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Submission to the
Commission for Aviation Regulation
on
The Economic Regulation of Airport Charges in Ireland CP2/2001



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1 Introduction

The Commission for Aviation Regulation was established under the Aviation Regulation Act, 2001 on 27th February 2001. The Act requires the Commission, no later than 6 months from its establishment, to make a determination specifying the maximum levels of airport charges that may be levied by an airport authority at any Irish airport with more than one million passengers in the previous year.

Aer Rianta is the airport authority which owns Dublin, Cork and Shannon airports. All of its airports meet the threshold set in the legislation and airport charges levied by Aer Rianta at the Irish airports are therefore subject to the Commission's determination.

Aer Rianta first called for the introduction of economic regulation of airport charges in its Future Strategic Direction Report presented to the Minister for Public Enterprise in April 1999. The company is very pleased that the Commission has been established and is beginning the work of reviewing airport charges so that Aer Rianta can continue to meet the needs of all customers at the three airports. Aer Rianta looks forward to engaging fully with the Commission as it makes its determination.

This submission is being made by Aer Rianta in response to the Commission's request to interested parties to submit views on the contents of a consultation paper on Economic Regulation of Airport Charges in Ireland (CP2/2001: Consultation Paper on the Maximum Levels of Airport Charges to be Levied by an Airport Authority under the Aviation Regulation Act, 2001) issued by it on 27th February 2001. CP2/2001 laid out the possible regulatory approaches that the Commission might adopt in its determination of maximum airport charges and the issues it considers relevant in airport regulation. Forty-one specific questions were posed which the Commission invited interested parties to address in the course of their responses.

This paper is Aer Rianta's response to the Commission's invitation. It addresses the questions raised in the consultation paper and is arranged in 10 chapters.

Chapter 2 gives an overview of Aer Rianta setting out the key activities of the airport authority.

Chapter 3 establishes the wider context in which the regulatory process will operate. As a commercial semi-state company Aer Rianta has statutory obligations as set out in the Air Navigation and Transport (Amendment) Act, 1998. It is also subject to a wide range of regulatory constraints in terms of its airport operations through safety, security and environmental legislation at both national and international levels. This chapter also addresses Questions 12, 36, 37, 40 and 41 which are raised in the Commission's consultation paper CP2/2001.

The importance of Aer Rianta's airports to economic development, both at national and regional level and the contribution they make to the region in which they are based results in a requirement to have regard to the regional policy context for regulation. This is considered in detail in Chapter 4. Questions 25 and 26 from CP2/2001 are addressed in this chapter.

The various methods of regulation are considered in Chapter 5. Aer Rianta sets out its opinion on the best approach to adopt in relation to Irish Airports, having regard to the systems of economic regulation of airports abroad and the requirements of the Irish airports, airport users and overall economic welfare. Questions 1, 2, 4, 7, 8, 9, 10, 11 of the Commission's consultation paper are responded to in this section.

Chapter 6 addresses the question of the regulatory till – its composition and operation. Aer Rianta presents its views against a background of wide-ranging debate which is taking place on this issue within the industry at present. Questions 27 and 28 from CP2/2001 are responded to here.

The regulated asset base and rate of return are discussed at length in Chapters 7 and 8. These two areas have been of crucial importance in the cases of other regulated sectors, both at home and abroad and Aer Rianta holds considered views on the most appropriate processes to adopt in relation to both issues in the context of Irish airports. Questions 16 and 17 of CP2/2001 are answered in Chapter 7, while Questions 18, 19, 20 and 21 are dealt with in Chapter 8.

Capital investment is discussed in Chapter 9. Capital expenditure is one of the most important factors in the determination of airport charges for Aer Rianta going forward. Current traffic forecasts, which are the key drivers of capital investment plans, indicate that a high level of investment in airport infrastructure will be required within the period of the determination. It is important that the scale of the throughput be appreciated and the consequent needs for infrastructure, facilities and services are carefully considered in any determination. It is also vital that the appropriate incentives are incorporated into the regulatory framework to ensure that this investment is made and that user needs are met. This section addresses Questions 13, 14, 15 and 39 of CP2/2001.

Efficiency, effectiveness and benchmarking and service quality are covered in chapters 10 and 11. Questions 22, 23, 29, 33, 34, 35 of CP2/2001 are dealt with in Chapter 10. Questions 32 and 38 are dealt with in Chapter 11.

Finally, Chapter 12 outlines Aer Rianta's proposals as to the structure of airport charges so that appropriate economic signals are given. Aer Rianta's views on Questions 3, 5, 6, 14, 15, 24, 30, 31 and 39 of CP2/2001 are put forward in this section.

Aer Rianta is available to discuss this submission in detail with the Commission and welcomes the views of other interested parties on this submission.

2 Overview of Aer Rianta

Aer Rianta is the owner and operator of the three principal airports in Ireland at Dublin, Shannon and Cork. Together, the company's Irish airports handled some 17.9 million passengers or some 97 per cent of airport traffic in Ireland during the year ended 31 December 2000. In recent years, Aer Rianta's Irish airports have experienced strong passenger growth, increasing from 10.6 million passengers in the year ended 31st December 1995 to 17.9 million passengers in the year ended 31st December 2000.

2.1 History

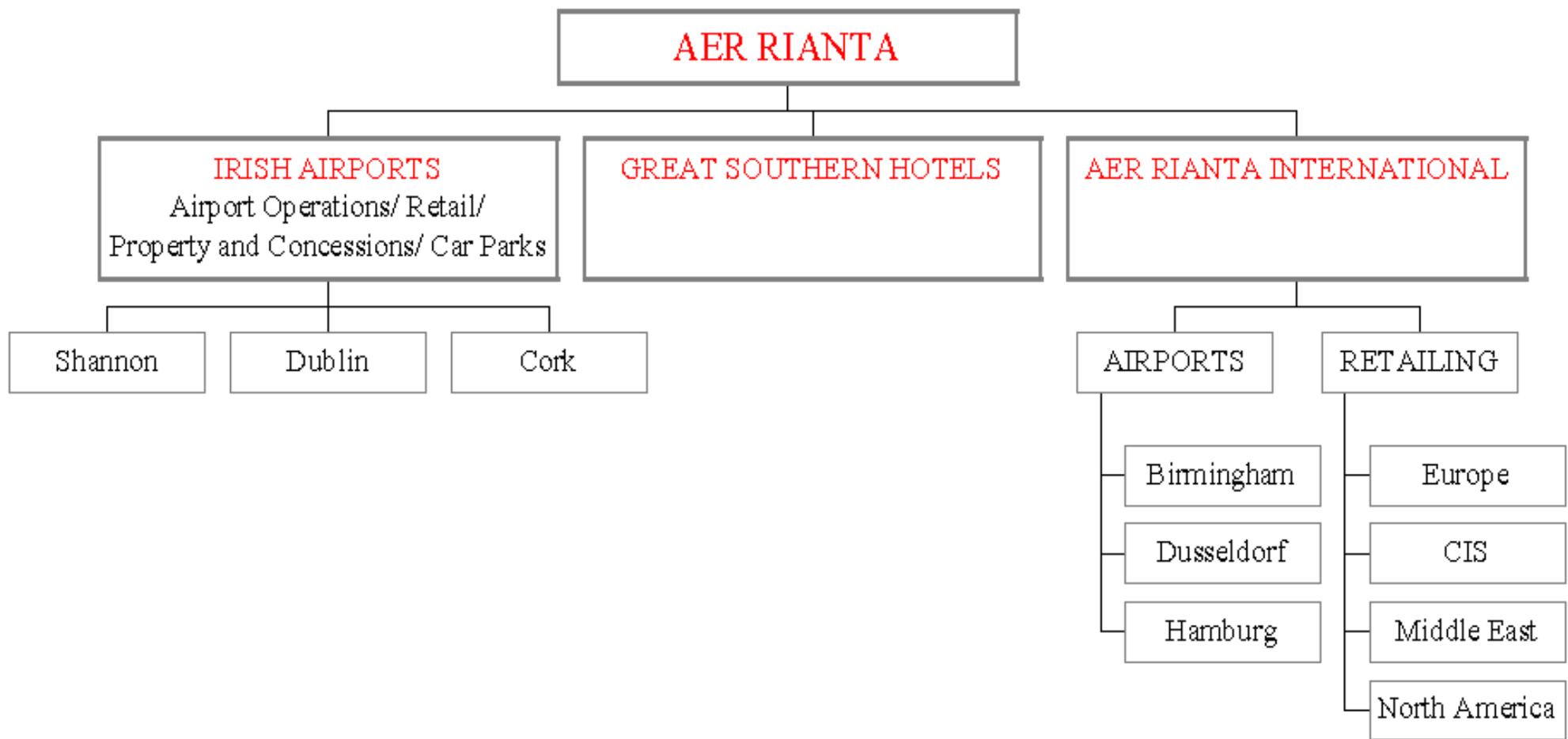
In 1937, Aer Rianta was incorporated as a holding company for Aer Lingus with all of the share capital of the company held by the Minister for Finance. In addition to its holding company functions, Aer Rianta had responsibility for the day-to-day management of Dublin Airport following the airport's establishment in 1941. In 1950, Aer Rianta was given statutory responsibility by virtue of Section 23 of the Air Navigation and Transport Act, 1950 of Ireland to manage Dublin Airport as the agent of the Minister for Industry and Commerce of Ireland (predecessor of the present Minister for Public Enterprise).

Pursuant to the Air Companies Act, 1966, the roles of airline and airport authority were separated and Aer Rianta retained the airport management role as agent of the Minister for Transport and Power (predecessor of the present Minister for Public Enterprise). Aer Rianta was given the power to manage Cork and Shannon airports in April 1969 by administrative decision of the then Minister for Transport and Power of Ireland.

On 1 January 1999, pursuant to the Air Navigation and Transport (Amendment) Act, 1998 (Vesting Day) Order, the assets of the three airports at Dublin, Shannon and Cork were transferred from the Minister for Public Enterprise to Aer Rianta.

2.2 Organisation Chart

The organisation chart below sets out Aer Rianta's group structure.



2.3 Irish Airports

The Company's activities at the three Irish airports can be divided into a number of aeronautical and non-aeronautical areas

- airport operations
- direct and indirect retailing
- car parking
- property & concessions

2.3.1 Airport Operations

Aer Rianta's primary responsibility is to supply the airport facilities and infrastructure (excluding air traffic control services) required for the transport of people and goods by air. Aer Rianta plans and develops its airfields, terminal buildings, piers, landside roads and other airport infrastructure. It is also responsible for the maintenance and management of the infrastructure of, and undertakes security and fire services at, all three Irish airports. Each of these airports has recently seen strong growth in passenger numbers. The compound average annual growth rate of passengers using these airports in the period 1995 to 2000 was 11.5 per cent. These traffic growth rates were in excess of those experienced by the European airport sector generally in the same period.

The largest airport is Dublin, which handled 13.8 million passengers in the year ended 31 December 2000, followed by Shannon with 2.4 million and Cork with 1.7 million passengers. At each of these three Irish airports, Aer Rianta handles its passengers in single terminals. At Dublin and Shannon airports, these terminals have been recently extended and an extension to the terminal at Cork airport is currently being planned. All three airports are favourably located from a site planning perspective and have ample room for expansion on their existing sites. All operate on a 24 hour basis.

In 2000, 118 scheduled destinations were served from the Company's three airports, up from 93 in 1995. This scheduled network comprises a diverse set of airline customers. 36 scheduled airlines serve the three airports. Aer Rianta has a strong traffic profile of origin-destination passengers, with passengers well diversified between the three principal travel purpose categories of business, holiday and visiting friends and relatives.

Approximately 51 per cent of traffic at the three airports in 2000 travelled between Ireland and the United Kingdom including Dublin-London, the busiest scheduled international route in Europe in 1999. The strength of this Ireland-UK traffic, along with the complementary effect of strong transatlantic traffic, and the increasing number of European routes served by Irish and non-Irish carriers, have contributed to the steady development of the traffic base at the airports. Scheduled traffic accounted for 87 per cent of total passenger numbers in the year ended 31 December 2000. Terminal freight at the three airports has grown 72 per cent from 124,144 metric tonnes in the year ended 31 December 1995 to 213,500 metric tones in the year ended 31 December 2000.

3 The Context for Regulation

This chapter establishes the wider context in which the regulatory process will operate. Aer Rianta is subject to a wide range of legal and regulatory requirements in terms of its airport operations in relation to safety, security, ground handling, environment, planning activities and airport charges. As a commercial semi-state company Aer Rianta has statutory obligations as set out in the Air Navigation and Transport Acts 1936-1998. The importance of Aer Rianta's airports to economic development, both at national and regional level and the contributions they make to the communities in which they are based results in a requirement to have regard to the regulatory policy context.

3.1 Policy Framework

3.1.1 Department of Public Enterprise 1998 Statement of Strategy

The Statement of Strategy published by the Department of Public Enterprise in 1998 includes the following sectoral objectives for aviation

- To ensure cost competitiveness and availability of appropriate infrastructure to meet current and prospective needs of the international airline industry
- To ensure that the standards, safety and security of aviation continue to inspire confidence in the use of Irish airspace and technical infrastructure
- To facilitate and encourage a wide range of reliable, regular and competitive commercial air services for Irish tourism, trade and industry

Aer Rianta is committed to fulfilling its role in achieving these policy objectives.

3.2 Statutory Framework

3.2.1 The Air Navigation and Transport (Amendment) Act, 1998

Aer Rianta is a public company limited by shares, operating under the Companies Acts 1963-2000. Its statutory mandate derives principally from the Air Navigation and Transport (Amendment) Act 1998. This legislation sets out the duties and responsibilities of the airport authority. The provisions of the 1998 Act are also enshrined in the Company's Memorandum and Articles of Association.

The “*airport authority*” is defined in Section 2 of the Act as

the person owning, whether in whole or in part, or managing, either alone or jointly with another person, an airport.

This definition is used for the purpose of the Aviation Regulation Act 2001.

Section 23 of the Act determines that the principal objects of the company shall be:

- a) to own, either in whole or in part, or manage, alone or jointly with another person, airports whether within the State or not,*

- b) *to take all proper measures for the safety, security, management, control, regulation, operation, marketing and development of its airports,*
- c) *to provide such facilities, services, accommodation and lands at airports owned or managed by the company for aircraft, passengers, cargo and mail as it considers necessary,*
- d) *to promote investment at its airports,*
- e) *to engage in any business activity, either alone or in conjunction with other persons and either within or outside the State, that it considers to be advantageous to the development of the company, and*
- f) *to utilise, manage and develop the human and material resources available to it in a manner consistent with the objects aforesaid.*

Section 24 of the Act provides that the general duties of the Company shall be:

- a) *to conduct its affairs so as to ensure that the revenues of the company are not less than sufficient taking one year with another to-
 - i. *meet all charges which are properly chargeable to its revenue account,*
 - ii. *generate a reasonable proportion of the capital it requires, and*
 - iii. *remunerate its capital and pay interest on and repay its borrowings,**
- b) *to take such steps either alone or in conjunction with other persons as are necessary for the efficient operation, safety, management and development of its airports,*
- c) *to conduct its business at all times in a cost-effective manner, and*
- d) *to regulate operations within its airports.*

“Airport charges” are levied on Users under Section 39 of the Act, in respect of:

- the landing, parking or taking off of aircraft at an aerodrome including charges for airbridge usage,
- the arrival at or departure from an airport by air of passengers, or
- the transportation by air of cargo, to, or from an airport.

The Commission has been set up to make a determination on the maximum level of airport charges as defined.

In carrying out its functions, the Commission should consider Aer Rianta’s statutory obligations in respect of operation and development of the airports.

3.3 Regulatory Environment

The environment in which airports operate is characterised by many national and international regulations and obligations which must be complied with. Aer Rianta is no exception to this. These obligations are very relevant to the regulation of airport charges as they have a significant effect on the way in which the business must be managed and run and have an important impact on the cost base. As such they must be considered carefully in arriving at a determination in respect of airport charges.

Aer Rianta faces a number of regulatory influences relating to its airport operations, either through policy pressure from bodies such as ECAC or from binding legislative and policy decisions at national and European level.

Aviation obligations in the international sense are a national responsibility to discharge. The response of the State to the obligations arising internationally has been to either discharge them itself or delegate responsibility to a statutory undertaker, principally the Irish Aviation Authority or Aer Rianta. The three aerodromes are licensed annually by the IAA and airports must comply with the licensing requirements.

The Chicago Convention was transposed into Irish law by the 1946 Air Navigation and Transport Act. As a signatory, the State has agreed to be bound by the Annexes to that Convention. The main obligations relevant to airports set out in some detail the minimum size, scale and manner in which facilities such as airside pavements and navigational aids should be provided and operated for the safety and regularity of operations. The levels and type of service that should be available to passengers and the manner of the service provided and available to pilots in command are prescribed. The requirements of an aviation security programme are detailed in respect of physical search, baggage control, boundary management etc. These matters are not discretionary but must be met and the prescriptions of the Annexes are usually minima.

Obligations also arise from Ireland's membership of ECAC which usually issues recommendations rather than absolute requests. Hold baggage screening is a significant development required by ECAC which is to be implemented by January 2003. While the obligation is principally one for the carriers to comply with, the infrastructure provision is airport related, including equipment, spatial provision and maintenance.

Obligations arising through Ireland's membership of Eurocontrol may increase with development of the EASA (European Aviation Safety Agency) and the evolution of Eurocontrol and the EU relationships to EASA.

The EU is obviously a significant player in setting obligations which airports must ultimately meet. Key directives and decisions include those in relation to ground handling, slot allocation, duty free and the free movement of people within the EU, passenger segregation etc.

EU and national environmental regulation may also have particular compliance cost implications for airport operators. Regulation in the area of aircraft noise emissions in particular is becoming more significant through standardization programmes, NFTM requirements and operational restrictions. Operational activities including aircraft and pavement de-icing as well as waste disposal issues can also generate significant environmental costs for airports. Environmental compliance has become and will continue to be a primary concern in the future operation and development of airport infrastructure.

Aer Rianta is obligated to provide facilities for a variety of state services at its airports including customs, immigration and the Department of Agriculture.

The airport is also bound by particular requirements that may be demanded by local planning or other statutory bodies including An Bord Pleanála, An Taisce, the Department of the Environment or the Department of Arts, Heritage, Gaeltacht and the Islands.

3.3.1 Section 33 of the Aviation Regulation Act 2001

Section 33 of the Aviation Regulation Act 2001 sets out the objectives for the Commission in making a determination in respect of airport charges. This Section of the Act provides that the Commission shall aim to facilitate the development and operation of cost effective airports which meet the requirements of users. In carrying out this statutory objective, the Commission must have due regard to

- The level of investment in airport facilities at an airport to which the determination relates, in line with safety requirements and commercial operations in order to meet the current and prospective needs of those on whom the airport charges may be levied
- A reasonable rate of return on capital employed in that investment, in the context of the sustainable and profitable operation of the airport
- The efficient and effective use of all resources by the airport authority
- The contribution of the airport to the region in which it is located
- The level of income of the airport authority from airport charges at the airport and other revenue earned by the authority at the regulated airports and elsewhere
- Operating and other costs incurred by the authority at the airport
- The level and quality of services offered at the airport by the airport authority and the reasonable interests of the users of these services
- The cost competitiveness and operational efficiency of airport services at the airport with respect to international practice
- Imposing the minimum restrictions on the airport authority consistent with the functions of the Commission
- Such national and international obligations as are relevant to its functions.

Aer Rianta agrees with the Commission's assessment that facilitating the development and operation of cost-effective airports and meeting the requirement of all

users is best achieved by applying the requirements of economic efficiency. It also agrees with the Commission that users be defined in the widest possible sense to include all users of airport facilities and this should also include the local communities in which the airports are situated as they are impacted by the development of the airports in their area/region.

In having due regard to the ten factors set out in Section 33, the Commission must also recognise the statutory obligations of the company to take all proper measures for the safety, security, management, control, regulation, operation, marketing and development of its airports and to provide facilities and services for all users. It would therefore, be inappropriate for the Commission through the regulatory process to impinge or restrict the Board and management of the airport authority in carrying out its functions as required under statute.

Under statute, there is a duty on Aer Rianta to conduct its affairs so that revenues are sufficient to meet all costs/charges and a reasonable return on capital allowing interest to be paid and borrowings to be repaid. The Commission in Section 33 is also required to have regard to the airport authority achieving a reasonable return on capital employed in the context of the sustainable and profitable operation of the airport.

We believe that the Commission in considering Section 33, should also have regard to the responsibilities of the company in relation to the development of air transport, policy guidelines by the Minister and safety standards as required under the Air Navigation and Transport (Amendment) Act 1998.

3.4 Economic Regulation

Airports are commercial entities which operate in global and competitive markets against the backdrop of a liberalised airline market. Airports experience varying degrees of competition in the market for aeronautical services^[1].

3.4.1 Airport Competition

Airports find themselves in competition with other airports in establishing themselves as the venue for the location of new airline services. Airport authorities must actively engage in the promotion of their airport in order to attract new passenger and cargo airline services. Since airport charges form a small proportion of total airline costs, airport competition tends to focus on market research, route profitability studies and the provision of efficient aeronautical infrastructure.

Many major European cities are in relatively close proximity to each other. A result of this is that airports tend to have overlapping hinterlands and are in

competition with each other for airline services and passengers. Examples include airports such as: Brussels/Amsterdam, Milan /Turin, Dublin /Belfast and Manchester/Liverpool. There is a danger that competition between airports in close proximity may result in a loss of economies of scale and scope at the airports in question. This is often reflected in higher airport charges as well as limited airline services. This situation is exacerbated when two airports compete within a single city or regional market e.g. Belfast where two independently owned airports compete for traffic. A study by Coopers & Lybrand^[2] on these two airports concluded that airport charges would be lower and the quality of air services better if traffic were concentrated solely on the larger airport, with no significant competitive loss.

Competition exists between airports as locations for the development of hub status, as airports recognise the important potential economic benefits to be derived from becoming established as a hub airport. Competition between airports with respect to hub status may be with respect to airport design, capacity availability, ability to provide future capacity, service standards and overall efficiency.

Competition also takes place within airports in relation to the provision of various non-aeronautical services at the airports. The liberalisation of the European groundhandling market has resulted in competition in the provision of groundhandling services. Competition exists in relation to the provision of various non-aeronautical facilities such as retailing, catering, service facilities, transport and car parking.

3.4.2 Market Failure

The Commission paper CP2/2001, discusses how competition may be made difficult due to the structure of certain markets. These markets commonly referred to as natural monopoly markets have characteristics including; a high ratio of fixed and sunk costs, heavy capital investment requirements, and economies of scale, scope and density. These characteristics act as barriers for potential firms entering the market.

The airport industry is capital intensive with a pattern of lumpy investment. Airports require substantial investment and they are likely to experience falling average costs of production over increasing output. The cost of production for the provision of aeronautical facilities is likely to be higher where a number of airports engage in supplying aeronautical services and it is more cost effective that a single producer supplies a large proportion of the market. This is due to the existence of economies of scale, scope and density. Economies of scope and density occur where two or more goods or services may be provided at a lower cost by a single firm than by a number of firms.

Economies of scope and scale occur in the airport industry where airports can spread corporate overheads, specialist aeronautical skills, administration costs, research and development, information technology, and maintenance across a number of aeronautical and non-aeronautical related functions and a number of airports.

Airport competition is also somewhat inhibited by the behaviour of incumbent airlines. Airlines show a reluctance to switch airport location where airport competition exists. This is largely due to the fact that for an airline moving its entire operation from one airport to another involves substantial cost and a high element of risk, just as a partial movement from one airport to another involves a loss in economies of scale for the airline. The establishment of new airline

routes in a new airport location represents high risk for an airline. The combination of these factors form what are commonly referred to as switching costs for airlines which restrict the movement of airlines between airport facilities and limit the opportunities for competition between airports.

