

CP9/2001 - Appendices

Report on the Determination of Maximum Levels of Airport Charges – Part 2

- Appendix I – Comment on the report by NERA on Aer Rianta's cost of capital.
- Appendix II – IMG comments on "Report on regulatory asset valuation prepared on behalf of Aer Rianta", dated 31 May 2001 by Arthur Andersen (the "Andersen Report").

CP9 - APPENDIX I

Comment on the report by NERA on
Aer Rianta's cost of capital

**Comment on the report by NERA
on Aer Rianta's cost of capital**

Report to the Commission for Aviation Regulation

August 2001

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[1] Introduction

In this document we discuss NERA's (2001) report on Aer Rianta's cost of capital. While we agree with most of NERA's theoretical discussions, a number of important issues arise when they proceed to put the theory into practice. In particular, we disagree with NERA's estimates of the following four components of the weighted average cost of capital:

- the risk-free rate of interest,
- Aer Rianta's beta,
- Aer Rianta's debt premium, and
- Aer Rianta's gearing.

NERA's report contains several errors and inconsistencies. In many cases, insufficient information is provided regarding the estimation techniques, and it is consequently impossible to replicate a number of NERA's important findings. This is particularly the case in the section on beta. Further, at times when it is most appropriate to draw on academic evidence, such as in estimating the equity risk premium, NERA has not done so. There are also instances where NERA has drawn spurious conclusions, for example from 'evidence' that is insufficient or absent.

[2] The Risk Free Rate

The risk-free rate is a very important component of the WACC because it is used twice; first in estimating the cost of equity via the CAPM and secondly in estimating the cost of debt. It is addressed in Section 4.2 of the NERA report. We agree with NERA that the risk-free rate of interest should be estimated using a European benchmark, notably a German government bond. This is an appropriate approach given Ireland's position in the Eurozone, and the size of the German bond market and its influence in Europe's financial system. However, we disagree with some of the techniques NERA has used to estimate the risk-free rate for use in Aer Rianta's WACC calculation.

1. 2.1 The use of current yields rather than long-term average yields: Section 4.2 (pages 10-12)

We disagree with NERA's use of current yields to estimate the risk-free rate, rather than estimating the risk-free rate using historical averages. The historical approach - using long-term average estimates for the risk-free rate - was used by the CC and the CAA in Britain. NERA does not properly justify its choice of current rates. In paragraph 2 on page 11, NERA recognises (correctly) that if short-term factors cause current rates to deviate from their historical averages, the latter might be more appropriate. The subsequent four paragraphs (on pages 11 and 12) are about the appropriate term to maturity, and then the following 'conclusion' appears:

"Thus, there is strong precedent for selecting current yields on long term bonds as the proxy for the risk free rate".
[NERA (2001), pg 12, paragraph 3].

Contrary to the quoted statement, the text provides no reference to any "strong precedent" for the use of current rates rather than historical averages. In fact, it provides no justification at all for this conclusion.

2.2 The use of current yields rather than long-term average yields (continued):

Section 4.2.1 (pages 12-13).

NERA presents Table 4.1, which shows the current yields and the average yields (averaged over the preceding year) for four German bonds with different maturities and different coupons. They then comment on the German 'yield curve.' These rates, however, could not be said to constitute a yield curve. A yield curve can only be called such when the instruments are exactly the same except for maturity. These four bonds have different coupons. Further, it is well recognised, both amongst academics and in the markets, that yields for securities with more than one cash flow, like these, are ideally converted into equivalent zero-coupon bond rates, because the size and timing of the coupon will affect the market yield. Assuming, however, that the yields given are a close enough approximation to a yield curve, NERA makes a serious error of inference in the paragraph below Table 4.1 on page 12. To demonstrate, we have drawn the 'yield curves' for both the German bonds and the Irish bonds (Table 4.2 has the Irish bond data). These appear in Figures 1 and 2.

NERA states that for the German market there has been 'a very slight movement in the term structure of the bond market, with the yield on short-term bonds increasing slightly and yields on medium-to-long-term issues falling.' As can be seen in Figure 1, current yields on short-term German bonds are lower than the average over the previous year, indicating that yields on short-term bonds have actually fallen. Further, the 15-year bond yield has risen, albeit very slightly. In the German market, therefore, there has been a steepening of the yield curve. This is opposite to what has happened in the Irish government bond market (Figure 2), where a flattening of the yield curve (relative to the previous year's average) has occurred, with short-term rates rising and longer-term rates falling. They both, however, show upward-sloping yield curves, which is nothing unusual as the upward-sloping yield curve is the most common, and is also called the 'normal' yield

curve for this reason. They also show similar levels of yields, but at each maturity these are not directly comparable because they have different coupon rates. But they do not, contrary to NERA's conclusion, demonstrate that 'returns' on the two markets show 'similar patterns.'

In this section NERA again uses a spurious argument to 'justify' the use of current rates rather than historical averages to estimate the risk-free rate. They argue that the 'similar patterns' exhibited by the German and Irish government bond yields demonstrate the absence of short-term factors impacting on the market; and conclude that there is consequently a strong argument for using current rates rather than historical averages.

