SETTING THE WEIGHTED AVERAGE COST OF CAPITAL FOR HEATHROW AND GATWICK IN Q5

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CONTENTS

Executive summary **4**

Overview 4

Context *(Section 2)* 4

Gearing *(Section 3)* 4

Cost of debt *(Section 3)* 5

Cost of equity *(Section 4)* 5

Tax *(Section 5)* 7

1. Introduction and context **8**

1.1. Introduction 8

1.2. Context and overview 8

1.3. Structure of report 10

2. Gearing **11**

2.1. Introduction 11

2.2. Notional gearing 11

2.3. BAA Capital structure and the Ferrovial takeover 11

3. Cost of debt **14**

3.1. Introduction 14

3.2. CAA approach 14

3.3. CEPA assessment 14

3.4. Triggers 15

3.5. Summary on cost of debt 18

4. Cost of Equity **19**

4.1. Overview and CEPA's approach 19

4.2. CAA's approach 21

4.3. Critique of methodology for estimating BAA's equity beta 22

4.4. Market evidence and the CAA's estimate of the cost of equity 30

4.5. Conclusion 31

5. Treatment of taxation **33**

5.1. CAA's proposed approach 33

5.2. Allowing for taxation in the price review 34

5.3. Quantifying the impact of CAA's proposed approach 35
5.4. Why use the effective rate of tax in setting allowed revenues? 40
5.5. Summary and conclusion 44

EXECUTIVE SUMMARY

Overview

This paper provides input to the Competition Commission on the CAA's proposed weighted average cost of capital (WACC) for Heathrow and Gatwick. It has been prepared by Cambridge Economic Policy Associates and builds on evidence submitted to the CAA in July 2006.

Overall we welcome the proposed reductions in the WACC from Q4 to Q5. However, we remain of the view that the allowed revenues for cost of capital (CoC) are too high for both airports. This reflects

- the excessive cost of equity used by CAA; and
- the treatment of tax, which results in an unjustified transfer from users to BAA shareholders.

In both cases we believe that the CAA's proposals are at significant variance from both regulatory precedent and empirical evidence.

Context *(Section 2)*

The context for this review and a common theme in this document is the fact CAA is setting the WACC at a time when required returns have been at historically low levels for a sustained period.

The CAA therefore faces the challenge of: (i) taking account of these low required rates of return on both debt and equity – to pass on the benefit to users; and (ii) ensuring that BAA is able to finance itself in the event that market conditions change significantly in Q5. On balance we believe that CAA in its CoC determination has got this judgement broadly right for the cost of debt, but not for the cost of equity.

A second element of context of particular relevance to the cost of capital decision relates to regulatory consistency between Q4 and Q5. The CAA point to regulatory consistency as a key justification for its approach to the cost of equity and the treatment of taxation. However, given the overall movement in market returns (which affect all asset classes available to portfolio investors) the CAA's proposed increase in the cost of equity and reduction in the cost of debt are neither consistent with market evidence nor with the judgements made in Q4.

Gearing *(Section 3)*

In section 3 we discuss the appropriate gearing to be used in determining the WACC. We welcome the CAA's decision to bring its approach in line with regulatory precedent here – which we believe is right. Our judgement is that a notional gearing of 60% is not unreasonable and is broadly consistent with a conservative estimate of a level of gearing consistent with an A-/BBB+ credit rating.

Section 2 draws the Competition Commission's attention to two additional points:

- First, we believe that it is important to note that the change in gearing compared with Q4 is the single largest contributor to the reduced WACC in Q5. In our view (given current market conditions) this observation casts real doubt on BAA's assertions that a lower WACC would put at risk its ability to finance investment.
- Second, we draw attention to concerns about the potential impact on users of the expected high levels of gearing to be put in place by Ferrovial. Unlike other regulated sectors, these concerns are not mitigated by licence powers available to the regulator. In these circumstances we believe that it is appropriate for the Competition Commission to consider putting in place additional protections for users.

Cost of debt *(Section 3)*

In Section 3 we discuss the further analysis that we have considered since July 2006 which leads us to slightly reduce our range for the cost of debt (now between 2.5% - 3.5%).

Our judgement is that CAA's proposed point estimate of 3.0% for the cost of debt is appropriate, given recent market evidence. Indeed the low end of our revised range (which places particular weight on the actual all-in costs of debt available at the moment, and the 5-year averages for the risk free rate) is below the CAA's point estimate of 3.0%.

However, we note that the introduction of an automatic adjustment mechanism for the allowed cost of debt could enable the CAA to set the cost of debt below the mid-point of our range. The potential benefits, in terms of lower prices for users, exceed (in our judgement) the small risks around reduced financing incentives and the need to explain the regulatory innovation to the markets. Introducing an automatic adjustment mechanism should also contribute to a reduction in non-diversifiable risks faced by BAA equity.

Cost of equity *(Section 4)*

In Section 4 we review the approach that CAA and its advisers have used to estimate the cost of equity and the numbers that have emerged. Key arguments are as follows:

- The derived cost of equity is excessively high due to the CAA's approach to determining the equity beta. We know of no sound arguments to support an equity beta of airport infrastructure assets greater than 1.0, at optimal gearing. If the maximum plausible equity beta of 1.0 is used (the standard regulatory default position) then, based on CAA's other assumptions, the cost of equity is reduced to 6.5%.

- The use of a lower equity beta despite increased gearing is justified. There is strong evidence of an observed downward trend in equity beta values over time despite increasing gearing in all regulated utility industries including BAA.
- There is clear evidence of a downward trend over time in calculated implied asset beta values. Taken at face value this suggests that asset risk and the asset risk premium have fallen over time. If correct, then this would argue for a reduction in the allowed WACC to reflect this.
- There is clear evidence in the global securities markets of a trend decline in the price of risk bearing (the risk premia) in debt and equity markets.

We understand that the CAA has concerns over the use of a lower implied asset beta value in Q5 (compared to the implied asset beta used by CAA in Q4) raising questions about regulatory inconsistency. We do not think that it would create any such inconsistency. The methodology for determining the allowed WACC has evolved in all regulated industries over the last 5 years. The consistent application of evolving regulatory 'best practice' in this area has led other regulators to further develop and improve their own approach in the light of new evidence. CAA would be no different in this regard. We believe the markets clearly understand the approach being adopted by regulators (and recommended by CEPA) and are content with it. If CAA built on regulatory best practice and the result was a change in the cost of capital parameters, this would neither surprise not disturb the financial markets (as it has not in other regulated industries, e.g. energy networks).

