Dublin Airport Operating Costs

Forecasts 2010-2014

Commentary and Back-up

7 April 2009

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1 Executive Summary

This document contains supporting commentary and analysis for the submission to CAR regarding the operating costs of Dublin Airport for the period 2010 to 2014.

DAA is an efficient, commercially focused organisation. Total operating costs per passenger declined by 21% in real terms between 2002 and 2007, with payroll costs per passenger reducing by 17% in the same period. Both the bottom up and top down assessments of Dublin Airport's operating costs undertaken for the Commission at the last price control review, concluded that existing operations were efficiently managed. The outputs from direct benchmarking analyses detailed later in this document suggest that DAA remains relatively efficient compared with other airports. Furthermore, the results of the indirect (TFP) benchmarking undertaken by DAA indicate that the scope for further efficiency gains is marginal.

A summary of the forecast operating costs for the period 2010-2014 is set out in the table below.

For the next regulatory period the key issues around operating expenditure are the step up in costs associated with the opening of T2 and the successful implementation of the Company's Cost Recovery Plan.

1.1 T2 Operating Costs

The majority of the payroll costs and non payroll variable costs associated with running T2 are the subject of a tender process which is being managed by the Department of Transport and its advisors. This process will not conclude until November 2009 at the earliest; as such there is significant uncertainty as to the projected operating costs of the facility. Notwithstanding this uncertainty, in its financial projections DAA has assumed that it will operate and manage T2, furthermore given the efficiencies associated with opening a greenfield facility and the competitive tender process it has assumed [redacted] operating efficiencies will be achieved when compared with its existing cost base.

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While the Company has incorporated these efficiencies into its projections, the introduction of T2 in 2010 will result in a step increase in fixed costs and an increase in unit variable costs in the early years after opening. It is important to note, however, that while T2 is expected to deliver a 75% increase to terminal capacity i.e. 20m to 35m, the forecast incremental growth in operating costs (reflecting a full year of operation of T2) is circa [redacted]

1.2 DAA Cost Recovery Plan

The global economic crisis is having a significant impact on DAA's financial performance. Passenger numbers at its three airports are down 11%, direct retail revenue is down 25% and car park revenue is down 26% in Q1 2009 over the same period last year. At the same time DAA Company payroll costs are budgeted to increase by 6% in 2009 (the National Wage Agreement and contractual increment payments being the main drivers of the increase). The Company appreciates this situation cannot continue and is in the process of developing a Cost Recovery Plan which it intends to implement during the remainder of 2009. As part of this process the Company has implemented a pay pause and has not paid the NWA increase of 3.5% due in January 2009 and increments due in April 2009.

At the time of writing employee representatives have set a precondition that they will not engage with management on the Cost Recovery Plan unless increments are paid. This issue has been referred to the Labour Court. Given the uncertainty around securing agreement on the Cost Recovery Plan a target cost saving amount has not been included in the financial projections.

The opening of T2 together with the impact of the lower passenger base that is anticipated for the forthcoming regulatory period will only serve to intensify DAA's commitment to the pursuit of best practice, cost reduction and overall efficiency.

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2 Operating Expenditure Efficiency

A key concern for DAA is how efficiently it is carrying out its activities, and like many organisations, DAA seeks to understand how it performs relative to its peers in a number of ways. There are two common means of assessing performance against comparators

1. direct benchmarking against peers
2. indirect benchmarking using Total Factor Productivity analysis.

We discuss DAA's performance using both options below.

2.1 Direct Benchmarking

A method which has been used by DAA for a number of years and which has also been adopted at times by the Commission is the use of direct benchmarking, and particularly partial productivity indicators benchmarking.

It is obviously critical than any approach adopted is robust and reasonable. Clearly, if the objective is to identify where and how the organisation can improve its performance, it is essential that both the base DAA data and the data on the comparator airports are well-founded and understood, as otherwise the conclusions and hence strategies deriving from the analysis might lead the company to move in the wrong direction. Unfortunately, in many cases, airport analyses have been predicated on superficial and simplistic analysis. For this reason DAA has outlined to the Commission on several previous occasions its reservations about the use of partial productivity measures as definitive indicators of an organisation's efficiency.

- This form of analysis often looks at a single comparative measure and does not take account of differences between comparator airports such as the proportionate use of capital and labour resources, the range of activities carried out by the airport, passenger mixes, the airport's stage in its investment life cycle, capacity availability, service quality, peakiness of traffic and levels of airport charges.

- A failure to 'normalise' data used in deriving partial productivity measures can have a considerable impact on the emerging results. For example, where partial productivity measures are derived from data for the different airports which has not been fully adjusted to reflect the fact that certain activities such as security, car parking, cleaning, trolley provision may be carried out directly by some airports but outsourced by others, this will impact on the benchmark results. This failure to normalise the comparative data can result in airports which carry out a broader range of activities being interpreted as being less efficient when compared with comparator airports that have outsourced certain activities.

Unfortunately, despite the limitations set out above the Commission has used such measures in the past to estimate the company's operational efficiency and its ability to deliver efficiencies in future regulatory periods. A range of partial productivity reports have been used to draw conclusions about the efficiency of the DAA. In

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some cases, the reports themselves have not employed the most robust of data collection processes, with consequential deficiencies in the output data.

The DAA believes that such measures when considered over a number of years can provide some indication of where efficiency is increasing or decreasing. Any cross-comparisons between companies should be limited to companies with well-established similarities in their business models, and where there is good supporting data to permit the analysis of any anomalous results which may arise, or where the differences been the airports are recognised explicitly and taken in to account in the analysis. In any event, such metrics should not of themselves be considered to be "proof of inefficiency". CAR should acknowledge the noise/errors in such studies, as well as the need to provide outperformance incentives when setting Opex allowances. Due to their limited nature, at best they should be considered to highlight areas which require a more detailed review using a more robust approach such as process benchmarking.

2.1.1 ACI-KPI Project

Like most commercial companies, the DAA uses various benchmarking techniques internally as a management tool to assess and improve the efficiency of its business. The view that partial productivity benchmarking may assist in identifying areas for further analysis is the context within which the DAA participates in an ACI partial productivity exercise on an annual basis. In this exercise, a range of airports in Europe collate historical information, to try to understand the business drivers, and obtain information which may be of use in analysing the business trends, in particular identifying what are common factors and what is unique to their own airport. The advantage of this group is that because it is on a strictly confidential, and mutual exchange basis, there is a confidence in the input data which is absent from many of the commercially produced studies of this kind, and when specific issue or anomalies are identified, it is often possible to go directly to the source and obtain clarification.

However, it must be borne in mind that even with such a transparent approach to participation, there are still anomalies due to the range of airport sizes, the variety of business models which participate, the differing economic and regulatory environments in which we operate, and the development phases of the airports involved. While the group seeks to minimise these differences by considering airports on the basis of size ranges, it is nonetheless true that there are still some areas where data comparison is difficult. This is particularly true where some of this information relates to airport companies and some to individual airports, as despite the goodwill within the group, some companies have been unable to provide data at a disaggregated level.

Bearing in mind the limitations of the approach, the DAA develops such metrics to assist in understanding and improving its business model and operation. As part of the regulatory submission, the DAA is willing to provide access to CAR to such indicators, on a confidential basis, for information purposes. DAA continues, however, to caution about over-interpretation of such measures as "proof" of efficiency or inefficiency.