"The parallel movements in Irish and German bonds suggests that there are no significant short-term "institutional factors" influencing bond returns in these two markets and thus we conclude that fundamental economic changes underlie the movements. Indeed, other eurozone countries display similar trends.

In such circumstances there is strong theoretical preference for the current yield as a proxy for the expected risk-free rate".

[NERA (2001), pgs 12 and 13]

This argument is spurious. Even if the two markets did exhibit 'similar patterns', or indeed if there were similar trends in other European rates, such evidence does not imply anything about the existence or non-existence of short-term influences in the bond markets. Nor does it imply that only 'fundamental economic changes' underlie recent movements in these markets. Given the widely accepted predominance of German bond markets in Europe, it is just as likely that temporary German market fluctuations influence smaller markets such as Ireland. Contrary to the last sentence in the quotation, no theoretical preference (strong or otherwise) is demonstrated for the superiority of the current yield rather than historical averages for estimating the risk-free rate.

2.3 The inflation adjustment: Section 4.2.2 (pages 13-14)

NERA generates a real risk-free rate by subtracting a forecast inflation rate for Germany over the period 2001-2010, of 1.7%. This is the appropriate approach for removing the expected inflation component from nominal interest rates if current yields are used as a proxy for the risk-free rate. They do not, however, remove the premium for inflation risk from the nominal rate. (See section 2.1.5 of our report for a full discussion of this issue).

NERA's Tables 4.3 and 4.4 report, respectively, the Consensus Forecasts (which is based on a survey of European private sector and research institutions), and the NIESR forecasts for German inflation. These tables report only the first moment of the inflation forecasts – the average. No information about the higher moments of the distribution are given. For example, averages can be highly misleading, particularly if distributions are skewed. More importantly, however, the averages give no idea of the dispersion of the distribution – in this case the extent of disagreement regarding future inflation between surveyed individuals.

[3] The Equity Risk Premium

There are many difficult theoretical and empirical problems in estimating an appropriate equity risk premium, and the techniques used for its historical estimation are many and varied. We agree with NERA's final estimate of the equity risk premium; at 6% it is the same as our estimate. NERA's approach to the issue, however, is inadequate. First, NERA does not refer to any of the large body of academic evidence on the equity risk premium. It refers to one outside study only: the LBS/ABN Amro (2001) study. Second, in its 'historical approach' to estimating the equity risk premium, NERA attempts to calculate it using returns on the FTSE all share index as well as on the S&P500 index, using data periods of 10 and 30 years. As we argue in our main report, the equity risk premium is ideally estimated with data over the very long-term (for example, the LBS/ABN Amro study used 99 years of data). For these reasons, our recommendation relies largely on previous academic (and practitioner) studies.

NERA's historical estimate of the equity risk premium is discussed in section 4.3.1, and their results are summarised in Table 4.5. This table contains a major error. We initially thought it highly unusual that the average risk-free rates in the UK and in the US would be exactly the same over 10 and 30 years: the table has the average risk free rate for the UK market at 7.33% for both 10 and 30 year periods; and for the US market it has 6.23% for both the 10 and 30 year periods. The resulting equity risk premiums reported in Table 4.5 are based on these rates. However, there are different figures for the 30 year rates in Table 0.2 in Attachment B. If we assume that these are correct (4.56% for the UK and 8.10% for the US), then the resulting equity risk premiums are 8.68% and 2.89% respectively, and the average should be 5.9% (instead of 5.3% reported in Table 4.5).

[4] Beta

The NERA report discusses, in section 4.4.1, 'three significant practical difficulties in estimating an equity beta for Aer Rianta.' These 'practical difficulties' correctly point to serious problems in estimating an accurate beta for Aer Rianta, but none of the issues are comprehensively addressed, and the methods that are eventually used to deal with these problems are inadequately justified. These 'practical difficulties' are discussed in sections 4.4.2, 4.4.3 and 4.4.4 of the NERA report, and are discussed in turn.

2. 4.1 The choice of comparator company: Section 4.4.2 (page 23)

The first 'practical difficulty' relates to the issue of which comparator company's beta should be used to estimate Aer Rianta's beta (as Aer Rianta is not listed). The report lists five European quoted airport operators: BAA, Copenhagen, Rome, Vienna and Zurich. The beta calculation, however, is restricted to BAA. This is justified in section 4.4.2 by the statement that 'BAA has a similar balance of aeronautical to non-aeronautical revenues, and is subject to a price-cap regulatory regime...' There is no discussion of similarities and differences between Aer Rianta and the other potential comparator companies. Further, this shows up a serious inconsistency in the report, because NERA goes on to justify a higher asset beta for Aer Rianta on the basis that it has a much higher proportion of non-aeronautical revenues than BAA.

3. 4.2 The appropriate estimation timeframe: Section 4.4.3 (pages 23-26)

The second relates to the appropriate time frame for beta estimation. The section of NERA's report addressing this issue is seriously flawed. There is insufficient evidence on how certain vital inferences and conclusions were made, and it contains several errors and internal inconsistencies. Further,

little effort has been made to consult academic evidence on beta estimation, or even to follow practitioner norms.