Economic regulation is applied in the case of airports where there is a belief that competition for aeronautical services is somewhat restricted and airports have the ability to exert market power.

In examining the need for economic regulation the customer base is also an important factor. Regulation is applied in markets where a dominant firm provides essential services for consumption by the public. The demand side of the market contains a large number of individual customers consuming in relatively small quantities. There is a need to protect the interests of individual consumers who are subject to the economic strength of the provider. In the UK, the 1998 Government Green Paper *A Fair Deal For Consumers*^[3] concluded that consumer protection was the primary function of economic regulation and that regulators had a duty to act in a manner best calculated to protect consumers. However the situation is quite different in relation to the airport industry. Airlines customers are powerful economic units and a number of large airlines may possess considerable market power at an airport, counteracting any possible market power that rests with the airports. This is particularly the case in slot-constrained airports where the holders of the slots, i.e. the airline carriers, are the key possessors of market power not the airports. In this instance fulfilling the interests of airline customers must be balanced with the requirement for long-term development of airport facilities.

Given this context it is appropriate that recent debate surrounding this issue suggests an ex-post method of regulation is more appropriate than a stringent ex-ante approach. An ex-post approach would also enable the introduction of regulatory control with minimum regulatory restrictions imposed on the regulated entity.

3.4.3 Competition at Aer Rianta Airports

Aer Rianta is a key player in the Irish aviation market providing a broad range of aeronautical and non-aeronautical services at Dublin, Cork and Shannon Airports. Aer Rianta does not have a statutory monopoly for the provision of airport services, as there are no statutory barriers to entry in the market for airport services in Ireland. Limited but sustained competition for the provision of aeronautical services is present in all three Aer Rianta airports.

Internationally Dublin Airport experiences competition with airports in the United Kingdom with respect to attracting and retaining additional airline services. Domestically Dublin Airport experiences competition for airline services and passengers from Belfast City and Belfast International, as well as the regional and provincial airports.

The airports at Cork and Shannon have overlapping hinterlands and compete with each other to a limited extent to attract airline services and passengers. In view of the relatively short distances to Dublin, Cork and Shannon experience competition for passengers from Dublin Airport where the choice of air services is considerably wider. Cork and Shannon airports experience some competition from regional airports located within their catchment area. Galway regional airport

competes with Shannon for airline services and passengers. Similarly Kerry regional airport represents competition for Cork Airport. Shannon Airport competes for Technical Transit Business with UK and Northern European airports and this is a highly competitive segment of the aeronautical market.

Competition takes place in Aer Rianta airports in relation to certain aeronautical and non-aeronautical activities/services. The level of competition is related to the size and scale of operations. Competition exists in relation to the provision of services at the airports including such areas as

- Groundhandling
- Catering
- Retailing
- Banking facilities
- Car-hire
- Access transport

3.4.4 Economic Regulation of Airports

Regulation imposes a considerable administrative burden on the regulated entity. It also exposes the regulated entity to regulatory risk. Regulation involves an extensive use of resources and therefore in itself distorts the efficiency of the market. It is therefore highly inappropriate to impose a regulatory burden on an airport activity that is operating in a contestable market. This would imply that activities which are provided in a contestable market are exposed to the rigours of both competition and regulation. This is clearly not justified, as it would result in a distortion of the relevant market.

Section 33 (i) of the Aviation Regulation Act, 2001 requires that the Commission shall have due regard to imposing the minimum level of restrictions on the airport authority consistent with the functions of the Commission.

In order to minimise regulatory restrictions regulation should only be adopted in areas where airports possess strong market power and it is clear that the regulatory system itself with all its distortions will improve the economic efficiency of the market. The structure of the regulatory regime should be no more onerous than the requirement necessary to meet the statutory objectives laid down in the Aviation Regulation Act, 2001. Airports are recognised commercial entities operating in a global and competitive market. The regulatory regime should allow Aer Rianta to continue its strategy of pursuing a commercial approach to the management of Dublin, Cork and Shannon airports in line with its statutory requirements under the Air Navigation and Transport (Amendment) Act 1998.

The purpose of economic regulation is to stimulate a competitive market outcome and to achieve an economically efficient market. The Commission in its paper

CP2/2001 discusses the application of regulation based on a test of economic efficiency. In CP2/2001 economic efficiency is broken into three elements

- Productive efficiency involves production of a good or service at minimum possible cost.
- Allocative efficiency involves equating the marginal cost of production for a good or service with the marginal benefit to society as represented by the market price.
- Dynamic efficiency involves maximising the long-run incentives for investment and innovation in the market.

In order to facilitate the statutory requirement for minimising the number of restrictions imposed on the regulated entity the test of economic efficiency should form the basis on which regulation is applied in the case of Irish airports.

4 The Regional Contribution of Airports

Economic development in a region is closely correlated with the level of resources available, the physical characteristics or geographical location of the area and the degree of accessibility to markets. There is evidence to suggest that as industrial development takes place in an economy a pattern emerges whereby industrial activities have a tendency to cluster together in certain areas where it is possible to derive maximum benefit from linkages and superior access to social and economic infrastructure. This leads to the development of key urban centers, which is a characteristic of modern industrialised economies. This factor is in turn responsible for the divergence in economic growth rates within the different regions of a larger geographical unit. Regional policy involves the use of various measures to ensure as far as possible a degree of balance between economic growth rates for different regions.

The economic disadvantages associated with peripheral areas mainly arise due to the fact that their physical and geographical location restricts their accessibility to the market place. This is determined not only by geographical location but also is contingent on the level of transport and communication infrastructure available in the region. This creates additional barriers to entry for potential firms investing in these regions. The success or failure of regional industrial policy is determined by the locational competitiveness of a region.

Since 1993 Ireland has experienced unprecedented levels of economic growth in the economy. However the rate of economic growth experienced across the regions has been somewhat imbalanced. This regional dimension to Ireland's recent economic performance is analysed by the Economic and Social Research Institute^[4]. The National Development Plan 2000-2006 emphasises the Government commitment to balanced regional development and the importance of regional policy.

It is acknowledged in the Forfás report Enterprise 2010^[5] that despite the fact that all regions of the economy have experienced positive economic growth rates,

the level of economic expansion has not been evenly distributed throughout the economy.

The report emphasises the need for regional policy considerations as part of an industrial policy to promote manufacturing and internationally traded-services and as part of the drive to encourage entrepreneurship in the economy if the target rates for economic growth and employment growth projected for the forthcoming ten-year period are to be achieved.

Forfás acknowledge the importance of investment in physical infrastructure as one of the key components in facilitating regional development. The operation of air services is listed as one of the essential requirements for enterprise development. Forfás recommends the development and maintenance of effective international air links while paying close attention to the issue of regional air services.[\[6\]](#)

It is recognised internationally that investment in transport infrastructure is an important component of policy measures designed to encourage balanced economic development between different regions. At both national and international level resources used to develop transport ensure that such less favoured areas are better integrated.

The European Region of Airports Council International (ACI Europe) states that air transport is an essential component of the global transport system and complements other transport modes. In Europe it generates an estimated 2.3 million jobs worth over US \$75,000m in salaries alone[\[7\]](#). Research suggests that one million passengers using an airport generate up to 4,000 jobs in the surrounding region.

As a small open economy, Ireland is crucially dependent on its air links for international trade, therefore each airport is significant within its region. The contribution of an airport to a region is commonly assessed on the basis of the total income, employment and output generated directly and indirectly by the airport facility. The Regional Input-Output method is considered most appropriate in estimating the regional impact of an airport. The Regional Input-Output method as outlined by Moloney *et al*[\[8\]](#) examines the interdependence between economic sectors in a region.

In applying this method the overall impact of airport activities is divided into three categories

- The direct impact measures the income, employment and output in the catchment area that is directly linked to the airport, as well as the onsite business located at the airport and transactions relating to retailing and services provided at the airport.
- The indirect impact measures the linkages between the airport and businesses in the airport region.
- The induced impact measures the income generated when the direct and indirect impacts of the airport is spent on locally produced consumer goods and services.

Expenditure by tourists and visitors to the region forms part of the direct impact of the airport, but there are also indirect and induced impacts associated with tourist and visitor numbers.

The overall impact of the airport is the sum of the direct, indirect and induced impacts. This is measured in terms of income, output and employment. Impact studies for Cork[\[9\]](#), Shannon[\[10\]](#) and Dublin[\[11\]](#) have been conducted using this Regional Input-Output method.

The economic impact studies merely estimate the static impact of the airport at a certain point in time. They do not appropriately assess the overall economic contribution and the historic importance of the airports to their region. Shannon and Cork Airports have played a pivotal role in the industrial development of the regional economies and they have provided the necessary infrastructure required to facilitate business growth in regional areas.

4.1.1 The Regional Contribution of Cork Airport

Cork Airport has played a major role in the development of the regional economy since its was founded in 1961. Many changes have taken place in the local economy over the intervening forty years, the region has moved away from its former dependence on agriculture and has emerged as one of the country's leading high-technology exporting centres. This Southern region combines a strong multinational presence with successful indigenous industries and a strong tourist sector.

The airport facility has contributed to the success of the Government's industrial policy in attracting international high technology investment and the promotion of an export-orientated indigenous sector.

The contribution of Cork Airport to the development of the regional economy was assessed based on the employment, output and income attributed to the airport. The regional contribution of Cork Airport is measured using the Regional Input-Output approach. The application of the Regional Input-Output approach for the Southwest region was first developed by Garhart *et al*[\[12\]](#) Estimates of the levels of employment, expenditure and income generated by Cork Airport in the catchment area have been assessed for the period 1999/2000. These estimates form part of a study undertaken by the Department of Economics UCC for Aer Rianta[\[13\]](#).

Overall Impact of Cork Airport 1999/2000

Type of Impact	Output (£000s)	Income (£000s)	Employment (FTE) [14]
Direct	7,369	19,276	913
Indirect	1,982	4,260	205
Induced	2,012	5,494	247
Total Impact	11,364	29,029	1,364

Multiplier	1.542	1.506	1.494
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Source: Department of Economics UCC

Direct employment in Cork Airport was estimated at 913 jobs, generating approximately IR£19 million in income for the region. These figures merely reflect the direct impact of the airport on the region, there are further induced and indirect benefits to the region derived from the airport. The multiplier effect reflects the additional indirect and induced effects that occur in addition to the direct impact of the airport.

The economic contribution of Cork Airport to enterprise in the region was reinforced with the opening in 1999 of the Cork Business Park at the airport. The Business Park was developed through a partnership between Aer Rianta, ICC Bank and Omnistone Ltd. When the impact of the Cork Business Park is combined with the impact of Cork Airport, it is estimated that an overall total of 1,970 jobs is supported in the region. A further estimate for the period 1999/2000 of overall income generated by Cork Airport and Business Park is given as IR£56m, with a corresponding estimate for the value of overall output given as IR£ 29m.

Cork Airport provides a means of access for non-resident visitors to the catchment area. The period 1995-1999 saw growth of 29% in tourist numbers in the Southwest region (Bord Failte, 2000) and this coincides with the substantial growth in passenger numbers for Cork Airport. In 2000 the number of non-residents round trip passengers was estimated at 445,080. The study estimated that in 2000, the overall impact of non-visitor expenditure was approximately IR£263 million in output, IR£91 million in income and 5,467 in employment.

4.1.2 The Regional Contribution of Shannon Airport

Shannon Airport acts as a gateway for the West of Ireland and in doing so facilitates the economic growth of the area. It facilitates the air access needed to encourage non-resident visitors to the catchment region. It provides the infrastructure requirements allowing industrial development to take place in the regional economy. Shannon Airport has contributed to the success of the Government's industrial policy of attracting overseas investment to the region. It provides a means of access for local indigenous firms seeking to export their output internationally.

Shannon Airport as a business entity is itself a valuable source of employment, income and expenditure for much of the Western half of the country.

A major study examining the economic impact of Shannon Airport was undertaken in 1997 on behalf of the Mid-West Regional Authority by Alistair Tucker^[15]. This study examined the contribution of Shannon Airport using the Regional Input-Output method. This study estimates the benefits bestowed on the region in terms of employment and income. These benefits are examined in the context of the value of the airport as a business entity, the contribution of the airport to the region's industrial sector and the importance of the airport to the tourism industry.

Employment Impact of Shannon Airport on the Western Region of Ireland 1995

Source	Direct	Indirect	Total
Tourism	2,900	1,200	4,100
Industry	18,000	11,000	29,000
Airport	2,200	900	3,100
Total	23,100	13,100	36,200

Source: Mid-West Regional Authority

This study estimates that in 1995 Shannon Airport provided a total of 2,200 jobs directly, with a further estimated 900 jobs indirectly connected to the airport facility. The annual total income generated from the Shannon Airport site in 1995 was estimated at IR£41 million. This highlights the importance of Shannon Airport as an employer and a business entity.

The Mid-West Regional Authority concludes that in 1995 an estimated 18,000 jobs in the Mid-West and Co. Galway catchment area are said to be dependent on Shannon Airport, with a further 11,000 jobs indirectly related to the airport, this amounts to a total of 29,000 jobs. This demonstrates the level of critical support that Shannon Airport provides to Western region industry and employment.

The heavy dependence by industry in the Mid-West on Shannon Airport is also illustrated in a survey performed in relation to internationally traded services and manufacturing industries in the Mid-West and Co. Galway in 1995. The results of the survey carried out for the Mid-West Regional Authority indicate that of the firms questioned an estimated 50% used Shannon Airport for passenger services and 40% of firms used the airport for freight services. These findings reflect the prominence of international investment and the export –orientation of industry in the region. Industry is attracted to the region through the presence of the international airport and this industry, in turn, generates further business for Shannon to the point where both industry and the airport support the regional economy.

The study undertaken by Tucker examines the economic impact of tourism in the Western region. It found that of the total number of non-resident passengers using Shannon airport in 1995, 76% were bound for the Western seaboard of Ireland. The non-resident visitor expenditure attributed to passengers arriving in Shannon Airport was estimated at that time as IR£ 118 million. The estimated figure for the level of employment attributed to non-resident expenditure was put at 4,100 jobs. Given the growth of terminal passenger traffic at Shannon Airport from 1.57m to 2.4m in the interim it can be safely assumed that the contribution in 2000 was a great deal higher than in 1995. It is clear the Shannon Airport makes an enormous contribution to the growth and development of the tourist sector in the West of Ireland.

4.1.3 The Regional Contribution of Dublin Airport

Dublin Airport acts as a national gateway facilitating travel to and from the country. It is a major transport asset in the Irish economy, with 77% of total passenger traffic passing through Dublin Airport in 2000. Dublin Airport also makes a significant economic contribution both to the national economy and to the Airport's catchment area of North County Dublin. A report analysing the regional impact of Dublin Airport using the Input-Output method was published in 1995[16].

In order to assess the impact of Dublin Airport a survey of all firms operating at Dublin Airport was carried out by Wilton Research and Marketing Ltd on behalf of Aer Rianta in 1994. The results of this survey were used as the basis for the input-output analysis.

Overall Impact of Dublin Airport

	Employment	Household Income (£m)	Government Income (£m)	GNP (£m)
Direct	20,031	118	100	267
Indirect	6,261	71	48	152
Induced	4,137	41	58	116
Total	30,429	231	206	534

Source: Meyler

Dublin Airport is a significant employer for the Dublin region, with the direct employment contribution of the airport facility in 1994 estimated by Meyler as 20,031. The direct impact of Dublin Airport on income in 1994 was estimated at IR£118 million while the estimated direct impact on National Output was given as IR£267 million.

It was estimated that Dublin Airport made an overall contribution of IR£534 million to GNP, IR£231 million to household income and 30,429 in employment at the time.

In 1994, 80% of non-resident air travellers entered Ireland through Dublin airport. The estimated revenue generated by this traffic was given as IR£800 million. The report concluded that Dublin Airport had undoubtedly contributed to a significant number of the 30,000 jobs created in the Irish tourism sector between 1986 and 1994. Clearly, given the growth of Dublin Airport traffic from just under 7 million in 1994 to 13.8 million in 2000 the level of contribution will have grown very sharply in the interim.

4.1.4 The Economic Impact of Airports to the Regions

It is clear that airports and economic activity are closely associated and in the context of a European single market and an increasingly global market, air transport is essential to economic progress. Therefore in the interests of regional development the role of regional airports should be recognised and supported in as far as possible. Restricted air access in regional areas would act as a barrier to balanced regional growth throughout the economy. Regions would lack locational competitiveness. The continued success of the Government's industrial policy combining inward investment with a strong export orientated indigenous sector depends critically on the strategic development of cost effective airports and a growing network of air services.

Airports are essential assets for regions wishing to expand industrial activity. Their proximity encourages industrial development. Industries choose to locate close to airports in order to gain easy access to air transport and the associated infrastructure.

4.1.5 Implications of Economic Regulation for the Regional Airports

The valuable contribution and importance of regional airports for their surrounding regions is acknowledged in the Aviation Regulation Act, 2001. Section 10 of the Act allows the Minister for Public Enterprise to give policy direction to the Commission specifically in regard to the contribution of the airports to the regions in which they are located. Section 33 (d) of the Act states that the Commission shall have due regard to the contribution of the airport to the region in which it is located when making a determination on airport charges. The regulatory approach taken by the Commission is of utmost importance in safeguarding the position of the regional airports, and is discussed elsewhere in this submission.

5 Framework for Regulation

The Aviation Regulation Act 2001 does not prescribe the form of regulation. In its consultation paper CP2/2001, the Commission has requested that interested parties make submissions on the form of regulation to be adopted.

Aer Rianta is of the view that the Commission paper CP2/2001 covered the models most deserving of consideration in terms of a regulatory structure for determining airport charges. In the context of Aer Rianta's experience and knowledge of how these models operate in other jurisdictions it believes that there are many lessons to be learned for economic regulation of airports in Ireland. Its analysis in relation to the models suggested by the Commission in its document is outlined below. This chapter discusses the most commonly applied models of regulation. It then assesses the various forms of price cap and outlines Aer Rianta's proposed model of regulation, and finally considers the issue of regulation of Aer Rianta as a group.

5.1 Alternative Forms of Regulation

5.1.1 The US Rate of Return Model

In the US, the traditional form of regulation has been termed the Rate of Return model. The aim of this form of regulation is to regulate a company's level of profit and to keep price/cost margins in line with competitive rates. The regulator allows the regulated company to make profits equal to the return on capital employed based on a firm's Regulated Asset Base (RAB), so that all costs are recovered. The return allowed is typically that available on other investments of equivalent risk. The regulator approves the tariff levels that the company requires to generate the revenue requirement, as derived from an accounting cost perspective.

In an uncertain market environment rate of return regulation may provide the regulated company with a reasonable profit level and a reduced risk of bankruptcy. Indeed, it is regarded as providing superior incentives for private investment as it offers a guaranteed rate of return on capital, which is particularly attractive for long-term capital investments. However, there have been a number of disadvantages associated with the operation of this model which Aer Rianta believes make it an unsuitable choice to apply to the regulation of airports in Ireland. These are as follows:

- Under rate of return regulation, the risk is largely borne by the consumer with the operator/producer enjoying a risk free return.
- There is little incentive for the regulated activity to pursue operational efficiency or cost reduction as all profit benefits are captured.
- It can give rise to overcapitalization and overcapacity, by using capital-intensive technologies or advancing investment in advance of need - the Averch Johnson effect. Indeed, there have been allegations of 'gold-plating' of assets by airports, which are subject to this form of regulation, to increase their asset base and improve their absolute return.
- For businesses, which are a mix of regulated and unregulated activities, there are considerable problems of allocation of costs and assets in order to determine the appropriate return on the regulated activity.
- Rate of return regulation proves costly as it requires a very detailed and accurate cost analysis of the company, thereby imposing a high administrative and negotiating burden on the regulatee (in this case the airport operator) and the regulator. The approach is characterised by the adversarial nature of the interaction between the parties, resulting in a form of regulation which is confrontational and heavy-handed. To adopt such a form of regulation in the Irish context therefore, could be in conflict with Section 33 of the Aviation Regulation Act 2001 which requires the Commission, in making its determination, to impose the minimum restrictions on the airport authority.
- Finally, rate of return regulation was devised to deal with US utilities and airports. US airports have an entirely different financing structure to that of European airports and as such rate of return would not be an appropriate choice in the Irish context.

5.1.2 The UK Price Cap (RPI-X) Model

In the UK, utility regulation has developed from the criteria and approach developed by Littlechild for the regulation of British Telecom, with the Price Cap or RPI-X methodology being the hallmark of subsequent UK regulation. This approach has been significantly developed since its original introduction, in which there were notable deficiencies.

In general price cap regulation is a superior option to a rate of return model as:

- It provides for a more forward-looking method of regulation with an emphasis on product efficiency. By limiting prices to inflation (RPI), plus or minus a few percentage points (X), which allow for industry specific considerations to be taken into account, the approach is designed to put pressure on the company to improve efficiency and cut costs.
- It is perceived as being simpler and more cost effective to implement than a rate of return approach, as it does not require such an extensive level of cost analysis.
- It allows the benefits of greater efficiency to be shared with airport users when the cap is reviewed.
- It allows the airport operator to plan on the basis of reasonably stable cash flows between reviews.
- It provides certainty in planning to customers through defining an inflation-adjusted average level of prices for a period of years.

5.1.2.1 Deficiencies of the Standard Price-Cap Model

The original UK system had some significant drawbacks. Many of these were addressed in the UK in terms of subsequent regulatory regimes and discussed specifically in the Green Paper *A Fair Deal for Consumers*.

The principal problems with the original regulatory structure related to issues such as the following:

- At the start of each new regulatory period the operating cost base is redefined to incorporate any efficiencies made in the intervening period. The regulated entity is thus encouraged to introduce changes that have a positive effect on the operating cost base at the start of the regulatory period where it could extract benefit for the longest period of time before savings are subsumed into the base for the subsequent period. This could have the effect of encouraging a company to implement operating cost savings when the rate of return effect is most advantageous, rather than as soon as possible from a cost efficiency perspective.

- In contrast, this type of regulation encourages airports to delay capital expenditure until the end of a review period, so that the new assets enter the regulated asset base (RAB) as soon as possible and the company can start to earn a return on them. The desire to optimize the capital efficiency of the investment may distort the timing of the investment to one that is sub-optimal from a capacity-planning viewpoint.
- There may be an incentive to over-estimate expenditure depending on the specific clawback provisions of the regulatory regime.
- It becomes increasingly difficult for the company to continue to make significant efficiency or productivity savings from one period to the next, as the regulator re-sets X at each review to incorporate efficiencies made in the previous period. This raises the standards for the company for the following period without conveying any ongoing financial benefit. Therefore, it becomes harder for the company to ‘beat X ’ and its incentive to continue searching for efficiency savings is eroded. This de-motivation also has the effect of stifling innovation and new product development, since the company is no longer rewarded reasonably for making progress in these areas. This amounts to a loss of dynamic efficiency over time. Such an outcome is not in the interests of the consumer in the medium and long term, and it effectively becomes a “no-win” situation for all interested parties.

The UK regulator, the CAA, has launched an extensive consultation exercise on the regulatory model it should apply. The process is currently underway, but it is already clear that significant changes are possible. For example, from one of its consultation papers, the CAA advances many arguments in favour of moving from a single till to a dual till approach.

5.1.3 Australian Model

The structure of regulation governing Australian airports is relatively new, and hence still developing. A comprehensive economic regulatory framework applies to the airports privatized since July 1997 (eleven in total), covering pricing, quality and access issues^[17]. The Australian Competition and Consumer Commission (ACCC) has primary responsibility for implementing and administering the framework of economic regulation.

