far the largest airport in this region with a turnover about ten fold that of nearby Liverpool (see Table 1) but the overlap of its catchment with those of other airports is considerable and this remained generally the case when the analysis was repeated for different market segments (domestic, long-haul etc.).

The UK Competition Commission ('CC') has also conducted a broadly similar analysis of the London and Scottish airports in relation to its *Emerging Thinking* Report (Competition Commission, 2008)[13]. However it made use of a different methodology and, in particular, it did not depend upon the analysis of driving times but used instead the results of passenger surveys. The CC's starting point was to assume that if a significant percentage of passengers originating from a district used a particular airport, then it could be inferred that all passengers in that district were potential customers of airlines operating from that airport. For the initial analysis the threshold of significance was set at 20 per cent. Therefore, the CC measured the degree of catchment area overlap by measuring the percentage of an airport's passengers that came from local authority areas where another airport accounted for 20 percent or more of its passengers. In terms of Figure 1, one would calculate for Airport A, the percentage of its passengers from the shaded area when Airport B attracted at least 20 percent of the shaded areas passengers.

Subject to the availability of survey data, this analysis can be refined further. For example, it can be repeated for different market segments, leisure, business etc and the CC did do this (although when judging whether such a disaggregated approach is really necessary again one should be mindful of constraints on the ability of airports and airlines to segment and thus price discriminate in spatial sub-markets). The CC also carried out a yet more stringent examination deriving catchment areas only for those passengers travelling on air routes served from more than one airport. However, my own view is that this approach is too stringent. For (short-haul) leisure passengers it ignores the issue that many such passengers are purchasing a commodity with certain attributes so that an airline route to destination X is a substitute for a route to destination Y. There are also market dynamics to consider: that in a liberalized, competitive airline market, airlines are free to enter in response to perceived opportunities so that the picture regarding parallel route competition is fluid. And, in the longer term, improvements in transport infrastructure also change the shape and size of catchment areas.

The initial conclusions of the CC following its analysis of the London region airports match, in large measure, those of the CAA: that in the regions analysed there should be significant potential for airport competition (para. 167), although the common ownership of three London airports by BAA is likely to adversely affect competition between them. With respect to the Scottish airports, the CC's current view is that there is potential for competition between Glasgow and Edinburgh (para. 274) and probably also between them and Aberdeen, but again joint ownership of these three airports by BAA is a feature that adversely affects competition.

The analyses of both the CAA and the CC have a particular regional focus (London, North West England and Scotland) because each was serving a particular purpose. In order to examine the potential for competition between airports more *generally*, I have carried out an analysis of driving times between significant airports across England and Wales as a whole (Starkie, 2008). **Table 4** shows driving times between proximate English/Welsh airports[14]. Included in the data base are all those airports with scheduled passenger services and with more than 400,000 passengers in 2005/6; a total of 21. The entries in the Table show times between those airports that are within 2.0 hours drive of each other (unless the nearest neighbouring airport exceeded 2.0 hours drive time). For this purpose, driving times are taken from the RAC's *Route Planner* and are based on assumed speeds of 60mph (96kph) for motorways (the national speed limit is 70mph (112kph)) and 30mph (48kph) for all other roads; times, therefore, are derived from very conservative speed estimates.

In spite of this conservative estimate of travel times, many airports are in surprisingly close proximity to at least one other airport (although, as noted, in south east England as well as in Scotland, most proximate airports are owned by BAA); bear in mind that, for example, a driving time of up to 2.0 hours between two airports implies that residents located halfway (in terms of driving time) can get by car to either airport within one hour. There is, in fact, only one airport, Norwich, lying more than 2.0 hours from its closest neighbour; all of the remaining 20 airports lie within 1.5 hours of at least one other airport (and, in some cases, several airports), The average driving time beween airports is slightly more than 1.0 hour implying an average journey time of about 0.5 hours for passengers located at the half way point on the fastest routes. This, of course, is well within the time criteria set by the CAA.