Some important points of criticism are as follows.

(i) Equity betas are not reported. Individual company betas are usually estimated via regression analysis using returns on the stock and returns on the market index. The resulting estimates are a starting point for estimating equity betas. The calculation of an equity beta is a necessary precursor to making the appropriate adjustment for leverage that gives an estimate of asset beta. (It is impossible, in practice, to estimate an asset beta directly). However, the NERA report does not, at any stage, report BAA's equity beta. Figure 4.1 is entitled 'Time Series of BAAs Asset Betas', which, it must be assumed, depicts a time series of asset betas – that is, equity betas that have already been adjusted for leverage. There is no explanation as to how this was done (although two equations commonly used for de-gearing equity betas are presented in a subsequent section), nor has data been provided on BAA's leverage for the years in which this 'rolling asset beta' was calculated.

The most serious issue here is that it is not clear whether the reduction in beta after 1998 – that NERA discounts – is due to a decrease in leverage, or due to other factors such as industry-wide effects or other fundamental company factors. This question is not adequately answered in the discussion of possible explanations for this reduction in asset beta on page 25. The reporting of estimated equity betas would have gone some way to answering this question.

(ii) The data interval. There is no discussion in NERA's report of the best data time interval for beta estimation. In fact, it is difficult for the reader to ascertain whether monthly or weekly estimates have been used. The axis on Figure 4.1 is labelled 'ungeared weekly betas', but in the discussion of 'ensuring robust estimates' (section 4.4.3.2) it is stated that a monthly interval has been used. It is well established, both amongst academics and

practitioners, that the use of different data intervals can result in different beta estimates. The use of short interval data, such as daily or weekly, can introduce bias due to non-synchronous trading. It is generally accepted, therefore, that monthly data has the dual benefit of being the least biased data interval, while allowing a sufficient number of observations for valid regression analysis.

(iii) The choice of index. NERA used the Dow Jones European index to calculate the beta for BAA. This, they argue, is 'consistent with our overall approach of calculating Aer Rianta's beta in the context of a European market.' (Section 4.4.3.2, page 26). While a more common approach to estimate the betas of British companies would be to use one of the FTSE UK indices, we concur with NERA that in this case it would be more appropriate to use a European index.

(iv) The choice of time frame. NERA used data from 1992 to 1998 to estimate BAA's beta. This choice of time frame is most unusual and would not normally be adopted by academics or practitioners.

The choice of time frame is related to the data interval. If a limited period is available for analysis, for example on a company that has listed in say the last year or two, then weekly data is necessary in order to give sufficient observations. This is not an issue with BAA, however, as it was listed in 1987.

The choice of time frame is also related to what the NERA report calls 'economic relevance.' A beta estimated for the purpose of computing a company cost of capital is by definition a future beta. Historical estimates are the necessary starting point. Betas will, however, change over time, as the fundamental characteristics that affect a company's systematic risk alter. More distant data is therefore less useful for this purpose. The choice of time horizon will therefore be a tradeoff between obtaining the best estimate of

future beta, and gathering sufficient observations for a valid regression estimate. The data that is mostly used for beta estimation has a time horizon of 5 years, and a monthly interval. It is of course optimal to use the most recent observations available.

NERA has, however, truncated the estimation period at 1998. They argue that the fall in BAA's asset beta shown in Figure 4.1 results from temporary rather than permanent factors, and that the most 'economically relevant' period for beta estimation is the period to the end of 1998. Before discussing the validity of the main argument that NERA raises in support of this truncation, it must be noted that as it is BAA's *asset* beta that is reported rather than its equity beta, it is difficult to tell whether this results from gearing changes or from some other fundamental factor.

NERA argues that the reduction in beta results from excess volatility in the market. Consequently there is a lower correlation between low-risk stocks and the market portfolio. We confirmed in our report that the beta does decrease from about 1998, but we dispute that this results from excess market volatility. We decomposed BAA's beta into its constituent parts in order to try to explain why the decrease occurred, and we demonstrated that it was not due to excess market volatility.

(v) The estimated asset beta for BAA (Table 4.10). The recommended asset beta of 0.67 given in Table 4.10 appears without justification. (Coincidentally, the MMC's estimate of BAA's asset beta is also 0.67 [see section 4.4.5 of NERA's report, page 30]). Again, no equity beta is reported. The reader is to assume that this estimate of BAA's asset beta results from the process of converting some unknown equity beta into an asset beta by the use of 'an average' of the two adjustment formulae that appear in section 4.4.3.3. No parameters are provided for the variables in these two models; we do not know NERA's estimate of T_C , T_S , D , E , nor do we know B_{equity} ; thus NERA's estimate of Aer Rianta's asset beta cannot be replicated.

4. 4.3 Differentiating factors: Section 4.4.4 (pages 27-30)

NERA argues that Aer Rianta's asset beta should be higher than BAA's, on the basis that Aer Rianta's operations are riskier than BAA's. They recommend an asset beta of 0.75 for the single-till and 0.7 for the dual till, which is 0.08 and 0.05 greater than NERA's estimate for BAA's asset beta. We argue that there is insufficient evidence to justify Aer Rianta's beta being 'significantly' higher than BAA's.

