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This article looks at recent trends in Irish air transport and in particular the role and experiences of airports. It is argued that Irish airports other than Dublin operate in very competitive circumstances because of their relative proximity to each other. Dublin Airport is a natural spatial monopoly. Issues relating to the Public Service Obligation routes at the regional airports, airport charges regulations in Ireland and in the EU and the issue of ownership and private sector involvement in terminal service provision are examined. The article suggests that maximisation of accessibility to and from Ireland must be the metre against which public policy decisions are evaluated; particularly as EU transport policy over the next 10 years will seek to increase the role of rail at the expense of air transport.

RECENT TRENDS IN IRISH AIR TRANSPORT

Ireland has experienced rapid growth in air passenger transportation in the last five years (approximately 55% between 1996 and 2001) and forecasts by various agencies would predict continued strong growth over the next 10-15 years. Dublin Airport handled 14.33 million passengers in 2001, an increase of 57% since 1996. Strong North American and European traffic growth in 1998-2000 was the main driving factor. The 2001 traffic volume represented a 4% increase on the 2000 figure, despite the negative impacts of the September 11th terrorist attacks in the US and the downturn in the tourism and travel sector that was accelerated by these events. Only three of the top 30 airports globally recorded growth in 2001 - Tokyo, Bangkok and Madrid - and Dublin Airport was the only major European airport to experience growth in the 4th quarter of 2001.[1]

* The author is Director, Transport Policy Research Institute, Dept of Economics in UCD.
E-mail: aisling.reynolds@ucd.ie

[1] AEA, 2002
Cork Airport has recorded similar growth levels to Dublin in the last five years (58%), with a 6% increase in passenger traffic in 2001. Domestic traffic accounted for almost one-fifth of the total (17.5%), the UK accounted for 55% with European traffic rising most dramatically to account for 27% of the total Cork passenger traffic in 2001.

Shannon Airport had no growth in 2001; traffic in the 1996-2000 period was up 41%. European traffic shares were the key sector driving these increases, as domestic, UK and North American traffic shares all declined. Shannon Airport depends heavily on transatlantic traffic (28% in 2001) and transit traffic (20% in 2001, down from 25% in 1999). The transit traffic is made up of stopover passengers connecting to/from Dublin and other transit passengers on long-haul flights to North & Central America from Europe, the Middle East and recently Pakistan. Traffic shares by region for the three Aer Rianta airports collectively are illustrated in Figure 1.

**FIGURE 1: PASSENGER TRAFFIC BREAKDOWN BY REGION AT AER RIANTA AIRPORTS, 1995-2001**

Ireland’s island status, geography, population density and dispersed settlement pattern have given rise to a heavy dependence on road and air transport. Ireland was ranked number one in the EU in 1999 in terms of per capita, intra-European enplanements (revenue passengers boarding aircraft) and total air passengers per capita, as Figure 2 illustrates. This reflects high levels of demand, driven by increased business interactions, increased disposable incomes, growth in tourism along with the availability...
of low-fare air services to and from an increasing number of European and North American locations.

The Irish Republic is served by a network of three larger publicly-owned airports and by six privately owned 'regional airports', with Knock and Kerry County Airports having jet aircraft capabilities. In Northern Ireland four airports make up the province's network. Figure 3 shows the location of the Republic's airports and also gives the hinterland as defined by a one-hour road journey to each airport in 1993. The three Aer Rianta airports, the 90-minute driving distances are also given, as this is a realistic approximation of the hinterland for international airports with jet services.

**FIGURE 2: INTRA-EUROPEAN ENPLANEMENTS AND TOTAL PASSENGERS PER CAPITA, 1999**

![Graph showing intra-European enplanements and total passengers per capita in 1999.]

Source: Authors calculations; Eurostat Transport Statistics
Note: Enplanements are the number of revenue passengers boarding aircraft

The map shows the natural spatial monopoly enjoyed by Dublin Airport and the highly competitive nature of the hinterlands elsewhere in the country. The population density in the Dublin hinterland area is significantly higher than elsewhere in the country. The hinterlands for several of the airports are restricted because of their coastal locations. The map clearly illustrates the difficulties that the regional airports have had in generating traffic, with strong competition evident from other regional airports and between Cork and Shannon airports for traffic.