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2.1.2 ACI indicators

The graphs below represent data gathered from airports with 10-25 million passengers per year. Note that the data is presented in nominal terms so that airports can relate results to their annual reports.

Aeronautical Revenue per Passenger

- Historically, the above graph shows that Dublin Airport has very low aeronautical revenues per passenger relative to its peer airports, confirming that airport charges have been very low at the airport in recent years and indeed this trend goes back for over a decade.
- Although the level of charges at Dublin has been increasing in nominal terms , it reamins one of the lowest in the group. Conversion to real terms would obviously show that that the trend has been strongly downwards until very recently.
- The graph is evidence that the business model at Dublin is different to thatof of its peer airports. The low level of airport charges which can be seen in this graph is enabled through the substantial subsidy of aeronautical revenues from commercial revenues through the single till environment, which enables Dublin to operate with airport charges lower than its peers.

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Aeronautical Revenue as a Percentage of Turnover

- Historically, aeronautical revenues as a percentage of turnover at Dublin has been very low when compared to its peer airports but it has been increasing slightly in nominal terms. This is consistent with the fact that airport charges have been relatively low, as seen in the previous graph.

- This graph shows that Dublin Airport has traditionally and continues today to generate most of its revenues from commercial activities. It is interesting that the level of airport charges as a percentage of income has been falling, which is reflecting both the modest increases in airport charges in recent years and the downward pressure on commercial revenues streamsIt follows that any overly optimistic assumptions regarding the level of future commercial revenues which could be expected in future would have a serious impact on the company, particularly in a market where passenger numbers are falling

Staff Costs per Employee

- This measure must be cautiously analysed. It cannot be simply interpreted as an indicator of high productive efficiency as there may be compensating increases in other aspects of production costs. It can also be indicative of the number of activities which are outsourced.
- Despite operating in a high cost environment, Dublin Airport still performs well when compared to its peers.

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- The increasing trend in this indicator is a concern in light of the serious economic conditions, so DAA is currently looking at a range of cost saving strategies, with an examination of staff costs being an integral part of that programme.

Passengers per Employee

- This measure must be cautiously analysed as differences in the level of out-sourcing at various airports can strongly influence the apparent productive efficiency under this heading.
- The position of Dublin in the graph is due to the high level of activities which are carried out in-house as opposed to outsourcing. Over half the employees at Dublin are employed in activities that are outsourced by many comparable airports, i.e. security, cleaning, retail and car parks. Although the activities are of necessity carried out at all airports, where they are provided by a third party the associated employees are not included in the denominator for this metric. Nonetheless, the airport still bears the cost, through its non-payroll operating costs.
- This metric will show a deterioration after 2008 as passenger numbers are impacted by the economic slowdown.

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EBITDA per Passenger

- Unlike a lot of the measures previously discussed, the level of out-sourcing at airports has minimal impact on the financial indicator graphed above. Assuming the definition of EBITDA is consistent across airports, this result should effectively normalise for differing out-sourcing levels.
- When compared with the aeronautical revenue per passenger graph, it is clear that [redacted] the pattern is broadly consistent with that of the aeronautical revenue per passenger graph. This suggests that, with a few exceptions, an airport's level of profitability is directly linked to its aeronautical revenue.
- [redacted] appears to perform significantly lower than would be expected due to its relatively high aeronautical revenue per passenger, while the reverse is true of
- [redacted] An indepth analysis of these two airports would be required to ascertain whether the specific trends they exhibit relate to differing efficiencies or definitional differences

Summary Direct Benchmarking

Partial productivity measures of the kind used in the previous sections are interesting but must be interpreted with caution even when developed on the basis of a confidential data exchange process, as here. In general, the data suggests that Dublin airport is performing reasonably efficiently to its peers.

2.2 Indirect Efficiency Measures

When assessing the efficiency of a regulated company, it is possible to look at indirect evidence of the firm's performance relative to a benchmark. Indirect benchmarking, which was an option presented for consideration in the CAR's Issues Paper does not rely on identifying direct comparators (i.e. other airport operators) but

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instead seeks to make comparisons with other sectors of the economy and with the rates of productivity gains from companies operating in similar industries.

DAA has carried out an indirect benchmark of its operating expenditure (OPEX) using total factor productivity (TFP) growth estimates produced by EU KLEMS.[1] This was considered given that TFP growth is the most widely used method of assessing productivity improvements over time within the economy as a whole. Regulators in the UK, including the Civil Aviation Authority (CAA), have frequently used TFP growth comparisons to provide high-level cost-reduction targets. In its Issues Paper, CAR indicated that it was considering the use of such measures for its own analysis.

TFP is a multi-factor measure of productivity which examines the change in ratio of all inputs to all outputs (as opposed to a single-factor measure which considers only one input, such as labour). TFP is typically calculated for the economy as a whole, and for sectors or industries within it. Positive change translates into productivity growth, which means that the industry or economy can produce the same output using fewer resources (inputs); negative change translates into productivity regression, whereby less output is produced using the same resources as in the past.

2.2.1 Data and methodology

The TFP measures used in this analysis are based, indirectly, on total costs, since they assess performance as a measure of value-added, including the contribution of labour and capital inputs to output growth. With the available data, it is difficult to identify the contribution of each primary factor of production to productivity growth (as opposed to output growth). This analysis therefore focuses on total cost TFP growth measures, which can be applied directly to the OPEX component of total costs, since the virtual comparator in this case has been constructed to ensure comparability with DAA's cost base.

2.2.2 Data

The dataset used has been sourced from the EU KLEMS project, a consortium of academic institutes including the University of Groningen and the National Institute of Economic and Social Research (NIESR). The project provides productivity growth estimates for a large number of EU countries,[2] using data on Ireland, the UK and an aggregate of ten EU countries[3] (These include all Member States of the European Union as at January 1995) for which sufficient data was available to construct TFP growth estimates.

[1] EU KLEMS Project, 'Productivity in the European Union: A Comparative Industry Approach', http://www.euklems.net/.

[2] EU KLEMS Project, 'Productivity in the European Union: A Comparative Industry Approach', http://www.euklems.net/.

[3] The countries that make up the aggregate are: Austria, Belgium, Denmark, Spain, Finland, France, Germany, Italy, the Netherlands and the United Kingdom.