We agree with Economics-Plus that the Warburg Dillon report, on which NERA bases Figure 4.3 relating to relative contributions of aeronautical and non-aeronautical revenues, is out of date. It is very likely that the proportion of aeronautical relative to non-aeronautical revenues has increased since this 1999 report. As pointed out by Economics-Plus, Aer Rianta would have been highly exposed to the loss of intra-EU duty-free sales, as 85 percent of passenger traffic is intra-EU. Aer Rianta's direct exposure to the duty-free market would have considerably reduced its non-aeronautical revenues relative to aeronautical. In addition, as Aer Rianta's aeronautical charges are very low compared to comparator companies in other countries, there is widespread market expectation that these charges will increase over the next few years.

We also agree with Economics-Plus' rejection of NERA's argument that differing passenger profiles between BAA and Aer Rianta make Aer Rianta's cash flow stream more volatile. Economics-Plus points out that the differences in passenger profiles set out in Table 4.11 are relatively small. Further, Economics Plus argues that the relative proportions of long-haul versus short-haul traffic is of more interest than domestic versus international. (This is particularly the case in Europe where there would be very little practical difference between domestic and much of the international traffic.) BAA has more long-haul traffic, which is probably more sensitive to economic cycles than short-haul.

5. 4.4 The equity beta used in NERA's cost of capital calculation (Table 7.1)

In the final cost of capital calculation (Table 7.1 of the NERA report), the equity beta used by NERA is stated as 1.04 (single till) and 0.97 (dual till). There is no discussion, however, as to how these equity betas were derived from the reported asset betas.

[5] The Cost of Debt

NERA's approach to estimating the debt premium is unnecessarily complicated. When a company has public debt outstanding, as Aer Rianta has, the 'text-book' approach to estimating the cost of debt is with reference to the current market-determined yield of that debt. (See, for example, Brealey and Myers (2000)). This is not only the simplest and most obvious approach, but it will also yield the most accurate estimate. Surprisingly, in NERA's Table 5.2 (page 37), which details the bond issues of various European utility companies, NERA does not include Aer Rianta's own euro-denominated issue, which was launched earlier this year. When a company has public debt outstanding, comparator companies are not necessary for estimating the cost of debt. Aer Rianta's debt has been rated by Standard and Poors, so it has a credit rating of its own, and various information services, such as Bloomberg, provide up-to-date information on the trading price and current yield of the issue.

Instead, NERA makes its conclusion regarding Aer Rianta's debt premium based on other utility bond issues and the average yield spread for bond issues by companies with the same credit rating. It assumes a spread of 150 basis points, which is almost 40 basis points greater than the actual spread over Bund yields (as at July, 2001) of 113 basis points.

We agree with NERA that the cost of debt to Aer Rianta should not assume an implicit government guarantee (NERA's executive summary, page ii; and again in section 2.2, page 3). It should be noted that the Standard & Poors credit rating also assumes no government guarantee. Further, Standard & Poors anticipates no change in the credit rating if and when Aer Rianta is privatised or partly privatised. In fact, the credit rating would be expected to improve if Aer Rianta increases its aeronautical charges. (Standard & Poors, 2000).

[6] Gearing

NERA's assessment of Aer Rianta's 'optimal' gearing ratio of 30 percent is far too low. NERA makes this estimate on the basis of only 4 comparator airport companies – BAA, Copenhagen, Zurich and Auckland. No justification is given as to why these companies are appropriate comparators. NERA goes on to argue that "we would expect [30 percent] to be an upper limit." (page 36). The explanation that follows relates to the fact that 'optimal' capital structure is influenced by the applicable corporate tax rate. NERA's argument is that because Aer Rianta's 'upper limit' tax rate is 25 percent, debt is not as valuable to the company because the tax shield is lower.

While this may be theoretically correct, the argument is no justification for using a gearing ratio that is considerably lower than both current and anticipated gearing. The concept of optimal capital structure is useful only insofar as it can be used as a guide for 'target' capital structure – that is, the level of gearing that the company is expected to achieve in the short-to-medium term. The gearing ratio used in the WACC should reflect the anticipated gearing level over the regulatory or project term.

In the absence of a known target capital structure, it is recommended that current gearing be used in the WACC calculation. This is also the preferred approach of the CAA (2001). Aer Rianta's gearing is currently in excess of 50 percent, and has been for the past couple of years. Aer Rianta's planned capital expenditure program suggests that its gearing ratio is unlikely to fall dramatically in the medium term.