Overall, the results of these three separate analyses of airport hinterlands suggest that in the UK there is a large degree of overlap of general catchments for passenger traffic and in this context the airports industry appears to have a potentially competitive structure (which will limit the average fare yield that the airlines can expect and, in turn, will influence negotiated contact prices). There will of course be a degree of differentiation in the market: not all airports have the infrastructure to serve long-haul destinations (although a surprising number do have this capability), for environmental reasons some have restrictions on their hours of operations, and the market for freighter operations is concentrated on only a few airports[15]. But, on the whole, the market for the provision of airport services in the UK appears to be strongly, if imperfectly, competitive; the one possible exception is the sub-market for international connecting traffics in which London Heathrow has carved out for itself a national dominance[16].

6. FINANCIAL PERFORMANCE

If the structure of the UK's airport industry is strongly competitive (at least outside the London region and Scotland where BAA is dominant), individual airports will have limited market power and are more likely to be price takers, especially when it comes to negotiating contracts to attract new business. But if, as received wisdom will have us believe, airports are subject to very high fixed costs and thus pronounced economies of density (as well as supposed economies of scale), such competition can be expected to result in airports with

small traffic volumes, and perhaps even not-so-small airports, generating financial losses. In part of mainland Europe it is this belief that competition will lead to average prices below average costs for many airports, that has encouraged a planned rather than market-led approach to the development of the airport industry.

To examine whether airports in a competitive environment are generally loss making, (or whether airports are so differentiated and competition so imperfect that profits are excessive), I have used summary statistics on the financial performance of UK airports compiled by the Centre for Regulated Industries at the University of Bath. These data have the great advantage that they are subject to consistent (UK) accounting standards, but, nevertheless, their use is not without its problems. First, in spite of the data being compiled on an annual basis, comparison between years is difficult because of changes in accounting standards[17]. Second, and more importantly, airports have often reported year-by-year results covering different periods of time, either: 9 months, 12 months or 15 months. Third, different airports have different depreciation policies. Finally, there are two sets of accounts available, one based on Company House returns and the other based on returns to the CAA for regulatory purposes; the two sets are, for the most part, the same but there are a few differences. The following analysis focuses on Company House data for 2005/6 which has the virtue that all airports are reporting 12 months results.

There are 27 *individual* airports reporting financial data in the series, ranging from Southend to the east of London with a turnover of just less than £5m at one extreme, to London Heathrow with in excess of £1bn of annual sales[18]. But, there is a discontinuity in the size range: the four airports, Heathrow, Gatwick, Stansted and Manchester, are very much larger than the remaining 23; because of this, the fact that the financial performance of medium sized and small airports is of more interest and especially because in 2005/6 all four of these airports were subject to price controls[19], they have been excluded from the following analysis. This gives a range of turnover for the remaining airports of between £5m to £111m.

Pertinent data for the 23 airports are shown in **Table 5**. Listed are: turnover, operating profit/loss (after allowing for depreciation), net profit/loss (after allowing additionally for tax and interest), operating profit as a percentage of turnover, and operating profit as a percentage of fixed assets (except for Coventry which was excluded because of anomalies in the data). These data refer to all the activities engaged in by the respective airports, including what the economic regulatory accounts refer to as non-operational activities.

The data show that, in 2005/6, of the 23 airports nearly all were profitable; only two, Blackpool, with a turnover of £6.3m, and Durham Tees Valley, with a turnover of £10.8m, made an operating loss *and* a net loss overall.[20] Coventry, with a turnover of £14.1m, also made an operating loss but recorded a net profit, whilst Cardiff, with a turnover of £22.1m, made an operating profit, large in relation to turnover, but an overall net loss.[21] Humberside also recorded a net loss on a more modest turnover of £10.9m.[22]

Although the few airports recording losses of one sort or another are among the smaller airports in the group examined, there are seven other airports falling within a similar range of turnover (up to £22mn.) that made both an operating profit and a net profit. These include the smallest airport, Southend; a small turnover *per se* does not appear to be an impediment to profitability. On the other hand, the margin of profit does appear to increase with turnover, but so too does the ratio of fixed assets to turnover; consequently operating profits

expressed as a percentage of fixed assets, a broad indication of the return on capital employed, do not show such a strong association with turnover (see **Figure 2**).