It is important to note that the implied asset beta value is a theoretical construct which plays no direct part in determining the weighted average cost of equity and debt of the optimally financed business. It is the cost of equity of a company with optimal gearing that is being estimated and, using the CAPM framework, it is the estimated *ex ante* equity beta at the optimal gearing that determines the cost of equity.

Section 4 also summarises market evidence which points towards a post-tax cost of equity for comparable utilities in the range of 5.5 - 7.0%, and if anything at the low end of this range. Allowing for the accepted higher relative risk of airports compared to energy networks and water, and allowing significant headroom to take account of possible mean reversion over Q5, we believe the appropriate cost of equity for Heathrow would be in the range 6.5 – 7.0%.

Taxation *(Section 5)*

This section argues that the size of the NPV benefits that BAA's owner will receive (and airline users pay) from CAA's approach to the treatment of tax will be significant in Q5. Part of this reflects the major impact that T5 will have on BAA's effective tax rate. Our view is that an approach to tax which sets allowed revenues for BAA based on its actual tax bill is clearly better suited to meeting the requirements of the Airports Act.

Our analysis suggest that CAA should as a minimum use a notional-actual approach to tax. This approach would involve calculating the allowed tax on the basis of the notional gearing assumed in the WACC calculation; but using the effective, rather than the statutory rate (in the grossing-up of the post-tax WACC)[1]. It would mean that the regulator simply allows the revenues that BAA requires to meet its tax bill. As we set out in the section, we believe that the CAA's arguments against the notional-actual approach are unconvincing.

The CAA's approach to tax also has the effect of rewarding BAA for increasing gearing above the optimal or 'notional' rate assumed in the WACC calculations. In the absence of licence conditions that protect users from excessive levels of gearing, we believe that there is a strong case for the CAA to consider setting the allowance for tax on the basis of actual gearing. We refer to this in our discussion as the actual-actual approach.

[1] In practice, using 'actual' tax suggests that the CAA should move to setting the allowed revenues for cost of capital on a post-tax basis and then adding back the calculated, actual tax.

1. INTRODUCTION AND CONTEXT

1.1. Introduction

This paper has been prepared by Cambridge Economic Policy Associates (CEPA) as evidence on the cost of capital for the Competition Commission's (CC) consideration of the Civil Aviation Authority's (CAA) referral on the Quinquennial price review of Heathrow and Gatwick airports.

The paper builds on and updates our July 2006 paper produced as a submission to CAA on the appropriate weighted average cost of capital for BAA in Q5. We presume that the CC has access to this paper, so we have not restated the arguments other than where they are relevant to the additional points made in this paper. We also draw the Competition Commission's attention to the paper that CEPA has recently produced as a contribution to Ofgem's gas distribution price control review (GDPCR 2008-13).

The paper has been prepared by CEPA at the request of British Airways. However, the views expressed are those of CEPA and do not necessarily represent those of British Airways.

1.2. Context and overview

Full details of the background for the quinquennium review, including the important context of the Airports Act and definitions of the WACC are set out in Section 3 of our July 2006 report.

In order to determine the allowed revenues associated with the cost of the capital, the CAA needs to determine for the forthcoming price control period:

- the cost of debt ;
- the cost of equity;
- the appropriate gearing (measured as net debt:RAB[2]) of the regulated business;
- an approach to allowing for taxation costs; and
- the appropriate regulatory asset base against which the WACC should be applied to get the allowed revenues.

It is important to note that for each element of this framework the regulator is seeking to set the parameters on a forward looking basis - that is to a level that is appropriate for the forthcoming quinquennium.

[2] Regulatory Asset Base

A common theme of this document is the emphasis that we believe should be placed on market evidence in informing judgements about each of these components. In particular, the CAA is setting the WACC at a time when required returns on assets have been at a historically low level for a sustained period.

Market commentators have explained these low levels of returns on a mix of global and national factors. Global factors include high personal savings rates in ageing populations such as Japan; high net notional savings rates particularly in China and the oil-producing Middle East Countries; and a decline in debt and equity risk premia. Domestic UK factors include developments in the pensions industry, stimulated by changes in legislation and accounting standards, resulting in an increase in demand for long life, index-linked assets in particular.

We do not propose to discuss these issues in detail. However, we believe it is important to draw attention to two particular challenges that the current market conditions raise:

- First, to what extent should the Competition Commission and CAA take account of current very low returns required by investors (on both debt and equity) and how should they allow for the risk that market conditions may tighten through the course of the Q5 period? The aim should be to set the WACC at a level that passes as much of the benefit of low required returns on both debt and equity onto users whilst at the same time ensuring that BAA is able to finance its investment if rates should rise above current levels.

- Second, are changes in the regulator's estimated cost of debt and equity (and the WACC as a whole) between Q4 and Q5 consistent with market evidence of the direction of changes in cost of capital between Q4 and Q5 more generally? It is important to note that portfolio investors choose between expected returns on cash, bonds, property and equities. Real returns on cash and bonds have remained very low (and have fallen further in recent years). Logically portfolio investors, confronted with reduced returns on alternative asset classes, should reduce the expected return on equity. This is particularly likely for investors in infrastructure assets, which are viewed by many as 'quasi-bonds'. Therefore, any change in the cost of equity between Q4 and Q5 should reflect these trends. Table 1.1 shows, however, that CAA's estimate of the cost of equity has increased, despite a significant fall in the cost of debt (Table 1.1). We do not regard this estimate as consistent with the market evidence.[3]

[3] Note however, that this depends on the assumption that is made about the relationship between the cost of equity and the level of gearing. This is discussed in detail in Section 4 of this report. Our simplifying assumption here is in line with market evidence which suggests that the return required by investors in regulated assets has not increased with gearing.

Table 1.1: Changes in the components of the WACC between Q4 and Q5

Percentages	Q4	Q5 (proposed)	Change
CoD	3.675%	3.0%	- 0.675
Post-tax CoE	6.38[4]%	7.7 and 8.7%	+1.42
Gearing	25%	60%	
Pre-tax WACC	7.75%	6.2%	

1.3. Structure of report

In the following sections of this report we outline CEPA's views on each of the elements of the cost of capital. The paper is structured as follows:

- Section 2 discusses the appropriate approach to gearing, which is directly relevant to the calculation of the WACC and the estimates of the cost of debt and equity.
- Section 3 provides a discussion of the appropriate cost of debt and summarises updated analysis of the risk free rate and debt premium. This section also presents the case for regulators to use some form of automatic adjustment mechanism to adjust the allowed cost of debt which would allow the benefits of very low real interest rates to be passed on to users without putting at risk the ability of BAA to fund itself in the event that large unanticipated interest rates movements occurred during Q5.
- Section 4 discusses the cost of equity. It argues that CAA's methodology is unusual and not supported by market evidence and that their proposed cost of equity is too high.
- Section 5 discusses the appropriate treatment of taxation costs in the regulatory settlement. CAA's proposed approach is now clearly out of line with UK regulatory precedent and results in a very significant transfer of value from users to BAA shareholders. We are strongly of the view that this is not consistent with the requirements of the Airports Act.