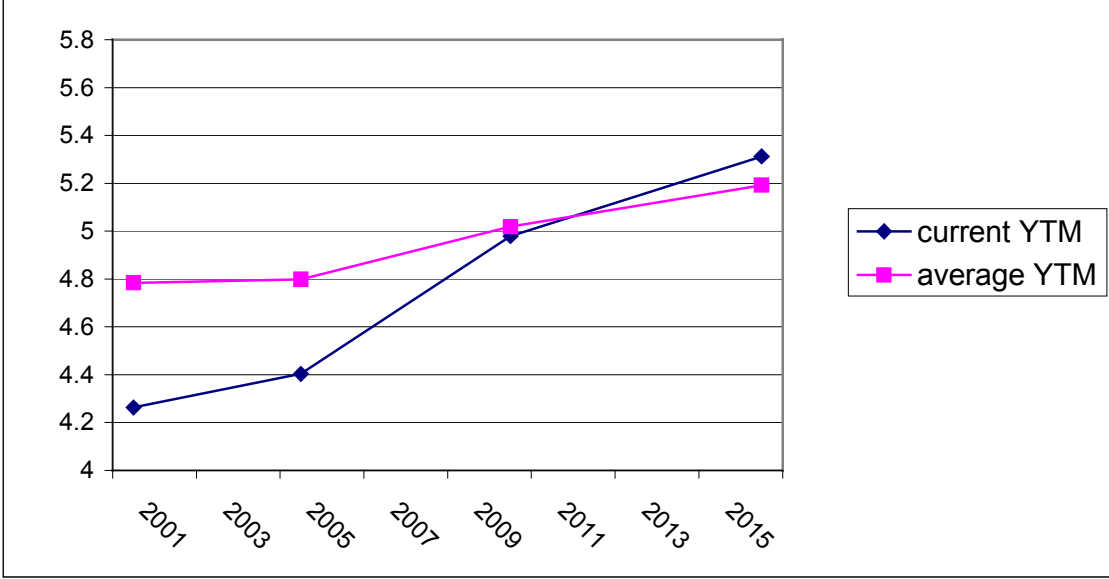
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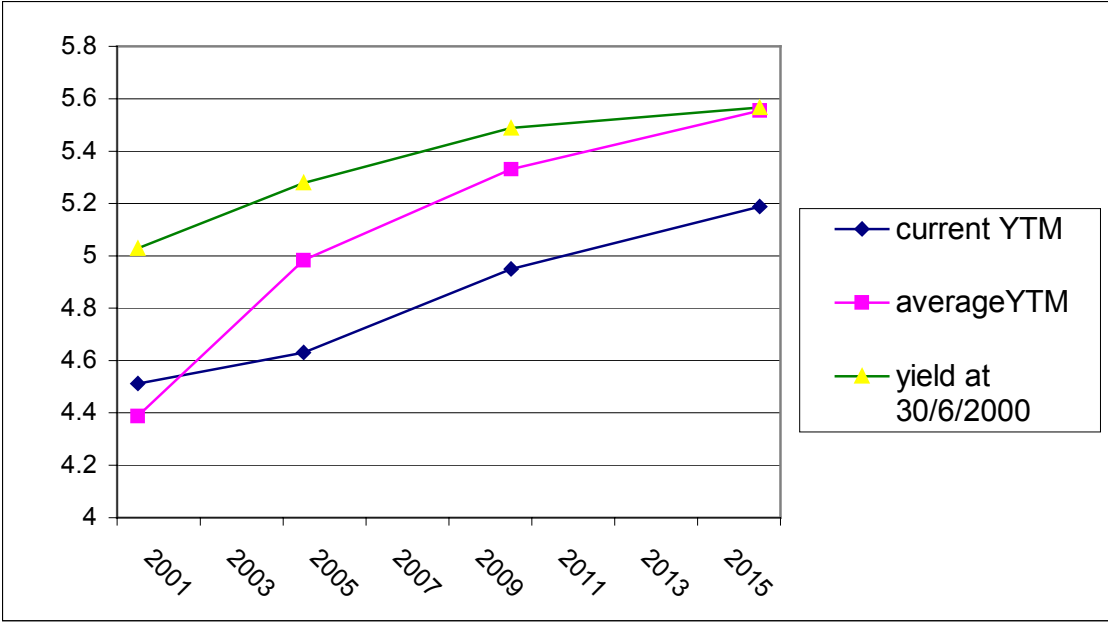
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Figure 1
German government bond yields



Notes. This figure is a plot of the yields on German bonds quoted in NERA's Table 4.1

Figure 2
Irish government bond yields



CP9 - APPENDIX II

IMG comments on "Report on regulatory asset valuation prepared on behalf of Aer Rianta", dated 31 May 2001 by Arthur Andersen (the "Andersen Report").



MEMORANDUM

TO: Bill Prasifka

FROM: Jeffrey Climans
Sasha Page

DATE: July 31, 2001

SUBJECT: Arthur Andersen Report

As we discussed earlier this month, you requested that IMG provide its comments on the document entitled Report on regulatory asset valuation prepared on behalf of Aer Rianta, labelled "strictly private and confidential" and dated 31 May 2001 by Arthur Andersen (the "Andersen Report").

The following sections of this memorandum present our comments under the corresponding numbered sections of the Andersen report. In the interest of brevity, we have not provided an introduction to this memorandum that sets the Andersen report in the context of asset valuation methodologies. We would be pleased to expand upon that context in a subsequent draft of this memorandum. Accordingly, please contact us at your convenience if you wish to clarify or discuss any aspect of this work.

1. SECTION 2: VALUATION METHODOLOGIES AND EVALUATION

1.1 Historic Cost and Indexed Historic Cost

This section of the Andersen report presented a typology of alternative asset valuation methodologies.