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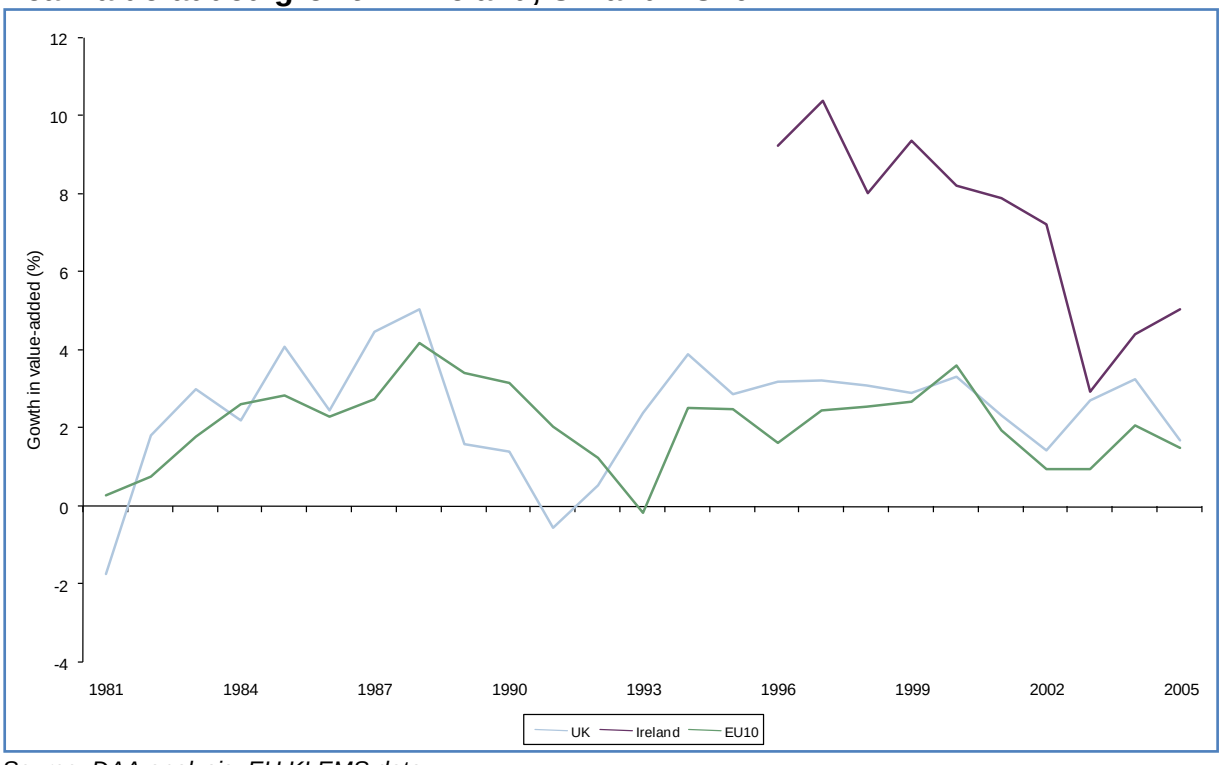
The dataset employs NACE classification.[4] This industry classification method, which is also used by the Central Statistics Office of Ireland, contains information on productivity growth estimates for a large number of industries from 1970 to 2005. However, the level of aggregation is quite high, with most estimates available for only the first level of NACE.

2.2.3 Time period and country selection

To establish a TFP growth rate benchmark, it is assumed that the productivity performance of a particular industry can be represented by a weighted average of the performance of a number of other industries. This amalgamation is referred to as a 'virtual comparator', and is constructed using sector-level productivity data. Estimates of productivity trends for the notional airport operator sector are therefore inferred by weighting the estimates for each comparator sector by its deemed contribution to the airport operator sector's activities.

Such comparisons have the potential to identify reasonable benchmarks for future annual cost reductions. To ensure the robustness of such estimates, the analysis considers productivity performance over a complete business cycle[5] to avoid misrepresenting the impact of recessionary or growth periods. The graph below shows the rate of output growth over the period considered for the selected countries.

Real value-added growth in Ireland, UK and EU10



Source: DAA analysis, EU KLEMS data

[4] Nomenclature générale des activités économiques dans la Communauté Européenne (Classification of Economic Activities in the European Community).

[5] Business cycles are periodic swings in an economy's pace of demand and production activity, characterised by alternating phases of growth and recession.

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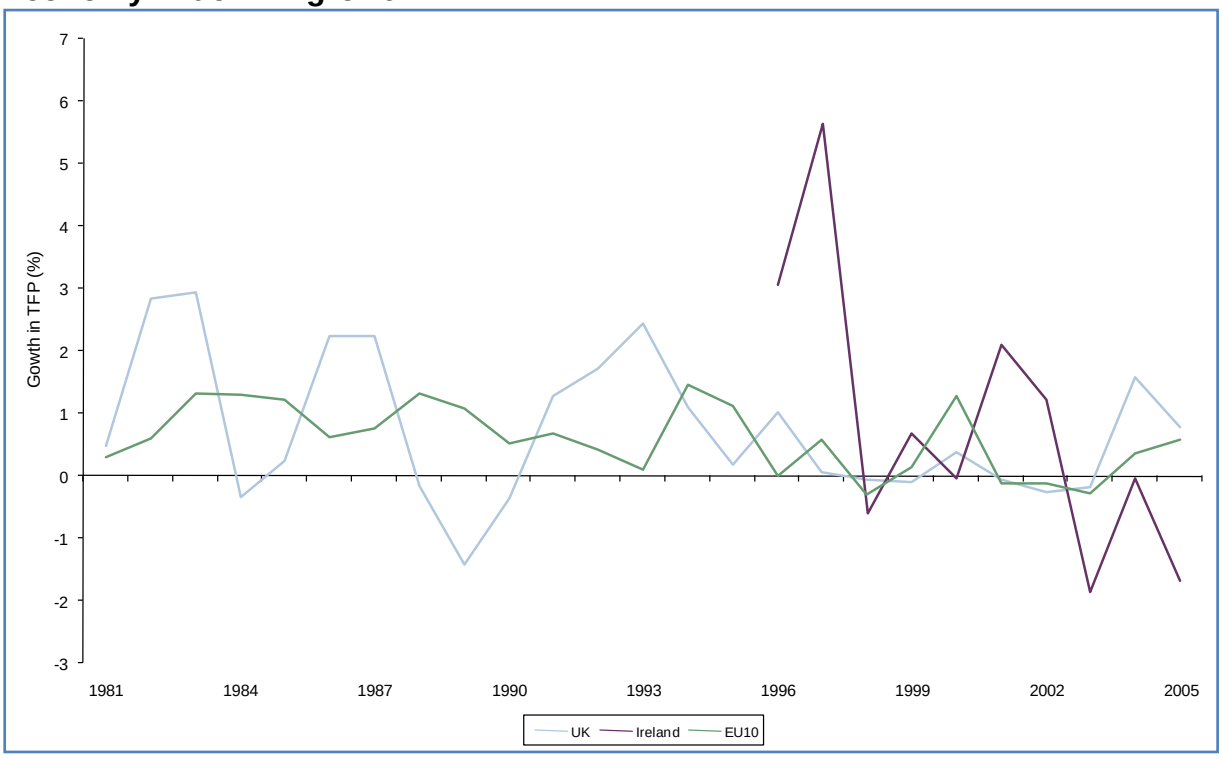
This graph demonstrates that the UK and EU10 data appears to cover approximately two full business cycles: one spanning 1981–92; and the latest covering the business cycle from 1992 to 2002, with data available up to 2004. Data for Ireland, which is available from 1995 to 2005 only, shows the growth in value-added output during this period as steadily declining, demonstrating that this period is not representative of a full business cycle.

It is also shown that value-added output growth in Ireland during 1995–2005 was significantly higher than that of the UK and EU10 economies during the same period. However, concerns have been raised about the quality of productivity data on the Irish economy. Economies such as Ireland—with low labour shares, high productivity per worker and low corporation tax rates—are also often heavily influenced by multinational corporations. These corporations engage in transfer pricing strategies to minimise their effective tax rates. This type of activity may add substantial value but also volatility to a country's accounts,[6] which can result in a wide range of productivity growth estimates over a given period, especially if the timeframe considered is relatively small. The following graph presents the economy-wide TFP growth estimates for Ireland, the UK and the EU10 aggregate.