[4] 6.38% is the cost of equity (for BAA) consistent with the 7.75% pre-tax WACC if the adjustments to the central values used by CAA are assumed to relate wholly to the cost of equity. Detail of this calculation is set out in note 29 of CEPA (July 2006).

2. GEARING

2.1. Introduction

In assessing the cost of debt and equity and in defining the WACC the regulator needs to make an assumption about the appropriate level of gearing for an efficiently financed airport.

2.2. Notional gearing

In theory the appropriate optimal level of gearing is the level that equates the marginal interest tax shield (arising from tax allowances) with the marginal default risk cost. An estimate of optimal gearing has typically been used by regulators to set 'notional' gearing when setting the allowed WACC. Section 4.4 of the July 2006 paper sets out the arguments for using 'optimal' or 'notional' gearing.

We are pleased to note that CAA has accepted these or similar arguments and is proposing to set the WACC on the basis of an assumed 'notional' gearing of 60% (i.e. net debt:RAB). We believe that 60% is not unreasonable and is broadly consistent with a conservative estimate of what the market could sustain. In particular:

- The evidence suggests that water companies are able to maintain 'solid' investment grade ratings with gearing levels of 70% and higher.
- We also note that Ofgem has recently decided to increase its own estimate of the notional gearing for gas distribution network (GDNs) companies to 62.5%.
- We regard airports as somewhat higher risk than water or gas distribution businesses and a slightly lower debt: RAB is therefore appropriate.

2.3. BAA Capital structure and the Ferrovial takeover

As the Competition Commission are clearly aware, BAA was acquired by the Ferrovial Group in 2006. Although we do not have access to the precise details of the financing we understand from analyst comments that ADI[5] is seeking to put in place a 'whole business' securitisation with levels of gearing as high as 85%.

We have considered whether this evidence should have a bearing on the notional level of gearing used by CAA in setting allowed revenues for the cost of capital. In summary, our view is that it is appropriate for CAA to maintain a conservative approach, and set the notional gearing at a level consistent with a more conventional capital structure.

However, we believe that the following points are relevant to the Competition Commission's consideration of this issue.

[5] The acquisition vehicle Airport Development and Investment Ltd (ADI)

2.3.1. Role of gearing in the CAA's lower WACC

First, we note that BAA's response to the CAA's proposal (including its briefing of the press) has been to argue that the WACC is so low that it will put at risk BAA's investment plans.

We are strongly of the view that the evidence does not support this assertion (or the threat implicit in it). Table 2.1 compares the WACC set for Q4 with that proposed for Q5, but adjusted to a common level of gearing (of 60%). It shows that, even after we take account of the various upward adjustments to the Q4 cost of capital the current proposed Q5 WACC is higher than that set for Q4 (assuming the cost of equity is unchanged by increases in gearing – see Section 4).

Table 2.1 – Comparison of Q4 and Q5 (for a common assumed level of gearing)

Percentages	Q4	Q5 (proposed)	Change
CoD	3.675%	3.0%	- 0.675
Post- tax CoE	6.38[6]%	7.7%	+1.42
Common gearing	60%	60%	0
Pre-tax WACC	5.85%	6.2%	+0.35

Unless BAA can argue that the cost of risk bearing has increased over Q4 (which it clearly has not, in fact the reverse is true[7]) its argument that the proposed WACC is too low does not seem credible. Moreover, even if the ADI structure fails to achieve a gearing of 85% gearing will be notably higher than the 60% proposed by CAA for their cost of capital calculations.

2.3.2. Risks to users of excessive gearing

Second, we believe that the Competition Commission should use notional gearing rather than actual gearing because the aggressive financing structure adopted by ADI could be detrimental to the interests of users. The risk to users is that excessive gearing makes BAA less robust to market shocks and there is a higher risk that in the event of such shocks BAA will limit discretionary investment and reduce service quality.

As we have argued elsewhere, we believe that the best approach for regulators to use is to rely on licence powers that require regulated utilities to maintain a solid investment grade rating. In the absence of such licence powers, the CAA is relying on both (i) its statements

[6] 6.38% is the cost of equity consistent with the 7.75% pre-tax WACC if the adjustments to the central values used by CAA are assumed to relate wholly to the cost of equity. Detail of this calculation is set out in note 29 of CEPA (July 2006).

[7] See discussion in Section 4.

to the effect that it would allow BAA to fail; and (ii) the proposed *ex ante* and *ex post* capital triggers to protect users.

We are not convinced that these are sufficient in all circumstances, and believe that the Competition Commission should investigate all of the potential options – including the use of the public interest powers.

In Section 5 we discuss an approach to treatment of tax that would tend to reduce the incentive to increase gearing above the level of the CAA's notional WACC. We believe that there may be merit in this approach to taxation costs in the absence of mechanisms available to (and used by) other regulators.

Other options which we do not consider here include the Competition Commission putting in place dividend lock-up provisions triggered by a significant decline in the rating of the regulated businesses that mirror the powers that currently exist within the energy and water sector licences (e.g. through a public interest finding). We also note that further work needs to be done to strengthen the CAA's *ex post* capital review mechanism if it is to be effective[8].

[8] For example, as a matter of practicality, the review almost certainly needs to be carried annually (as is currently proposed by Ofgem)

3. Cost of debt

3.1. Introduction

The appropriate cost of debt to be set by the regulator is the cost of debt that an efficiently operated and financed business with comparable risks to a London airport would incur.

Below we provide a summary of our analysis and estimates of the risk-free rate and the debt premium. We conduct our analysis on the assumption that 60% gearing is a conservative estimate of the level of gearing at which the business could sustain a solid investment grade rating. Section 3.2 provides a summary of CAA's approach. Section 3.3 is CEPA's assessment. Section 3.4 summarises CEPA's views (set out in CEPA's April 2007 paper) on triggers.

3.2. CAA approach

The CAA referral to the CC does not contain a great degree of detail on the cost of debt. This is due in part to CAA's stated intention to place considerable emphasis on the CC's views on economy wide WACC inputs such as the risk free rate. However, the approach followed by CAA appears reasonable and is consistent with approaches used by other UK regulators.