[2] The extensions of the M50 motorway and several other significant road construction projects have most likely extended the extent of the hinterlands for the airports, most especially for Dublin Airport in the off-peak period. High levels of delay and traffic congestion in the Dublin, Cork and Galway city environs will have increased peak-period travel times. The hinterlands in Figure 3 represented an average one-hour journey distance (42 miles) on national primary, secondary and regional roads in 1993.

FIGURE 3: TRAVEL DISTANCE BY ROAD TO IRISH REGIONAL AIRPORTS AND THE THREE MAJOR INTERNATIONAL AIRPORTS, 1993

Note: Enniskillen Airport and hinterland was included in the 1993 study because it had received EU funds to develop its facilities.
PUBLIC SERVICE OBLIGATION AIR ROUTES

The increased volume of low-fares air services available at Dublin, Shannon and Cork Airports have increased the attraction of these locations, with price-sensitive passengers choosing to drive to the main airports rather than availing of air services from the regional airports. The hinterlands of airports vary depending on the availability of alternatives. The Irish Government put in place the first Public Service Obligation (PSO) air routes permitted under the 1992 ‘Third Package’ of air transport liberalization measures.[4] These PSOs were permitted only on domestic routes until April 1997. However, with full cabotage[5] Member States were free to impose PSOs and offer subsidies, if necessary, on intra-European routes, once carriers were selected through a competitive tendering process. The new Irish PSOs, revised in 2002, still focus on domestic routes between the regional airports (Galway, Sligo, Kerry, Carrickfinn, Knock) and Dublin. The Dublin-Derry route is the only exception.

The National Spatial Strategy (NSS) was published in October 2002[6] and set out long-term, spatial planning goals for Ireland in the period up to 2020. The NSS named four new ‘gateways’ (Dundalk, Sligo, Letterkenny/Derry and Athlone/Tullamore/Mullingar) in addition to the five existing gateways of Dublin, Cork, Limerick/Shannon, Galway and Waterford. Infrastructure and services are to be focused on these gateways in order that they may act as key gateway centres at national level.

In addition, nine ‘hubs’, which will play a regional- or county-level role in driving economic development, were also identified. Of these, the Castlebar-Ballina and the Tralee-Killarney ‘linked hubs’ are located close to an existing regional airport, which will facilitate domestic and international air access.

Research on social air service provision through schemes such as the European PSO route designations would suggest that communities receiving such services fall into two main categories. Some communities need subsidised air services to help establish year-round, scheduled services, so that local businesses and the tourism sector can develop products relying on such services. These smaller communities are particularly vulnerable to cyclical downturns in the air transport sector and the PSOs act as a ‘safety net’ to guarantee services. Other smaller communities will not at any stage be capable of supporting commercially viable air services without government support.[7] In such cases, the PSO routes provide vital air services connecting remote or isolated regions to the main national or international transportation networks.

[5] Cabotage involves access to domestic markets by non-national carriers. For example, with cabotage an Irish carrier could offer air services from Toulouse to Paris.
[7] Reynolds-Feighan, 1999a
It may be argued that, in the case of Ireland, Sligo, Kerry, Galway, Knock and Waterford fall into the former category, while Carrickfinn would fit into the latter. In attempting to assist the ‘gateway’ centres and hubs in the first category, the implications of extending tenders to include intra-European PSOs needs to be carefully examined. The approach in the US is for the carriers tendering for services to select the connecting airport from a subset of larger airports identified by the US Department of Transportation. In this way small communities are integrated into regional or intercontinental carrier networks via the carrier’s hub. By contrast, the Irish PSOs are very tightly specified by the government and limited to domestic routings, except for the Dublin-Derry route. However, schedule revisions at Dublin have limited the extent to which connections from the regional PSO routes may be facilitated.

There has been some discussion recently of the need to revise the Irish PSO air route programme, particularly in light of the collapse of Euroceltic airways as well as the very high levels of per-passenger subsidy payments being made on some routes. A more flexible tendering procedure, in which the carriers have greater scope to offer alternate services, may help to reduce costs and rationalise the services being provided - for example, some carriers may be interested in offer cross-channel direct services, rather than ‘hubbing’ through Dublin. Research on the demand profiles of passengers and their origins and destinations needs to be undertaken in order to facilitate such a re-examination of this programme. Social air service provision should be aimed at fulfilling air transport requirements of regional or remote communities by relying to the maximum extent possible on market forces - via a competitive bidding process, open to all European carriers in a fair and equal manner - and minimising the costs to the exchequer. Furthermore, mechanisms to encourage the designated carrier to expand the traffic base have to be explored, as have tender specifications to facilitate higher participation rates by potential service providers. The US ‘Essential Air Service’ Programme has evolved over the last 25 years to deals with such scenarios. [8]