Economy-wide TFP growth



Source: DAA analysis

2.2.4 EU10

[6] Conroy, C., Honohan, P. and Matrie, B. (1998), 'Invisible Entrêpot Activity in Irish Manufacturing', Irish Banking Review, Summer, pp. 22−38; Honohan, P. and Walsch, B. (2002), 'Catching up with the Leaders: The Irish Hare', Brookings Papers on Economic Activity, 1, pp. 1−57.

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Productivity growth experienced a slowdown in the ten EU counties used for this analysis, from 0.7% in the period 1970–1995, to 0.3% in the period 1995–2005. This slowdown in TFP growth is recorded almost everywhere across the EU, with the exception of Finland and the Netherlands, where it improved after 1995. In France, TFP growth remained stable at 0.7%, but slowed sharply in Germany and in the UK. In Italy and Spain TFP growth was negative, largely driven by the productivity performance of service industries.

2.2.5 UK

The UK experienced a reduction in the rate of TFP growth in the period 1995–2005 compared with 1981–1995, with the exception of the better performance of the Financial and Business Services sectors. Underlying these figures, however, is acceleration in TFP growth in market service sectors during the period 2000–2005, compared with the second half of the 1990s, concentrated in Distribution, Financial and Business Services. In general, the rise in output in the UK across the timeframe considered has been largely due to greater input utilisation. However, since 1995, UK TFP growth rates have been generally greater than those for the EU10.

2.2.6 Ireland

Ireland's TFP growth estimates appear to be more volatile than those for the UK and the EU10 aggregate, displaying large increases but also large decreases in the TFP estimate on a yearly basis. Data on Ireland's productivity performance is available from 1995 to 2005, a relatively short period which, when combined with the volatility of the TFP growth estimates, serves only to increase the uncertainty surrounding the published figures. As the above graph illustrates, Irish output growth (measured as value-added) has been significantly greater over this period than output growth in both the UK and the EU aggregate, although this has been trending downwards. This suggests that the data available does not cover a complete business cycle and therefore the long-term trends of Irish productivity growth cannot be robustly quantified.

Significant volatility and the short timeframe for which estimates are available suggest that the UK and EU10 aggregate productivity growth estimates would provide more robust evidence of the likely productivity growth potential of the composite benchmark. Nevertheless, a composite benchmark using data from the Republic of Ireland has also been produced for comparability purposes.

The use of UK and EU10 aggregate data to construct the virtual comparator was motivated primarily by data availability issues. The use of other countries that are of similar size to Ireland and have experienced rapid growth over the past decade or so was also considered; however, data was available for the 1995–2005 period only, which leads to the same issues as with the Ireland-specific data. Also, the countries that satisfy both size and growth criteria are all eastern European countries and as such faced—and many are still facing—very different issues in their period of expansion relative to Ireland. It is clear that irrespective of any data considerations, using productivity data of such countries to infer the productivity potential of DAA would not lead to credible conclusions.

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2.2.7 Constructing a 'virtual comparator'

Disaggregated cost data for DAA for the period from 2001 to 2008, was used as the basis for the construction of the virtual comparator. Due to the instability of the cost base evident in the earlier period (particularly in the areas of Police and Fire services, Terminals and Airport Management & Support), the analysis uses data from 2007 and 2008 to determine average relative cost weights in each category of operations. All relevant costs have been taken into account, including payroll, non-payroll and depreciation costs. This is presented in column two of the table below. The main reason for the inclusion of depreciation is to ensure consistency with the EU KLEMS data used in constructing the virtual comparator, since this data also includes a measure of depreciation. An alternative basis was constructed using all costs excluding depreciation. This results in a slightly different allocation of weights, as can be seen from column three of the table below. Each category of operations was then mapped onto a selection of aggregate industries, which were deemed to engage in similar activities. These possible comparator industries are listed in column four below.

2.2.8 Activity mapping for DAA

Weights for DAA costs	**payroll and non-payroll only %**	**payroll, non-payroll and depreciation %**	**Possible comparators**
Airside Services & Facilities	2.4	4.3	Transport and storage
Terminals	6.1	13.7	Transport and storage
APFS	17.5	15.0	Transport and storage
Maintenance	8.2	7.6	Transport and storage
Cleaning	6.1	5.1	Renting of machinery and equipment; other business activities
Airport Management & Support	14.6	12.4	Renting of machinery and equipment; other business activities
Car Parks	5.9	6.3	Transport and storage
Commercial Property	4.2	4.6	Real estate activities
Retail	10.2	9.3	Retail trade(excluding motor vehicles and motorcycles; repair of household goods)
Head Office	24.8	21.8	Renting of machinery and equipment; other business activities
Total	100.0	100.0	

Source: DAA analysis

Note: Weightings are based on the average of 2007 and 2008 reported costs.

DAA is typically categorised in the Transport and Storage industry (60t63), more specifically 'Other Supporting Air Transport Activities' 63.23, which according to NACE:

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Includes activities related to air transport of passengers, animals or freight:

- operation of terminal facilities such as airway terminals, etc.
- airport and air traffic control activities
- ground service activities on airfields, etc.
- activities of flying schools for commercial airline pilots.

Data from EU KLEMS is available only at the highest level of aggregation, such as the 60t63: Transport and Storage industry classification. Therefore, by necessity the analysis focuses on the high-level aggregates for the construction of the virtual comparator.

The base and alternative virtual comparator compositions are presented in the following table.

2.2.9 Virtual comparator compositions (%)

Possible comparators	Base mapping (payroll, non-payroll and depreciation)	Sensitivity 1 (payroll and non-payroll only)
Transport and storage	46.8	40.1
Post and telecommunications		
Renting of machinery and equipment and other business activities	39.0	45.5
Construction		
Financial intermediation		
Real estate activities	4.6	4.2
Retail trade, except of motor vehicles and motorcycles; repair of household goods	9.3	10.2

Source: DAA analysis

Note: Weightings are based on the average of the 2007 and 2008 reported costs.

The base case represents the compositions of the comparator industries identified to engage in similar activities to DAA, accounting for all costs, including payroll, non-payroll and depreciation. Sensitivity 1 uses the cost allocation that excludes depreciation.

2.2.10 Productivity performance of the virtual comparator

The TFP performance of the virtual comparators is presented below with the TFP growth for the total economy also included for comparison purposes.

2.2.11 TFP growth benchmarks (% per year)

	Ireland (1995–2005)	UK (1981–2005)	EU10 (1981–2005)
Economy-wide TFP	0.8	0.7	0.6
Composite benchmark	-1.1	1.1	0.2

Source: DAA analysis

Since the productivity benchmark is to be applied to operating costs only, DAA also considered whether it would be appropriate to include an adjustment for capital

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substitution. This issue is specific to partial productivity and efficiency measures, and relates to the fact that increases in the partial measure cannot be identified solely as efficiency improvements since changes in the choice of input mix will have an influence. For example, if a firm replaces much of its workforce with an improved information technology system, output per person will increase significantly, although productive efficiency could fall when both inputs are considered. A similar problem arises from outsourcing; in that the labour productivity measure could increase substantially, concealing the growth in input costs. The trade-off between OPEX and CAPEX can be both operational as well as the result of changes in accounting policy. This analysis assumes that the effects of factor substitution are similar to the industries that comprise the composite benchmark. In addition, DAA employs a labour/capital mix (approximately 80/20) that is very similar to that employed in the wider economy in all of the comparator countries. Therefore, it was found that there was no need to adjust the productivity growth estimates for capital substitution.