Particular points to note about CAA's approach are as follows:

- CAA and their advisers have focused on yields on index-linked UK government securities as the basis for determining the risk-free rate and have suggested a range of 1.65% - 2.25% taking account of the historically low rates seen in the market since 1999. In recognition of the possibility of asymmetric risks to investment should the WACC be set too low, a point estimate of 2.0% (slightly above the midpoint of the range identified) is used in the computation of the Q5 WACC.

- On the debt premium the analysis carried out by CAA's advisers principally considers: i) spreads on the US utilities sector; ii) BAA historical spreads (as provided by BAA's advisers Oxera); and iii) spreads on UK airports with credit ratings comparable to BAA. Their analysis leads them to a range of 80bp – 110bp. Taking into account CAA's intention that BAA maintain an A-/BBB+ credit rating over Q5, an estimate of 100 bp is proposed as the relevant debt premium.

Based on these ranges CAA proposes a cost of debt of 3.0%.

3.3. CEPA assessment

In our July 2006 submission to CAA, CEPA's 'most likely' estimates of the cost of debt were based on conservative assumptions about: (i) mean reversion; and (ii) longer-term (i.e. 10-year) historical averages. At that time we identified a relevant range of 3.0% - 3.75%, and argued that the introduction of 'triggers' or 'automatic adjustment mechanisms' on the cost of debt would allow CAA to set the cost of debt at the low end of the range (i.e. 3.0%).

Since then CEPA's further analysis has led us to revise down our estimate of the range. In carrying out this analysis we have:

- Considered more explicitly the likely portfolio of debt held by an efficiently financed utility – including both the mix of index-linked and nominal debt and the mix of maturities.
- Given greater weight to 5-year averages on the risk free rate. For example the five-year average on risk free rates (from index-linked gilts) is close to 1.7% compared with the ten year average of closer to 2%.
- Noted that average, actual debt premiums on 20 year 'A' rated bonds have fallen below 100 basis points. In addition, we have given some weight to the lower spreads on shorter dated bonds.
- Given greater weight to the all-in cost of debt on long-dated corporate utility bonds. For example recent long-dated index-linked issues by the water companies and by National Grid have been as low as 1.7% and 1.6% respectively.

Our judgement, based on developments since the mid 2006 report, is therefore that an appropriate broad range for the cost of debt is likely to be 2.5% to 3.5%[9].

We recognise that the CAA's assessment of the cost of debt is at the low end of recent regulatory precedent, but believe this is defensible given the sustained benign debt market conditions. Regulators (including CAA) have typically been slow to reflect lower rates – in order to protect the regulated company from the risk that rates increase over the course of the price review period. However this 'aiming high' means that the benefits of lower costs of debt have been passed on to shareholders, and not to users.

In this context, we are persuaded of the merit of using a trigger / automatic adjustment mechanism for setting allowed revenues for the cost of debt. Our judgement is that the use of triggers would allow CAA to set the cost of debt in the lower half of our range (i.e. 2.5% – 3.0%), passing on the benefits of low interest rates to users without putting at risk the ability of BAA to finance its activities.

3.4. Triggers

By triggers, we mean mechanisms that would allow automatic adjustments to the allowed cost of debt in the event that market rates increased above the allowed rate during the price control period for a sustained period.

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[9] Although in CEPA (April 2007) we suggested a narrower range with top-end of 3.25%. This reflected a particular judgement about the mix of index-linked and nominal debt.

3.4.1. Regulatory precedent for use of triggers

Although we are not aware of triggers relating to the risk free rate or the cost of debt currently in use, we are aware that a number of regulators are considering whether such arrangements might be appropriate. As well as the ongoing CAA/CC process, we understand that Ofwat and ORR are commissioning a study to look at the case for triggers.

3.4.2. Potential adjustment mechanisms

Any adjustment mechanism adopted should be transparent, predictable and not subject to influence by the regulated companies or by third parties. The trigger could be on the risk free rate only or on the all-in cost of debt. Examples of benchmarks are:

- The risk free rate: a specified basket of benchmark gilts, e.g. as published on the Bank of England website, as an indicator of the allowed risk free rate. The basket could consist of nominal and/or index-linked gilts in pre-specified proportions.
- The debt premium: the current spreads on UK investment grade bonds as published by Bloomberg / Reuters, as an indicator of the allowed debt premium.
- The total cost of debt: using a reference basket of debt issues with the appropriate rating as published by an authoritative source.

There would need to be agreed thresholds around a base value (eg, +/-50bp change in the average over a, for example, 6 month period to avoid excessive volatility). If market rates fell outside the threshold the pre-agreed adjustment mechanisms would apply.

There are a number of ways in which the trigger mechanics could work, we summarise the more likely candidates below[10].

- **Logging up/down mechanisms.** If the actual cost of debt falls outside the threshold then the extra costs could be 'logged' and allowed for at the next price control review. This mechanism would potentially be the most straightforward to implement once the benchmarks have been agreed, and would be transparent. The amount of any adjustment 'logged-up' would have to be predictable and unambiguous.
- **Intra-period interim review**. If the actual cost of debt falls outside the threshold then the company could seek intra-period adjustment to allowed revenues at the discretion of the regulator (within pre-announced general principles that are known to the markets). This mechanism would create more uncertainty for stakeholders, including investors, suppliers and consumers and risks the regulator being faced with a large number of parties seeking interim review at the same time.

[10] Fuller descriptions of the mechanisms are outlined in CEPA (April 2007)

- **Automatic adjustment mechanism**. In general such an approach would involve:
    - The allowed cost of debt (or risk free rate only) being set by the regulator at the outset of the control.
    - Benchmarks for the cost of debt (which are consistent with the regulators methodology) being agreed (e.g. transparent, non-controllable measure of cost of debt issuance for specified rated debt).
    - Cost of debt 'tolerance' bands would then be agreed within which the allowed cost of debt would remain unchanged. But if actual cost of debt benchmarks moved outside the tolerance, then an automatic adjustment would be made to the allowed cost of debt and allowed revenues within the period[11].

  The mechanism would operate over a specified period e.g. 6 months or one year, so the test of whether the benchmark rate was outside the tolerance would be undertaken periodically in arrears and any adjustment to allowed revenue made over the remainder of the price control period.