The main regulatory measures applying to the privatized airports are a price cap on aeronautical services and control of airline access arrangements. The price cap is to apply for the first five years after privatisation with a review to determine if there is a need to extend the price cap beyond that period. The package also includes a number of complementary measures including formal price monitoring, quality of service monitoring and a subsequent review of regulatory relationships. The arrangements are similar in many ways to the regulatory framework that applies to airports in the UK though the arrangements in Australia are more comprehensive due to the existence of access provisions, which are unique to that country.

There are some interesting developments in respect of airports regulation in Australia, which indicate further refinement of the traditional price cap approach. Principal among these is that, in conducting its review, one of the main considerations for the ACCC is airport operator conduct. If operators have a track record of abusing their market power, the ACCC is likely to recommend more stringent regulatory arrangements. At the same time, the review also represents an opportunity for reduced regulatory obligations if the ACCC considers it appropriate, given the performance of the airport in question.

This is a significant advance on the regulatory framework in other jurisdictions where the totality of airport operations is often seen as requiring detailed regulatory oversight. This happens despite the fact that the airport in question may not be abusing its dominant position in certain areas of activity.

Australia has also made significant advances in terms of maintaining incentives for regulated entities. It has espoused a gain-sharing approach through which regulated entities may be allowed to retain some of the benefits of efficiency gains for an extended timeframe beyond the five-year period of the price cap and at the same time a portion of the benefits are shared with customers through reduced prices. According to the Independent Pricing and Regulatory Tribunal of New South Wales^[18]:

the glide path approach exemplifies the most appropriate regulatory approach to benefit sharing.

The ACCC has been amongst the first airport regulators to accept the fact that the dual till and an optimised replacement cost approach to the valuation of airport assets (excluding land), could give more appropriate economic signals to users. It is proposing to allow Sydney Airport to adopt both approaches under a draft decision issued in February 2001^[19].

Aer Rianta is of the opinion that these progressive developments in Australia should be taken account of in compiling a regulatory framework for Irish airports.

5.1.4 New Zealand Model

The Commission in its consultation paper CP2/2001 referred to the New Zealand system for regulating airports. The approach in New Zealand to regulation is essentially a light-handed one whereby airport charges are not directly regulated unless the negotiation process between airport and airlines is deemed to have failed.

The Aviation Regulation Act 2001 requires the Commission to impose the minimum possible restrictions on the airport authority that are consistent with its functions. The Commission could well use some aspects of the New Zealand system as the template for its approach to regulation although it may be premature to assess if this new regulatory approach is effective.

5.2 Forms of Price Cap

5.2.1 Maxima for Individual Categories of Charges

Aer Rianta does not agree with a determination of individual categories of charges for the following reasons:

- While in principle a price cap could be applied to each charge individually, in practice this is likely to be complex to administer and unduly restrictive for a business supplying a dynamic market. In general, an airport operator should be given the freedom to re-balance individual charges in accordance with its commercial objectives and market factors, providing that the general level of charges is not above the level allowed under the price cap. This will also ensure efficient and effective use of resources.
- As the Commission itself notes in its Consultation paper, the larger the number of individual maxima that are set, the less price-setting discretion is left to the airport authority. Such an inflexible approach in the context of a five-year determination period could damage the airport's ability to react to changes in the marketplace and reduce dynamic efficiency.
- Adopting such an approach would also require the Commission to undertake a lengthy and in-depth analysis of the cost base and drivers underlying each individual charging element. This would be difficult to achieve within the short timeframe specified within which a determination must be made. In addition, such an approach would not be in keeping with the provisions of Section 33 of the Aviation Regulation Act 2001, relating to the minimisation of costs and restrictions on the regulated entity.

5.2.2 A Total Revenue Cap

The application of a total revenue cap would incorporate some serious drawbacks in terms of reduced operational flexibility. Most importantly, from Aer Rianta's viewpoint, if the maximum revenues which could be earned were to be capped, any incentives to invest in additional capacity would be immediately eliminated. This outcome would be contrary to the requirement of the Commission under Section 33 to aim to facilitate the development of cost-effective airports which meet the requirements of current and prospective users. This form of regulation could result in significant capacity deficits in the future and ultimately in regulatory failure.

5.2.3 A Hybrid Cap

The Commission has asked that consideration be given to the application of a hybrid cap in regulating airport charges, but Aer Rianta does not believe that this is desirable for a number of reasons.

- Imposition of an absolute cap would reduce incentives to Aer Rianta to grow the business and inhibit appropriate investment decisions. This would contravene the Air Navigation and Transport (Amendment) Act, 1998.
- By combining absolute and individual cap approaches, the inflexibility imposed by both systems are introduced with very little added benefit.
- This structure would be complex to administer and transparency of charging would be very limited.
- The complexity of structure would mean high administrative costs
- This approach would not be consistent with Aer Riana's proposal on a new structure for airport charges, which are designed to provide sound economic signals.

5.2.4 Tariff Basket Approach

The tariff basket approach involves the application of a price cap to the weighted average charge, as developed from weighting individual charges in a 'basket' of charges with their share of the revenue in the previous period – for example, a weighted average of airport charges with weights based on revenue from terminal, runway and parking charges in the previous period. The disadvantages of this approach are similar to those of setting maxima for each charge as outlined above. Specifically, Aer Rianta submits that the application of a tariff basket approach to setting airport charges would be an unsuitable option to apply in an Irish context for the following reasons:

- Problems arise in applying the tariff basket approach when new products, with no previous revenue weight, are introduced. Aer Rianta will be proposing a new structure for airport charges in this submission, which is designed to encourage behaviour modification on the part of users so as to ensure efficient use of facilities in the future. To apply a tariff basket form of the price cap would be inappropriate in such circumstances as it would be inaccurate to base future projections on historic patterns which would no longer be applicable.
- The tariff basket is a very inflexible approach, therefore if it is found to have been inappropriately structured over the period of the price determination, the risk of economic failure and damage to the regulated entity or to its customers is high.
- To fully meet the requirements for the introduction of a tariff basket for airport charges would prove a costly and time-consuming exercise which would not be in keeping with the provisions of Section 33 of the Aviation Regulation Act 2001, relating to the minimisation of costs and restrictions on the regulated entity.

This complex approach would also pose a significant challenge to implement given the tight time constraints implicit in the six months allowed to reach the first determination.

- The tariff basket approach gives a producer the incentive to concentrate price increases on products for which demand is growing fastest (in order to obtain the maximum revenue benefit from such increased volumes) and similarly to raise prices on products for which the demand response to the price change is least (to avoid revenue decline through a strong demand response). This may have a distorting effect.
- The tariff basket is more appropriate to the regulation of industries such as telecommunications, where there is a series of distinct and independent activities and services to which the basket can be related. However, the use of the tariff basket is less appropriate in the case of airport operations where a number of charges have inter-related cost drivers.
- The tariff basket approach is not widely supported. According to MMC4[\[20\]](#), following extensive experience of regulation, neither the airlines, the CAA or the BAA in the UK expressed any support for a tariff basket approach.

5.2.5 Revenue Yield Approach

In the revenue yield approach, the expected revenue from regulated airport charges is divided by the forecast number of passengers to generate an average yield, and the price cap formula is applied to this average yield to generate a permitted revenue yield per passenger. The airport operator adjusts charges to ensure compliance with this cap.

Aer Rianta recommends that the maximum level of airport charges at Irish airports be applied in terms of a revenue yield per passenger for the following reasons:

- The average yield per passenger is a well-established approach to airports regulation. It has been applied consistently by the CAA in regulating the three designated London airports and Manchester since the enactment of the Airports Act in 1986.
- Revenue yield offers no incentives to the airport management company to maximize revenues by distorting tariff increases away from an efficient structure of charges.
- The revenue yield approach gives producers incentives to raise output of the product against which revenue yield is measured, e.g. in the case of passenger revenue yield at airports by stimulating passenger numbers. This would allow Aer Rianta to comply with the requirement under Section 24 (3) of the Air Navigation and Transport (Amendment) Act, 1998 i.e. that it should have due regard to the development of air transport in carrying out its functions and the policy objectives set by the Minister.

- The revenue yield approach provides a better reflection of the underlying fixed costs of the airport business than alternative methods.
- By allowing the airport operator the flexibility to set its own pricing schedules in response to market imperatives, the revenue yield approach requires less intervention on the part of the regulator and encourages more effective and efficient use of resources.

Aer Rianta recommends, that the determination specifying the maximum level of airport charges under Section 32 of the Act should provide for an overall limit on the total level of charges rather than individual charges or to a basket of charges. The company recommends a revenue yield price control on the basis that capping the change in revenue per passenger would be the most appropriate way of expressing the determination for maximum airport charges for Dublin, Cork and Shannon Airports.

5.3 Aer Rianta's Proposed Framework for the Economic Regulation of Airport Charges

In response to the Commission's query as to the type of regulatory framework advocated and having examined the advantages and disadvantages associated with other regulatory regimes, Aer Rianta is proposing the following model which it feels is most appropriate for implementation in the Irish context.

5.3.1 Framework for Regulation

Aer Rianta sees the predominant role of economic regulation as maximising the welfare of customers and businesses by balancing overall needs and objectives. In maximising welfare, regulators act as a market surrogate where there is no effective competition. As market surrogate, the regulator attempts to drive the economic efficiency that would be delivered if effective competition were possible.

Aer Rianta believes that the best approach to adopt in fulfilling these aims is incentive-based regulation. Incentive-based regulation is a "win-win" approach for firms and customers. Firms "win" by having the incentive to achieve higher profits through increased performance, while customers "win" by receiving better value and more innovative products than they otherwise would have under traditional rate of return or cost of service regulation.

A recent wide-ranging review of regulation in the UK [\[21\]](#) recommended that the interests of consumers should include

their interests in quality, range of services, continuity and availability of supply as well as price, and their medium and long term interests as well as their immediate or short term interests.

In achieving this, the report proposed that regulators

should make explicit the need to ensure that the regulated companies have sufficient finance to carry out their functions.

Aer Rianta believes that adopting such a balanced approach in relation to the regulation of airports will deliver the most efficient outcomes.

Incentive regulation puts the onus on the business to achieve efficiency improvements and meet customer requirements. Aer Rianta is of the opinion that the most effective way to do this is to provide the company with appropriate commercial incentives. These can be achieved by the Commission through the adoption of standardized economic asset valuation processes, allowing a rate of return that is commensurate with risk, sharing of out performance through glidepaths, and allowing flexibility in the setting of service standards.

5.3.2 Form of Regulation

Aer Rianta proposes a variant of the Price Cap or RPI-X form of regulation which is consistent with best practice in other jurisdictions. While our proposal retains the basic strengths of the RPI-X methodology, it allows for sharing of benefits of unanticipated efficiency gains between the customer and the airport on an ongoing basis, which will ensure that Aer Rianta is continually motivated to improve efficiency (see Section 5.3.5 below).

Aer Rianta proposes that the type of price cap that should be applied in the case of Irish airports is the Revenue Yield model set out at Section 5.2.5 above, as it is the most appropriate given its greater simplicity of administration, pricing flexibility and advantages in terms of overall economic efficiency.

5.3.3 Choice of Index

Aer Rianta favours the CPI Index as the most stable and rational option to use as the basis for the price cap. Warburg Dillon Read, SH&E and AIB Corporate Finance also recommended this approach in their report to the Ministers for Finance and Public Enterprise in 1999. CPI is relatively simple and easy to understand on the part of direct and indirect consumers and is used in the UK and Australia.

The alternative approach is to use industry specific indices, as were considered in the UK Utility Review. Whilst these indices may reflect more accurately the costs of a particular industry, they may cause confusion and suspicion where the regulated business is itself a major determinant of the industry-specific costs concerned. Moreover it is not obvious what the appropriate industry specific index would be in the case of Irish airports.

5.3.4 Specific Factors

One of the most important aspects in the design of a robust regulatory system is the striking of a proper balance between risk and reward. Unanticipated cost savings and cost increases can come from exogenous factors which are not within the control of the company. If the entire effect of these is reflected in profits rather than prices, then profitability will vary considerably and the cost of finance to the company is likely to increase. Accordingly, it makes sense to measure the size of these effects and insure the company against them by adjusting prices to take account of them, in whole or in part, and passing the impact through to customers. Cost pass-through mechanisms exist to take account of these effects.

One of the key externally imposed risks and uncontrollable circumstances, which impact on aeronautical revenue, is the additional security costs which may be exogenously imposed in accordance with new directives at national or international (e.g. ICAO or EU) level. Airports must implement these regulations regardless of the cost implications. For example, recent decisions by the UK Government in respect of greater segregation of arriving and departing passengers has resulted in the BAA increasing planned spend by 10% over the next ten years to fund the resultant required changes to infrastructure in its forthcoming capital investment programme.

The UK airports regulator allows the BAA and Manchester to pass through sudden and unforeseen increases in security costs at a level of 95 per cent (the S factor in the UK pricing formula). Partial pass through ensures that the airport authority has an incentive to find the least cost method of implementing the new security arrangements while the requirement that the cost be passed through one year in arrears affords the regulator an opportunity to verify the additional costs. It is debatable, however, whether there should be any reduction in the costs imposed by mandatory security requirements.

The cost associated with economic regulation is also a legitimate externally imposed expense over which the airport authority has no discretion and should constitute part of the overall airport cost base.

There have been suggestions by some airlines in the UK that a volume adjustment term should be included in the pricing formula for regulated airports in that jurisdiction to allow for divergences between traffic forecasts and actual demand. This arose from concerns that forecasting errors could lead airports to make substantial windfall gains or losses which could not be corrected until the next quinquennium. Whilst agreeing that it might be appropriate for Manchester airport to share the forecasting risk with airline customers given that it had little control over the underlying economic forces which are the principal drivers of traffic patterns, the CAA and MMC^[22] noted that a volume term would ultimately have significant drawbacks which outweighed the advantages.

Firstly, to the extent to which the objective of the volume adjustment term is to fix the airport's projected revenues, then the term would have to be symmetrical i.e. the TTT term would have to accommodate both under and over performance and would therefore lead to a less stable and more unpredictable charging regime.

A symmetrical volume term could introduce perverse signals – it would have the effect of causing airport charges to rise when airline revenues might be under pressure due to disappointing traffic volumes and would send inappropriate economic signals if charges were to be reduced as congestion increased due to greater volumes.

Most importantly, the MMC claimed that the adoption of a volume term could reduce the incentive to achieve traffic growth and to provide facilities to meet the growth in demand. Such a term would also run contrary to the requirements of Aer Rianta under the Air Navigation and Transport (Amendment) Act, 1998 whereby it must develop air transport at its airports. For these sound reasons, Aer Rianta is of the opinion that a volume adjustment term should not be included in the formula for Irish airports.

However, Aer Rianta does consider that with a revenue yield approach to a price cap, there should be a correction factor for prior year errors in the regulatory formula. This need arises from forecasting uncertainty. When airport charges are set, Aer Rianta is basing its revenue projections on forecast data, and the actual outcome may show differences for a number of reasons. Differences may arise due to the contribution from the various revenues streams diverging from the forecast, or the number of passengers might grow faster than projected while the number of movements might grow more slowly. The revenue yield per passenger would be distorted from the projected value in either case. Hence there should be a provision for adjustment (upwards and downwards) of the revenue yield allowed in later years.

5.3.5 Incentive Mechanism

Implicit in the concept of independent economic regulation is the principle that the regulated company is entitled to retain profits on its regulated activities which it has earned through productivity or efficiency enhancements. However, by making a cost saving, the company demonstrates to the regulator that a saving is possible. In traditional forms of incentive regulation, the regulator then insists upon that saving being reflected in lower prices at all future reviews. Over the long term, this “ratchet effect” reduces the incentive for the company to make the cost saving in the first place. If the temporary gain from the saving (within the regulatory five year term) is insufficient to compensate for the permanent effort of maintaining costs at the reduced level, the company may prefer not to make the saving.

Aer Rianta proposes that in the medium and long term, the interests of the consumer, the regulated company and the shareholder are best served by a charging regime which allows for the sharing of both operating efficiencies and capital efficiencies on an ongoing basis. This requires that a proportion of the unanticipated efficiency gains of both types be retained by the regulated company at the end of each quinquennium. This approach is the one best geared to drive continuous innovation, efficiency and service improvements to the benefit of both consumer and regulated company. Furthermore,

a sharing element in the formula will reduce the incentives for, and suspicion of, gaming between the regulator and the regulatee.[\[23\]](#)

An approach which could be used to deliver the benefits of a profit sharing mechanism is the Glide Path model. This would facilitate the progressive phasing of unanticipated operating and capital efficiencies and productivity gains into the cost base of the regulated entity over an extended period. Such a process would

allow the retention by the regulated entity of some of the differential between projected and achieved efficiencies as a reward/incentive rather than having the benefit immediately subsumed into the baseline at the start of the next review period (as happens in traditional formulations of the RPI-X model).

The tendency to skew the timing of investment within a review period which is implicit in the earlier UK regulatory models would also be reduced, as savings would be rewarded appropriately regardless of timing. This could ultimately facilitate more efficient capital expenditure by the regulated airports.

The ‘glide path’ approach to the sharing of benefits is proposed in the case of the Australian electricity industry or, more recently, as suggested in the UK by the CAA Economic Research Group for the regulation of the air traffic agency NATS. We understand it has also been implemented in the 1999 review of electricity and water companies. It is also the basis for debate and consultation in preparation for the next determination of airport charges in the UK. Most proposals of this kind suggest that the glide path should extend over two review periods.

The estimation of an ‘unanticipated efficiency’ for the purposes of such a mechanism is potentially a difficult issue, but some regulatory advisors are suggesting that the approach adopted should be quite a simple one where there are no distinctions made between capital expenditure efficiencies and operating efficiencies, and the difference between expected and actual spend is defined as the measure of efficiency, subject to confirmation that program outcomes have been achieved as planned. This amount is then deemed to be the ‘benefit’ to be shared between consumers and the regulated entity.

5.4 Regulation As a Group

Section 32 subsection 4 of the Aviation Regulation Act 2001 states that

Where it appears to the Commission that two or more airports are either-

- a) managed by the same airport authority, or*
- b) that they are owned by the same person and operate as a group of airports whose activities are co-ordinated by that person,*

any determination in relation to any one of those airports may be made by reference to the aggregate of amounts levied by way of airport charges at that airport and amounts so levied at the other airports.

The Commission is thus granted the discretion to choose to apply a single price cap to a group of airports or to set individual price caps at each airport. Aer Rianta is strongly of the opinion that Dublin, Cork and Shannon airports should be regulated as a group. This is consistent with the strategic approach adopted by Aer Rianta and in Aer Rianta’s opinion it allows the company to best serve the obligations laid down in Section 23 of the Air Navigation and Transport (Amendment) Act 1998, particularly in relation to the promotion of investment at its airports. Regulation as a single entity provides the framework for the introduction of relative charges, balancing demand and capital expenditure between the three airports while ensuring economic efficiency. Aer Rianta would therefore advocate the economic regulation of Dublin, Cork and Shannon Airports as a single unit. It should be noted that having the airports regulated as a unit does not imply that

the airport charges would be the same at each airport.

5.4.1 Economies of Scale and Cost Efficiencies

The airport sector bears some of the characteristics of a natural monopoly. A natural monopoly occurs where the structure of the market is such that a single firm produces a range of output more cost effectively than an alternative group of firms. In order to operate with a degree of productive efficiency, the airport operator must produce a sufficiently high level of output.

The nature of the airport business is such that it includes a high level of fixed and sunk costs with the result that the ratio of fixed to variable cost is extremely high. Investment in airports is subject to lumpiness and indivisibility. The aviation business is characterised by economies of scale and economies of scope. If the three Aer Rianta airports are regulated as a single unit this will present opportunities for maintaining benefits derived from economies of scale, scope and density. This will play a crucial role in the continuing long-term development of cost effective airports.

Economies of scope and scale occur in the airport industry where airports can spread corporate overheads, specialist aeronautical skills, administration costs, research and development, and maintenance across a number of aeronautical and non-aeronautical related functions. The operation of the three Aer Rianta airports as a group gives rise to various cost efficiency gains through the pooling of resources in areas such as human resources, retailing, property, finance, compliance/regulation and information technology.

If the three airports at Dublin, Cork and Shannon were regulated as single individual units, some of the cost efficiency gains derived from the operation of the airports as a unit would be lost giving rise to additional costs at individual airport level. Such an approach would counteract the requirement in Section 33 of the Aviation Regulation Act 2001 whereby the Commission is obliged to facilitate the development and operation of cost-effective airports. In order for the benefits of effective networking and economies of scope to be realised in the aviation sector it is essential that a single price cap be introduced across the three airports.

5.4.2 Implications for Capital Investment

The regulation of Aer Rianta as a unit is necessary to ensure a balanced and effective approach to capital expenditure across the three airports. The regulation of the three airports under individual price caps could have serious negative implications for capital investment in relation to the individual airports.

Dublin, Cork and Shannon airports are at different stages in their development cycles, therefore the investment requirement at each airport may differ considerably. This will exacerbate the potential capital expenditure and demand imbalances occurring between the three airports.

There are high costs associated with the development of new aeronautical capacity. If the capital expenditure requirement is compared with the revenue derived at each airport under individual price caps, investment incentives can be severely limited. This gives rise to a grave concern that the application of regulation to the three airports on an individual basis could be potentially detrimental to dynamic efficiency, reducing the likelihood of capacity expansion. This would call into question the ability of the individual airports to meet the long-term requirements of users in terms of capacity provision and the prospects for future development for the Irish airports. Such an outcome would be potentially contrary to the objectives outlined in Section 33 of the Aviation Regulation Act 2001 whereby the Commission is obliged to have regard to the level of investment required to meet the current and prospective needs of users when determining airport charges.

5.4.3 Impact on Competition in the Marketplace

Limited but sustainable opportunities exist for competition between the three Aer Rianta airports. In the interest of national development, it is important to safeguard the balanced competitive position of the airports at Cork and Shannon with respect to Dublin. This can be achieved most effectively by regulation of the airport group as a single entity.

Different patterns and volumes of demand exist across the three airports. Cork and Shannon airports have much smaller traffic volumes than Dublin. If airport charges were to be determined on an individual airport basis, the average revenue requirement per passenger at Cork and Shannon would exceed that of Dublin due to the fact that operations at the regional airports are on a smaller scale. This could reduce the ability of the regional airports to compete in the marketplace, advance the attractiveness of Dublin as a primary point of entry and ultimately threaten market stability and the growth potential of Cork and Shannon. This would have implications for the local regional economies in the airports' catchment areas.

This would not be in keeping with the spirit of the provisions laid down in Section 33 of the Aviation Regulation Act 2001 whereby the Commission is obliged to take account of issues such as the need for airport investment and the airport's ability to earn a reasonable rate of return in the context of sustainable and profitable operation when determining airport charges.

Regulation as a unit would also allow flexibility in that airport charges need not be the same at each airport. This level of flexibility is necessary in order to pursue the objective of cost effective airports.

5.4.4 Economic Efficiency

The introduction of three individual price caps across the airports would have implications for economic efficiency. The introduction of individual price caps at the three airports could create induced changes in airport charges. The induced changes in airport charges could have implications for allocative efficiency at the three airports.

Allocative efficiency would be reduced if the induced changes in airport charges increases the imbalance between the price and the marginal cost of production for aeronautical services.

The introduction of individual airport regulation could limit the ability of the airport authority to coordinate and plan its aeronautical activity in a centralised manner. This in turn could reduce the benefits derived through economies of scope and scale and could lead to a loss in productive efficiency.

Separate price caps at each airport could impinge on the ability of the company to manage capital expenditure across the three airports. A failure to introduce an appropriate level of capital expenditure would result in a loss in dynamic efficiency.

The combined effect of losses in allocative, dynamic and productive efficiency would result in a substantial loss in economic efficiency across the three airports. In the interest of securing an appropriate level of economic efficiency in the operation of the airports, economic regulation should be introduced by way of regulation as a unit.