2.2.12 Sensitivity analysis

The productivity growth estimate based on the composite benchmark approach required assumptions for:

- the composition of the benchmark; and
- the period of the analysis.

To understand the impact of these assumptions on the final estimate, a sensitivity analysis was used to test the stability of the constructed estimates and reveal the extent of the uncertainties surrounding them.

2.2.13 Sensitivity analysis for the TFP growth benchmarks (% per year)

	Ireland (1995–2005)	**UK (1981–2005)**	**EU10 (1981–2005)**
Base-case results	-1.1	1.1	0.2
Reducing the period (1995–2005)	–0.6	1.0	-0.1
Sensitivity 1 (payroll and non-payroll only)	–0.6	0.9	0.0
Range	-1.1 to -0.6	0.9 to 1.1	-0.1 to 0.2

Source: DAA analysis

The results of the sensitivity analysis reveal that the estimates by country are relatively stable regardless of the assumptions used to construct them, however the results for Ireland cannot be considered robust. Results from the UK composite benchmark suggest a potential productivity growth estimate of approximately 0.9 to 1.1 with a productivity growth estimate of approximately -0.1 to 0.2 from the EU10 aggregate.

2.2.14 Economic slowdown and productivity growth

Productivity changes are thought to be pro-cyclical, which means that productivity growth rates tend to increase in the early stages of an economic upturn while weakening significantly in a downturn. In the early part of a recession, reduction in demand leads to restructuring efforts by firms in an effort to reduce capacity. However, sticky wages, the relative inflexibility of labour markets (compared with the

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other factors of production) and accumulated capital make reductions in capacity a slow process. As such, the rate of productivity growth generally declines early on in the recession, as input utilisation lessens. Once the economy begins to recover, productivity growth picks up relative to the long-term trend, as the same factors that cause the slow response in capacity changes again come into play when the economy gears up to higher levels of demand. Input utilisation increases, which speeds up the rate of productivity growth as firms gear up to meet growing demand. [7]

The implications of the above for the scope of productivity performance for DAA are unclear, mainly due to the uncertainty surrounding the depth and length of the current economic downturn. If, however, it is accepted that productivity growth is strongly pro-cyclical and neither substantially lags nor leads the economic cycle then it is possible to comment on likely outcomes for a number of growth scenarios. If the economy starts recovering in 2010, this would potentially have a minimal impact on the TFP estimates or possibly an increased rate of improvement, depending on how severe the downturn is. If, however, the economic recovery is slower, the scope for productivity improvements available to DAA is likely to be significantly reduced. The likely reduction in demand for air travel will be likely to have a detrimental effect on DAA's efforts to increase efficiency.

Different industries use different input mixes and therefore face different price effects. In this analysis, the TFP estimates used to construct the composite benchmark were derived after adjustment for input price effects, using industry-specific historical input price growth indices, thereby ensuring like-for-like comparisons for the TFP growth estimates. As such, the productivity growth estimates do not include the effects of DAA's future real input price growth. However, if DAA faces input prices changes that are significantly different from the forecast CPI growth over the next control period, an additional adjustment will be required to allow for the use of TFP benchmarks as cost-reduction targets.

2.2.15 Conclusion

The analysis presented above provides a composite benchmark based on the latest available aggregate productivity growth estimates from sectors of the economy engaged in activities comparable to those carried out by DAA. The results of the analysis indicate that the scope for further efficiency gains is marginal. The estimate corresponds to a long-term average scope for productivity improvement. If the current economic downturn leads to a deep and lengthy recession, it is quite likely that the scope for productivity improvements available to DAA would be significantly reduced.

[7] For a more in-depth discussion of these effects, see Malley, J. and Muscatelli, V.A. (1999), 'Business cycles and productivity growth: Are temporary downturns productive or wasteful?', *Research in Economics*, 53:4, pp. 337–364, December.

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3 Future operating costs

3.1 Introduction

DAA has always maintained that the majority of operating cost categories are not in fact strongly correlated with passenger growth, but are linked to other cost drivers determined by factors relating to regulation/economy, physical infrastructure, external factors (e.g. energy cost increases) and the company's business model.

Only certain categories of costs are linked to passenger numbers e.g. payroll costs such as such as FTEs in ASUs, CSAs and Retail, and non payroll costs such as cleaning costs (primarily waste disposal), marketing / promotional costs, and car park bussing. In its response to CP6/2008, the Commission's Issues paper, DAA tested the level of correlation between costs and passenger numbers for total costs, costs linked to passengers and costs deemed to have no link to passengers. It clearly showed a significant correlation for those costs deemed to have a link to passengers. Significantly, this category of costs makes up less than 40% of total costs, and therefore reliance on elasticity with passengers for the purposes of forecasting future operating costs is not appropriate.

3.2 Operating Cost Profile

The Company's operating cost base is comprised of approximately two thirds payroll and related costs and one third other costs. The other costs comprise fixed and variable costs.

Three Airports-Dublin Shannon & Cork

Payroll and related costs comprise basic pay for permanent, contract, and casual staff, overtime, bonus, shift pay, roster dusty allowances, bank holiday pay, employers PRSI, employer's pension contribution etc.

Non-payroll Opex- fixed costs comprise items such as rent and rates, energy costs, technology operating costs, insurance etc. and the Company has limited control over these costs. These costs have increased significantly, for example energy has increased at a compound annual growth rate of circa 25% across the three airports from 2005 to 2008. Notwithstanding the company has limited control it is seeking to reduce costs in these areas. Examples include use of CHP and hedging to minimise energy costs and an element of self insurance.

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Non-payroll opex-variable costs comprise items such as repair and maintenance costs, marketing and promotional costs, cleaning contracts and materials, fees and professional services etc. These costs are budgeted to decrease in 2009 vs. actual 2008. In addition, notwithstanding the increased scope of infrastructure and facilities and increased passenger volumes from 2005 through to 2009 these costs have increased at a compound annual growth rate of 3.9% in this period.

Against this background management established that the majority of the company's cost recovery plan would come from payroll and related costs, in addition it would seek targeted reductions in non payroll costs.

3.3 Short term fixed and exogenous costs

At Dublin Airport, over 60% of total operating costs are capacity rather than passenger related and are therefore relatively fixed in the short term.

The table above shows that the company's operating cost base is comprised of approximately two thirds payroll and related costs, and one third other costs. On the non-payroll side such costs as rates, insurance, energy and the regulatory levy are fixed in the short term, and largely externally determined. In addition some 87% of Dublin Airport's basic payroll costs in 2008 relate to permanent staff, and any effort to reduce this level would come at a cost (e.g. a voluntary severance scheme). In overall terms, [redacted]

Due to this, the opportunities for significant cost reductions are limited. Though DAA has identified and implemented such measures as are within its control to minimise costs, some of these initiatives only provide short term or even once-off reductions.