**IRISH AIRPORT CHARGES**

The Commission for Aviation Regulation was established on a statutory basis in 2001 with the principal functions of regulating airport charges and aviation terminal charges. The Commission has imposed a price-cap economic regulation regime for airport charges, in common with the three London BAA airports, Manchester and Hamburg. This form of regulation forces the operator to set charges within a certain limit specified in the RPI-X (or CPI-X) formula, where X represents some productivity factor. The Commission applied a ‘single-till’ approach, essentially taking into account non-

aeronautical revenues of the airport in the setting of maximum airport charges. Furthermore, in order to reduce the ability of Aer Rianta to use Dublin Airport revenues to cross-subsidise its other airports, an aggregate price cap for Aer Rianta was set in addition to a separate price cap for Dublin.

The argument against the single-till approach is that the aeronautical charges may bear little relation to the costs of providing the services. In the UK, London Heathrow Airport's charges were below those of Stansted, despite the excess demand for slots at the former and the excess capacity of the latter. The UK Civil Aviation Authority has recommended that the single-till system be replaced by a dual-till system, so that airport charges will be related strictly to aeronautical costs. The role of airport charges in allocating traffic in the broader European context will be discussed in the next section.

EUROPEAN TRANSPORT POLICY

In September 2001 the European Commission adopted the White Paper on Transport, "European Transport Policy for 2010: Time to Decide". The new objectives set out for transport are summarised in the introduction by Loyola de Palacio as "restoring the balance between modes of transport and developing intermodality, combating congestion and putting safety and quality of services at the heart of our efforts while maintaining the right to mobility".

The main thrust of this White Paper is to shift modal share in favour of rail by (i) promoting the rail mode along with sea/inland waterways, (ii) increasing the costs of road transport and (iii) increasing the costs of air transport. A package of 60 policy measures is set out to achieve these objectives through regulations, harmonisation directives, user charges, taxes and investment strategies. Table 1 below briefly summarises some of the main measures for road, rail and air transport.

The White Paper proposes measures to encourage the emergence of freight integrators and to promote interoperability between rail and sea/waterway transport - such as the standardisation of containers and swap bodies. In dealing with the congestion problem, the Commission proposes the development of dedicated multimodal freight corridors along with expansion of the high-speed, passenger rail network.

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<th>Mode</th>
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<td>Road-freight</td>
<td>• Harmonising transport contract minima</td>
<td>Raise the price of road transport and effect substitution in favour of rail</td>
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<td></td>
<td>• Work-time regulations in road haulage sector</td>
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<td>• Road safety regulations</td>
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<td></td>
<td>• Imposition of road user charges</td>
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<tr>
<td>Rail</td>
<td>• Develop an internal European rail market with regulated competition</td>
<td>Improve organisational and operational aspects in rail sector, increasing its attractiveness as substitute for surface and air transport</td>
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<tr>
<td></td>
<td>• Rail safety regulations</td>
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<td></td>
<td>• Construction of dedicated rail freight network with community support</td>
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<tr>
<td></td>
<td>• Develop rail network in ‘enlarged Europe’</td>
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<tr>
<td>Air</td>
<td>• Creation of ‘single European sky’ — reduce fragmentation of ATC</td>
<td>Increase operational costs in air transport and effect substitution of rail services for short haul air services; promote consolidation in European air transport industry; promote spatial concentration of air traffic</td>
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<tr>
<td></td>
<td>• Harmonise and upgrade ATC equipment</td>
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<td></td>
<td>• Define new airport charges regulatory regime</td>
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<tr>
<td></td>
<td>• Define environmental regulations/ rules</td>
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<tr>
<td></td>
<td>• Imposition of fuel taxes (at least on intra-European services)</td>
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<td></td>
<td>• Promote intermodality with rail</td>
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The Commission also plans to propose a change in funding rules for the TransEuropean Networks (TENs), increasing to 20% the maximum contribution from the Community for cross-border projects crossing natural barriers and projects at the borders of candidate countries. In addition, it is proposed that in the next two years a framework will be established for channeling revenues from charges on competing routes towards building new infrastructure, especially rail.