5.4.5 Regional Policy

The requirement of a single price cap in relation to the three airports is important not only for market stability but also in the interests of regional policy development. The regional importance of airport infrastructure is widely acknowledged. Airports play an important role in promoting the economy of the surrounding area in which they are located. Regional airports determine the locational competitiveness of different regions. It is recognised that access to airport infrastructure is a key factor in promoting balanced economic growth between the different regions. The regional contribution of airports has been discussed in an earlier chapter.

In order to protect the long term viability and development of the regional airports a single price cap for the three airports is necessary. The Aviation Regulation Act 2001 recognises the importance of airports in a regional context, this is enshrined in the provisions of Section 33(d) where the Commission, in making a determination on airport charges, is obliged to take into consideration the contribution of the airport to the region in which it is located. This is also referred to in Section 10 of the Act.

The introduction of separate regulation for each of the three airports would have implications for development and capacity expansion at each of the airports. The application of individual price caps could potentially distort the market between Cork Airport and Shannon Airport due to the relative timing of lumpy investment between the two airports. It would also provide strong disincentives for investment in regional airports. The company would be incentivised to concentrate capital expenditure on Dublin Airport as this would present the least risky option for the company. This would create an imbalance between the availability of aeronautical services at Dublin and the regional airports. The future development of regional airports would be severely restricted. This would not be in keeping with the obligation on the Commission to have due regard to the contribution of an airport to a region in which it is located. In order to allow for the provision of the necessary level of aeronautical services in a viable cost effective manner at Dublin, Cork and Shannon, it is important that the three airports are regulated as a

single unit.

5.4.6 Proposal for Regulation as a Unit

In summary, regulation of Aer Rianta's three Irish airports as a group is required to

- reap the benefits of networking, economies of scale and scope
- introduce timely and necessary expenditure programming in all three airports
- facilitate balanced demand between the airports
- assist in the future development of regional airports
- reduce the regulatory burden experienced at individual airports
- acknowledge the role of the airports in relation to regional policy
- maximise economic efficiency at all three airports

In order to further the development of cost effective airports it is appropriate for the Commission to regulate the airports at Dublin, Cork and Shannon as a unit. The introduction of a single price cap for the three airports will permit a structure of relative charges that will maximise overall economic efficiency. Regulation as a single entity will grant Aer Rianta the freedom to continue its successful strategic approach to airport management.

5.5 Advantages of the Aer Rianta Proposal

The proposal outlined above results in more efficient charges to users, more closely mirrors the competitive marketplace and would enhance the airport management and regulatory processes in a number of defined ways

- Facilitates the proper development and operation of cost effective airports which meet both the short and long term needs of current and prospective users of the airports.
- There would be a transparent and ongoing incentive to achieve cost savings for the regulated company. This would deliver better value for airport users.

- It encourages efficient investment decisions in the context of sustainable development of the airports. The tendency to skew the timing of investment within a review period implicit in the earlier UK regulatory models is reduced as savings would be rewarded appropriately regardless of timing through the application of a glide path.
- This approach is based on tried and tested methods, in which known weaknesses have been progressively reduced/eliminated.
- The revenue yield approach to a price cap formulation minimises the regulatory burden and provides Aer Rianta with an economic mandate to manage demand and capacity at its airports
- It encourages the airport authority to deliver on the policy objectives set by the Minister for Public Enterprise and to ensure the proper development of the airports as required under the Air Navigation and Transport (Amendment) Act 1998.
- It is less likely to result in regulatory failure through distortion of current or future markets.
- It takes account of best practice in regulation worldwide, both in airports and other industries as well as the recommendations arising from recent reviews of regulatory frameworks in other jurisdictions.

5.6 Summary

Aer Rianta has extensively researched the regulatory regimes in other jurisdictions in the UK, Australia, New Zealand and the US and proposes in line with best practice that

- The three Aer Rianta airports should be regulated as a unit as is allowed for in the legislation and to comply with the requirement that the Commission should have regard to the contribution of airports to the regions in which they are located
- The determination specifying the maximum airport charges under Section 32 of the Act should be measured in the form of the revenue yield per passenger, and the determination should set an overall limit on the amount which may be levied by the airport operator by way of all airport charges at the airport

- The price cap level may need to be adjusted within the regulatory period to take account of the capital investment profile of the airport authority
- Specific incentive mechanisms should be considered to share the productivity and efficiency benefits between airport authority and customers. This could be achieved by adopting a “glide path” approach over two quinquennia to ensure continuous improvements to productivity and rapid adoption of best practice
- Protection should be factored into the determination against increases in costs which are outside of Aer Rianta’s control due to policy or legislative/regulatory requirements
- The price index in the formula should be the Consumer Price Index (CPI)

6 The Regulatory Till

6.1 The Single Till/Dual Till Debate

Section 33(e) of the Aviation Regulation Act, 2001 requires the Commission, in making its determination to have due regard to:

the level of income of the airport authority from airport charges at the airport and other revenue earned by the authority at the regulated airports or elsewhere

The impact of the composition of the regulatory till on the level of airport charges has provoked much debate and discussion in recent years. The debate has been centred around two broad concepts – the single till and dual till. In particular, discussion has focused on the appropriateness of the single till approach for determining airport charges following the ending of intra-EU duty free sales and the need for capital investment and additional capacity at European airports.

6.1.1 The Single Till

The single till principle has been widely applied in the airport industry since the Chicago Convention of 1944. The underlying premise is that due to the complementary relationship that exists between aeronautical and some other selected airport activities, revenue from the latter should be used to supplement aeronautical revenue thereby allowing for the cross-subsidisation of aeronautical activities by non-aeronautical activities. Thus aeronautical pricing proposals have traditionally been formulated by combining net revenue from the aeronautical activities and net revenue from some selected airport activities.

The single till approach assumes a complementary relationship exists between certain non-aeronautical and aeronautical activities. This concept is clearly not one which has a rational economic basis, and indeed conflicts with much current thinking on competition and market dynamics. Furthermore, although the principle was widely applied, there has never been a consensus on which activities should actually comprise the single till and there has been decreasing support for this approach in recent times.

6.1.1.1 Shortcomings of the Single Till

The single till has been widely criticised on both economic and commercial grounds and a trend away from the single till has been observed in a number of jurisdictions in recent years. For example, in South Africa, Germany and many of the largest US airports, the single till approach is being or has already been abandoned.

Some of the implications of the single till which cause concern for airports were set out in an ACI-Europe working paper for the ICAO Conference of the Economics of Airports and Air Navigation Services (ANSCConf) in June 2000^[24]. The paper states that while the single till helps to reduce airline operating costs in the short term through lower airport charges, it distorts the market, and gives rise to three specific problems.

- First, it takes commercial revenues which could be used to finance capital investment and instead gives that money back to airlines in the form of lower charges. In that way, it reduces short term costs at the expense of longer term investment.
- Second, the channeling of commercial revenues back to airlines through the single till reduces the airports ability to develop new and better commercial facilities for the benefit of passengers. As a result, the single till may actually reduce the amount of commercial revenue available to airports in the longer term.
- Third, as airport traffic increases, the operation of the single till forces down charges, merely contributing to the creation of additional congestion and environmental pressure while denying the airport the resources to counter these problems.

The application of the single till has a number of implications for the aviation market. Under the single till prices for aeronautical services are supplemented by revenue from non-aeronautical activities. As a result, prices do not signal the true cost of provision of aeronautical services and may be lower than if they were

based on the true costs of aeronautical operations at airports.

The formation of pricing structures for aeronautical services through the single till has implications for economic efficiency in the market. In the case of a congested airport facility where the price of aeronautical services is derived under the single till principle, the price may fail to cover the marginal cost of production of aeronautical services. This gives rise to allocative inefficiency, the price charged to users for the last unit of output is less than the marginal cost of producing that last unit.

However, in an airport facility with spare capacity where the marginal cost of production is relatively low, the single till may enhance allocative efficiency in the short term.

The impact of the application of the single till in the market for aeronautical services critically depends on the level of aeronautical capacity available at an airport facility. Where an airport facility has available capacity the introduction of the single till mechanism allows the airport authority to reduce airport charges sufficiently to encourage airlines to use the available infrastructure and develop air traffic. In the case of an uncongested airport facility the application of the single till may assist in achieving market equilibrium. However, where an airport facility is operating at or near capacity, the single till gives rise to under-priced aeronautical services, inflated demand, disequilibrium in the market, and the probability of exacerbating congestion. The price of aeronautical services derived from the single till is artificially low and inhibits the market from clearing. The single till also results in a transfer of scarcity rents in favour of the airlines operating at the congested facility.

The single till mechanism may distort investment in both aeronautical and non-aeronautical facilities and infrastructure. The pricing policy for airport charges has traditionally been derived through the single till using non-aeronautical revenue to cover a proportion of common costs incurred in the provision of aeronautical services. Since a return on aeronautical assets through airport charges is not required to cover the full stand-alone costs incurred in the provision of aeronautical services, the incentive for investment in aeronautical capacity is reduced. Non-aeronautical revenue streams are used to supplement aeronautical revenue through the single till and act as a deterrent to investment in non-aeronautical airport activities. The combined effect of this is reduced dynamic efficiency in the airport sector. This is an important factor as airport congestion, where there are no other factors such as physical constraints limiting the airport's ability to expand, is a reflection of a lack of dynamic efficiency over time.

The application of the single till increases the level of uncertainty associated with the forecast return on aeronautical assets. Under a single till approach uncertainty exists in relation to the revenue returns derived from aeronautical charges due to the combination of the risk associated with demand for aeronautical services and those inherent in non-aeronautical activities. Aeronautical charges are susceptible to changes in non-aeronautical revenues and an increase in non-aeronautical revenue will drive down airport charges just as a corresponding reduction in non-aeronautical revenues will force an increase in airport charges.

The single till mechanism extends the remit of regulation beyond the confines of aeronautical charges. The application of the single-till may serve to reduce the focus of regulation on the natural monopoly elements of the single-till. It allows an airport regulator to extend the scope of ex-ante regulation into commercial and retailing activities. The single-till exposes non-aeronautical activities to the potential market distortion of regulation thereby weakening incentives for non-aeronautical airport investment. Irish competition law provides the basis for the application of ex-post regulation and this is considered a more appropriate model in safeguarding competition in this instance.

In many other regulated sectors businesses combine both regulated and unregulated activities. However with the exception of rail networks, the single till principle is not deemed applicable in other regulated sectors. This is because the single till provides a method of pricing which does not encourage best use of airport resources or ensure economic efficiency.

6.1.2 The Dual Till

The dual till system separates aeronautical and non-aeronautical activities of an airport enterprise in the regulatory accounts as they are treated as separate and independent segments of the business. Airport charges are levied to cover the costs directly attributable to aeronautical activities plus the aeronautical share of common costs incurred by the airport facility. Application of a dual till would, in practice, result in an increase in airport charges, due to the fact that the current practice effectively cross-subsidises airport charges from other revenue streams. The introduction of a dual till offers substantial economic benefits over the single till approach as it provides for the possibility of enhanced economic efficiency.

Dual till offers benefits in terms of dynamic efficiency as it increases the incentive to invest in both the aeronautical and non-aeronautical sectors of the business. The incentives for investment in aeronautical assets are increased as the airport authority can earn a full return on aeronautical assets. The incentives for investment in non-aeronautical activities are also enhanced as the entity is entitled to a proper competitive return on these activities also.

In the adjustment from a single till to a dual till mechanism the prices of under-valued aeronautical services increase in line with their marginal costs of production. This ensures an improvement in allocative efficiency. It should be noted, however, that under a dual till approach there is a danger that in the case of an uncongested airport the marginal cost of production for aeronautical services will fail to cover the average revenue requirement for aeronautical assets, therefore allocative efficiency is not always achieved.

Under the dual till, prices offer a more accurate reflection of the marginal costs of production enabling efficient signaling for use of aeronautical capacity in the market. The approach also provides efficient signals in the market regarding new investment in capacity. This eases congestion and allows the market for aeronautical services to clear. It also enables a more equitable distribution of scarcity rents between the airport and airline industry.

The dual-till approach focuses regulation exclusively on the natural monopoly elements of the airport business, which is the only area where economic regulation is justified. There is a consequently lower level of uncertainty in forecasting a return on aeronautical investment as the risk factor involved relates solely to aeronautical activity. The dual till approach is increasingly gaining currency amongst experts in the area of airport regulation as the most rational approach from an objective economic viewpoint.

6.1.3 The Current Perspective

Widespread debate is currently taking place concerning the application of the single till /dual till mechanism in aeronautical pricing. The debate on the single/dual till approach to airports regulation is best illustrated by reference to the UK, one of the most evolved regulatory environments for this sector. During its last review of BAA, the MMC[25] found that:

there are, in our view, evident problems with the single till approach. Charges are lower than the overall cost of supplying the airport services to airlines which is not in principle an economically efficient way of pricing.

The UK airports regulatory authority the CAA acknowledges the cross-subsidisation effect of the single till[26],

Depending on the level of commercial profits, the single till may result in the commercial activities bearing a substantial share of an airport's common costs. It may even result in cross-subsidisation of the aeronautical activities if these fail to cover their incremental cost.

The CAA published an important consultation paper last December entitled "*The 'Single Till' and 'Dual Till' Approach to the Price Regulation of Airports*". [27] The CAA concludes that the single till mechanism extends the parameters of airport regulation into non-aeronautical activities,

The most basic argument against the single till approach is that it is aeronautical charges relating to services provided by a firm with substantial market power which should be subject to economic regulation, not the commercial side of the business. To incorporate the commercial costs and revenues into the equation therefore widens the scope of the regulatory framework beyond the basket of services for which a robust diagnosis of market dominance is possible and for which price controls have therefore been deemed appropriate

The CAA divides an airport's unregulated activities into three broad categories

- Essential services/facilities for airport users e.g. check-in desks
- Non-essential services/facilities e.g. business lounges, ground handling activities
- Other services/facilities e.g. retailing, office space, car parks and hotels

The CAA is against regulating services/facilities where airports do not have monopoly powers. These include business lounges, retailing, car parks and hotels. They are considered non-essential for airport users or else subject to competition.

The MMC expressed its concern that a move to a dual till system could result in a windfall profit gain for the airport authority[28],

to abandon the single till approach and to base charges on costs of supplying airport facilities would allow BAA to make very large profits on its commercial activities, since we do not have the power to introduce any windfall tax on such profits.

The CAA discusses the potential benefits to be gained in the move to a dual till. It recognises that windfall gains may occur through the removal of the single till where earnings are redistributed from airlines to airports. However, this redistribution is seen as a by-product of the improvement in economic efficiency associated with a dual till approach[29],

a dual till would increase an airport's incentives to invest appropriately in new facilities, the scarcity rents would in the long run decrease(subject to exogenous constraints, such as restrictions on planning permission).

Even if planning restrictions constrained new investment, a move to a dual till would probably also increase pricing efficiency at congested airports because the difference between the prevailing and the market-clearing level of airport charges would become smaller. This would then be accompanied by a non-transitory transfer of scarcity rents from the airlines to the airports. This redistribution would be a by-product of an increase in economic efficiency....

In examining the Sydney Airports Corporation Ltd pricing proposal for Sydney airport, the ACCC concluded that the preferred approach was that of a modified dual till where certain non-aeronautical activities are considered when pricing aeronautical services.[30]

The model is applied as follows. Services defined as 'aeronautical' under Declaration 89 are incorporated into the cost base from which a 'dual till' estimate of aeronautical revenues as determined. The contribution from aeronautical-related services is then subtracted from this figure to generate the total allowable revenue from aeronautical services

6.2 Aer Rianta Proposal For The Regulatory Till

Section 33 of the Aviation Regulation Act 2001 requires that when making its determination on airport charges, the Commission shall aim to facilitate the development and operation of cost-effective airports which meet the requirements of users, having due regard to a number of issues including

- the level of investment in airport facilities
- a reasonable rate of return on capital employed

- the efficient and effective use of resources by the airport authority

Aer Rianta strongly believes that the dual till approach should be adopted to achieve these objectives. The company believes that it would make more economic sense to have all of the costs of provision of aeronautical services recovered by airport charges, hence ensuring better allocative efficiency and price signalling. Moving to the dual till would enhance dynamic efficiency and therefore would best serve the long-term development of the airports sector. It should be noted in this context, that in the case of other regulated Irish companies such as ESB, Bord Gais and Eircom, regulated activities are not subsidised with revenue from contestable markets.

7 The Regulated Asset Base

7.1 Introduction

In determining the permitted rate of return in an RPI-X type model, key considerations are the initial Regulated Asset Base (RAB), how this RAB is rolled forward, and how it is depreciated. It is anticipated that the Commission will take a “building block” approach to determining Aer Rianta’s revenue requirement, from which the airport charges will be derived. In its most basic form this is normally assessed as the sum of the return on capital, the return of capital and operating costs. Since the first component to this equation is the product of multiplying the value of the assets associated with the provision of services by an appropriate risk adjusted rate of return and the second is the depreciation of the assets, the value ascribed to the assets is typically an important determinant of regulated revenues. It is essential, therefore, to ensure that only appropriate assets are included in the regulated asset base which is in turn related to the structure of the regulatory till. Aer Rianta has already outlined its views on the appropriate approach to adopt in relation to the composition of the regulatory till in Chapter 6.

7.2 Asset Valuation Methodology and Approach

Determination of the value of the RAB is central to the determination of two key components of the overall regulatory revenue requirement: the return of capital

(i.e. depreciation) and the return on capital (i.e. the cost of capital). These components typically represent a significant proportion of allowable revenues^[31].

After the RAB composition has been defined, therefore, it is important that the appropriate values are attached to the included assets. This is particularly relevant in the context of a capital-intensive industry such as airports where many assets are relatively long-lived and expensive. Under-valuation of assets and inadequate depreciation provisions will not allow a company to generate enough cash for expansion or replacement capital projects. The cost of capital to the company will be increased, thus deterring capital investment. The decisions on the valuation and depreciation policies are therefore of long term significance. In the case of state companies it has generally been considered appropriate to involve a representative of the shareholder, such as the Minister for Finance, in discussions on the initial valuation of the asset base due to its fundamental impact on the future valuation of the enterprise.

Disagreements on methodology can have material effects for regulated companies; for example, in the British Gas appeal to the MMC against the last Ofgas determination, the differences in the proposed costs of capital were small, whereas the difference between the parties in relation to the RAB amounted to £6.7bn (65%).

One of the factors which the regulator is directed to consider in setting prices is “the efficient and effective use of resources by the airport authority”. It is likely, therefore, that economic efficiency will be a key consideration in setting a regulatory framework for Aer Rianta. The Commission has spoken in favour of the principle of economic efficiency, specifically in terms of maximising economic welfare.

As discussed earlier, economic efficiency can be discussed in terms of three dimensions - allocative, productive and dynamic efficiency, which must each be balanced and maintained within the regulatory framework. This has been considered by the CAA:^[32]

While efficient operation of airports could, for example, require the CAA to put heavy weight on an airport’s achievement of cost efficiency and to transfer any cost savings into lower airport charges, such a regulatory policy could limit the airport’s incentive to take risks and invest in new facilities. Once such a trade-off is accepted, it may be a superior long-term strategy to sacrifice the immediate transfer of some short-run efficiency gains to users in order to incentivise the appropriate enhancement of capacity.

Thus in considering the various valuation methodologies, economic efficiency, and specifically the balance of the various elements must be a key consideration.

It should also be noted that the approach to valuation can vary across asset categories, and this has occurred in recent regulatory decisions in Sydney, Wellington and Christchurch.

7.2.1 Valuation Approaches

The Commission's consultation paper CP2/2001 notes that "A number of different approaches to asset valuation are available for consideration, including historic and current book values, current market values (in the case of a company with publicly traded shares) and net present value". The most relevant of these approaches are considered in detail below.

7.2.1.1 Historic Cost

Aer Rianta's assets are currently held at depreciated historic cost (HC) - an accounting-based approach, where the current book values are used. Historic costs are generally reported in an organisation's annual accounts and for this reason are easily obtainable and verifiable. Thus, as an objective and practical approach to measuring the value of the RAB, historic cost scores highly.

The main shortcoming of the approach is that in times of rapidly changing prices or technological changes, the historic value of assets will quickly cease to bear much relationship to the costs that a new entrant would incur in order to provide the same service. Even in times of lower inflation, historic costs can diverge considerably from current costs for those assets over long periods.

Under either of these circumstances, prices based on an HC asset valuation will not provide appropriate signals about the current cost of the underlying assets and therefore may not achieve an economically efficient allocation of resources.

Historic book value is unlikely to provide Aer Rianta with adequate cashflow to fund its capital programme.

A HC approach to asset valuation has been heavily criticised in the UK as understating the real economic amount of capital employed in a business, providing poor economic signals to users and airports, and being a poor base on which to make decisions on real allocations that depend on regulated prices. As a result of this criticism, the BAA and British Telecom both revalued their assets using a replacement cost approach in the late 1980s and 1990s.

7.2.1.2 Indexed Historic Cost

A variety of approaches exist for revaluing assets to current costs thus enabling the asset base to keep pace with inflation and technological changes.

The simplest approach is to index the historical cost to current values either using an inflation index or an industry/asset specific index. This approach has the advantage of being a relatively transparent calculation, which may be easily verified by reference to the historic cost reported in the company accounts, and publicly available information on indices.

Using an inflation index has a further potential advantage in that it ensures that the value of capital held in the company is maintained in real terms. This is an issue of key importance for prospective equity or debt holders who provide capital funds on the expectation that charges will be set at a sufficient level to allow a return on the real value of their investment.

The disadvantage of using an inflation index is that it may result in values, which do not precisely reflect asset replacement costs if actual costs have not moved in line with general prices. Consequently, inaccurate signals may be sent about the efficient allocation of resources. This would be the case, for example, if the cost of rebuilding an airport, or certain aspects of it, had fallen in real terms due to improvements in technology and materials or any cyclical effects related to the cost of a downturn in the construction industry.

The alternative would be to use industry or asset specific indices, which might be expected to capture industry or asset specific trends and hence provide a better measure of actual costs. However the asset indices must be specific to the businesses' actual assets for this to be the case and often the relationship is more approximate. The use of asset specific indices in this approach does not guarantee the maintenance of stakeholders funds (henceforth referred to as capital value) in real terms and may over or under-recover this value depending on whether asset-specific inflation was expected to be higher than or lower than general inflation.

In the Irish context, current replacement costs are higher than indexed historical costs because Irish tender price inflation greatly exceeds CPI and construction price indices on all but short life assets. The use of indexed historic cost may therefore send inadequate price signals to the market about the cost of capacity maintenance or expansion and may not generate sufficient revenue to fund a capital programme, thus reducing dynamic efficiency.

7.2.1.3 Replacement Cost

An alternative to the indexed historic cost approach would be to use a Replacement Cost (RC) approach for valuation. This determines asset values by identifying the current market cost of purchasing new assets, which provide the same services and capacity as the existing asset.

In some cases it may not be possible to acquire a directly comparable asset and accordingly a modern equivalent may have to be acquired. The nature of the modern equivalent asset (MEA) may be different from the historic asset in terms of its functionality or capability. Consequently the MEA value will need to be adjusted to ensure that the valuation reflects assets of equivalent capacity and functionality.

As an example, consider the valuation of two taxiways. Assume that one of the taxiways is an older design while the other is a newer taxiway that uses the latest surfacing materials and is constructed to a different depth. In this case, the costs of the additional functionality should be deducted from the current replacement cost to derive an appropriate cost for the more basic type of asset.

As described above, a valuation based on the replacement cost of modern equivalent assets has the advantage of reflecting cost changes that come with technical progress but may in practice be difficult where there is no direct functional equivalent.