A statement is made at section 2.66 (page 11) that the “use of the historic cost approach fails to meet any of the economic efficiency objectives and accordingly is not an appropriate basis for valuation” of Aer Rianta’s regulatory asset base. That statement conflicts with the opinion expressed at paragraph 2.5 (page 2) that the historic cost “is an objective and practical approach to measuring the value of the RAB” (regulatory asset base).

The Andersen report argues that historic costs are “easily obtainable and verifiable” (paragraph 2.5) and therefore offers a transparent method for establishing the value of the regulated asset base. Andersen correctly states that unadjusted historic costs will not correlate with “the current cost of the underlying assets and therefore may not achieve an efficient allocation of resources” (paragraph 2.7).

To overcome some of the deficiencies of an unadjusted historic cost valuation approach, Andersen describes the Indexed Historic Cost as a method “for revaluing assets to current costs and hence ensuring that reported values keep pace with inflation and technological changes” (paragraph 2.9). There are deficiencies with this approach, tied largely to the inflation index that must be applied. The principal concern lies in the risk that the specified inflation index “may result in values which do not precisely reflect asset replacement costs if actual costs have not moved in line with general prices” (paragraph 2.12). Andersen states that “inaccurate signals may be sent about the efficient

allocations of resources...if the cost of building 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 a downturn in the construction industry” (paragraph 2.12).

The preceding points appear to clarify the rationale behind Andersen’s conclusion in paragraph 2.66 that the historic cost approach does not meet economic efficiency objectives. In our opinion, however, their dismissive approach to this methodology is unfounded. Inflationary adjustments are a common mechanism for adjusting values in contracts to reflect market conditions. Virtually every form of commercial ground lease or building rental agreement is indexed to general price inflators or specific industry indices. Moreover, the transparency afforded by the use of published indices will reduce the risk of arbitrary or capricious behaviour that may arise at periods of lease escalation or renewal. Finally, in our opinion, this method involves the fewest number of adjustments and assumptions in order to produce a valuation.

Andersen appears to acknowledge the latter points in their statements in paragraphs 2.68 and 2.69, although they state a preference for the replacement cost approach “in signalling economic costs” (paragraph 2.69).

1.2 Deprival Method

The terminology applied by Andersen to this methodology is not one that is in common usage. Based on their description of the methodology, it coincides with the Discounted Cash Flow (DCF) approach that is widely used as a common method of asset valuation. The DCF approach analyses asset value from a purchaser’s perspective, regardless of whether the entity to be purchased is regulated. This approach permits the consideration of commercially

relevant factors including variation of annual cash flow, lack of market data, unique construction or technology. This approach has the particular advantage of incorporating projected assumptions for development costs, capital structure, traffic, inflation, and cash flow (not just operating income). These factors are relevant in the expectation of future income potential for all airport facilities and would play a role in the process of establishing the amount that a private investor would be willing to pay for an airport, including a regulated airport. Accordingly, this methodology offers the most comprehensive, sophisticated and realistic approach to valuing complex, one-of-a-kind properties with a known income stream, regardless of whether an actual transaction occurred.

Andersen concludes that the deprival (DCF) method is not a viable valuation methodology for a regulated entity due to “the difficulties in applying deprival value in a regulatory context” (paragraph 2.66). The rationale offered for that opinion is that the economic value “of the asset (i.e. the expected net cash flows) is determined by the regulator on the basis of the allowable revenues attributable to the asset. Moreover it is unlikely that the regulator would value the asset himself (in terms of future cash flows) as less than the replacement cost since this would be in breach of the principles of economic efficiency and consistency with efficient incentive structures” (paragraph 2.21).

The rationale advanced by Andersen is not defensible. In the first instance, a key component in the deprival methodology according to Andersen has nothing to do with cash flows. Andersen states that “where the remaining service potential embodied in an asset would be replaced if the business was deprived of the asset, the asset should be measured at its replacement cost” (paragraph 2.20). In our view, is highly likely (probably certain) that all assets subject to valuation (the regulatory asset base) are necessary for use in the operation of the

airport (i.e., no redundancy or superfluous assets). Accordingly, all components of the airport business would “be replaced” as mandatory rather than discretionary investments, and therefore would be measured at replacement cost. In this way, one of the important benefits of this approach cited by Andersen, involving “the open market value of the asset” (paragraph 2.19) would be realized.

For assets that are not essential to the operation of the airport, Andersen indicated that “the asset should be measured at its ‘economic value’ which is the greater of the net present value of the cash flows expected from continued use and the net realisable value from immediate disposal” (paragraph 2.20). Discounted cash flow is in fact a method regularly employed in the valuation of core business assets of privatised entities including airports. A key to this approach is the choice of an appropriate discount rate by which future expected cash flows is discounted to a present value. In our view there are sufficient European examples of market valuations derived from major airport operating companies including BAA, Copenhagen and Vienna, to support a whole airport valuation using this methodology.