Over time all fixed costs are variable and in the case of the short term fixed costs identified above, growth (in real terms) is primarily linked to provision of additional facilities which generally result in step increases in operating costs.

3.4 Link between Facilities, Step Increases in Costs and Economies of scale

One of the most significant drivers of operating costs is delivery of additional capacity. When capacity is delivered step increases in operating costs are to be expected, mainly in such cost categories as maintenance cleaning, energy, insurance, rates and technology. However, economies of scale will deliver a reduction in average operating costs per passenger from the time a facility first opens until it reaches full capacity.

This is can be demonstrated with reference to DAA's experience. The last significant delivery of capacity was in the late 90's early 2000's when Pier C phases I & II, the 6 Bay extension to Terminal 1 and significant apron expansion were delivered. The figure below shows that from 1997 to 2001 operating expenses increased by c.60% in real terms. Even when 2001 is excluded to ensure there is no 9/11 impact, the increase is still almost 50%.

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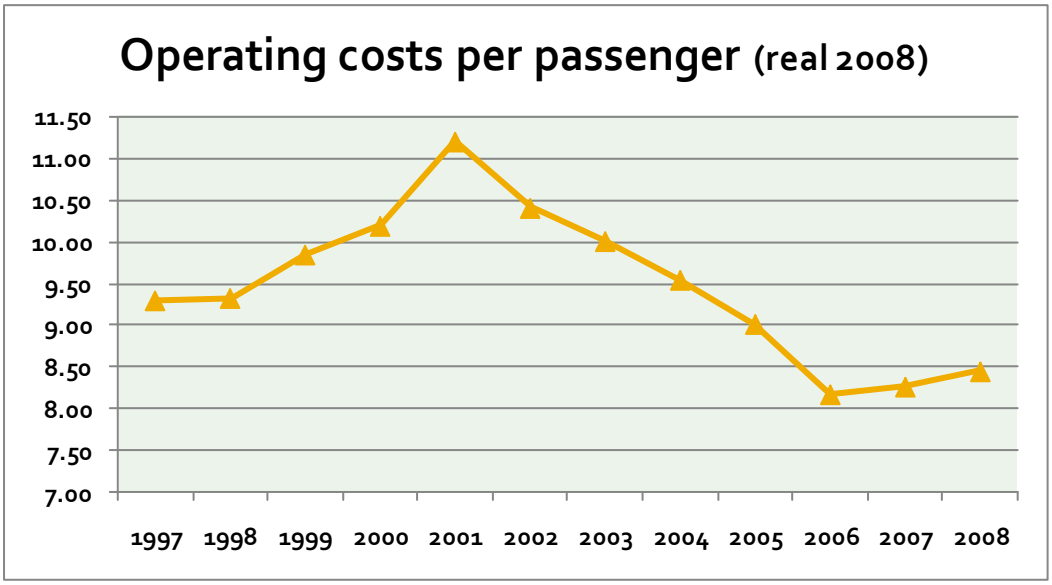

However, the graph also demonstrates that DAA, in the year where capacity of the existing facilities was reached, i.e. 2006, reduced the cost per passenger by 12% below the level when capacity limits were last reached (i.e. 1997).

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4 Impact of T2 Step increase on Operating Costs

As previously stated one of the most significant drivers of operating costs is the provision of capacity delivering facilities, and in particular terminal capacity. Delivery of additional terminal capacity leads to a step increase in operating costs, which in the short term also leads to an increase in the operating cost per passenger as economies of scale are only achieved as the new capacity fills up. This was demonstrated in the previous section where the operating cost per passenger at Dublin airport increased between the years 1999 and 2001 as various projects delivered additional Terminal & Pier capacity (as well as apron), and from then to the point where terminal capacity was reached (i.e. 20m during 2006) the average cost per passenger decreased, though congestion effects resulted in a slight increase in 2007/8. In the absence of a cost saving plan, there would be an increase again in 2009 as the reduction in passenger numbers, coupled with the fixed nature of a significant portion of Dublin Airport's operating costs, limits the scope for reducing the average cost per passenger during 2009.

4.1 Determinants of cost increases

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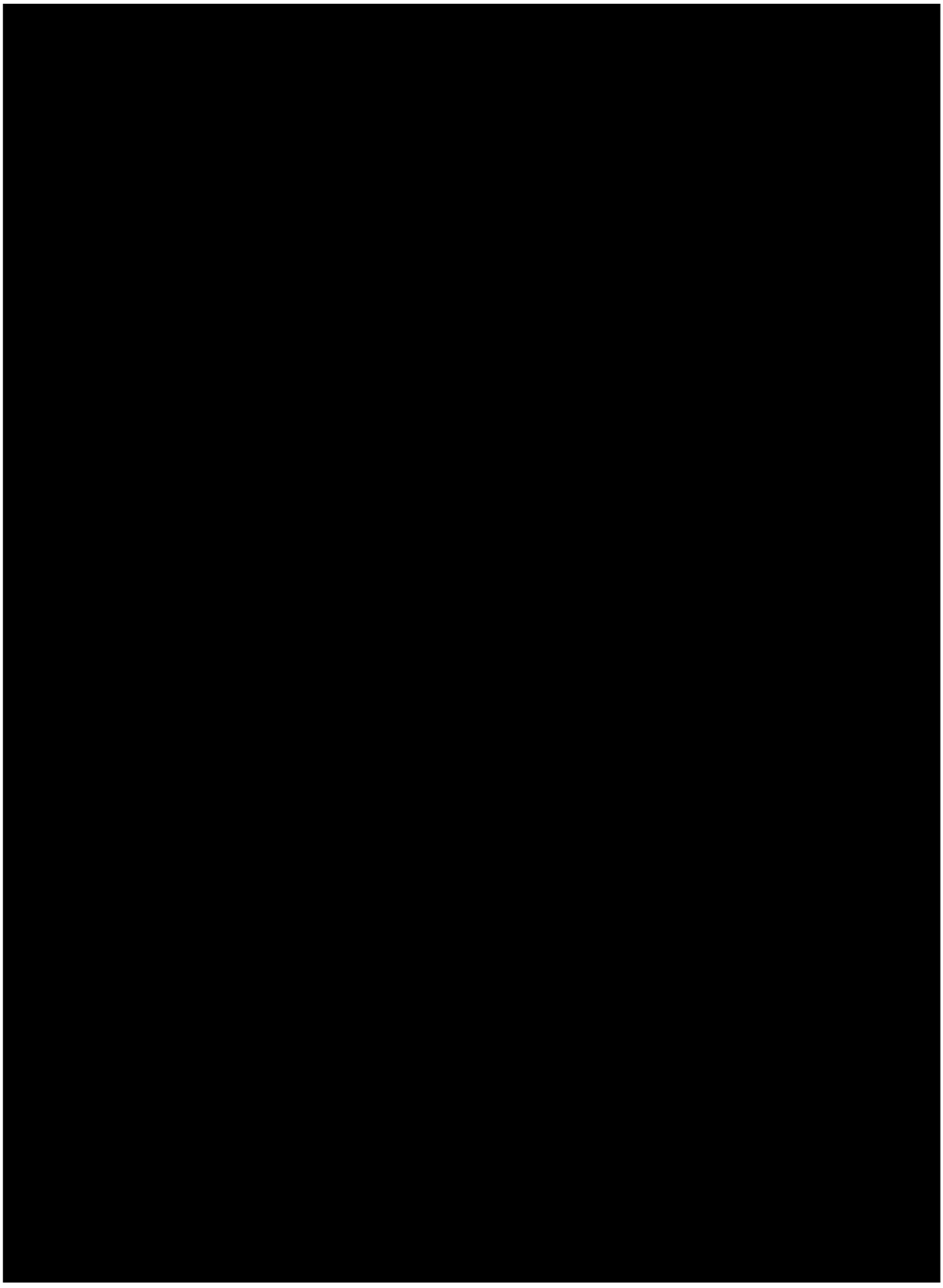
4.2 T2 tender process – efficiencies