Generally speaking, the better return on fixed assets were produced by airports occupying the middle range of turnover but, overall, the performance measure in **Figure 2** does not suggest an inability of small to medium sized airports to make a decent return on fixed assets; the ratio of operating profits to fixed assets was over 32 per cent for the relatively small Biggin Hill for example. Most probably the ability of such airports to perform well is assisted by the multi-product nature of the industry and associated economies of scope.

Nor do the performance measures suggest, as do proponents of the 'airports are natural monopolies' school, that if no price controls are imposed the industry will make excessive returns. The average return (operating profits as a percentage of fixed assets) for the 22 airports is 15.3 (or 10.9 if we exclude the single most positive and negative outlier). This is very similar to the overall return for the non-financial sector in the UK in 2005 and 2006. To extend the comparison, non-financial *service* sector companies in the UK made an average net return of 17.9 per cent in 2005 and 19.5 per cent in 2006, whilst the corresponding returns for the *manufacturing* sector were 9.1 and 7.8; the return in the UK airports' industry falls neatly between the two (**Table 6**). Competition appears to be a most effective regulator[23].

7. CONCLUSIONS

On the basis of the foregoing evidence, I would argue that a competitive framework is an achievable objective for a national airports policy. It is by no means evident that the industry is inherently a natural monopoly industry and thus requires regulation of prices or financial returns. On the contrary, the UK illustrates the ability of an airports industry to evolve a competitive structure whereby competition is an effective regulator of what the airport can charge the airline. Where there have been problems it is because of the failure to break-up the state enterprise, the British Airports Authority, when it was privatised in the mid-1980s so that proximate airports in two UK regions, London and Scotland, continue in common ownership. The lesson to be drawn is clearly apparent.

And yet, in those countries where privatisation or corporatisation of the airports industry is on the policy agenda, as is currently the case in Spain and Portugal, it appears that economic regulation is considered the natural adjunct of such a policy, a necessary appendage[24]. The alternative approach, of restructuring ownership to provide a less concentrated, more competitive industry structure and then allowing competition to drive the industry forward, does not appear on the radar screen. I suspect that one of the reasons for this is that unless the national administrations are familiar with the processes, the fundamental problems associated with even well designed economic regulation[25] will not be fully appreciated (and there will be an army of advisers with a vested interest in a regulated solution; the consulting industry, for example, does well out of offering solutions to regulatory problems).

The most important of these perceived problems is that the price control approach could discourage investment, the so-called 'hold-up' problem, and encourage the under supply of service quality. In the former case, because the regulator can commit to a regulatory settlement for only a limited period of time (usually 5 years) but investments are amortised over much longer periods, the regulated firm is faced with the risk that (future) regulators might renege on the regulatory settlement, thus reducing incentives to invest[26]. In the case of service quality the price regulated firm can save costs and increase its return by skimping on quality but the regulator finds the problem difficult to address because of the difficulty of judging an optimal level of service quality.

And yet the irony of this situation is that, as we have seen, the unregulated airports industry reaches its own solution to these problems: it establishes long-term vertical supply contracts with its airline customers. The long-term nature of the contract provides the security that the airport needs to sink costs in additional infrastructure, thus avoiding the hold-up problem and the terms of the contract stipulate the quality of service that the airline expects from the airport. It is, after all, the way in which similar issues are resolved in much of the market economy[27]. In contrast, the effect of regulation can be to crowd out the efficient solution[28].

It would be better, therefore, if policy makers when undertaking industry reviews, instead of reaching first for the regulatory tool-box, pose the question: is the structure of the industry such that a reasonably competitive outcome is likely? If not, can the industry be restructured to make it more competitive? For the UK's airport industry, as I have tried to show, competition appears to have worked well and led to a dynamic industry, free of subsidy[29], yet profitable for both small and large airports, with an overall level of profit similar to that for the non-financial sector of the UK economy: a most satisfactory state of affairs.

NOTES

1. For a recent excellent general overview of the UK industry, see Graham (2008).

2. At www.caa.co.uk/airportstatistics

3. For UK airports with under £30mn turnover (n=13), total passenger numbers explained two-thirds of the variance in turnover.