As a forward looking measure, the replacement cost approach provides more reasonable signals to the marketplace by ensuring that prices more accurately reflect the economic cost of the underlying assets than the HC. It is thus consistent with the Commission's assessment criteria in terms of both allocative and dynamic efficiency.

The most common valuation base now used in the UK for regulated industries (i.e. water, electricity, gas and telecommunications) is current replacement cost.

7.2.1.4 Other Valuation Approaches

The Commission referred to two other possible approaches to asset valuation in its consultation paper, current market value and net present value.

Current market value, or the market value at a specific date, has been used internationally to determine the value of the regulatory asset base of quoted companies. Such an approach is consistent with setting revenues that provide the owners of the business with a return on the value of their investment. However, since Aer Rianta is not a quoted company, it is not possible to value the RAB by reference to its current market value and therefore this approach is not applicable in the current context.

The use of the net present value approach to valuation of businesses is common-place, particularly in relation to the investment appraisal. It would be possible to assess the value of the assets by reference to the net present value of the cash flows generated from their use in the business. However, to do so would require the costs and revenues in future years to be known. As both of these are the subject of the price control review and will reflect the value ascribed to the asset base, there is a circularity to this approach which Aer Rianta believes renders it inappropriate for regulatory purposes.

7.2.2 Aer Rianta Proposal for Asset Valuation

Among the factors that the Commission is directed to consider in setting prices is “the efficient and effective use of resources by the airport authority”. The elements of efficiency described in the Commission’s consultation paper CP2/2001 tend to support the view that asset values should reflect some measure of their current cost. Aer Rianta has developed proposals to significantly expand capacity in Dublin and Cork and to undertake a range of other capital projects. In order to fund these the company will require strong cashflow. It is therefore critically important to the company that the asset valuation methodology agreed by the Commission in determining the maximum level of charges is consistent with Aer Rianta’s investment needs. International precedent would support the need to set asset values at a level that allows for the funding of capital expenditure.

Aer Rianta considers the most appropriate valuation method for regulatory purposes and price setting would be replacement cost (RC). The use of replacement costs would ensure that prices more accurately reflect the economic cost of the underlying assets and is thus consistent with the assessment criteria concerning allocative efficiency. For the Commission to adopt such an approach to the RAB would also be consistent with the requirements under Section 33 of the Aviation Regulation Act 2001. As a result, Aer Rianta believes that the best approach to asset valuation is to use a replacement cost model.

7.3 Rolling Forward the RAB

The estimation of future asset values for the period of the price control must be made having regard to

- New capital expenditure
- The depreciation of assets
- The disposal of assets
- Indexing

The asset valuation methodology applied has significant implications for the approach taken to the roll-forward of assets. A feature of recent years is that asset inflation has been running ahead of CPI increases. This has implications for the use of an Indexed Historic cost approach to asset valuation. In order to ensure that the asset book value continues to provide appropriate signals about the costs which a new entrant would have to bear in order to provide the same level of service, the RAB would need to be rolled forward at an appropriate measure of the trend in cost of replacement assets i.e. an Operating Capital Maintenance (OCM) approach. It is nonetheless recognised that the inflation index used may result in values which do not adequately reflect asset prices. This approach does not guarantee that shareholder funds are conserved in real terms, and is likely to have implications for the Weighted Average Cost of Capital WACC (to be discussed in Chapter 8).

A financial capital maintenance (FCM) approach to the rolling forward of the asset base would be a superior method when assets are valued on the basis of replacement cost in order to ensure that shareholder and debtor value is maintained. This is a key issue for prospective equity or debt holders who will provide capital funds on the basis that charges will be set so as to allow a return on the real value of their investment. If there is a risk of holding gains or losses due to changes in asset prices relative to inflation, then investors will require a higher cost of capital to compensate for this risk. This would in turn lead to higher charges.

Rolling forward the value of the RAB ensures that the RAB more closely represents the shareholder's investment in the company, but implies a very high pre-commitment from the regulator not to act opportunistically. If credible this should reduce the cost of capital and encourage appropriate and efficient investment.

7.4 Summary

The valuation methodology is critical in terms of the ability of the airports industry to operate in an economically efficient and financially sustainable manner. Aer Rianta believes that the use of the RC approach is the best way to ensure that the appropriate signals about economic efficiency are communicated to users and that accordingly this is the most appropriate basis on which to value assets for regulatory purposes. There are further related decisions on the method of rolling forward of the RAB, which need to be well-considered to ensure that no consequent negative effects arise relating to the cost of capital to the company or the ability of the company to invest in infrastructure in the future. The valuation of the opening RAB is critical in determining enterprise value and generally for state companies in other jurisdictions the shareholder has an input in this decision.

8 Cost of Capital

8.1 Rate of Return and Cost of Capital

It is generally accepted that the rate of return allowed to a regulated company should be equivalent to its cost of capital on new investment. The cost of capital is a measure of the appropriate reward that investors require to compensate them for the risk associated with an investment. It is equivalent to the return on the market value of the equity and long term debt which the company needs to generate to compensate shareholders and lenders for the inherent risk. If this reward is not forthcoming, then in the long run investment will decline and the industry will not be able to perform its functions. The reward comprises both income (in terms of dividend and interest payments for equity and debt respectively) and any capital gain resulting from increases in the market value of the company. The exact measurement of the market price of risk and the appropriate cost of capital needed to compensate for that risk is a complex business with considerable scope for dissension.

The “allowed rate of return” should be defined as the risk-adjusted return that suppliers of funds require the business to provide on those funds, given the risks imposed by the inherent nature of the regulated business sector and the regulatory process itself and the allowed rate of return should be measured with reference to the rate of return that investors could expect to earn on investments of equivalent risk i.e. the risk-adjusted rate of return or cost of capital.

Cost of capital is very important for airports as, in the circumstances of very lumpy capital spend, special attention must be given to the return required on investment and the implications for the financing of the capital programme. According to the Aviation Regulation Act, 2001 the Commission must aim to facilitate the development and operation of cost effective airports which meet the requirements of users with due regard to allowing the airport “*a reasonable rate of return on capital employed in that investment, in the context of the sustainable and profitable operation of the airport*”. This requires that the allowed rate of return is sufficient to attract new capital investment for future service obligations and to ensure that the regulated activities of Aer Rianta are financially viable.

The allowed rate of return can be defined on either a pre-tax or post-tax basis and on either a real or a nominal basis.

· The post-tax Weighted Average Cost of Capital (WACC) is the return required to persuade investors to take on the risks of investing in this company. However, since companies’ profits are taxed, this is not the same as the return that a company is required to make in order to provide that post-tax return. In short, interest repayments on debt are not subject to corporate taxation and thus the pre-and post-tax rates of return on debt equate. However, returns on equity are subject to taxation, and this drives a wedge between pre- and post-tax cost of capital. There is no simple scaling formula that can be used to convert a post tax rate of return to a pre tax rate of return that can adequately capture the complexities of the interaction between a (nominal) tax system and an RPI-linked regulatory system. For this reason it may be more appropriate to set revenues on the basis of a post tax rate of return with separate allowance for forecast tax costs determined through financial modelling.

· Setting revenues on the basis of a real or nominal rate of return should in principle result in NPV equivalent cash flows over the asset life but that there may be differences in the timing of returns.[\[33\]](#) In the UK the use of a real rate of return is usually favoured within a retail price linked regulatory regime with adjustments for actual inflation through an Index Linked Regulatory Asset Base which is then multiplied by a real rate of return to give nominal returns.

8.1.1 Cost of Capital Formula - WACC

The Weighted Average Cost of Capital (WACC) methodology is now widely accepted as a suitable method for calculating the cost of capital. The WACC formula determines the required rate of return on a company’s total capital base.

The methodology states that cost of capital is calculated as the weighted average of the cost of debt and the cost of equity, weighted by the market values of debt and equity of an efficiently financed business. The relative return required for equity and debt is different because debt-holders enjoy a prior claim on a company’s earning stream, and therefore face different levels of risk.

Thus, the cost of capital for a company is a weighted average of the two instruments, with the weightings determined by the relative levels of debt and equity in the company's asset base, or the company's "gearing". In applying the WACC methodology it is necessary to estimate the cost of debt, the cost of equity, and the "efficient" market-based weights separately.

Formally, the post-tax cost of capital is:

$$\text{Post-tax WACC} = g \times r_d + (1 - g) \times r_e$$

where,

g = gearing = (debt/ debt + equity)

r_d = the post tax cost of debt; and

r_e = the post tax cost of equity

8.2 Context for Determining Aer Rianta's WACC

There are a number of key issues which need to be taken into account in estimating an appropriate cost of capital for Aer Rianta.

8.2.1 Nature of the Regulatory Till

Under a single till approach, of the kind applied until now in the case of BAA, for example, airport charges would be set to recover the airport operator's costs after taking full account of net revenues likely to accrue from certain commercial activities. Under a dual till approach, aeronautical charges would be set to recover the allocated costs of aeronautical activities.

The legislation stipulates that in determining the level of charges for regulated activities, the regulator must have regard to "other revenue" earned by the airport operator, at the regulated airports and elsewhere. However, it does not determine precisely how the regulator should take account of such other revenues. Aer Rianta has already made the point in Chapter 6 that it is inappropriate and economically perverse that activities which are subject to competition be included in the regulatory till.

The choice between these two economic models could have significant implications for the estimation of the WACC for regulated activities, since the risk profiles of the two “businesses” could be very different, both in respect of revenue risk and operational gearing.

8.2.2 Aer Rianta’s Status

Although Aer Rianta is currently a state-owned enterprise no sovereign guarantees are extended to the company’s debt stock. The recent credit rating report by S&P reflects this.

For the purposes of estimating a WACC for the current review, it is appropriate to treat Aer Rianta as if it were a private sector enterprise and to treat its regulated activities as if they were stand-alone, commercially orientated, and investor owned. There are no reasons for the assumption that the State as a shareholder should be prepared to accept a lower return than the market as a whole.

8.3 Estimating the Cost of Equity

The post-tax cost of equity is the return on equities (either through dividends or through an increase in the value of shares) that is required to persuade investors to bear the risk associated with the company’s equity. There are essentially two ways of calculating the cost of equity, the Dividend Growth Model (DGM), and the Capital Asset Pricing Model (CAPM).

8.3.1 Dividend Growth Model

The theory of the DGM is that the market value of a share is equivalent to the expected future dividend payments discounted at a rate of return equal to the cost of equity. This requires a projection of investors’ expectations as to future dividends.

There are some significant problems associated with this approach viz:

- Robust data is difficult to ascertain, principally because one of the model’s key components, the expected growth in company’s dividends, is unobserved.

- The model suffers from circularity issues as the current price of a share depends on the expected outcome.
- There are difficulties associated with determining the expected dividend growth rates for industries in the early stage of regulation as in the case of Irish airports.
- The model uses the simplifying assumption that the expected dividend growth rate is constant.
- DGM does not deal with the interaction of gearing levels on the cost of capital.
- DGM is not generally used as a primary mechanism for determining the cost of equity.

As a result, Aer Rianta is of the opinion that DGM should not be used for the purpose of calculating the cost of equity for Irish airports.

8.3.2 Capital Asset Pricing Model

Under the CAPM, the cost of equity capital is developed as a function of the risk free rate of interest plus a premium for investment risk comprising a factor ('beta') applied to the average equity market risk premium.

The standard Capital Asset Pricing Model determines required returns for investment in the equity capital of a firm as:

$$E[r] = E(r_f) + \beta(E[r_m] - E(r_f))$$

Where $E(r_f)$ is the current risk-free rate of return; beta (equity beta) is the expected covariance between returns on the risky asset and the market portfolio, divided by the variance of the market portfolio; and $E[r_m]$ is the expected rate of return for the market.

A key tenet of the CAPM is that an investor diversifies his or her stock holdings by combining risky securities into a portfolio. The effect of this diversification is to eliminate risks known as specific risks (also known as non-systematic risks). Specific risks arise from all those events that are unique to a particular share and have nothing to do with general market or economic factors. Because specific risks are not related, an investor holding a diversified portfolio can minimise this type of risk.

Complete diversification of risk is not possible since securities all move together to a certain extent, a result of the influence of economy wide factors such as interest rates, inflation, and macro economic demand. The risks that cannot be eliminated through diversification are described as "market" risks (or "systematic" risks).

A fundamental notion of the CAPM is that investors are risk-averse and therefore they demand higher returns for assuming additional risk and that higher risk

securities are priced to yield higher returns than are lower risk securities. The CAPM quantifies the additional return required for bearing incremental risk, and provides a formal risk-return relationship based on the idea that only market risk matters, as measured by beta.

The Capital Asset Pricing Model (CAPM) is widely established as an appropriate model to use to estimate the post tax cost of equity of a regulated company and it is the methodology most commonly used by regulators. Virtually all regulators, regulatory bodies and regulated companies in the UK have conducted their assessment of the cost of capital using the capital asset pricing model. It is also the approach adopted by the ODTR in the regulation of Eircom. Given the principle that the cost of capital should be measured with reference to the required returns on investments of equivalent risk, Aer Rianta is of the opinion that use of the CAPM is the most robust option available and would promote best opportunities for comparisons.

8.3.3 Estimating Beta

The CAPM is based on the theory that the required return on an asset is related to the asset's *systematic risk*, that is, the degree of co-movement between the company's returns and the market returns. This measure of systematic risk is known as the beta factor and can only be directly observed for quoted companies.

It is typically measured by statistical estimation methods such as Ordinary Least Squares (OLS) regression, regressing the return to a company's shares on the return to a market index, over a reasonable time period. Further adjustments are then made to the raw beta estimate to derive an adjusted beta, which effectively allows for estimation bias and tendency for betas to move toward unity, as well as a further adjustment to account for influence of gearing.

As noted by the Commission in its consultation paper CP2/2001, Aer Rianta is an unquoted company and therefore its beta cannot be estimated directly using regression techniques. In the absence of share price data and direct comparators in Ireland, the beta factor of Aer Rianta's regulated activities must be estimated by reference to

- Observed beta factors of quoted "comparator companies".
- Adjustments to reflect differences in co-variant risk between Aer Rianta and the comparators.

8.3.3.1 The Choice of Comparators

In practice, there are only five quoted airport operators in Europe (BAA, Copenhagen, Rome, Vienna and Zurich) and therefore the comparator set is restricted. It is best to exclude Zurich from the comparator set as it has only recently come to market and because its estimated long term beta is out of line with the other comparators.

The best approach is to estimate an average or composite beta value using share price and gearing data for all of the comparators. This “inclusive” approach acknowledges that beta values for individual companies can be quite volatile and poor indicators of covariant risk, over short time periods at least. A composite beta derived from a set of companies is likely to give a more robust estimate of the covariant risk of the airport sector.

Aer Rianta is of the opinion that estimations of betas should use the longest possible estimation period for each of the comparator airport businesses. This is because:

- Current beta estimates might be biased downwards and the decline is expected to be relatively short lived
- Longer term estimates of comparable companies’ betas are more efficient (have lower standard errors) than estimates over a shorter time period. In short, they tend to be more robust estimates of the actual beta.

8.3.3.2 Differentiating Factors

The set of quoted airports will have slightly different asset betas partly because of the nature of their activities and fundamental differences in their demand and cost characteristics, as well as the regulatory and competitive environment. By comparing Aer Rianta’s operating characteristics with the comparator set, whether its beta is likely to be higher or lower than the observed quoted betas may be assessed.

In considering differentiating risk factors it is appropriate to take into account differences in the composition of revenue (aeronautical/ non-aeronautical), the traffic mix (domestic/international/business/leisure) and the cost structure (operating/capital cost mix) between the airports.

8.4 Summary

Aer Rianta is of the opinion that the rate of return allowed to a regulated company should be equivalent to its cost of capital on new investment. The cost of capital should be calculated by use of the Weighted Average Cost of Capital (WACC) methodology and the cost of equity component should be estimated by use of the Capital Asset Pricing Model.

The approach to the beta has been extensively discussed above in response to the questions posed by the Commission in its consultation paper CP2/2001. The estimation of the WACC includes a number of other component parts and Aer Rianta will discuss these factors with the Commission in due course.

9 Capital Investment

The ability of an airport to grow and evolve with the growth of its traffic is greatly influenced by the ability of the airport authority to plan for the proper development of the airport in the very long term. This contrasts with the more short-term focus of the airlines who have the ability to move their aircraft in response to market conditions to any location.

For environmental, business and cost reasons master physical development strategies for airports are of necessity framed in long term horizons, typically 20-40 years. As airports comprise such vital elements of national infrastructure and are gateways into the country, the adoption of a long-term view is critical to ensure that they are properly integrated into the wider planning process i.e. National Development Plans, County Development Plans etc. In this way, approaches to runways can be kept free of inappropriate development, adequate drainage and sewage services can be assured and allowances are made for access and public transport. In short, a long-range plan – over a twenty to thirty year horizon – ensures that the airports ability to expand and develop is preserved.

Investment plans are critical to decisions taken by the regulator on price regulation. The magnitude of capital spend in an airport context has profound effects on the cashflow and capital structure position, its timing affects the operational throughput of the airport and the cost effectiveness of the capital programme will affect the airport's self-financing capability and impact on user charges. The starting point for the capital plan is the forecast, which must be developed in a robust and systematic manner.

9.1 Level of Investment

In the Irish regulatory context, Section 33 of the Aviation Regulation Act 2001, stipulates that in making its determination the Commission must aim to facilitate the development and operation of cost-effective airports which meet the requirements of users. In doing so it must also have regard to inter alia the level of investment in airport facilities, in line with safety requirements and commercial operations, in order to meet current and prospective user needs.

The appropriate level of investment is that which delivers the required level of service performance most cost effectively. “Gold-plating” on capital expenditure projects may deliver an acceptable service level but at substantially higher cost than is necessary. Too little investment will result in reduced standards in the long term and potentially heavy costs and considerable delay before required service levels can be restored. Alternatives to capital expenditure may include increased operating expenditure on maintenance or demand management options. It is important to recognize and weigh trade-offs between capital expenditure, operating

expenditure and reliability.

In its consultation paper the Commission asks for comments on how it should address the degree to which the airport authority is relating capital expenditure decisions to user needs. Some regulators in the UK e.g. Ofwat have used capital expenditure reviews to address this question. Aer Rianta is of the opinion that continual monitoring of capital expenditure by the regulator during the inter-review period would not be the most efficient or effective solution for the following reasons

- the company has a statutory responsibility under the Air Navigation and Transport (Amendment) Act 1998 to promote the efficient operation, safety, management and development of its airports
- the Commission would be attempting to second-guess airport management decisions which would be contrary to the requirements under Section 33(i) of the Aviation Regulation Act 2001
- imposing a formal monitoring structure on airports could reduce flexibility to adjust capital spend to react to new information on technology, costs and user demand
- the accountability of airports for investments planned and undertaken would be diluted

The CAA recently reviewed this option in its paper Economic Regulation and Capital Expenditure. It concluded:

In the case of airports, the case for a full capex review, with the CAA taking views on which projects are desirable and how much they should cost is not justified at this stage.[\[34\]](#)

A better approach would be for the Commission to conduct a detailed analysis of the differences between planned and actual capital expenditure at the end of each review period and incorporate significant differences into the setting of the price cap for the next period, within the context of the profit-sharing mechanisms being applied. This would maintain the integrity of incentive based regulation and ensure that appropriate spend was being undertaken in the knowledge that significant underspend or overspend would be dealt with at the next review.

Decisions on capital investment are predicated upon forecasts of passenger and aircraft movements. The airport authority must balance the long term demand requirements against short term needs and such issues are a core area of discussion during the consultation process. This process helps to ensure that the capital investment programme is delivering the required infrastructure effectively from both a customer and an airport perspective.

9.2 Traffic Forecasting

Recent years have shown strong steady growth at Aer Rianta airports, averaging 11.5% across the three Irish airports between 1995 and 2000. This traffic growth, deriving principally from the strength of the Irish economy, is the base on which Aer Rianta's traffic projections for the future are made. Traffic forecasting is a vital component of the planning process in any airport, with profound implications for the level and timing of investment.

The forecasting model used by Aer Rianta is a combination of statistical and judgmental methods, in a robust process, consistent with best practice in the aviation industry. As part of the Warburg Dillon Read/AIB/SH&E review of the Aer Rianta Future Strategic Direction Report, the broad methodology was specifically reviewed by SH&E in 1999, and the view was that the basic methodology was sound, although it was suggested that in the longer term issues such as market maturity should be addressed. Aer Rianta's updated forecast in 2000 incorporated those recommendations.

A full report on the methodology used and the low, centerline and high forecast outputs has already been submitted to the Commission for review and a short synopsis of the main issues is set out below.

9.2.1 Methodology

In understanding the dynamics of any market, it is necessary to discuss the key drivers. For air traffic forecasting, the factors affecting the level of growth are well known, although the exact relationship between traffic growth and the causal factors is still the subject of extensive discussion and debate amongst industry experts. In Aer Rianta, the approach adopted is one combining both statistical and judgmental features. Traffic growth trends are determined primarily by GDP and airfare trends, but within each market, local dynamics may be taken into account to adjust this underlying trend.

The primary drivers of air traffic growth are listed below, along with the main moderating secondary factors

Primary Driver	Secondary Driver
Economic Growth	Exchange Rates
	Population and Demographic Changes
	Tourism
	Modal Competition
	Market Fragmentation
Yield	Airline Route Mix
	Airline Fleet
	Airport Capacity
	Airline Strategies

Some of these factors are not equally significant for all route groups – e.g. modal competition is of significance only in the Ireland-UK and domestic markets.

9.2.2 Forecasts

The pattern for traffic projections for the three airports is illustrated in Figure 9.1 below.

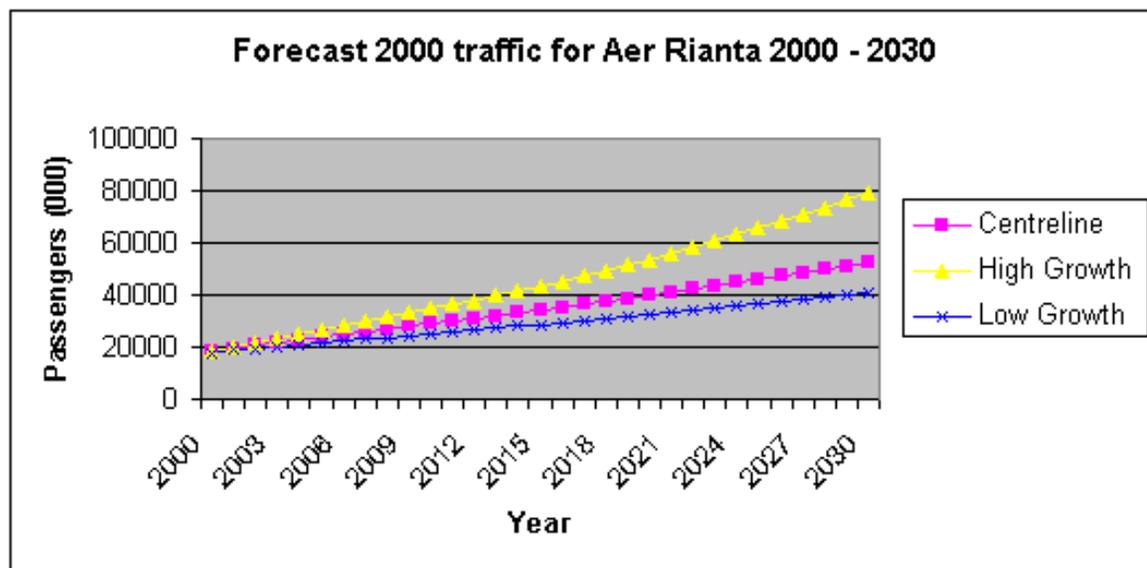


Figure 9.1

- Total traffic is projected to reach 52 million passengers by 2030 using centerline projections.
- The gap between high and low scenarios is close to 10 million by 2010, and by 2030 reaches almost 40 million passengers, using current assumptions. This clearly underpins the need for our capacity planning to allow for modular development where a slowing down of growth leads to a slow-down of capacity introduction, and where we are also able to handle a greater swing upwards than the centerline figure suggests.
- The centreline traffic projection for the three airports shows a cumulative average growth rate (CAGR) of 4% to grow from 18 million in 2000 to almost 40 million passengers by 2020, with Dublin comprising over 31 million, and Shannon and Cork together contributing over 8 million. These growth rates may be compared with the current Airbus 20-year RPK forecast CAGR of 5%, and the appropriate Boeing projections (Europe 4.3%; US 3.7%).