3.4.3. Incentives and other issues

CEPA (July 2006) noted that CAA had raised concerns about the use of triggers. We believe that these concerns can be addressed once the principle of such a mechanism is accepted. Their concerns are discussed further below:

- **Increased uncertainty to returns on investment.** This will in part depend on whether or not the mechanism adopted is symmetric and the basis for sharing the cost of significant upward or downward shifts in the market cost of debt between shareholders and users. An automatic adjustment mechanism should have the effect of reducing risk for shareholders (should debt markets tighten sharply), thereby favourably impacting on the cost of equity.
- **Risk of undermining the properties of incentive based regulation.** As noted in CEPA (2006), incentive-based regulation has the central tenet that companies should bear and be rewarded for managing those risks that they are best able to control. The benchmark components of the cost of debt are set in competitive markets and are outside the control of the company/borrower.
- **Implications for efficient financial structure.** We recognise that a cost of debt adjustment mechanism might give a very slight reduction in the incentive to minimise the cost of debt (because the company does not keep all the gain, only the

[11] We have not considered here the possibility of 'triggers' in relation to the cost of equity – since we believe that it is not possible to identify clear benchmarks. However, it would be possible for an adjustment based on the risk-free rate to be applied to the whole WACC (i.e. including the risk-free element of the cost of equity).

gain within the tolerance[12]), but this should be more than offset by immediate lower prices for users and reduced risk for shareholders.

3.5. Summary on cost of debt

In summary, our judgement is that CAA's proposed point estimate of 3.0% for the cost of debt is appropriate, given recent market evidence. Indeed the low end of our revised range (which places particular weight on the actual all-in costs of debt available at the moment, and the 5-year averages for the risk free rate) is below the CAA's point estimate of 3.0%.

Our view is that the introduction of a transparent, predictable automatic adjustment mechanism for the allowed cost of debt could allow the CAA to set the cost of debt below the mid-point of our range. The potential benefits, in terms of lower prices for users, exceed (in our judgement) the small risks around reduced financing incentives and the need to explain the regulatory innovation to the markets. Introducing automatic adjustment mechanisms should also contribute to a reduction in non-diversifiable risks faced by BAA equity.

[12] It could potentially also keep the gain for the portion of control prior to the change in allowed cost of debt if no *k* factor in place.

4. COST OF EQUITY

In this section we discuss the methodology adopted by CAA to estimate the cost of equity (CoE) for Q5 and the values derived for Heathrow and Gatwick. For reference, our July 2006 assessment of the 'most likely' CoE for BAA's three London airports (we did not estimate separate WACC's for the London airports) was 6.6%.

This chapter is structured as follows. Section 4.1 provides an introduction and overview and sets out CEPA's general approach to estimating the cost of equity. Section 4.2 outlines our understanding of CAA's approach. Section 4.3 then presents a critique of the approach, particularly in relation to the approach to estimating the equity beta. Section 4.4 discusses the estimate of the required return on equity that results from the CAA's approach – taking into account our own recent analysis – set out in CEPA (April 2007). Section 4.5 concludes.

4.1. Overview and CEPA's approach

4.1.1. Overview

CAA has proposed a post-tax cost of equity of 7.7% for Heathrow and 8.7% for Gatwick. We strongly believe that this is excessive especially so when viewed in light of the following points:

- Current market conditions, referred to in Section 1 of this report, indicate that the required returns on risk-bearing assets are at historically low levels. In this context, we believe that the current equity risk premium is likely to be towards the lower end of its historic range of 4.0-5.0% pa[13].

- Analysis of actual returns currently required by equity investors suggest that required returns are in the range 5.5% – 7.0%. See the evidence presented in CEPA (April 2007) and summarised in Section 4.4 below.

- Recent regulatory determinations, including Ofgem's December 2006 determination of the post-tax CoE for energy transmission businesses at 7.0%. We recognise that airport businesses are likely to be marginally more risky than energy transmission. However, as we have noted earlier, regulators' judgements have typically lagged actual levels for both debt and equity. We believe that it is reasonable, in interpreting Ofgem's estimate, to take account of the further evidence of sustained low required returns on equity (since the analysis and consultations for transmission price control review (TPCR) were conducted in 2006).

In our view a strong argument can be made that the rate of return on equity currently required in the market for regulated utilities is significantly below 7.0%.

[13] Smithers (2006) p4, based on arithmetic averages.

We recognise that in setting a point estimate for the expected cost of equity over a 5-year period it is inappropriate for the regulator to presume that current (very low) rates will necessarily persist throughout Q5. Therefore we consider it prudent not to rely exclusively on current values that are historically well below the long-run average. In CEPA's July 2006 submission to CAA on BAA's cost of capital we therefore suggested a central estimate of the post-tax CoE of 6.625%, a full per cent lower than CAA's assessment of Heathrow and 2% below for Gatwick. Our view remains that an appropriate range for BAA's cost of equity is 6.5% - 7.0%[14].

Even if the allowed cost of equity were set as high as 7.0% it would allow for the possibility of significant tightening in equity markets over the forthcoming price control period compared with returns on equity currently required by equity investors.

The principal reason for CAA's high cost of equity is the approach used in estimating the equity beta. As we argue later, this approach, which assumes that the MM theorem can be used to deduce the cost of equity, makes predictions about equity beta that are at major variance with empirical evidence and regulatory precedent.

4.1.2. CEPA's approach to estimating the cost of equity

In common with most UK regulators, CEPA's approach is to assess the cost of capital broadly within the framework of the capital asset pricing model (CAPM) but taking particular account of market evidence. It is widely recognised that there are major practical and theoretical limitations of CAPM. It is a poor predictor of historic excess returns and parameter value estimates have tended to display high standard errors. Our approach is therefore to have particular regard to market evidence including from:

- The market asset ratio (MR) which contains information about the market's required returns compared to those allowed by the regulators (amongst other things). The 2006 takeover of BAA by Ferrovial provides relevant evidence with implications for the WACC of BAA.
- Implied MR ratios from asset acquisitions / disposals of regulated assets in the UK.
- Other market evidence, e.g. from infrastructure fund valuations of regulated assets.

In practice, the weight that we give to market information means that our approach is closer to those regulators (e.g. Ofgem and ORR) who have in recent times preferred to focus on the aggregate return to equity. We do, however, believe that it is useful to illustrate what CAPM parameters would be consistent with the aggregate judgement on the cost of equity.

[14] We have not explored in detail (at this stage) the appropriate differential between the Heathrow and Gatwick at this stage. But we note that, given the relative importance of Heathrow (as a proportion of the RAB) within BAA, its cost of capital is likely to be only slightly below the BAA corporate cost of capital (as a matter of arithmetic).

4.2. CAA's approach

At least in general terms the approach proposed by CAA is consistent with that outlined above. In particular CAA noted during the consultation process and in their referral to the CC that:

- the CAPM framework would remain the main analytical basis for setting the cost of capital;
- CAPM should be viewed as a tool to assist in judgement on the appropriate cost of capital; and
- CAPM should not be viewed as a mechanistic tool which will automatically determine the cost of capital allowance at each airport.