4. BAA is owned by Airport Development and Investment Limited (ADI), in turn wholly owned subsidiary of SGP Topco Limited, in which Groupo Ferrrovial SA holds 61.06 per cent of the ordinary shares through two of its subsidiaries. The other two shareholders are Airport Infrastructure Fund LP, which is managed by Caisse de Dépôt et Placement du Québec which has 28.9 per cent of the ordinary shares and Baker Street Investment PTE Limited, a subsidiary of GIC Special Investments PTE Limited which holds the remaining 10 per cent.

5. Some have been written with 20 year terms.

6. For a review of similar arrangements in the electricity supply industry, see Littlechild (2007).

7. This description of contract terms is based on those in two contracts details of which are known to the author.

8. Note that the airline is not necessarily dependent upon the existence of a potentially competing airport in the same region. It is to be stressed again that the airline will be looking for the best return on its airline capital across a wider European market.

9. It is also one of the UK's major centres for air freight.

10. Competition Commission, 2002, Appendix 7.5.

11. I have refered to this group as 'non-legacy' airlines rather than LCC's because only easyjet and Ryanair maintain the essential characteristics that define the original LCC brand.

12. For London Stansted the figure was about 80 per cent but closer to 90 percent in the case of London Luton and London Gatwick. This difference between Stansted and the two other airports might reflect the fact that Stansted is dominated by Ryanair which has a lower average fare yield than the low cost airlines that are relatively

more important at Gatwick and Luton; thus passengers might be driving longer distances to benefit from lower fares.

13. One of the UK's two competition agencies, the Office of Fair Trading (OFT) conducted in 2005/6 an investigation of UK airports (OFT, 2006). This led to a referral to the second agency, the Competition Commission, with the request that it carry out a market investigation into the supply of airport services by BAA, the dominant airport operator in two regions of the UK, with a view to increasing competition in this part of the market. This inquiry is ongoing but in April of this year the Commission published its *Emerging Thinking* report[13]. The Commission plans to publish its interim conclusions in August 2008 and its final report in March 2009. Unfortunately, the stipulated timetable for completion of this written paper precedes the publication of the CC interim conclusions.

14. Cardiff International is the only significant airport in Wales.

15. The sunk costs associated with the specialized facilities required for freight operations are also protected in a number of cases by long-term contracts.

16. In this part of the market, London Heathrow competes with Mainland European hubs.

17. The most recent examples are FR17 and FR 21.

18. Also included in the series, but in aggregate form only, are the results for the Highland and Island group of airports controlled by the Scottish Executive. Because of the aggregation, these are excluded from this analysis.

19. Manchester was de-designated in 2008 thus removing price controls.

20. Blackpool's operating loss and net loss were virtually identical, recording no movement on the tax account and virtually zero movement on the interest account.

21. Cardiff's net loss is the result of an exceptionally large tax charge.

22. Humberside's net loss is the result of a large interest payment.

23. It is perhaps useful to note that a survey of 50 European airports, most of which were in the public sector, by SH&E (2006) found that the average return on capital was 4.6 percent.

24. For a very good overview of the European industry see Gillen and Niemeier, 2008.

25. In the case of the UK utility industries has taken the form of the price control model 'RPI-/+X' developed during the 1980s and, because this model provides incentives for economic efficiency, (particularly because of its forward looking approach) it is generally considered to be superior to rate base (rate of return) regulation which preceded it. The generic model has a number of key features: a periodic review process, a building blocks approach focused around a Regulatory Assets Base (RAB) which integrates (depreciated) past and planned investments, and a process

for deciding upon an allowable return on the RAB: the RAB, allowable return and efficient operating costs then form the basis for determining future allowable prices, usually for a period of 5 years, benchmarked against the Retail (Consumer) Price Index, hence the RPI-/+X formula. There are different variants of the approach based on this core with a different emphasis given to different components at different times and according to the industry concerned, (for example, applied to the airports' industry there can be commercial revenues from retailing to take into account).