9.2.3 Forecasts for the Airports

The following section presents the centreline, medium and high passenger traffic forecasts for each of the three Aer Rianta airports, showing the 1998 centreline forecasts for comparison.

9.2.3.1 Dublin

- The centerline assumption leads to passenger traffic trebling in thirty years. The basis of this scenario is that growth will be steady but less strong than in recent years. Traffic is expected to grow to over 40 million in the next 30 years.

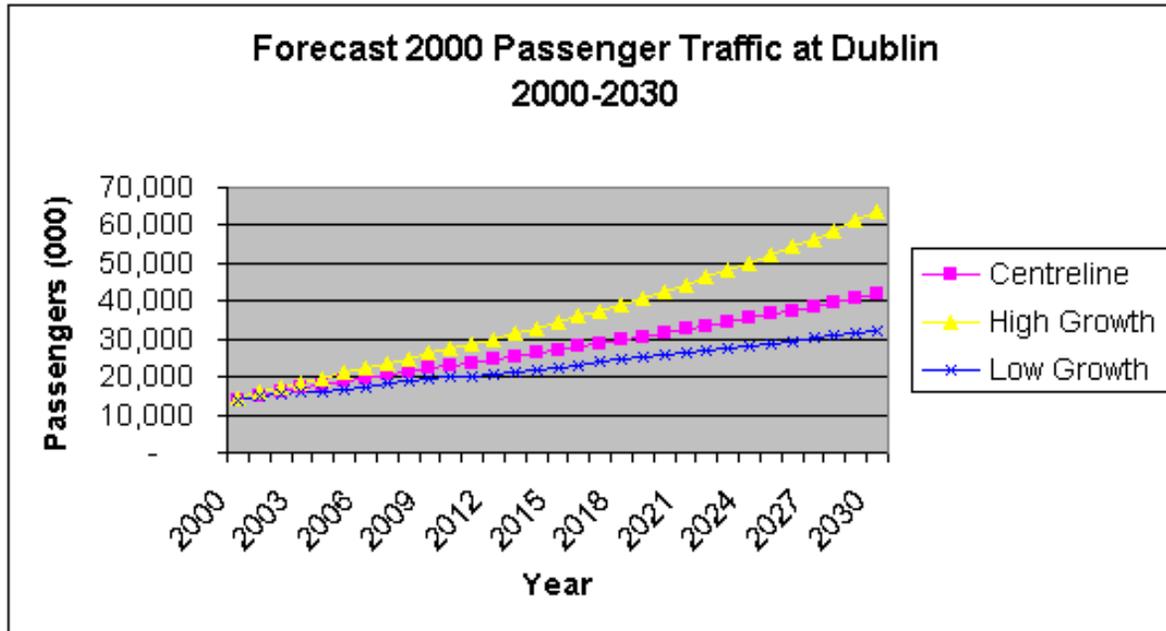


Figure 9.2

9.2.3.2 Cork

- Figure 9.3 below shows that the pattern in traffic growth for Cork is similar to that for Dublin
- The centerline forecast predicts traffic of five million by 2030

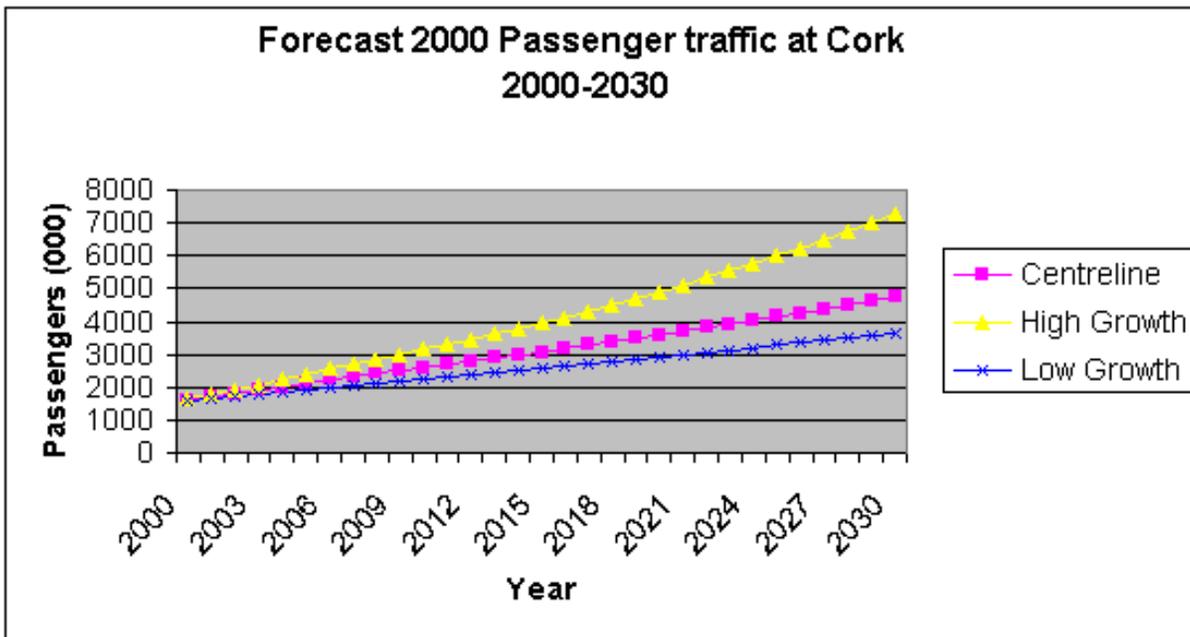


Figure 9.3

9.2.3.3 Shannon

- This forecast shows Shannon airport reaching 6 million passengers by 2030.
- The principal growth markets in this forecast are the US and UK, with additional services driving traffic upward in these markets. Other segments are assumed to develop gradually.
- Transit traffic is assumed to stay at close to 2000 levels, because of the volatility of this sector.

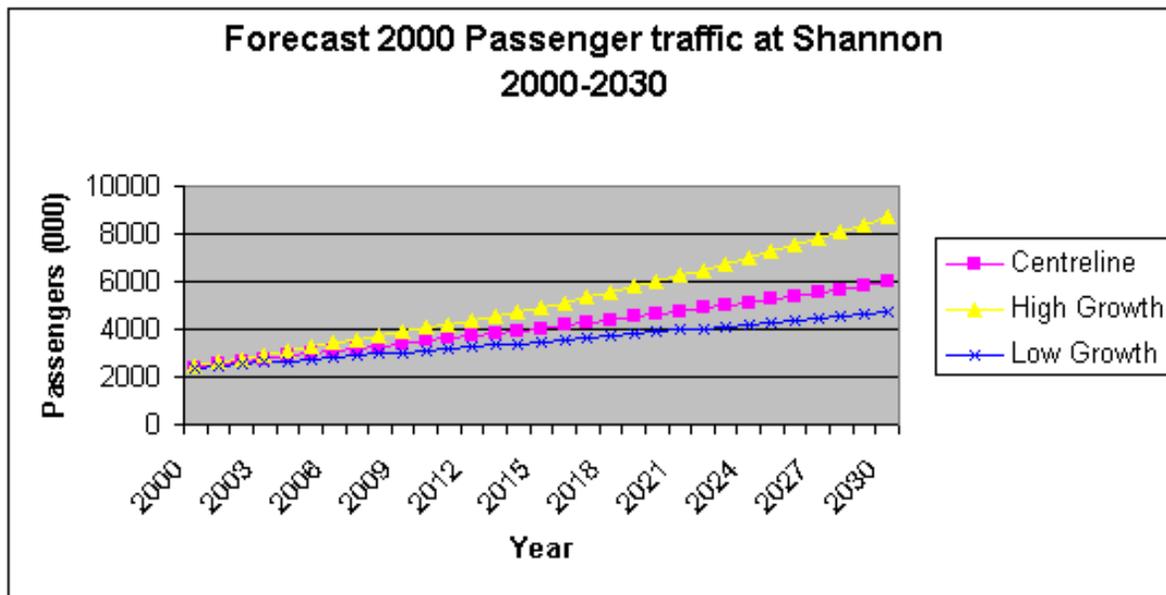


Figure 9.4

9.3 Capital Investment Programme during the 1990s

The effects of the capital investment programme have not been as significant an effect on airport charges at Aer Rianta airports as at most other airports since the mid-1980s. This arises because of three factors.

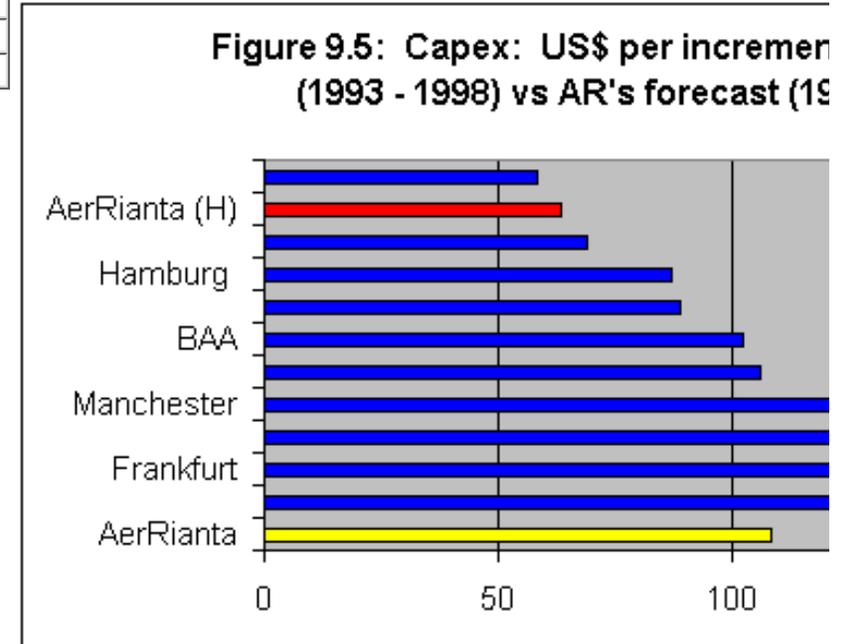
1. Duty and tax free revenue made a very significant contribution to Aer Rianta during the 1990s, comprising 39.5% of total revenues in 1998, hence allowing it to undertake its capital programme without increasing airport charges, and still deliver significant annual cash surrender to the exchequer.
2. Historically, capital expenditure at the three airports was very low prior to the 1990s. The major terminals were built before 1973 and the main runway at Dublin Airport, which opened in 1989, has been the main capital expenditure item since then.

Table 9.1 Historic Capital Spend	
Total Spend 1995-1999	IR£262m
Dublin Spend 1995-1999	IR£202m

Table 9.1 above illustrates the comparatively low capital expenditure in more recent years. On a per passenger basis, this is

Shannon Spend 1995-1999	IR£42m
Cork Spend 1995-1999	IR£18m
Capital Spend per Passenger 1995-1999	IR£3.90
Capital Spend per Passenger Dublin 1995-1999	IR£3.90
Capital Spend per Passenger Shannon 1995-1999	IR£4.59
Capital Spend per Passenger Cork 1995-1999	IR£2.95

substantially lower spend than that by other comparable airport companies, see figure 9.5 below.



The comparatively low spend was confirmed by a recent review by Warburg Dillon Read, SH&E, AIB Corporate Finance on behalf of the Ministers for Public Enterprise and Finance^[35]. The consultants reviewed Aer Rianta's capital expenditure in the period 1993-1998 and concluded that

- Aer Rianta's historical capital expenditure was second lowest of its peer group
- 1993-2003 spend is significantly lower than historic average of peer group

9.4 Current Capital Programme

The context for the current capital programme is very different to that pertaining during the 1990s. Once again there are a number of contributing factors:

- The delay in investment has put Dublin Airport under severe pressure as demand increased faster than projected. Hence for the last few years Aer Rianta has

been building in 'catch-up' mode, putting in place as rapidly as possible adequate facilities to meet customer demand. The current phase of development is nearly complete, and terminal capacity will be 20 million passengers.

· Although this current phase is now nearing an end, there is already a need to move forward on the next phase of development. This will ensure timely delivery of capacity to meet demand. In particular, adequate time must be allowed for such phases as obtaining planning approval, which is becoming an increasingly extended phase of a project.

· The elimination of the intra-EU duty free revenue stream has seriously reduced the ability of Aer Rianta to fund its growth plans internally without adjustment to the airport charges levels.

In its consultation paper CP2/2001, the Commission asks whether the current extent of industry consultation is adequate. The extent of consultation in the airports business is extensive and involves many diverse groups who can all be considered users or interested parties in airport services. The challenge for the airport authority is to consider the varying objectives and requirements of all these groups and to balance the short term requirements and development of the airports with sound long term planning, the likely needs of prospective users and the requirements of the community in which the airports are located.

Consultation takes places with many groups including

- Airline customers
- Groundhandlers and other providers
- Cargo operators and other users on the airport site
- Fingal County Council
- Local Community Groups
- Local Chambers and business interests
- National Roads Authority
- Dublin Transportation Office
- Tourism Bodies and Groups
- Regional Development Groups
- Irish Aviation Authority
- Department of Public Enterprise
- Department of Environment
- Staff and trade unions

For all major capital projects general consultation is carried out and specific working groups are set up to input the planning and design of a particular projects. Many operational groups are in place to deal with airport operational matters, groundhandling etc.

The airport charges at the Irish airports have not been changed since 1987 and as a result the normal process in other European Airports of regular consultation on charging structures and levels has not occurred or been necessary in Ireland over the last 13 years. There was however consultation with the airlines on the discounts schemes which were introduced. Meetings and contact has also taken place with IATA.

Aer Rianta is currently in the process of extensive consultation with many interested parties on master plans for the airports. Because of the diverse nature of the objectives and requirements of all users of airport services and in particular the more recent trend towards the use of the media and lobbying by the bigger users of airport services, it is unlikely that maximum airport charges could be determined for the Irish Airports without being formally set by an independent regulator.

9.5 Funding of Capital Investment Programme

The Air Navigation and Transport (Amendment) Act 1998, specifies that airport charges may be levied in relation to five categories of activity, viz.

- landing
- taking off
- parking of aircraft at an airport
- passenger arrival or departure
- cargo

In CP2/2001, the Commission asked whether one of the five regulated charges should be earmarked for investment spending. In order to ensure that the appropriate economic signals are given in relation to each of these areas of activity, Aer Rianta believes that it is inappropriate to allocate the revenue from one specific airport charge to the funding of capital investment across a series of activities. In order to ensure that the charge for each activity reflects the costs of providing and maintaining related infrastructure, operating and capital investment costs as incurred should be recovered through the relevant charge as far as practical within the context of regulatory till definition which has been applied. It is important that assets in the course of construction (AICC) are included in the RAB to maintain price continuity, to reduce the risk of asset stranding and consequent cost of capital increases, and to ensure investment is made at the appropriate time. This will ensure both allocative and dynamic efficiency are maximised. The inclusion of revenue from any activity other than those deemed to be inextricably linked to the aeronautical cost base or those where Aer Rianta has significant market power would, as outlined in Chapter 6 be a distortion of competitive market activities and reduce economic efficiency within the aeronautical activities. The approach, which has been proposed by Aer Rianta in its airport charges structure, is predicated on the recovery of the relevant operating and capital costs through individual charges, and is outlined in Chapter 12.

9.6 Summary

Aer Rianta believes that an effective capital planning process is in the interests both of customers and airports. In this context, traffic forecasting is a vital component of the planning process as it has profound implications for the level and timing of investment. Since, by definition, airport infrastructure is costly and requires extensive planning, uncertainty about capacity being available when required is a major risk for airlines into the future. It is worth bearing in mind that in the UK, the primary concern of carriers such as British Airways was that required facilities would be available when needed. This concern superseded issues such as charging levels. To ensure that both allocative and dynamic efficiencies are maximized it is important to ensure that AICC are included in the RAB.

10 Efficiency, Effectiveness and Benchmarking

10.1 The Role of Benchmarking

There is widespread agreement that there is value for both the regulator and the regulated entity in comparing its performance against appropriate comparators in terms of the efficiency of specific, identifiable airport services, processes and in terms of cost effectiveness (including the costs of major investment projects). Benchmarking can also be a useful tool to counter information asymmetries that exist in all regulated environments. Aer Rianta fully supports the concept of benchmarking. Its Future Strategic Direction Report [\[36\]](#) states that

Aer Rianta is committed to benchmarking its performance with best practice.

However, there are many difficulties associated with identifying appropriate comparators, both at a national and international level, which can make reliance on international comparisons difficult. All businesses have different methods of capturing and presenting data. These issues were recently considered in a consultation paper by the UK airports regulator, the CAA [\[37\]](#) which stated that

Finding appropriate comparators and corresponding data is absolutely critical for the quality of any benchmarking exercise. The more homogeneous the airports compared, the more robust the results will be.

Some of the key difficulties which need to be addressed in benchmarking airports, or in interpreting the results of partial benchmarking are as follows:

- Revenues, costs and margins depend to a large extent on the range of services that the airport operator carries out itself compared to those carried out by airlines or third parties on a concession basis. Not all airports provide security services for example and others, notably in Germany, Italy and Austria are heavily involved in ground handling activities. Aer Rianta currently performs a comparatively wide range of activities at its three airports. It directly undertakes provision of 24-hour security, fire and rescue services, retailing operations, some other commercial activities (such as car parking) and certain maintenance and cleaning functions. Shannon offers additional services such as fuel and in-flight catering. It is most important therefore, when attempting to make comparisons across airports that the organizations in question are sufficiently similar in structure and function so as to make comparisons meaningful.

- Different accounting practices in different jurisdictions means that comparing financial indicators can be particularly prone to problems of consistency and comparability. Even when the national accounting procedures are similar, there may be differences in financial practices between individual airports e.g. depreciation policies.

- Airports are faced with lumpy investment and the different airport investment cycles can distort efficiency comparisons. An airport which has just opened a large new terminal will probably be able to deliver higher than average quality of service for example, due to the fact that facilities are under-utilised, though its cost of service provision may be high. Any applied benchmarking techniques must take this into account to ensure that “like-with-like” comparisons are made.

- Other issues which should be taken into account to avoid inaccurate benchmarking include
 - The relative size of airports is important as the impact of economies of scale can be significant
 - Differences in the
 - operational environment (e.g. environmental constraints in the form of night curfews would affect the airport’s relative efficiency ratings);
 - regulatory environment (which could affect operating cost comparisons);
 - fiscal conditions;
 - exchange rates (can have an effect when airport data is converted into a common denominator); and
 - the legal framework (e.g. planning constraints)
 - Differences in the basket of charges which might be compared e.g. Aer Rianta does not include a charge for terminal navigation services though other airports which perform this function could do so

- Different input costs e.g. labour costs are substantially lower in the Far East than in Europe so airports there can be expected to operate with higher labour/capital ratio reflecting the most efficient use of inputs
- Differences in output mixes e.g. need to guard against comparing those expressed as passengers with those expressed as Work Load Units

Aer Rianta believes that relevant cost benchmarking is a valid regulatory exercise. However the difficulty is in obtaining meaningful results, given the practical and methodological problems outlined above.

The most appropriate international comparators will be found within the continent in which the airport is located. In Ireland's case this will be European airports with which it shares similar approaches to airport operations, the European social model and a common regulatory environment in terms of EU Directives, regulations etc. In contrast, US airports have an entirely different system of funding, levels of outsourcing are much higher, and the legislative framework is wholly dissimilar, making meaningful comparisons very difficult indeed.

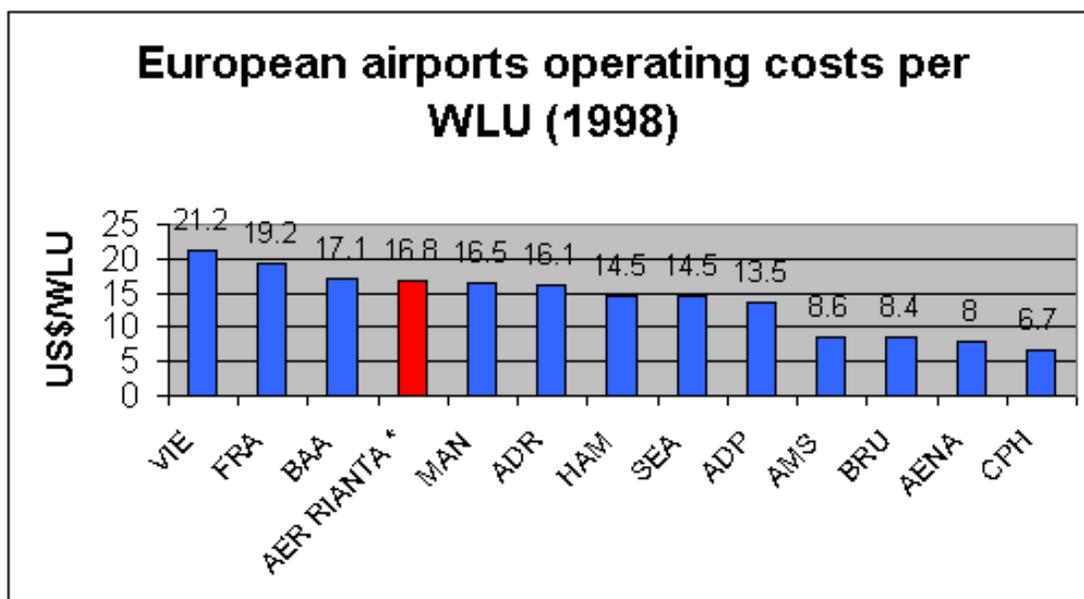
There would also be significant difficulties in attempting to benchmark airport against regulated utilities. In addition to fundamental differences in product scope and structure, the nature of primary customers is significantly different. The primary customers of airports are airlines, who unlike the individual consumers of utility services, are economically significant organisations and well able to promote their interests when negotiating with airports. Another key differentiating factor in this regard is the structure of revenues. If a single till framework were to be implemented, for example, it would have serious implications for the comparability of financial indicators.

Ultimately, benchmarking should result in management action to improve processes and increase efficiency. In light of this, the best approach to adopt to selecting appropriate comparators might be to work at the individual activity level. This would allow anomalies from a data set to be addressed more easily and a larger and more uniform sample size to be obtained.

10.2 Benchmarking and Aer Rianta

10.2.1 Cost Base

The Warburg Dillon Read, SH&E, AIB Corporate Finance "*Review of the Strategic Options for Aer Rianta*" which was commissioned by the Ministers for Public Enterprise and Finance reviewed the issue of Aer Rianta's operating costs. The report considered European airports operating costs per WLU (a hybrid of passenger and cargo throughput), and concluded that "*Aer Rianta's comparative operating cost performance is in line with airport operators undertaking a similar range of activities*" (see chart below). The report concluded in broad terms that "*Aer Rianta's lower profit margins are a result of lower than average aeronautical revenue, rather than an excessive cost base*".



Note * Includes GSH costs and cost of goods sold

Figure 8.1

The difficulties presented by international comparisons between airports is illustrated in figure 8.1 as the Aer Rianta costs as presented include the costs of Great Southern Hotel and the costs of goods sold.