The European Court of Justice ruling in 2002 found eight Member States’ ‘Open Skies’ air service agreements with the US to be illegal, and has paved the way for the European Commission to negotiate a common agreement with the US on behalf of all Member States within the next two to four years. The Commission is keen to establish a Free Trade Zone for air transport in the transatlantic market. The White Paper proposes a clear role for the Commission in negotiating a common external air
transport policy and in facilitating increased spatial and industry concentration levels in
the European airline industry.

The European Commission attempted to introduce an airport charges directive in 1997,
but this directive failed after several significant revisions.\textsuperscript{[11]} The White Paper places the
issue back on the agenda along with the related issue of slot allocation procedures.
The slot issue arises from a desire to allocate available capacity efficiently. As Forsyth
argues (1997), the problem with a price-cap regulation is that it may set prices too low
to allow efficient rationing of the capacity, particularly when there is excess demand. If
price-caps are set high enough to ration demand efficiently, then the airport may earn
very high profits. Forsyth then argues that, in addition to the price-cap regulation, an
efficient slot allocation system must be imposed. However, the allocation of the rents
from slots is a major problem, particularly at congested facilities like London's Heathrow
Airport, where the slots are valued at hundreds of millions of pounds.\textsuperscript{[12]} There needs to
be sufficient trading of slots so that they go to the user that will make the best use of
them. This is why the UK's Civil Aviation Authority now argues for a dual-till approach
in setting airport charges since such an approach will better reflect the costs and the
scarcity value of slots; and, in addition, it will provide better incentives to the airport
owner to invest in additional capacity where this is feasible.

IMPLICATIONS FOR IRELAND

Clearly the priorities for European transport policy do not suit the Irish situation
because of the following.

- Ireland's island status gives rise to a heavy reliance on air transport.
- The low density of population and dispersed settlement pattern makes air and
road the most effective and flexible alternatives for the movement of passengers
and freight. Urban transit is a possible exception.
- There has been a high level of expenditure - and further planned - on
constructing and maintaining sufficient road and air transport infrastructure
facilities, since these best suit our needs. The EU research agenda in transport
supports the policy goals of the White Paper. The implementation of such
policies on an EU-wide basis in areas such as Ireland will impose considerable
extra costs because (i) the dependency on the 'unfavourable modes' and (ii) the
fact that in the regions individuals travel greater distances in conducting their
daily activities, compared to urban dwellers.

\textsuperscript{[11]} Reynolds-Feighan and Feighan, 1997
\textsuperscript{[12]} Forsyth, 1997; Ashworth and Forsyth, 1984
The air transport policy agenda in Europe will have significant implications for Ireland, particularly given the relatively heavy reliance on this mode of transport. Research on US airline deregulation impacts has demonstrated the increased industry (or market) concentration among a small number of very large carriers and increased spatial concentration of traffic across a small subset of nodes in the airports network. The entry of significant numbers of low-cost carriers and of non-US carriers to the international markets operating to/from US airports - facilitated by the many ‘Open Skies’ agreements negotiated since 1992 - reduced industry concentration during the mid-1990s. However, increases were observed overall during the decade with further consolidation in the industry.

The development of high-speed rail networks and rail terminals at large European airports will free up slots, as increased substitution of rail for short-haul air services takes place. The large European airports will service to an increasing extent, the long-haul external (i.e. extra-EU) routes. Changes in carrier ownership requirements and the negotiation of common EU external aviation Air Service Agreements will encourage both the increased concentration of traffic at the large airports and increased industry concentration, as consolidation among EU carriers takes place. Some direct, long-haul air links from Ireland to the US may be vulnerable under this scenario - particularly services at Shannon - although there is also the potential to increase transatlantic air services through Irish airports.

It is vital that a long-term Irish air transport policy be developed that meets regional development needs and national development priorities. The long-term provision of airport and port capacity needs to be addressed at regional and national levels. The regulatory and ownership structures for these facilities must be examined, so that bottlenecks and constraints do not restrict opportunities for enhanced accessibility or help make the case for reduced accessibility to and from Ireland. The impact of institutional structures on the transportation sector is an evolving research area in Europe and in the US and this research effort has significant strategic implications for Ireland.