26. There are counter arguments that suggest that price controlled airports might over-invest. Furthermore, there is also the issue of a suitable cost of capital. It is argued that the standard approach, deriving the weighted average cost of capital (WACC) with reference to a partly debt financed RAB and an equity-based capital expenditure programme, does not provide enough incentive for equity capital (particularly in circumstances where there are, as is probably the case with large airports like Heathrow, decreasing returns to scale).

27. By co-incidence at the time I was writing this paper, the following example appeared in the *Financial Times* (3rd July, 2008): "Scottish Coal has agreed to sell about 2 million tonnes of coal a year - half its current output - to Scottish Power to feed its two coal-fired power stations…The coal will be sold at an undisclosed fixed price, which Scottish coal said gave both parties the certainty they need to invest in new mines and power generation equipment."

28. London Luton airport provides an interesting footnote on this point. EasyJet, an important customer of Luton, attempted in its earlier days at the airport, to get the airport subject to price control. It failed to do so but it then reached a negotiated long-term contract with the airport which, when judged against the published tariff, was on terms most favourable to the airline.

29. The exceptions are the Highland and Island airports subsidized by the Scottish Executive for social reasons.

TABLES AND FIGURES

Table 1
Selected Financial and Operating Data for UK Airports, 2005–06

	Turnover (£000)	ATMs[a]	Other movements[b]
London Heathrow	1,195,400	472,954	5,981
London Gatwick	361,500	254,004	9,058
Manchester	290,553	217,396	16,421
London Stansted	176,500	180,729	15,465
Birmingham	111,109	113,668	9,731
Glasgow	82,615	97,610	13,296
Edinburgh	77,381	117,312	9,808
London Luton	77,021	87,690	20,203
Newcastle	51,360	55,164	23,798
Nottingham East Midlands	50,566	56,224	24,490
Bristol	49,619	59,854	20,670
London City	40,180	61,179	9,733
Aberdeen	33,954	94,665	17,851
Belfast International	31,206	43,780	37,093
Liverpool	28,799	43,312	37,347
Cardiff	22,103	20,689	22,337
Southampton	22,022	45,109	13,351
Leeds Bradford	21,023	36,330	31,641
Exeter	17,707	14,481	40,572
Bournemouth	14,440	14,041	69,600
Coventry	14,123	13,951	54,134
Norwich	12,089	20,894	30,145
Humberside	10,934	11,342	25,996
Durham Tees Valley	10,834	53,532	52
London Biggin Hill	6,892	4,834	62,666
Blackpool	6,333	13,028	61,985
Southend	4,973	1,548	47,798

Source: Centre for Regulated Industries, *Airport Statistics 2005/6*, Appendices D1 and B2.

[a] Movements of aircraft engaged in the transport of passengers, cargo or mail on commercial terms.

[b] Includes test and training flights, aero club movements, military movements and private flights.

Table 2
Ownership Patterns at Main Airports in the United Kingdom, 2007

	Present ownership	Private interest (percent)	Privatization	
			Date	Re-sales[a]
Aberdeen	ADI (BAA)	100	1987	1
Belfast City	Ferrovial	100	n.a.	1
Belfast International	ACDL	100	1994	2
Birmingham	Local authorities / Dublin Airport Authority / Macquarie Airports / Employees	51	1997	
Bristol	Ferrovial / Macquarie Airports	100	1997	
Cardiff	ACDL	100	1995	1
Edinburgh	ADI (BAA)	100	1987	
Glasgow	ADI (BAA)	100	1987	2
Leeds Bradford	Bridgepoint	100	2007	
Liverpool	Peel Holdings	100	1990	
London City	AIG / GE / Credit Suisse	100	n.a.	2
London Gatwick	ADI (BAA)	100	1987	1
London Heathrow	ADI (BAA)	100	1987	1
London Luton[b]	ACDL	100	1998	1
London Stansted	ADI (BAA)	100	1987	1
Manchester	Local authorities	0	n.a.	
Newcastle	Copenhagen Airport	49	2001	
Nottingham East Midlands	Manchester Airport Group	0	1993	1
Prestwick	Infratil Ltd	100	1987	2
Southampton	ADI (BAA)	100	1961	2

Source: Adapted from Graham, 2008. All airports in the United Kingdom with more than one million annual passengers in 2005.
n.a. = Not applicable.
[a] 'Re-sales' indicates the number of changes of owner since the first privatization or initial sale in the case of Belfast City and London City.
[b] 30-year concession contract. Ownership remains with the local authorities.