Aer Rianta's operating costs have also been analysed as part of the Transport Research Laboratory's (TRL) annual publication on Airport Performance Indicators. Key results from the 2000 analysis in terms of operating costs are as follows:

Indicator	Aer Rianta Ranking (out of 39)	Aer Rianta (SDR**)	Average for 39 Airports/Airport Groups
Total Costs per 1000 ATUs*	19	78.6	84.1
Total Costs per Passenger	20	5.36	6.64
Operating Costs per Passenger	16	2.53	2.77

*TRL use a replacement term for WLUs – Airport Throughput Units or ATUs, which, in addition to considering passenger and cargo throughputs, factors in a measure for the number of air transport movements at an airport.

**The preferred conversion unit used is the Special Drawing Right (SDR) as published in the Financial Times of 24 July 2000. This unit is based on the trade-weighted values of a group of major currencies from the G7 nations.

The Aer Rianta cost performance is well within the average range, which is very creditable given the fact that the company is being compared, for the most part, against single airport operators and the average size of airport is generally larger than that of Aer Rianta airports.

Aer Rianta is currently investing in the latest technologies across a range of activities which will deliver increased effectiveness and efficiency in operational and planning areas and allow for improved monitoring of standards in many areas of the business.

10.2.2 Airport Charges

There have been many benchmarking studies which reviewed Aer Rianta's airport charges – the results have unanimously indicated that they are amongst the lowest in Europe viz:

- Hague Consulting Group on behalf of the Dutch Directorate General of Civil Aviation – lowest of 23 major European Airports
- Copenhagen Airport study - Dublin 14th lowest out of 16 European Airports
- PricewaterhouseCoopers report which demonstrated that average aeronautical revenue per passenger at Aer Rianta airports is the lowest of comparable European airports reviewed, by a considerable margin – less than half the average.
- IATA comparison - 49th out of 50 key European airports/airport groups.

Aer Rianta's competitiveness in the area of airport charges and its effectiveness in providing excellent value for money have been recognised by the international airline community. In 1998 Aer Rianta won the prestigious "Eagle Award" from IATA, the world body that represents over three hundred airlines, when it recognised Aer Rianta's "excellent contribution to generating aviation business".

10.2.3 Other Areas

Benchmarking can be of assistance across a range of business activities in addition to cost base analysis. These include retailing, capital investment and service

standards evaluation.

Following an analysis of Aer Rianta's retailing performance, Warburg Dillon Read/AIB/SH&E[38] concluded that

Aer Rianta has historically achieved superior performance in duty free activities

Capital investment was also benchmarked by Warburg Dillon Read/AIB/SH&E, in terms of the capital spend per passenger as discussed in Chapter 9. Benchmarking studies in respect of service quality performance are discussed in more detail in the next chapter.

10.3 Summary

Aer Rianta accepts that cost benchmarking is a valid regulatory exercise and will co-operate with any cost comparison exercises that the Commission decides to pursue, though there are significant comparability issues which need to be taken account of in generating meaningful comparisons. For this reason it feels that the most appropriate approach is to benchmark at the level of individual activities.

From the benchmarking which has been undertaken to date, it is clear that there is little evidence of inefficient or ineffective use of resources by Aer Rianta and that the efficiency of its operations is borne out by various inter-airport comparisons.

11 Quality of Service

11.1 Providing Incentives for Quality of Service

The achievement of high service quality is not without cost. In theory, airports subject to a traditional price cap would have an incentive to deliver lower quality (assuming higher quality has a higher cost) if there is no penalty for doing so. In practice, the countervailing power of airline customers and airports' determination to avoid the negative impact on their business which the perception of "poor quality" brings, exerts considerable influence to limit the theoretical opportunity to reduce service quality.

Therefore, any conclusions on service quality must be related to operating cost, capital expenditure and passenger throughput. In light of this, the role of the regulator should be to incentivise the regulated airports to

- Meet service levels it has agreed with customers
- Offer value adding services to customers who are prepared to pay for them
- Encourage appropriate investment and maintenance to meet service standards.

Airports present particular challenges in terms of specifying and measuring the quality of the output to be remunerated by airport charges. These were succinctly set out in a recent CAA consultation paper[\[39\]](#) on quality of service issues as follows

· Airports provide a wide heterogeneous set of outputs which range from quasi-public to private goods and which vary in the extent to which quality of service can be measured. There is a danger that perverse incentives can be introduced if service levels can be specified for some outputs but not for others. As an illustration, Martyn Booth, BAA Director of Corporate Strategy in 1992, noted that one of the four initial measures of service quality set by the BAA was availability of trolleys.

The result was that you could not walk across a departure concourse without falling over row upon row of trolleys. Trolley availability was high; ease of passenger movement was not. [\[40\]](#)

- The requirements of the airports' users differ – between airlines and between passengers - and where there is a conflict it can be difficult to determine whose interest should take precedence.
- There may be a problem in assuming that the preferences of passengers are fully represented by airlines
- Airport outputs are the result of a combined set of inputs from a group of service providers over which the airport has varying levels of influence and control.

As a result, it would be inappropriate for the Commission to become directly involved in determining the level of service standards at regulated airports. In this context it should be noted that following approximately fifteen years of economic regulation of airports in the UK, there has been no consensus on the appropriate levels of service quality which should be applied in relation to airports. It would be most difficult and inappropriate for the Commission to attempt to set down standards for application in the Irish context given the short timescale which it has to make a determination.

Furthermore, it should be noted that the primary customers of airports are airlines, who are large organisations and are well able to promote their interests when negotiating with airports. By virtue of their size, airline customers can put enormous pressure on the airports they serve, using their significant market power very effectively to demand extremely favourable terms. It follows that the development of standards is most effectively handled through direct negotiation between airports and airlines.

Standards need to be broad enough to accommodate all categories of suppliers and customers, and should relate to basic quantitative measures. The kind of indicators which are likely to be of relevance are those which are used in Australia e.g. availability of gates, stands and airbridges, queueing times, equipment availability and standard of facilities, etc. Current prevailing business contracts should continue to be the primary tool to define the standards which are required by individual airlines and for which they are willing to pay. For example, it is reasonable that airlines who asked Aer Rianta to provide a “Fast-track” screening facility for business class customers should have to pay the costs associated with providing this extra service dimension. It is important to note that bilateral agreements of this kind should only relate to arrangements for additional service elements. No bilateral agreement should be permitted that arranges for service levels which are below the generic standard at a lower price than standard charges as this would place a disproportionate burden of cost on the majority of airlines who wish to operate to the generic standard.

Aer Rianta recommends that rather than setting specific quality of service measures, the delivery of service performance should be a matter of judgement by the Commission at the five yearly review. In this way quality of service should be another factor in judging the performance of the company and the reasonable rate of return it should earn, given that performance.

Information on service quality could be published by the Commission to aid transparency. Publication of information in this way has been seen as providing substantive incentive effects in the UK regulated sector^[41].

As well as issues of company pride and sense of achievement such effects include shareholder and analysts’ perceptions and consequent capital market implications, the fear of poor performance being taken into account at the review...and the somewhat distant but nevertheless credible possibility that performance could have some bearing upon the regulator’s decision to make inset appointments.

A methodological issue within this approach to quality regulation is whether or not the information generated by companies should be audited by the regulator. In general, regulators have tended to regard the data generated by the regulated entity to be more reliable than that they would be able to produce. However, in some cases (e.g. OFTEL in the UK) regulators have reserved the right to engage in some limited confirming research of their own. Aer Rianta agrees in principle that external validation measures, if cost effective, may be appropriate.

The precedent for such an approach to quality exists in the regulatory structures of the Australia and the UK. In Australia, the ACCC is not involved in setting standards, but in monitoring those defined between airport users and operators. Similarly, the CAA, as the primary regulatory body for UK airports, prefers to reserve powers to intervene as opposed to involving itself in the detail of standards determination. It recently noted that

in some circumstances, standards set by the regulator may lead to outcomes worse than no standards[42].

The benefits arising from Aer Rianta's proposed approach as outlined above will outweigh the substantial costs to the Commission -and ultimately to users- which would be associated with fulfilling the information requirements required to move to a more prescriptive form of quality regulation. These are likely to include the costs associated with:

- Measuring the quality of service
- Setting standards which reflect the preferences of different users and the underlying incremental costs of quality and delivery
- Administering any system of penalty or reward for subsequent performance.

11.2 Service Standards at Aer Rianta Airports

11.2.1 Design Standards

Service quality at airports is often heavily dependent on capital investment. It is important, therefore, that the level of service it is planned to deliver at an airport be defined during the planning of infrastructure so that it can be incorporated into the design of various elements. In the case of Aer Rianta airports, the long established standard used is the IATA "B" design objective which aims for a high level of service and a high level of comfort for passengers. In the early 1990s these IATA standards were further complimented by the adoption of a standard first developed by the BAA – the 5% busy hour rate. Under this standard Aer Rianta aims to ensure that in a given year, 95% of passengers receive the quality of service which has been designed into the system and that 5% or less would receive quality of service below the defined standard. The spatial and service standards which result from the above are set out in tables 9.1 and 9.2 below.

Table 9.1

Spatial Service Standards	Personal Space
Areas	Standard/Passenger

Through Routes/Circulation Areas	3.50 sq.m
Check – In Queue	0.80 sq.m
Seating/Standing Areas	1.00 sq.m
Retail Areas	2.75 sq.m
Catering Areas	2.75 sq.m

Table 9.2

Time Based Service Standards	Waiting Time
Facility	% of Pax within a Stated Time
Check-in	95% up to 12 minutes
Passenger Search	95% up to 3 minutes
Passport Control	95% up to 1 minute
Immigration – UK/EU	95% up to 4 minutes
- Others	95% up to 12 minutes
Baggage Reclaim	Max 25 minutes from 1 st passenger entering reclaim to last bag on unit

It is important to note that these planning standards were never intended for use in operational monitoring and should not be proposed for this purpose.

It is clear that, for a given amount of resource input, service quality output is likely to decline as volume increases, at least in the short term. As a result of delays in obtaining consent for capital expenditure in the early 1990s and higher passenger volumes than expected due to the strong growth in the economy in recent years, Aer Rianta's ability to provide timely capacity was severely constrained, particularly at Dublin. The result was that service standards did not meet the objectives set in all instances in recent years, especially at peak periods. Despite this, however, the company has an ongoing commitment to service quality and is continuing to actively develop its service quality ethos and standards monitoring processes.

11.2.2Aer Rianta and Service Quality

Aer Rianta's Strategic Review Document[\[43\]](#) identifies customer service as one of the company's core values.

Aer Rianta recognises the importance of delivering a high quality of service to all customers. The Group will continually strive to facilitate efficiently the business of customer airlines and to enhance the quality of the travel experience for users.

Aer Rianta has used a variety of indicators to assess service at Dublin Airport since the late 1980s. Quantitative research measures service performance in a number of areas including baggage delivery times, pier use, queue lengths etc. The reports give details on overall airport performance and are also broken down to assess the performance of individual service providers at the airport e.g. airlines and ground handlers. This information can then be used at performance review meetings with third party service providers.

Almost 9,000 passengers are surveyed annually as part of the Operations Passenger Survey conducted by IMS on behalf of Aer Rianta. Interviews are conducted on a monthly basis and data is available on a quarterly basis. Passengers are asked to rate facilities at the airport on a number of aspects. The main areas monitored are car parks, signage, check-in, restaurants/cafes, bars, gate lounges and transfer facilities. There is also a section dedicated to Aer Rianta operated retail outlets. The range of facilities and services included in this survey are currently being reviewed in the light of the changes brought about in the terminal building as part of the capital expenditure program. Qualitative research will be undertaken with customers to ascertain the most relevant areas for inclusion in future surveys.

Dublin Airport has had a customer comment card system in place for many years, through which passengers are invited to record their views on various aspects of the landside and terminal products at the airport. A new customer services database system (CARM) has recently been commissioned which will aid tracking of how comments card suggestions and complaints are being dealt with, to ensure speedy and appropriate responses to issues raised.

Dublin Airport has participated in the International Air Travellers Survey (IATS) since 1988. This is an independent survey carried out at a number of airports in Europe every two years. Dublin has consistently received high relative results for check-in and retail areas, in particular (figure 9.1 below shows the most recent results).

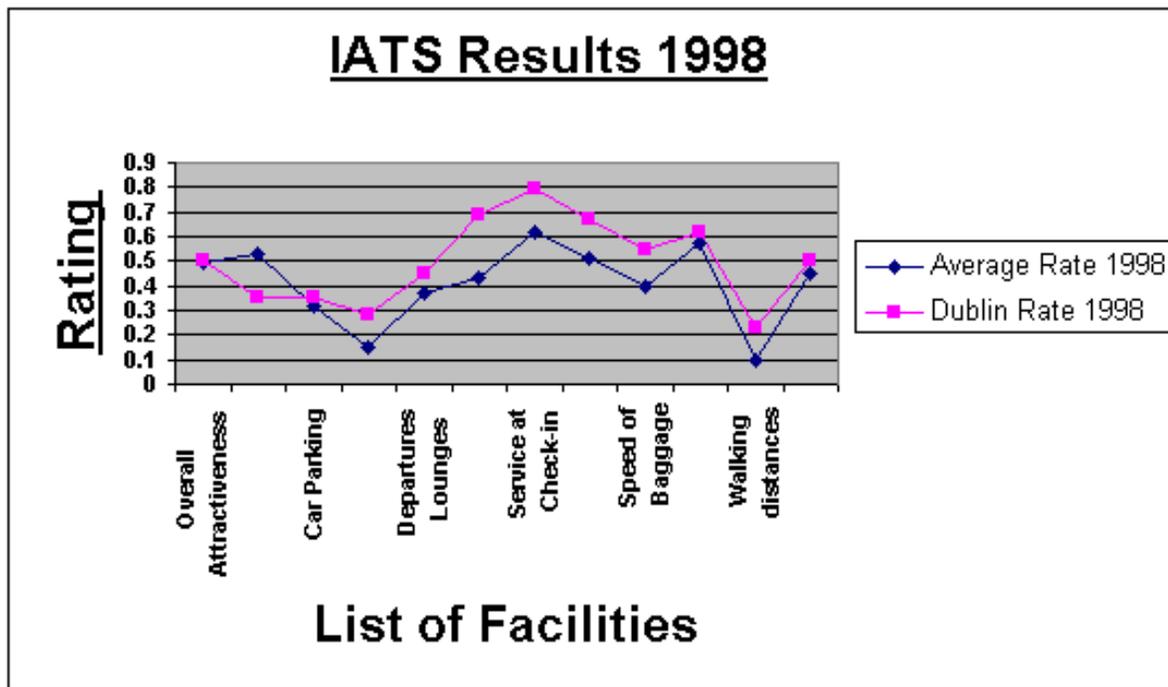


Figure 9.1

Dublin plans to take part in the International Air Transport Association (IATA) Global Airport Monitor Survey from summer 2002 which will further assist in comparative benchmarking of service performance.

Due to the relatively low levels of passenger throughput at Cork and Shannon airports, quantitative methods for monitoring service standards are more limited. A facilities survey is undertaken in Shannon every second summer and Cork Airport is about to commence a quantitative survey to monitor passenger satisfaction with airport facilities there. The small size of the airports facilitates obtaining direct feedback from customers on various aspects of service quality. As is the case at all Aer Rianta airports, a strong customer service philosophy is espoused. Staff feedback on problem areas is encouraged and front line staff are empowered to deal effectively with customer problems as and when they occur. This is reflected in the regular positive feedback on the actions of individual employees.

11.2.3 Standards for Third Party Service Providers

It should be noted that airports are not a self-contained system. They are part of an integrated system of activities in which each part impacts and depends upon the others. The overall performance of processing passengers, freight and aircraft depends on the collaboration of “partners” (e.g. airlines, handling agents, customs, immigration and aerodrome navigation services). A key issue for consideration is the degree of influence and control that the airport can exert over the service standards where the product/service is being delivered by another agency.

This was illustrated at Dublin Airport in the past 18 months by the ineffectiveness of voluntary slot control procedures at the airport. Aer Rianta as the airport management company traditionally had no effective control over the timing of arriving and departing aircraft at Dublin Airport. Indeed, Dublin is the only airport of its size in Europe that is not fully co-ordinated under EU regulation 95/93. Co-ordination means that flight schedules are planned so that the facilities on the ground (runway, terminal, parking stands, handling) are efficiently and safely utilized for the benefit of all.

The uncoordinated approach to flight schedules planning led to over scheduling by the airlines and to the overloading of facilities at certain peak times, particularly weekends. Airlines are unwilling to move to a co-ordinated arrangement as it curtails their scheduling freedom. However it is the passengers using the airport and the airport itself which are inconvenienced if the airlines are allowed complete freedom to come and go as they wish. Ultimately the impact of such airline behaviour is to push Aer Rianta to deliver capacity to meet heavily peaked demand – a most inefficient and costly approach.

In light of this, Aer Rianta welcomes the initiative to designate Dublin Airport as a co-ordinated airport and the appointment of ACL as an independent co-ordinator thereby assisting the more efficient use of facilities. The Commission is now the competent authority for the purposes of slot allocation in the State.

In an attempt to further improve service delivery, Rules of Conduct for ground handling companies were instituted at Dublin Airport on 1st January 2001. These set out the appropriate service standards for all parties i.e. airlines, ground handling agents and the airport authority. Aer Rianta also has a standard clause relating to service standards which is inserted into all contracts with third party concessionaires e.g. banks, car hire companies etc.

In summary, Aer Rianta gives a high priority to quality of service issues and will co-operate fully with the Commission in developing a transparent system to monitor service standards in the future.

12 Development of a New Structure for Airport Charges

12.1 Introduction

Previous chapters have outlined Aer Rianta's views on the most appropriate method for determining the maximum level of airport charges at Dublin, Cork and Shannon airports, from a consideration of the form and scope of regulation to the appropriate WACC within the context of its current and planned operation. The Commission has expressed an interest in considering the appropriate structure for airport charges at the Aer Rianta airports to ensure allocative efficiency. Aer Rianta has already undertaken a comprehensive review of the current airport charging structure, and it believes its proposals in this regard will address many of the key concerns of the Commission. Aer Rianta has also consulted with its customers on the proposed charges structure.

This chapter begins by referencing a number of studies which indicate that Aer Rianta airport charges are amongst the lowest in Europe. The weaknesses of the

current structure and the principles we have adopted in developing a new set of charges are then discussed. After discussion of the economic theory of airport charges, its application to the new structure is discussed. Finally, the impact on airport users is assessed and our proposals are summarised.

12.2 Current Level of Charges:

The Air Navigation and Transport (Amendment) Act 1998 specifies five areas which are subject to airport charges, specifically passenger and cargo processing, and landing, take-off and parking of aircraft (including airbridge charges). Airport charges should be levied to allow airports to operate and develop aeronautical facilities on a commercially sustainable basis.

As previously outlined, airport charges at Aer Rianta airports are currently levied within a single till context based on 1987 market conditions. However, since 1st July 1999, these earnings have reduced significantly (by £17 million pre-tax in the second half of 1999) with the cessation of intra-EU duty and tax-free shopping.

This effect has been compounded by the need to provide additional capacity and facilities as the traffic volumes at the airports have increased. Since 1993, the traffic at Dublin airport has increased by over 1 million passengers per annum. At Shannon and Cork, traffic has increased by 9% and 12% per annum since 1995. Aer Rianta's airports require a substantial investment of capital annually for the next 10 years in order to ensure that the airports can meet the demands of their customers.

The net result is that there is an urgent need for Aer Rianta to obtain a higher level of income from airport charges than in the past, to ensure that it is possible to maintain and develop the airports required to meet forecast traffic growth as Aer Rianta is statutorily bound to do.

Various independent studies confirm that Aer Rianta has traditionally levied airport charges well below comparable airports in Europe. To provide appropriate facilities into the future in accordance with the planned capital investment programme as outlined in Chapter 9, an increase from this very low base will be necessary.

12.3 Current Charging Structure

In addition to altering the level of income derived from airport charges, Aer Rianta wishes to adjust the charging mechanism that delivers this income. The current airport charges structure was developed in the 1980s, and has a number of deficiencies that make it nowadays an ineffective tool for Aer Rianta to manage its airports in the most efficient and effective manner:

- The charging structure does not reward efficient use of facilities through a flexible pricing structure. This deficiency may be illustrated through a consideration of the aircraft parking charges. Because the current structure has minimal and uniform aircraft parking charges for all stand and aircraft types, it does not enable pricing to be used as a tool to assist in the efficient management of the apron area.
- The simplicity of the charging structure does not allow the clear identification of costs imposed through exogenous factors.
- The charging structure does not provide Aer Rianta with any signals as to when it is necessary to start providing for new capacity.

As a result, Aer Rianta has developed a new structure for airport charges that will address these deficiencies. The starting point for this new structure was to

identify the key features which would be required of a more effective charging structure. Note that although it was intended to derive a charging structure that was coherent and consistent across the three airports, there are some differences in detail between the airports due to the individual capacity issues which apply at each. Furthermore, while the charging structures will be similar, the level of each type of charge will in many cases differ from airport to airport to reflect the local cost base, facilities provided and operational features of each airports.

12.4 Principles of Future Airport Charges

In developing a set of principles for airport charges, Aer Rianta has considered views from a number of sources. ICAO has produced a set of broad guidelines in relation to airport charges, while the EU has developed a draft directive on airport charges. Although in existence for several years, this draft directive is, we understand, not scheduled for implementation in the near-term.

PricewaterhouseCoopers in London advised extensively on the development of this charges structure and consulted with IATA and customer airlines. There have been no material objections from the airlines to the structure proposed and described in this chapter.

The basic principles which Aer Rianta proposes in respect of the new charging structure are as follows:

- Charges should be objective, cost reflective, non-discriminatory between users and transparent
- Charges should encourage users to make efficient use of assets and signal clearly the consequences of such use (e.g. they should reflect the costs of increasing the capacity of particular facilities)
- Net revenues from appropriate and related on-airport commercial activities should be used to off-set the revenue that needs to be generated from airport charges
- Charges should be as simple as possible to administer, consistent with the above criteria.

12.5 An Economic Approach to Developing an Airport Charging Structure

In deriving the charging structure, one of the first considerations is identification of the activities/facilities for which there should be a separate charge, and how costs should be allocated against each activity/facility. The approach advocated by ICAO would involve basing charges on an accounting allocation of costs over various activities. As airports generally add capacity in large tranches, this would imply a significant discontinuity in charges as new capacity is brought on stream. In addition, just prior to the introduction of new capacity, when facilities are most congested, prices would be lowest – encouraging further congestion. In contrast, prices would be high when new capacity came on stream, as there would be fewer users over whom the additional costs can be spread. This could serve to discourage additional traffic at a time when there is capacity available. Such a methodology would not be consistent with the objective of encouraging economic efficiency, and therefore is not advocated by Aer Rianta.

From an economic perspective, airport charges could be set on the basis of a marginal cost approach – i.e. that the price of an additional unit is set to equal the cost of the production of that extra unit. However, the application of such an approach to the setting of airport charges is very difficult as the industry is characterised by

- A high proportion of fixed costs, which do not vary as volume increases within a significant range. The marginal cost of handling each additional passenger will therefore be lower than the average cost. Without adjustment, this would mean that the total revenue requirement could not be met.
- A significant element of common costs, which cannot be easily associated with a single activity. Road access, service provision, utility costs and legal/regulatory costs would fall into this category.
- Sunk costs, where facilities were put in place in the past and now the only costs associated with the handling of additional passengers are the additional operating and maintenance costs.

The application of a marginal cost approach to airport charges would therefore mean that the airport would not recover the total costs associated with the operation of the airport which clearly would not be financially sustainable. Thus application of marginal pricing alone would not be appropriate for the derivation of a new charging structure.