However, in practice the approach used by CAA places undue emphasis on theory at the expense of market evidence. This is particularly true of CAA and its adviser's, Europe Economics (EE), approach to estimating equity betas for Heathrow and Gatwick. We briefly explain this approach.

Equity betas

In summary CAA's methodology for estimating betas is as follow:

- First CAA estimated a BAA group equity beta - finding a range of equity betas of 0.5 to 0.9. In their analysis, EE use 0.8 as a reasonable point estimate. However, CAA's referral takes the top end of the range (i.e. 0.9) on grounds of regulatory consistency with the approach that was taken in Q4[15].
- An underlying asset beta for the BAA Group as at January 2006 was then estimated. To do this EE have used their range for the equity beta of 0.5 to 0.9; an estimate of 0.21 for the debt beta; and 38% assumed gearing.[16] These assumptions give a range of 0.39 to 0.64. CAA's point estimate is based on the top end of the range for the equity beta is 0.64[17].
- CAA then seek to disaggregate the group asset beta between Heathrow and other airports. For Heathrow, CAA considered the range of comparators suggested by

[15] CAA argue that their approach in Q4 was to take a figure in the top half of the Q4 range rather than apply two 25 basis point uplifts on the WACC in order to get to a pre-tax WACC of 7.75%.

[16] Debt to Equity (See note 16 of EE's cost of capital supporting paper XIII to the December Initial Proposals). See also Section 4.3.4

[17] EE's point estimate for the asset beta is 0.58, based on an assumed equity beta of 0.8 (as opposed to 0.9 used by the CAA).

Oxera and used a range for the asset beta of 0.575 – 0.625[18]. The range for Gatwick is 0.64 – 0.71.

- Finally, these airport specific betas are re-levered to give equity beta ranges for Heathrow (1.13 – 1.26) and Gatwick (1.30 – 1.48) at the assumed notional gearing of 60%.

Other CAPM components

For the equity risk premium (ERP), CAA has relied on the range that it used in the NATS review of 3.5 to 5%. The CAA use a point estimate of 4.5% - at the higher end of the range again on grounds of regulatory consistency with Q4. The risk free rate (as discussed in Section 3 of this report) is assumed to be 2%.

Cost of equity

Table 4.1 sets out the resulting ranges for the post-tax cost of equity for Heathrow and Gatwick. CAA's point estimates are once again at the top end of the ranges, at 7.7% for Heathrow and 8.7% for Gatwick. We note that CAA has opted to use the estimates at the very top end of the range identified in their analysis. This differs from the approach in Q4 where CAA used an adjusted midpoint[19].

Table 4.1: CAA proposals on the post-tax cost of equity

	Heathrow		Gatwick	
	Low	*High*	*Low*	*High*
Risk free rate	2.0%	2.0%	2.0%	2.0%
ERP	4.5%	4.5%	4.5%	4.5%
Equity Beta	1.13	1.26	1.30	1.48
Post-tax CoE	**7.1%**	**7.7%**	**7.8%**	**8.7%**

4.3. Critique of methodology for estimating BAA's equity beta

CAA's approach includes two particular innovations or departures from current regulatory practice as follows:

- First, in order to estimate an equity beta for BAA at the assumed notional gearing (in the absence of market data following the takeover), CAA make the assumption that the asset betas of the airports will remain constant.

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[18] Given that EE use a lower point estimate for the asset beta (0.58) they argue that an appropriate beta range is 0.5 – 0.55. (with the 0.55 corresponding to CAA's point estimate of BAA Group asset beta of 0.64).

[19] 6.38% was the Q4 cost of equity (for BAA) consistent with the 7.75% pre-tax WACC Adjustments for ERP and T5. This compares with the range for the cost of equity of 4.5 – 7.25%.

This is consistent with MM theorem that (subject to a range of simplifying assumptions) the cost of capital should be invariant with a company's capital structure. Implicit in this is therefore the assumption that (other things being equal) an increase in gearing will result in a higher equity beta and therefore higher cost of equity.

- Second, CAA choose (uniquely among UK regulators) to use a non-zero debt beta in their estimation of BAA's asset beta (and in deriving the re-levered equity beta at 60% gearing).

CAA argue that these changes in methodology are justified on the grounds that they are faced with four circumstances that have not been present simultaneously in past regulatory determinations[20]. These are:

- a large increase in assumed gearing;
- the absence of observable equity beta after the step-change in BAA gearing following the takeover;
- the relatively low equity beta before the change in gearing; and
- the relatively high asset beta.

4.3.1. CAA proposals in context

In order to put the CAA proposals for BAA in context, Figure 4.2 below presents recent regulatory assessments of both the equity beta (and the overall cost of equity). For ease of reference we also include the range of CEPA's estimates for BAA as at July 2006. The most directly relevant comparator is the TPCR (2006). We note that the Ofwat review of 2004 determined a cost of equity for the water companies of 7.7%, similar to that proposed by CAA. However, in the subsequent two years returns on assets required by investors have continued to decline. It is clear from this comparison that Heathrow (7.7%) and Gatwick (8.7%) are at the top end of the range of recent estimates.

Figure 4.2: Recent assessments of the cost of equity and equity betas

Parameter	CAA: HAL Q5 (2006)	CAA: GAL Q5 (2006)	Ofgem: TPCR (2006)	CAA: HAL Q4 (2002)	Ofwat: W&S (2004)	CEPA: HAL Q5 (2006)
Equity Beta	1.26	1.48	0.9	0.8-1.0	1.0	0.8-0.95
CoE	7.7%	8.7%	7.0%	6.4%[21]	7.7%	6.0-7.25%

[20] CAA, *"Airport price control review – CAA recommendations to the Competition Commission for Heathrow and Gatwick Airports"*, March 2007.

[21] See note 4.

Significant conclusions that are implicit in CAA's assessment of equity betas at Heathrow and Gatwick are as follows. In our view all of these statements are inconsistent with the available evidence and open to challenge.

- First, since the market has (by definition) a beta of 1, CAA's analysis has assessed airports to be riskier than the stock market taken in its entirety. As a regulated business with volume risk limited to a single quinquennium, we do not find this convincing or consistent with market evidence.
- Second, equity holders in BAA bear much greater systematic risk than other regulated businesses in the UK. Whilst we accept that BAA is likely to be slightly more risky than energy utilities, we do not believe that the magnitude of the extra risk premium is reflected in market evidence, e.g. relative betas.
- Equity in Heathrow will face substantially more market risk over Q5 than it did in Q4. Given the evidence that we present below on the relationship between gearing and the equity beta and the continuing capacity constraints at Heathrow, we do not believe this view is supported by the evidence.