Andersen adopts a different view and claims that under regulation the influence of external price controls would distort the valuation. The Andersen report states that the expected net cash flow “is determined by the regulator on the basis of the allowable revenues attributable to the asset” (paragraph 2.21). Accordingly to this reasoning, asset value is capped by the regulator’s predetermined assessment of maximum allowable income and therefore the cash flows that are measured under this approach are induced by the regulator rather than set by the market.

On this particular point of undue influence, we believe that Andersen has overstated the potential risk. It is not sufficient to rule out this

approach simply because of the influence of regulatory pricing. It is conceivable that a regulated price regime would prevail at the time of privatisation and would not deter private investors from conducting a due diligence based, in part, on the use of a discounted cash flow. Accordingly, we conclude that Andersen has applied incomplete reasoning in its exclusion of the deprival method as a legitimate valuation approach in these circumstances.

1.3 Optimisation Approaches

Andersen is equally blunt in concluding that optimisation is not an appropriate technique for valuation of the regulatory asset base.

According to the Andersen report, optimisation is a valuation method in which “the optimised replacement value of an asset can be viewed as what an efficient new entrant into the industry would be prepared to pay, or the price if the industry was in long run equilibrium. A key issue is the degree of optimisation to be applied” (paragraph 2.22).

While we agree with Andersen that there is some subjectivity in a regulator knowing how a private company would optimise the assets it was acquiring or developing, this is essentially no different from conditions that prevail in other industries. Regulators of electric utilities for instance may preclude regulated utilities from passing on the costs of ‘stranded assets’ in certain circumstances.

1.4 Other Approaches

In its consideration of the most appropriate valuation methods to be employed in calculating the regulatory asset base of Aer Rianta, the Anderson report excludes historic cost (indexed and simple) as well as the deprival (DCF) and optimisation methods. The report is silent, however, on a further method that is briefly described on page 5.

Under the heading of "Other approaches", the Andersen report states that privatised entities may be valued "by reference to the privatisation proceeds" (paragraph 2.26) which is understood to refer to the transaction value for a privatised entity. The report goes on to state that in "many cases the implied values of the assets were lower than the replacement cost at the time of privatisation" (paragraph 2.26).

The approach that Andersen refers to here is the sales comparison approach. According to this traditional method of valuation, the values achieved from comparable transactions are applied, with adjustments, to the assets under consideration.

While the references to privatised businesses and asset values in the preceding statement are unsubstantiated with concrete examples, there is a clear bias evident in this assessment. In Andersen's view this methodology is not applicable because Aer Rianta "has not been the subject of such a transaction" (paragraph 2.28) and therefore, "a proceeds-based approach cannot be used to setting the value of the RAB". We fundamentally disagree with that observation and believe that the method described above is a reasonable approach for the valuation of a regulatory asset base.

There are a number of international examples of whole airport sales and other aviation-related transactions that establish benchmarks for airport values. The comparable sales approach specifically countenances the use of site-specific adjustments to reflect unique local circumstances that will affect the resulting valuation. These adjustments are commonly employed in the valuation of income-producing properties that have a unique market profile (e.g., utility, transportation terminal, or monopoly operation) are sufficiently distinct

from other facilities by virtue of use, location and/or construction, or possess annual cash flows that fluctuate over time.

Furthermore, we consider Andersen's reference to "the *implied* value of the assets" as not being appropriate when referring to the amount paid for a privatised entity or asset. The proceeds of any transaction reflect an objective appraisal of the expected risks and returns in the business. The "implied" value to which Andersen refers is not implied but real, and was a concrete representation of asset values established through negotiations between willing buyers and sellers and with full knowledge of the potential liability arising from defeasement of outstanding government indebtedness or other relevant immediate or contingent liabilities.

Based on the preceding observations, we conclude that the Andersen report has not provided an adequate assessment of the comparable sales approach, which may be a viable technique for valuation of the regulated asset base of Aer Rianta. Accordingly, we conclude that the Andersen report fails to consider viable valuation methodologies. Their subsequent choice of the method for valuation of Aer Rianta's assets is deficient in this respect.

1.5 Replacement Cost

The Andersen report states that the "replacement cost approach has the significant advantage of enabling prices to be based on actual current costs" and therefore, "replacement cost is the most appropriate basis for valuing the RAB" (paragraph 2.70). Subsequently, Andersen states that the "need to raise funds adds further weight to adopting a replacement cost valuation of the RAB" (paragraph 2.71).

In reaching that conclusion, Andersen appears to abandon the principle of economic efficiency, which is acknowledged as “a key criterion by which to assess the appropriateness of any price control regime” (paragraph 2.32). Moreover, Andersen first introduces the concept of economic efficiency by stating that “one of the main objectives of introducing regulation is to mimic the effects of the market in generating efficient outcomes in situation in which competitive pressures are either ineffective or infeasible” (paragraph 2.32).

The Andersen report also fails to establish the connection between replacement cost and one of the key elements of economic efficiency; namely cost efficiency. In particular, Andersen does not specify how replacement cost valuation achieves the “aim to ensure that customers benefit through lower prices as a result of projected efficiencies, while at the same time preserving incentives for the regulated company to find new further cost savings” (paragraph 2.34). In fact, it can be argued that replacement cost valuation does nothing to discourage excessive construction or promote investment in labour-saving practices that are not tied to capital investment. In our view replacement cost valuation as a technique applied on its own also fails to satisfy a further test of economic efficiency in which “a regulator may wish to expose a regulated company to some risk in relation to future investments in order to promote efficiency in the timing and cost of such projects” (paragraph 2.39).