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4.3 Key Drivers – Costs in operations 2010 to 2014 (excluding T2)

4.3.1 Projections

4.3.2 FTE's & Payroll

Delivery of additional apron capacity in recent years has lead to requirement to increase airside management unit and outdoor cleaning. Delivery of T2 in 2010 will lead to a gradual reduction of customer service staff to less than half by 2011. There will still be a requirement to maintain a certain level in 2010 for the purposes of providing way finding services to passengers when the new facilities first come on stream.

Certain FTEs which are passenger driven will see a transfer from existing facilities into T2, namely ASU's and CSA's (before final reduction in 2011).

Payroll costs are still forecast to increase ahead of CPI due to the combination of national wage agreements and the incremental scales in DAA. The cost savings plan being pursued by DAA, which will be covered in a later section, will among other things deal with this issue.

4.3.3 Pension Costs

The Company operates, or participates in, pension schemes covering the majority of its employees. Pension schemes assets are held in separate, Revenue approved, trustee administered funds. The majority of the Company's employees over the age of twenty are members of the multi-employer Irish Airlines (General Employees) Superannuation Scheme ("the IAS Scheme"). Contributions are specified in the Trust Deed and Rules at 6.375% of pensionable salary for both employer and employee.

DAA had previously indicated to the CAR the need for separate pension arrangements in addition to those of the IAS scheme and has stated its intention to establish a new successor scheme to the IAS scheme in its financial statements since 2001. During 2008, the company reached agreement with trade unions representing the majority of staff to establish, subject to Ministerial approval:

(a) additional discretionary, fixed contribution, pension arrangements for DAA members of the multi-employer IAS Scheme ("Additional Fixed Contribution Funds for Existing Employees") whereby Company contributions calculated by reference to pensionable pay will be at the rate of 5.625% (employer, 3% capitalised) and 2.625% (employee). The purpose of the Additional Fixed Contribution Funds for Existing Employees will be to seek to provide to eligible

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members, insofar as available funds permit and subject to the trustees' discretion, additional pensions in payment to those paid by the IAS Scheme.

The Company intends to make a once-off contribution (3% capitalised payment) to the Additional Fixed Contribution Funds for Existing Employees in respect of past service, which will be conditional, inter alia, upon employee election to join and contribute to the funds, the associated cost of which was estimated at €36 million at 31 December 2008. The Company, and current eligible employees who opt to become members of the funds, will also pay ongoing annual defined contributions. The ongoing employer contribution to these funds will be 2.625% of pensionable pay and the employee contributions will also be 2.625% of pensionable pay.

(b) A new Company pension scheme, independent of the IAS Scheme, for new employees with contribution rates set at 12% and 9% for employer and employees respectively. These contribution rates will be the same as those for the existing IAS Scheme together with the additional schemes as detailed above. This new scheme will be a "hybrid" (i.e. part defined benefit and part defined contribution) scheme.

Other Pension Arrangements

The Company also contributes to certain other pension arrangements, the principal one of which is the Aer Rianta Supplemental Superannuation Scheme ("the ARSS"), a scheme for certain categories of company employees to provide certain retirement pension benefits supplementary to those payable under the IAS Scheme. The current contribution rates are 6.375% for both employer and employees.

The Company also has an unfunded obligation to provide for the costs of early retirement for a certain category of employees (the "Early Retirement Obligation") as a result of agreements entered into in prior years which up to 2008 did not result in any significant cost to the Company. Due primarily to a change in the relevant actuarial assumptions arising during 2008, the Group has recognised a pension liability in respect of the Early Retirement Obligation at 31 December 2008 of

[redacted]

[redacted]

Future pension costs included in the 2010 to 2014 final projections prepared as part of the 2009 regulatory submission to CAR are based on the contribution rates outlined above for existing and new employees.

[redacted]

4.3.4 Nonpayroll

On the nonpayroll side, costs which will transfer with passengers to T2 include waste removal costs and public liability insurance. With the exception of those costs linked to passengers, the only increases in nonpayroll costs on the operations side expected in the period relate to additional maintenance on upgraded HBS from 2012 and HV & MV electrical distribution system from 2010.

Energy costs are expected to continue to grow ahead of inflation; however DAA is actively managing its energy costs and expects to achieve significant savings as a result for 2009. The forecast reflects that DAA will be able to achieve a portion of this saving beyond 2009 by finding ways of achieving efficiencies in energy through price (e.g. hedging), or through CHP use (Dublin Airport has been gaining efficiencies through use of CHP since the 90's).

There is a full review of Dublin airport rates to be carried out within the next year. It is unclear what the outcome will be and the forecast does not reflect any assumption regarding the overall impact of this review. However there are a number of facilities which to date not been included in the rateable valuation, mainly Pier D and some apron, and the forecast reflects an increase to include these facilities from 2010.

4.4 Key Drivers – Costs in Commercial areas 2010 to 2014 (excluding T2)

4.4.1 Projections

4.4.2 FTE's & Payroll

In retail the two most significant changes to operating costs are the opening of T2, leading to some reduction of FTE's in 2010 in Terminal one, and the move to a greater proportion of concession business from 2011 in Terminal 1 which will also lead to a reduction in FTE's. There are sufficient retail employees currently employed on a contract basis to facilitate these reductions without a cost to DAA in the form of

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severance payments. On the Commercial property and marketing cost side there is no forecast change to FTE's in the short term.

4.4.3 Nonpayroll

The increased concession proportion will lead to a reduction in some nonpayroll costs for retail, including rates. Car park bussing is expected to increase in 2010 to cover the Blue car park. Significant effort is being put in to ensure car park revenue increases despite the effects of the global economic downturn. This will be achieved through pricing strategies resulting in lower charges but higher occupancy, which increases the bussing requirement. The current assumption is that the rates review will not lead to any increase in car park rates.