4.3.2. Evidence of the relationship between gearing and equity betas

As noted above, one of the main reasons that CAA have relied heavily on the theory to estimate the equity beta is the fact there is not directly observable evidence of BAA's beta following the takeover and re-leveraging.

Whilst we agree that there is 'no direct' market evidence, the CAA's approach (to assume a rising equity beta with gearing, based on a constant asset beta) ignores significant and relevant market information that is inconsistent with this assumption. In what follows, we summarise the evidence from three sources which show that the implied asset beta for regulated utilities does not appear to change systematically with changes in gearing in the way predicted by MM. This is one reason why, whilst retaining the 'form' of CAPM, we derive our assessment of the 'correct' cost of equity using a range of market evidence, rather than relying unduly on mechanistic application of the theory underlying CAPM.

Given the CAA and EE's response to this evidence, it is important to emphasise that we are not questioning the value and importance of the MM theorem. Rather, we are noting that the evidence is that *real* (as opposed to theoretical) equity investors have not required a higher return on equity to compensate them for the higher volatility of equity cash flows arising from higher gearing of regulated utilities.

We draw attention to three sources of evidence: (i) regulated water companies; (ii) BAA's own beta; (iii) statistical analysis from Smithers et al on energy utilities.

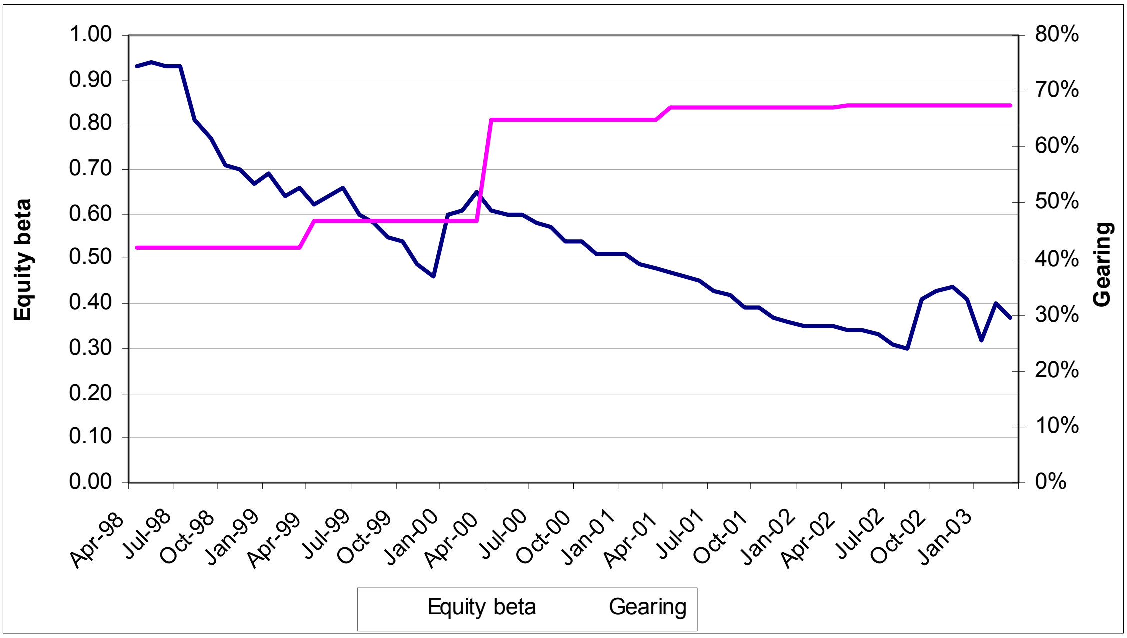
Water companies

We noted in CEPA (2006) that the average equity beta had fallen steadily in recent years despite an increase in average gearing across regulated UK utilities. The observed trend could be interpreted within the CAPM framework as indicating a reduction in systematic asset risk, and therefore in the asset risk premium, over time. Alternatively, it could be interpreted (as pointed out by CAA/EE) as indicating a trend decline in the value of the equity risk premium. Either interpretation is consistent with the observation across asset and securities markets of a general decline in the price of risk bearing in securities markets.

In addition, the observed equity betas of water companies with different gearing ratios at the same point in time do not vary in accordance with the predictions of MM. In fact there is no systematic variation of observed equity values with gearing. Nor is there evidence that observed equity betas change significantly following a debt re-leveraging.

Figure 4.3 below provides details of the equity beta and the gearing[22] of Anglian Water over the period 1998 – 2003, when gearing increased significantly. The theory predicts that the increase in gearing experienced over the period would have resulted in an increase in the equity beta to 1.7. In practice, however, it actually decreased to around 0.4. We note that the implied asset beta as at March 2003 (with an observed equity beta of 0.37 and gearing level approaching 70%) was just 0.12.

Figure 4.3: Equity beta versus gearing levels for Anglian Water



Sources: LBS Risk Management Service, Ofwat

[22] D:D+E. Net debt is taken from Anglian Water's annual accounts, and equity is measured as the average market cap over the preceding year.

We have not included data on Northumbrian Water due to the relatively short time series available for their observed equity beta since re-listed on the London exchange[23], however, it would appear that the re-leveraging of the company has had a similarly benign effect on its equity beta.

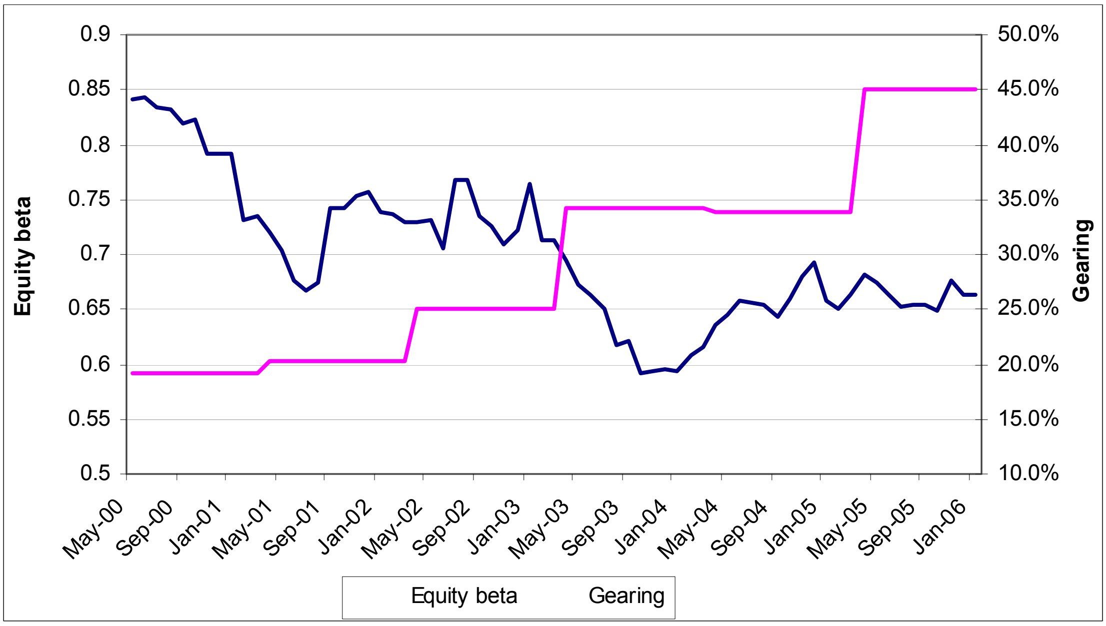
Hence, the evidence from the water companies is not consistent *either* with a constant asset beta *or* with a systematic change in the equity beta with gearing.