Table 3
UK Operating Bases for Four Non-Legacy Airlines, Summer 2008

	easyJet	Flybe	Ryanair	Jet 2
Belfast				
- Belfast City		●	●	
- Belfast International	●			●
Birmingham		●	●	
Blackpool				●
Bournemouth			●	
Bristol	●		●	
Edinburgh	●		●	●
Exeter		●		
Glasgow				
- Prestwick			●	
- Renfrew	●			
Leeds Bradford				●
Liverpool	●		●	
London				
- Gatwick	●			
- Luton	●		●	
- Stansted	●		●	
Manchester	●	●		●
Newcastle	●			●
Nottingham East Midlands	●		●	
Southampton		●		

Table 4
Driving Times between Adjacent Airports (hours.minutes)

	BHX	BLK	BOH	BRS	CWL	DSA	EMA	EXT	HUY	LBA	LCY	LGW	LHR	LPL	LTN	MAN	MME	NCL	NWI	SOU	STN
BHX							0.48								1.26	1.34					
BLK										1.44				1.14		1.01					
BOH																				0.42	
BRS					1.23			1.17													
CWL				1.23																	
DSA							1.22		0.48	1.20						1.44					
EMA	0.48					1.22															
EXT				1.17																	
HUY						0.48				1.32											
LBA		1.44				1.20			1.32							1.06	1.29				
LCY												1.01	0.44								0.47
LGW											1.01		0.44		1.14					1.28	1.19
LHR											0.44	0.44			0.40					1.08	1.09
LPL		1.14														0.44					
LTN	1.26											1.14	0.40							1.37	1.01
MAN	1.34	1.01				1.44				1.06				0.44							
MME										1.29								1.04			
NCL																	1.04				
NWI																					2.12
SOU			0.42									1.28	1.08		1.37						
STN											0.47	1.19	1.09		1.01				2.12		

BHX: Birmingham BLK: Blackpool BOH: Bournemouth BRS: Bristol CWL: Cardiff DSA: Doncaster EMA: Nottingham
EXT: Exeter HUY: Humberside LBA: Leeds Bradford LCY: London City LGW: Gatwick LHR: Heathrow LPL: Liverpool
LTN: Luton MAN: Manchester MME: Durham Tees Valley NCL: Newcastle NWI: Norwich SOU: Southampton STN: Stansted

Table 5
Financial Data for the Smaller UK Airports, 2005–06

	Turnover (£000)	Operating profit/ loss (£000)	Net profit/ loss (£000)	Operating profit as % of turnover	Operating profit as % of fixed assets
Birmingham	111,109	35,477	19,458	31.9	9.9
Glasgow	82,615	25,789	15,153	31.2	10.0
Edinburgh	77,381	31,381	18,335	40.6	12.1
London Luton	77,021	12,878	5,643	16.7	13.5
Newcastle	51,360	19,072	15,309	37.1	10.9
Nottingham East Midlands	50,566	15,804	7,433	31.3	25.8
Bristol	49,619	25,344	23,465	51.1	33.7
London City	40,180	7,587	6,024	18.9	164.8
Aberdeen	33,954	10,944	8,715	32.2	11.1
Belfast International	31,206	9,436	4,700	30.2	7.9
Liverpool	28,799	18,336	20,606	63.7	17.7
Cardiff	22,103	5,953	-2,188	26.9	7.8
Southampton	22,022	8,791	5,941	39.9	9.6
Leeds Bradford	21,023	1,357	571	6.5	2.9
Exeter	17,707	1,019	32	5.8	6.1
Bournemouth	14,440	2,951	1,513	20.4	5.6
Coventry	14,123	-1,739	1,415	-12.3	N.A.
Norwich	12,089	563	71	4.7	2.3
Humberside	10,934	642	-751	5.9	2.2
Durham Tees Valley	10,834	-2,715	-1,242	-25.1	-9.8
London Biggin Hill	6,892	391	246	5.7	32.1
Blackpool	6,333	-2,953	-2,952	-46.6	-46.4
Southend	4,973	137	118	2.8	7.1

Source: Centre for Regulated Industries, *Airport Statistics 2005/6*, Appendix D.
N.A. = Not available.
Note: There is some variability in depreciation policies which might have an effect on the figures for operating profits as a percentage of fixed assets.