An alternative approach would be the adoption of a 'Ramsey Pricing' approach on a widespread basis as referred to in CP2/2001. This means that the users would be charged on the basis of their ability to pay. Thus users with lower price elasticities i.e. less sensitive to variations in price- would have to pay more. However, reliable information on the price elasticities of users can be very difficult to obtain, which would mean that such a proposal would be impractical to implement. In the extreme, the effect may be interpreted as being discriminatory, where 'captive' users are forced to pay more for similar services. Thus Aer Rianta does not advocate such an approach.

Instead, Aer Rianta has adopted a modified form of the Ramsey approach, subject to a number of conditions

- The charging basis should be transparent
- The charges should not distort competition between users
- Charges must as far as possible promote the development of the airports and air services provided, as required by the Air Navigation and Transport (Amendment) Act 1998. This is possible within a Ramsey pricing context as long as expanding the user base serves to reduce the average cost to, and hence benefit, all users.

The appropriate costs, including a return on assets and overhead allocation, should be applied to each activity/facility. In identifying the appropriate costs and in assessing the appropriate charging structure within each category, economic principles must be applied. This will involve the identification of the operating and capital costs which Aer Rianta will incur over the coming years, and use of these to decide what structure rewards efficient use of existing facilities. This would

provide an optimal signal both to Aer Rianta and to users in relation to future investment. Such effects will be discussed in relation to the charging mechanism for each activity/facility, later in this chapter.

12.6 Costs covered by Airport Charges

A simple approach to specifying the appropriate costs which should be recouped through airport charges would be to include all costs related to provision of aeronautical facilities. This would make for a simple charging structure, which from an administrative perspective would be appealing. There are however a number of disadvantages to such an approach

- Many airside facilities are used by parties other than the airlines themselves, including handlers, tenants etc. If all costs were recovered through charges directly levied on the airlines, Aer Rianta would not be able to use pricing as a tool to help manage facilities and infrastructure so as to optimise allocative efficiency.
- Charging on a high-level aggregate basis for all facilities reduces transparency of charging, as the drivers of cost are less clear in relation to specific areas.
- Ground handlers and cargo operators also make extensive use of airport infrastructure, and it would seem reasonable that such operators would make a direct contribution to the airport, to avoid a perception that some types of business consume resources without paying for them – that they are ‘free-riders’ at the expense of the airline community.

For these reasons, Aer Rianta feels that it is appropriate to apportion charges to all users of airport infrastructure, on a basis which relates more closely to their consumption of these resources. At the same time, it is necessary to ensure that the appropriate economic signals are given both to users and airport authority, and that the sustainable profitable operation of the airport is maintained within the context of the regulatory till approach discussed already in Chapter 6. Airport charges, to be levied on airlines, should relate to the costs of provision of facilities for airlines. Additional charges – e.g. rents, concession income, ground handling charges - should be introduced so as to reflect activities undertaken and facilities consumed by those on whom the charges are levied, on a practical and reasonable basis. Thus, where practical, the charging policies in these areas should also serve to improve allocative efficiency. This inevitably implies a more complex system of charges. However, the positive effects in terms of transparency and economic efficiency outweigh the added administrative burden.

12.7 Allocation of Joint Costs

Airport operators are usually involved in a range of business activities at their airports. These range from the aeronautical activities to provision of ground

handling facilities, and from commercial activities directly associated with the aeronautical to those unrelated. In terms of cost allocation, the starting point should be that costs are directly attributed^[44] to the activity from which they arise where this is possible. However, a number of assets are used by several or all of these activities. For example, road access is a necessity for all aeronautical activities and costs associated with it should be spread over the aeronautical cost base. A terminal building is a multi-functional facility, and the costs of provision of such a facility should be recovered from users. A reasonable rationale would be that costs should be allocated⁴⁴ according to the area occupied by a specific activity.

A number of overhead costs also should be allocated across the business activities/business units. In the case of Aer Rianta, economies of scale and scope across the three airports may be derived from such overhead activities, e.g. through the use of centralised technical consultancy, legal and corporate departments, information technology, finance and human resource departments.

12.8 Direct Passenger Charges

The Commission for Aviation Regulation has asked whether or not some of the airport charges should be borne directly by passengers. It would be conceptually quite easy, for example, to levy the passenger service charge directly on the passenger. This is the approach taken in many airports in the US and Canada. In principle, this seems a very reasonable approach, but there are some additional considerations

- It would still be necessary to levy some level of charges on the direct airport customers, i.e. airlines and ground handlers, which would be material enough to permit Aer Rianta to retain the ability to encourage efficient use of resources.
- A consequence could be that the airlines/handlers would demand facilities/services for which they themselves would not be willing or obliged to pay. Passenger reaction to any consequent increase in charges would be fragmented, and directed at the airport authority. This contrasts markedly with the current situation where airlines and handlers are themselves large and powerful business entities with significant market power and with the financial and business resources to bring great pressure to bear on supplier costs.
- A direct charge to passengers would have the effect of demonstrating clearly to the end-user, the passenger, that airport facilities are provided by the airport authority rather than by the airlines, and would provide a direct point of contact with the end-customer. From the perspective of increasing public awareness of Aer Rianta and its business activities, this would be welcome.
- A direct charge would also illustrate the point that facilities at the airport are not 'free' and development can be provided only at a cost.
- In the short term, such a charge would require public re-education, as it is not currently routinely applied in Europe, and would probably provoke some negative reaction at the airport in question.

- Airlines and handlers would probably object to this approach, since it would have a significant cash flow effect from their perspective, as currently they receive the cash and interest benefit of the charges concerned before payment to the airport authority.
- From an airport perspective, collecting a charge directly will imply an additional transaction at the airport, unless such charges were collected through travel agents, for example. The latter would not always be possible in the context of online booking facilities which is becoming an increasingly significant ticket distribution mechanism. Aer Rianta would have to consider how this could be done so as to minimize passenger delay and cost to Aer Rianta in the process.

Overall there would be significant advantages to such an approach from an airport perspective but one specific concern would relate to the ability in the short-term to implement such a mechanism without causing congestion or delay

12.9 Peak Pricing and Long Run Incremental Costs:

For some facilities, there are particular periods of time where demand for facilities is significantly higher than at other times. Where this occurs, Aer Rianta believes that it is appropriate to levy a charge on the off-peak user reflecting the operational costs of production, which is reflective of the marginal cost of production. For the peak period, the user charge should reflect the concept of peak responsibility. Charges for the peak period should thus reflect the incremental operational costs associated with serving peak users plus the additional incremental costs associated with expanding capacity to fulfill the demand requirements of peak users. This approximates to the long run incremental cost of production. The charge indicates to users that if they wish to extend their use of the peak period, they will have to pay higher charges than if they operated outside this timeframe, in order to fund the future capacity they are signalling is required by their pattern of operation. In a congested period, the marginal cost of an extra unit of infrastructure capacity is likely to be higher than the average cost, while in the off-peak the marginal cost is unlikely to exceed the average cost. Application of a peak/off-peak approach will move charges in both peak and off-peak closer to the marginal cost. The concept of peak load pricing has been discussed by Williamson[\[45\]](#), Turvey[\[46\]](#) and Kahn[\[47\]](#).

The estimation of the appropriate differential between peak and off-peak charges commonly involves the use of a Long Run Incremental Cost (LRIC) approach. In this approach the incremental costs associated with the provision of extra capacity could be levied on the peak users in terms of a threshold rate. This threshold rate comprises the operational costs associated with serving the peak users within the existing capacity constraints plus the incremental costs associated with the provision of the additional infrastructure necessary to meet the peak user demand. Off-peak users are not levied this amount since they are operating within existing capacity constraints. It is worth noting that Kahn[\[48\]](#) has advocated the application of a peak/off-peak pricing policy:

airplane landing fees do not reflect the enormous variation in airport congestion from one time of day, day of the week or one airport to another. These variations themselves tend to induce air travellers and airplane companies to rearrange their travelling plans and schedules to avoid peak hours and locations and make fuller use of off-peak time: equivalently varying landing fees could make a further contribution

In the formulation of the pricing structure for airport charges, Aer Rianta is very anxious that the structure is reasonable, economically based, cost reflective and non-discriminatory. The use of peak/off-peak pricing is very consistent with this as outlined by Kahn⁵

In economic terms, peak responsibility pricing is not discriminatory between peak and off-peak users. Discrimination consists in price differences not corresponding to cost differences. It is an objective fact that it costs more to supply users at peak than off-peak and the proposal is to reflect the cost difference in the respective prices. Every peak user actually imposes on society, in the long run, the incremental cost of the capacity on which he draws. There is no causal connection between off-peak utilisation and capacity costs: the capacity would be there whether or not the off-peak users made demands on it.

12.10 Charging Structure Proposal

In the formulation of the charging methodology, the following areas were identified as requiring a separate charge to encourage allocative efficiency:

Airport Charge	Activities and Costs Incorporated
Runway	Runways and taxiways provision and maintenance, landing aids and fire service
Apron	Apron, including stands (remote and contact), airside roads and equipment parking areas but excluding airbridges
Airbridge	Use of airbridge only
Terminal	Common passenger areas to arrival/departure gate but excluding those used for commercial or Ground Handling purposes
INS	Use of US pre-inspection facilities
Security	Hold Baggage Screening, passenger search and protection of whole airport with exception of commercial areas

In Aer Rianta's proposed structure, economic principles have been used within each charge category to ensure that the new charges encourage the efficient use and management of capital-intensive facilities.

12.10.1 Runway Charge

At all three airports, the runway charge will involve a variable charge based on the Maximum Take-Off Weight (MTOW) of a given aircraft type/sub-type. This type of structure is similar to that applied at the majority of the world's airports. While a simple structure of this kind is sufficient at Cork and Shannon, it is not adequate to ensure good economic signals to users and Aer Rianta at Dublin Airport because of different demand patterns.

Current centreline forecasts and the Irish Aviation Authority suggest that a parallel runway will be required at Dublin Airport circa 2007. However, even at present there are periods of time when there is a high demand for runway facilities, spare capacity is at a minimum and there is a significant level of congestion. Due to current demand for airport facilities, ACL has been appointed to act as independent slot coordinators reporting to the Commission, with a mandate to control slot allocation at Dublin Airport for summer 2001, with Dublin being classified as a 'coordinated' airport.

Aer Rianta has analysed the runway traffic patterns produced by the ACL for summer 2001 based on the operating schedules supplied to the coordinator by the airlines. In addition, it has considered the operating pattern for 2000 and 1999 to examine the annual, monthly daily and hourly patterns of runway operation. From this analysis, a peak period when demand is high on the runway can be identified. Increasing peak runway demand accelerates the need for investment in a second runway. Any such acceleration has to be built into the capital expenditure plan for the airport. At peak periods there is a relatively low price elasticity for runway operations, and a correspondingly high price elasticity at off-peak periods.

In the case of Dublin, the use of a simple runway charge, as at Cork and Shannon, would not take account of the differential between high and low demand periods, nor encourage the use of the off-peak period. Therefore, a threshold rate is applied to peak users to reflect the incremental costs associated with provision of a second runway. If users modify their behaviour as a result of a peak charge, delaying the need for a second runway, then all users benefit. The threshold rate level is derived from the operational costs associated with serving the peak users within the existing capacity constraints plus the incremental costs associated with the provision of the additional infrastructure necessary to meet the peak user demand. Since they are operating within existing capacity constraints, off-peak users are not charged this threshold rate. Such an approach has been advocated by some regulatory advisers in relation to development of a second runway at Manchester^[49], where timely introduction of

a well-considered peak load pricing scheme would have tested the case for a second runway and informed a decision on its optimal timing

Aer Rianta's proposal for the runway charges at Dublin involves charging on a movement basis (i.e. for both landings and take-offs) as opposed to the more usual charge for landings only. This allows for the fact that either movement may occur in the peak period.

12.10.2 Apron Charge

For the apron area, the principal drivers of cost are the number of each type of stand (viz, narrow bodied, wide bodied) that is required to meet demand. This demand is a factor of the number of movements, and varies by time of day, day of week and seasonally. One of the principal objectives of a new apron pricing policy is that it should complement new stand management policies and technologies, to optimise the use of apron facilities. This requires a significant change from the current structure which comprises a simple charge regardless of stand type, involving an initial free parking period, followed by very low daily charges, which is very insensitive to efficiency of airline turnaround operation.

One of the features of Aer Rianta airports which distinguish them from many other airports with similar levels of traffic is that they have a traffic base comprising both a large full-service carrier and a large low-cost carrier. These two types of operator have significant differences in respect of their turnaround times, with the low-cost and commuter operators having significantly shorter layover periods, often less than 30 minutes. Charging for aircraft parking should be based on a time unit small enough to reward the most efficient operators. Use of a 15-minute unit of charge would be too broad, and a five-minute interval has been recommended as a reasonable basis.

Due to the uneconomically low apron charges which have obtained since 1987, a persistent feature of recent years has been that a number of airline operators have developed a pattern of 'dumping' aircraft at Dublin for prolonged periods at very low cost to themselves. This puts significant pressure on stand capacity, particularly at weekends, during the summer period, when there is a significant level of both charter and scheduled traffic. As a result, Aer Rianta intends to penalise operators who operate in such a fashion in order to discourage such behaviour. Parking for prolonged periods will trigger progressive increases in charges over time. Operators who are forcing significant additional cost on Aer Rianta and hence its broader customer base through an inefficient use of existing facilities will be forced to bear a greater component of the incremental costs through such a mechanism. This element of the charging policy is specifically introduced to encourage behavioural modification on the part of the operators.

However, Aer Rianta also recognises that orderly expansion of the user base at the airport is desirable where the average user costs are reduced while allowing for the development of capacity as demand increases. The apron charging regime outlined above is a significant change from the current structure, and should give appropriate economic signals.

In summary, apron charges at the three airports will be based on a per five minute unit, with charges increasing for prolonged stay operators. For Cork and Shannon, this structure is flexible enough to ensure orderly management of the apron area at present, but additional elements are required to take into account the pattern of operations at Dublin.

12.10.3 Additional Factors for Dublin

At Dublin Airport, there are additional constraints which need to be taken into account.

There is a significant demand for contact stands, of which Dublin currently has a high proportion. Currently there is no difference in charge for a contact relative to a remote stand. From a user perspective, however, the use of a remote stand involves higher costs, in terms of the need to provide bus transport to and from the aircraft and/or a longer turnaround time to allow for transport of goods and passengers to and from the aircraft. From an airline perspective, contact stands may be seen as providing a superior customer product. For this reason Aer Rianta intends to introduce a higher charge for contact stands vis-à-vis remote stands, supplemented by a rebate to offset the additional costs to remote users for provision of buses.

There is also the further issue of the effect of different aircraft types on stand demand patterns, from large transatlantic aircraft to the smaller narrow-bodied jets and turboprops. The increasing use of larger narrow-bodied aircraft with a typical wingspan of 34m-38m has meant that some of the older narrow-body stands

can now only accommodate the larger aircraft provided that an adjacent stand is unoccupied. In addition, larger stand areas are clearly required for wide-bodied aircraft than for smaller. Thus Aer Rianta proposes to differentiate between different aircraft types based on relative sizes.

Thus the charging structure for apron at Dublin will be differentiated first on the basis of remote versus contact, and then further based on the aircraft type. As for Cork and Shannon, the charge for each stand type will be based on a per five minute unit, with step increases for extended layovers.

12.10.4 Airbridge Charges

Not all contact stands are equipped with airbridges. Indeed some airline customers prefer to use stands without airbridges. It would therefore be inappropriate to include the charge for the use of an airbridge within the apron charge, and a separate charge is proposed for this purpose. When an aircraft is parked on a stand served by an airbridge, no other aircraft is able to use it. Therefore Aer Rianta proposes to charge for the airbridge as it charges for the contact stand, namely on the basis of a five-minute charging unit.

12.10.5 Terminal Charge /Passenger Services Charge

Currently, Aer Rianta terminal charges are differentiated between domestic and international departing passengers. In accordance with notification from the EU Directorate General IV-Competition that differentiation on such a basis between domestic and intra-EU traffic constitutes an a priori infringement of Article 86 of the EC Treaty, Aer Rianta with Ministerial approval decided to increase domestic passenger load fees to intra-EU level over a period of three years. This decision was communicated to the airlines on 28th April, 2000.

The new passenger charge proposed in this document envisages a similar diminishing differentiation between domestic and international until the domestic passenger charge becomes aligned with the international passenger charge. This phased increase conforms to the requirements of DG-Competition to eliminate any differentiation between domestic and intra-EU charges. At the same time the gradual phasing in of the change minimises discontinuity to airline customers.

At present Aer Rianta does not propose any differentiation between EU and non-EU passengers but is considering whether or not such a differentiation would be appropriate in the future, based on relevant and transparent grounds.

Transit passengers, however, do not avail of terminal facilities to the same extent as terminal arriving and departing passengers. Thus it is proposed that no terminal charges be levied for transit passengers, since such passengers make little/no use of terminal facilities, and runway and apron usage costs are recovered through runway/apron charges.

In contrast, transfer passengers make somewhat more use of airport facilities than do transit passengers, although they avail only of airside facilities. Since transfer passengers are of necessity departing passengers each time they transfer through an airport, it is considered that a charge of circa 25% of the standard departing passenger charge is a reasonable reflection of the usage of facilities by such passengers.

At Dublin, despite extra capacity coming on line in 2000/2001, there will continue to be significant demand for facilities at particular periods. Using an approach similar to that adopted for the runway, a peak threshold rate for domestic and international passengers is proposed using a LRIC-type approach.

12.10.6 Immigration and Naturalisation Services

This charge relates to the provision of facilities for pre-clearance of immigration for transatlantic passengers at Dublin and Shannon. This facility is a significant product advantage for airlines relative to competitors based at non-Aer Rianta airports elsewhere. Most transatlantic airlines avail of the facility. A simple charge for each passenger departing to the US is proposed.

12.10.7 Security Charge

Security charges are largely determined by external factors such as IAA and ICAO regulations, and for this reason a separate charge has been levied to ensure transparency. Again, a simple charge per departing passenger is proposed.

12.11 Impact on Customers

As airport charges are at such a low base level, Aer Rianta's proposed increase in the aeronautical revenue required per passenger, if fully passed onto the travelling public by the airlines would only represent a small increase in the price of an airline ticket and would have no effect on the competitiveness of Ireland with respect to airport charges.

Air traffic is composed of several segments and typically only a small proportion of the total passenger numbers relate to tourist inflows. In relation to the Aer Rianta airports the Irish resident segment typically is in the range of 40%-50% though this figure will be somewhat lower in the case of Shannon Airport with its significant proportion of transatlantic traffic. Overseas resident traffic is broadly composed of three key segments viz. business travel, VFR and holiday travel. CSO /Bord Failte/ NTB figures show that in 1999, only 37% of overseas visitors to Ireland specified holiday travel as their main purpose of visit. When taken in conjunction with Irish originating traffic above, it is clear that only about 20% of total traffic at Aer Rianta airports is inbound holiday traffic.

The proposition has been made that airport charges should remain at their current low level in order to subsidise the non-resident segment of the tourist market. The use of airport charges as a means of supporting the tourist sector is a highly inefficient approach. On examination it is clear that in relation to holiday/tourist arrivals by air, the price elasticity of demand for the air travel component does not exceed -1 as the air travel component must be combined with land product price to determine the overall cost involved to the potential tourist. Irish airport charges form between 5-10% of the airfare. The airfare itself is only a proportion of the overall holiday price therefore the likely effect of increases in airport charges on incoming tourist flows is negligible.

The introduction of efficient pricing signals and reasonable returns will assist the development a viable aviation business that receives an appropriate degree of maintenance and upgrading and is able to compete internationally for the necessary capital required for future expansion. This will ensure that in the future Aer Rianta can provide appropriate facilities for both airlines and passengers and will ultimately contribute to the long-term development of the Irish economy, including the tourism sector.

12.12 Summary

Aer Rianta is proposing a significant re-structuring of its current airport charge structure to maximise the allocative efficiency in the management of airport infrastructure. The transparent, non-discriminatory mechanism proposed is cost reflective and signals the need for capital investment both to users and to Aer Rianta. Furthermore, due to the significant increase in capital expenditure required to meet demand over the next five years, and the reduction in commercial revenue due to the elimination of duty free in July 1999, to meet its statutory requirements under the Air Navigation and Transport (Amendment) Act 1998, the net aeronautical yield per passenger will need to rise.

Aer Rianta proposes that the individual charges for separate activities should reflect the economic costs of provision of additional facilities relating to those activities, through the use of peak and off-peak pricing where appropriate.

The proposed structure has separate charges levied on the airline for aircraft landing/takeoff, aircraft parking, airbridge usage, and for passenger arrival and departure services as specified in the Air Navigation and Transport (Amendment) Act 1998. Consultation with IATA and individual airlines on the proposed airport charges structure took place in May 1999, and no substantive objections were raised. The proposed structure may therefore be implemented relatively easily.

These airport charges are complemented by ground handling charges which are levied on ground handling operators at the airports, as provided for in S.I. No. 505. In addition, various property rental fees are also charged. Use of various utilities/infrastructure is to be charged on the basis of the level of utilisation of such infrastructure. It is appropriate that as far as is practically possible that charges should be broadly cost-reflective and relevant, transparent and non-discriminatory.

In accordance with Section 33 (i) of the Aviation Bill 2000, it is appropriate to allow Aer Rianta the flexibility to construct the charging basis for aeronautical and

other charges as it sees fit, once it is clear that the overall level of income is adequately regulated and that the charging structure is non-discriminatory, transparent and relevant and complies with all legal requirements. The development of a robust charging structure allows Aer Rianta to optimise allocative efficiency across a range of activities. The freedom to adjust the structure to take account of changes in behaviour of either airlines or ground handlers is necessary to ensure that such allocative efficiency can be monitored and enhanced in the future.

Glossary

The following abbreviations are used in this report

ACCC	The Australian Competition and Consumer Commission
ACI EUROPE	The European Region of Airports Council International
AICC	Assets in the Course of Construction
ARI	Aer Rianta International
BAA	British Airports Authority
CAA	Civil Aviation Authority
CAGR	Cumulative Average Growth Rate
CAPM	Capital Asset Pricing Model
CARM	A new customer services database system
CER	The Commission for Electricity Regulation
CPI	Consumer Price Index
CP2/2001 February 2001	Consultation Paper on the Maximum Levels of Airport Charges to be levied by an Airport Authority under the Aviation Regulation Act 2001,
DAOPG	Dublin Airport Operations Planning Group
EASA	European Aviation Safety Agency
EBIT	Earnings before Interest and Tax
EBITDA	Earnings before Interest, Tax, Depreciation and Amortisation
ERP	Equity Risk Premium

FTE	Full Time Equivalent
HC	Historic Cost
IAA	Irish Aviation Authority
IATA	International Air Travelers Association
ICAO	International Civil Aviation Organisation
ILGs	Index-Linked-Gilts
LIBOR	London Inter-bank Overnight Rate
LRIC	Long Run Incremental Cost
MA	Manchester Airport
MEA	Modern Equivalent Asset
MMC	The Monopolies and Mergers Commission
MTOW	Maximum Take-Off Weight
NERA	National Economic Research Associates
OCM	Operating Capital Maintenance
OECD	Organisation for Economic Cooperation Development
ODTR	Office of the Director of Telecommunications Regulation
OLS	Ordinary Least Squares
RAB	Regulated Asset Base
RC	Replacement Cost
SOE	State Owned Enterprise
WACC	Weighted Average Cost of Capital

[1] ACI Europe, *European Airports A Competitive Industry*, ACI Europe Policy Paper, 1999.

[2] Coopers & Lybrand, *Rationalisation of the Belfast Airports System*, June 1999

[3] A Fair Deal for Consumers - Modernising the Framework for Utility Regulation, UK Department of Trade and Industry, March 1998.

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