Replacement cost offers advantages over other methods by providing a relatively current snapshot of the cost to rebuild the regulatory asset base that was planned and constructed under government ownership. However, the policies and practices that prevailed at that time will not emulate the simulated market behaviour of the regulated enterprise. Accordingly, Andersen’s willingness to rely on replacement cost alone

for its valuation of Aer Rianta's regulatory asset base appears to be driven by the resulting outcomes rather than adherence to the principles cited in their report.

6. SECTION 3: PROJECT APPROACH

The approach adopted by Andersen in conducting the asset valuation is described in this section. In the interest of brevity we will not take issue with the stages of analysis, other than to state that important details of the approach are not readily apparent for independent review.

7. SECTION 4: VALUATION OF LAND

The Andersen report provides limited details on the multitude of underlying assumptions that have been incorporated in the valuation of real property at each airport (Dublin, Shannon and Cork). Our principal questions relate to the following issues.

2.1 Land Values per Acre

In paragraph 4.6, Andersen lists its assumption of the current value per acre for agricultural, industrial and commercial land that is applied to each airport. With the exception of a higher value for agricultural land in the vicinity of Dublin airport (IR£10,000 versus IR£3,000), the values attributed to the land at each airport are identical. This fact is surprising based on our understanding of the varying demand and available supply of industrial and commercial property in each location. Accordingly, an independent validation of those figures is warranted.

2.2 Land Value

The Andersen report states "that there are a number of reasons to believe that these values may understate the 'true' replacement cost"

for each category of property, at each location (paragraph 4.7). Two reasons are offered for that opinion:

- Andersen claims that the potential to rezone agricultural land in the vicinity of an airport to an alternative (industrial or commercial) use represents a “hope value” that will exceed the amounts cited above. Based on our experience in the valuation of airports and adjacent real estate in numerous locations, we dispute that claim. The vast majority of agricultural land held by an airport is situated between and around runways, taxiways and other airside or air navigation facilities. There is absolutely no alternative use for that property and it is generous to claim agricultural values for that type of property. Furthermore, the nature of height and noise restrictions within operational clear zones, obstruction-free areas, runway clear zones and other areas that are subject to zoning restrictions on runway approaches, precludes many forms of development. Accordingly, we do not accept the premise that “hope value” can be attributed to agricultural land in the vicinity of the subject airports.
- Andersen also claims that the quoted values are conservative because “recent and contemplated AR land transactions have been at rates significantly higher than those outlined above” (paragraph 4.7). Once again drawing upon our wide range of experience in this field, we are cautious about claims that “rates” may be comparable between transactions. Typically a high value is received for a small (and potentially scarce) property. That value per acre cannot be applied to a larger parcel without a discount for the larger size and different location. As a result, larger properties typically produce lower values per acre. Accordingly, we raise questions about all of the

real estate values cited in the Andersen report until we have an opportunity to review the source data and consider the necessary adjustments for size of parcel, type of use, date of transaction and, as noted above, differences between locations.

For the reasons stated above, we conclude that the Andersen report exaggerates when it is claimed that “the context in which these values were prepared might be expected to result in conservative estimates” (paragraph 4.7).

8. SECTION 5: ASSET LIVES

The data provided in this section, particularly under the heading International Review, is identified as being drawn from a sample of "airports and airport groups", although none are identified. This raises a question regarding the declining balance depreciation schedule that may apply to regulated airports and other regulated enterprises.

Furthermore, while it may be accurate to state that the depreciation of a terminal building can range from 5 to 50 years in Europe, and 20 to 50 years in North America, the low end of the range can hardly be equated with the "estimated useful lives" (paragraph 5.1) of that type of asset. In the case of 5 years, it is likely that most major building systems will still be under manufacturers' warranties at that time.

Unfortunately, there is insufficient data to offer further comments on the manner in which this information is used in the asset valuation. Although the Andersen report states that "a number of key assumptions were made regarding asset lives for key assets" (paragraph 5.10) we do not have sufficient information to conduct an informed assessment of those assumptions.

9. SECTION 6: VALUATION RESULTS

We are unable to offer objective comments on the results of the Andersen valuation due to the lack of important data regarding key assumptions and calculations. For example, the results of the valuation "have been prepared on the basis of the remaining useful lives in the AR fixed asset registers" (paragraph 6.2) although we have no idea what values were applied to each asset. Accordingly, it is appropriate to conclude that the methodology and specific assumptions employed by Andersen to conduct the valuation are

incomplete. The values for each airport (Dublin, Shannon and Cork) are therefore suspect at this time.

You may wish to consider a solicitation of further information from Andersen to clarify the range of issues and questions posed above. Upon receipt of further information we will be pleased to revisit the Andersen report, and in particular the latter sections dealing with asset lives and valuation results.