Table 6
Net Return (%), Airports and UK Private Non-Financial Sector 2005–06

	2005–06
Airports[a]	15.2 (10.9[b])

	2005	2006
Non-financial service sector	17.9	19.5
Manufacturing sector	9.1	7.8
All private non-financial corporations	14.0	14.5

Source: National Statistics and author's calculations.
[a] Airports listed in Table 5.
[b] Excluding outliers.

Figure 1
Competition and Catchment Areas

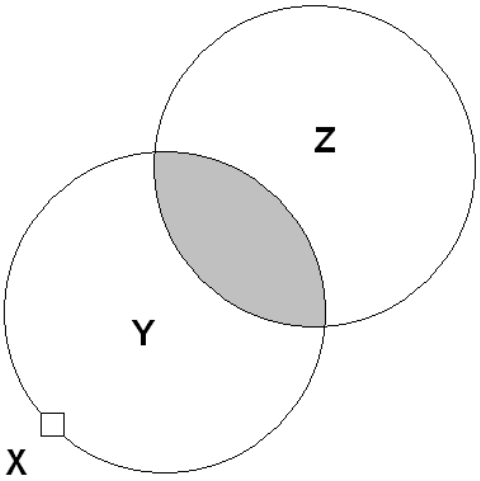
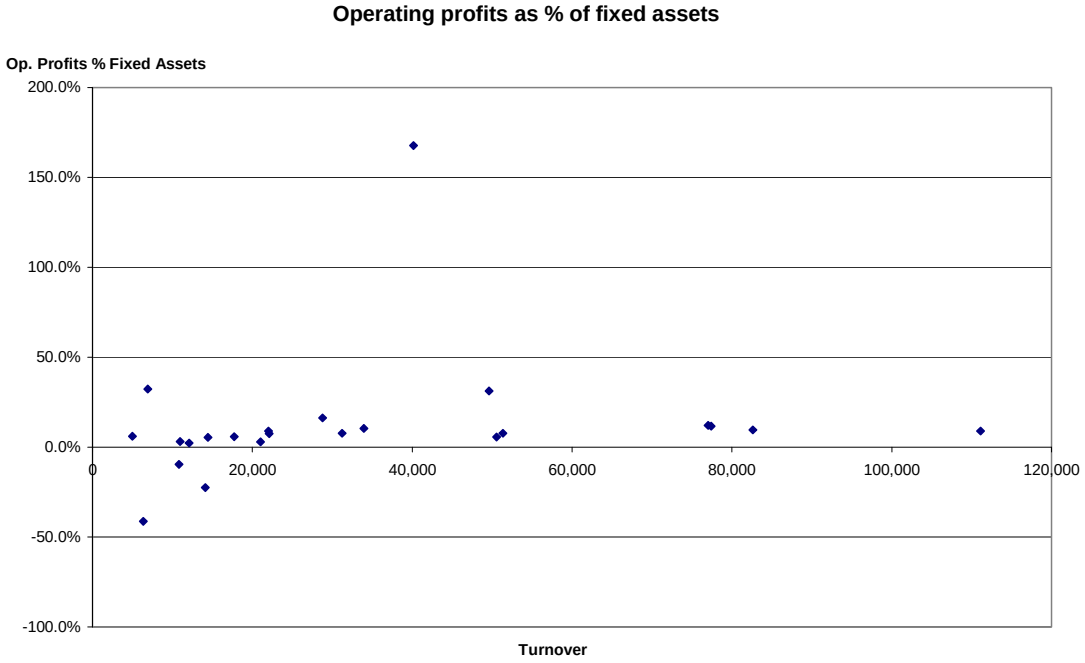


Figure 2
Operating Profit as % of Fixed Assets v Turnover (£000)



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