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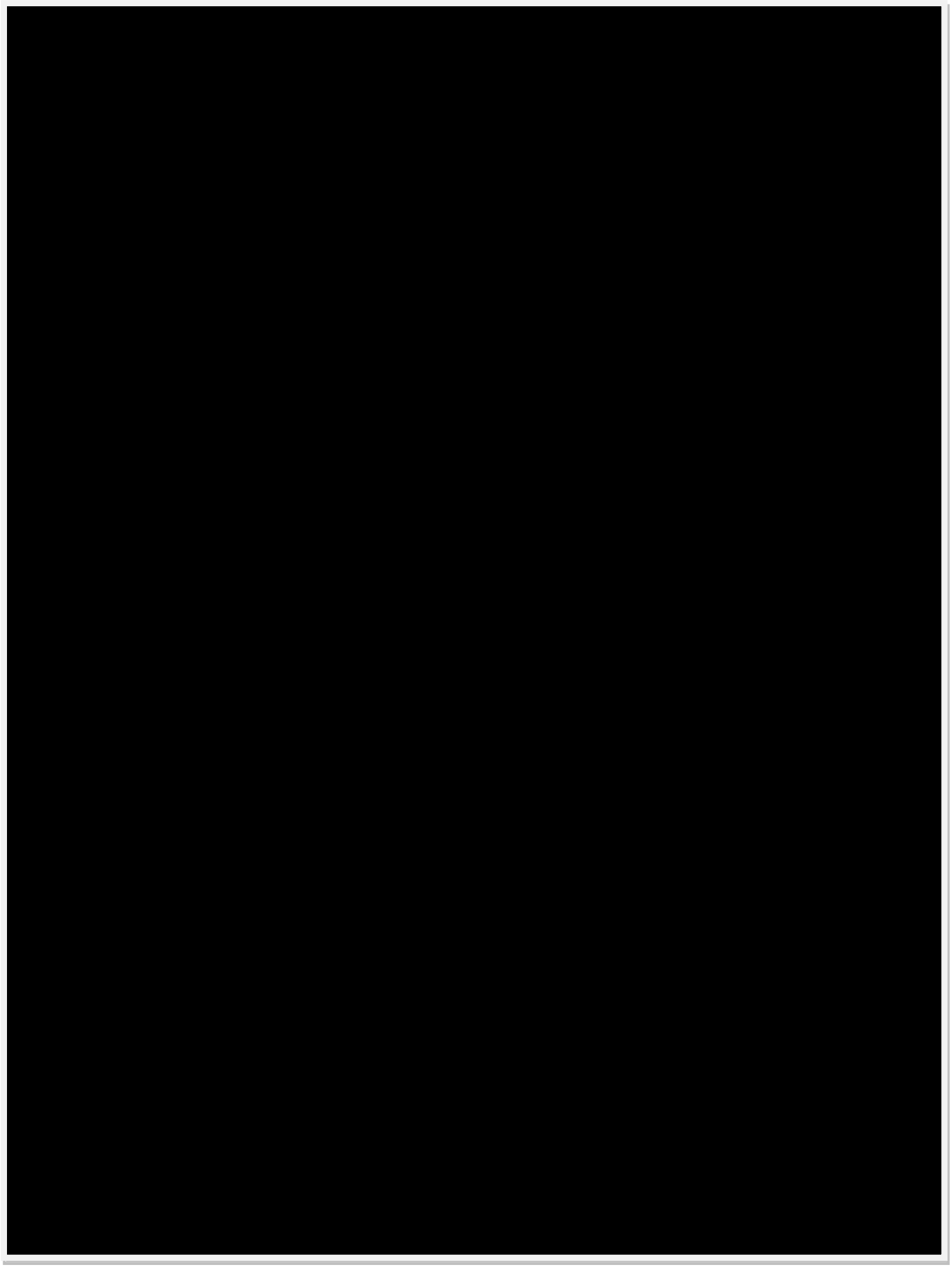
5 Likely Trends for Operating Expenditure 2010-2014



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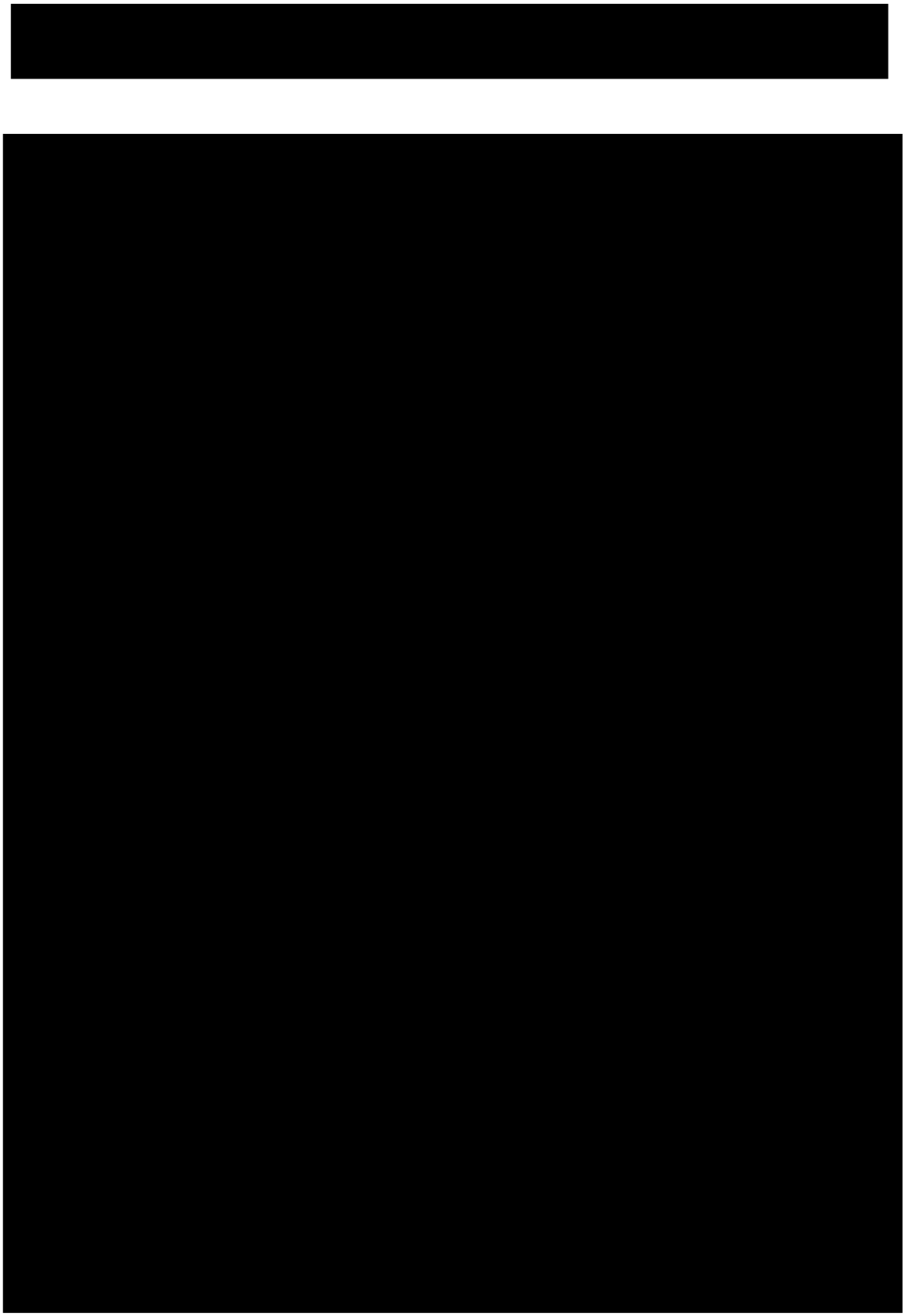
Appendix A – Detailed Opex Assumptions



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Appendix B – Detailed T2 Costs

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