If new mechanisms are introduced for airport charges in parallel with efficient allocation mechanisms for distributing scarce capacity, it may be expected to result in accelerated use of the main European ‘superhubs’ for long-haul, wide-bodied jet services and a need to reallocate other traffic elsewhere. Short-haul feeder services will increasingly be provided by rail, freeing-up valuable slots for long-haul services. A system view and approach to the funding of airport infrastructure was argued in Reynolds-Feighan and

Feighan (1997), whereby revenue raised at congested airports would be used to develop facilities at alternative sites for the benefit of the users. A flexible framework for airports in Ireland is necessary in order to facilitate regions and their airports taking advantage of opportunities in the changing European environment.

AIRPORT OWNERSHIP, CHARGES AND INVESTMENT STRATEGIES

The evolving economic and policy environment for Irish airports presents new opportunities as well as many new constraints. Ireland has the highest per capita air passenger volume in the EU along with the second lowest rail modal share. European transport policy over the next 10 years will seek to increase rail’s traffic share and reduce the growth of air transport. The concentration of long-haul traffic at the large European airports and consolidation within the airline industry could have adverse effects on Ireland’s regional and national development priorities. Irish aviation policy needs to be set out with the goal of facilitating the optimum development of air transport for the benefit of the regions and of the national economy. Access to and from Ireland via the ports and airports will be constrained within five years because of capacity constraints. Long-term planning of infrastructural needs must be prioritised, so that lean and flexible airport enterprises can compete to enhance accessibility between Ireland and other regions.

The establishment of separate boards for the three state airports by the Minister for Transport is a welcome step in facilitating a more entrepreneurial approach within the regions, so that investment decisions and traffic generation strategies may be evaluated from the vantage point of the region itself. As was shown earlier, all airports except Dublin in the Republic face significant competition because of overlapping and constrained hinterlands. Increasing the autonomy of the three state-owned airports should improve their responses to local demands and opportunities.

The issue of ownership, competition and regulation are interrelated. The World Bank in 1995 undertook an extensive study of the emerging role of the private sector in airport infrastructure provision, maintenance and management. On the basis of a relatively small number of instances of private sector involvement in airport ownership, the evidence available to the study indicates that both the quality of service and the investment commitments have significantly improved when the private sector has had significant involvement in management and ownership. The study concludes that airside charges have neither increased nor decreased substantially under private

[16] Juan, 1995
ownership, but pricing mechanisms have become more complex. In addition, there has been intense development of non-aeronautical, commercial revenues.

The recent Irish government decision to investigate the potential for a second terminal that would be independently owned and operated at Dublin is an initiative aimed at introducing competition in terminal service provision at the airport. There are a variety of ways in which such a terminal might operate such as Build-Operate-Transfer, Lease-Develop-Operate, Build-Transfer-Operate or Perpetual Franchise. The international literature on such ventures is still quite sparse and it seems that local factors and circumstances can play an important role in the success or failure of such ventures. More research in this area is required.

It is clear that in proceeding with one of these approaches, the contractual arrangements for the operation and interaction of the different components within the airport need to be established upfront. In the case of Dublin airport for example, rules governing access to runway, taxiway and other airside facilities must be set out clearly. The potential conflict of interest if Aer Rianta were to continue to operate both the airside infrastructure and the existing terminals, car parks, hotels etc must be evaluated carefully so that the separation of these functions or the regulation of procedures will be established. This places a heavy burden on government to design a regulatory and/or contractual framework in which effective competition in terminal services may be realised. There is a significant potential benefit if this venture operates successfully.

Long-run planning of transport needs and policy goals will improve the efficiency of regional economies by reducing the substantial costs associated with a piecemeal approach. The key objective of air transport policy must be the provision of safe, reliable and inexpensive air services to maximise the potential economic benefit to Ireland and to facilitate access to international transport and distribution networks for all regions. Where current structures and institutional arrangements hinder the achievement of these aims, more flexible structures should be established once these have been analysed and evaluated.

[17] Reynolds-Feighan, 1999b. In the rail sector the provision of infrastructure and rail services have been separated in order to induce competition where it is economically desirable and feasible to do so (i.e. in rail services). While it is not desirable to duplicate airport infrastructure in the Dublin region, the separation of infrastructure and terminal services provision may be.
CONCLUSIONS

Irish air transport faces significant change in the next five years given the changing European policy environment and the changes within Ireland in the structure of airport management and operation. The Government must seek to set out a clear air transport policy that will allow the regional and national economies to take advantage of opportunities arising from these changes. The Government must also argue at European level that the White Paper changes cannot be a 'one size fits all' policy and that the Irish circumstances dictate a different emphasis on transport choices by virtue of our demographic and geographic characteristics.

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