BAA

The observed trend for the water companies is true also for BAA. Figure 4.4 tracks BAA's observed equity beta against its level of gearing at the corporate level for the period 2000 - 2006[24]. Since 2000, BAA's gearing has steadily increased, more rapidly since 2004-05, whilst its equity beta has either declined or remained constant over the period.

We acknowledge that the six year time series from 2000 is relatively short and we are not suggesting that the relationship is robust enough to conclude that as BAA's gearing increases, it can be assumed that its asset beta will unambiguously decline. Rather we present the data as additional evidence that it is not sufficient simply to assume that as BAA's gearing increases, its equity beta will as well.

Figure 4.4: Equity beta versus gearing levels for BAA plc



Sources: LBS Risk Management Service, BAA Annual Reports, CAA

[23] Prior to the sale of Northumbrian by Suez and subsequent listing on the London exchange the company was owned by Suez holding company Suez Lyonnaise des Eaux and listed on the Parisian bourse.

[24] Gearing is again measured as D:D+E on the basis described in note 21.

Indeed, based on the evidence the most reasonable assumption to make would be that increases in gearing over a reasonable range (i.e. a range that retains an investment grade rating and does not place the company in any financial distress) have little if any effect on BAA's equity beta.

Energy utilities

Smithers & Co has recently completed a detailed analysis of the cost of capital of regulated energy utilities for Ofgem (September 2006)[25]. This work is by far the most thorough evidence based analysis undertaken in recent years that is relevant for the determination of the WACC. One issue that they addressed in detail was whether the equity beta and gearing data for those companies supported the MM thesis. They noted that:

- The equity betas for their sample of companies exhibit a trend decline during a period when gearing was rising. The implied asset betas also declined over the period. This is the same relationship as observed in the water sector (and also observed for BAA).
- The MM hypothesis is not supported. On the basis of detailed time series and cross-section analysis they say 'we find, if anything, the reverse [of the MM relationship] to be the case… Higher gearing appears to be associated with low equity betas'. However, they note the inverse relationship is weak so that the evidence is consistent with the proposition that there is no statistically significant relationship between gearing and the equity beta.
- They also say, '[the data] shows a negative, and slightly stronger, relationship between [gearing] and asset betas'[26].

The evidence cited by CEPA and by Smithers & Co suggests that, so long as gearing remains within a 'normal' range (probably up to debt;RAB ratios of 80% for regulated utility businesses), the equity market does not require a higher expected return on equity for higher gearing.

If this is the case, the measured equity betas for companies with gearing higher than the assumed optimal gearing (in this case 60%) but less than about 80% may not need to be de-levered and certainly not to the extent implied by MM.

In their referral to the CC, CAA and its advisers dismiss the Smithers' evidence. EE note that Smithers et al themselves point to the possibility that a lower asset beta might result from the actions of regulators. EE argue that since they [EE] assume this is not the case

[25] 'Report on the Cost of Capital provided to Ofgem', Smithers & Co. Ltd, September 2006.

[26] Ibid. Page 58

with CAA the observations made by Smithers et al are unlikely to be of relevance to airports[27].

It seems to us that EE discuss the evidence and assume that MM is valid despite the evidence. We believe that this leads to an inappropriate assessment of the cost of equity that is at variance, not only to regulatory precedent, but also to market evidence.

4.3.3. Debt betas

CAA has, in the context of UK regulation, taken the unusual step of assuming the beta on debt to be positive. Non-zero debt betas have been adopted elsewhere by utility regulators (most notably in Australia), but they are a significant departure, both from standard UK regulatory practice and from the methods used in previous CAA reviews. The case for adopting them in this review therefore needs to be robust.

The standard finance assumption is that the debt beta is zero, meaning that the price of debt is not correlated with movements in the market portfolio. If it were assumed that the debt beta was non-zero and positive, then for any given observed equity beta and positive level of gearing the implied asset beta would be higher[28]. Or, alternatively, for a given asset beta the levered equity beta would be lower with a non-zero debt beta than on the assumption of a debt beta of zero. CAA acknowledge this point and note that to assume a debt beta of zero would, in their view, lead to the overstatement of the cost of equity that occurs as a company gears up[29].

Whilst we recognise that, in principle, debt betas can be non-zero, we are not convinced that enough has been done to support the use of a positive debt beta in this review. Moreover, we believe that the methodology adopted results in a value for the cost of equity that is at variance with other market evidence.

The observations (discussed above) of unchanged equity betas at different gearing levels over time would only be consistent with a trend change in the debt beta value varying continuously over time. This would imply that there was a change in the systematic risk to which debt holders are exposed over time without any change in the pricing of the debt. If systematic risk increases for debt holders, this should be reflected in an increase in the debt risk premium of new debt issues. In fact we observe the opposite – risk premia have fallen in recent years.

Other issues to note are as follows:

[27] Smithers etc. all discussed the possibility that regulators may be perceived as likely to act to 'bail out' discussed companies (via a price increase) and that this could lower the perceived asset risk. All regulators have made it clear that they would not do so.

[28] Asset beta = D/D+RAB x debt beta + E/D+RAB x equity beta

[29] Supra at note 1. Para 18.66.

- The correct way to determine a debt beta is to use a factor pricing model, such as the CAPM. Indeed, this is how EE determine the equity beta. Technically, what EE has done is estimate the debt beta simply by using the averages of certain variables. This gives a biased estimate of the true debt beta, which should be estimated using, e.g. ordinary least squares regression analysis. This, given standard assumptions, would give a less biased estimate of the beta.

  Intuitively, EE's calculation conflates a number of different sources of bond risk. The difference between corporate and government bond rates can come from at least two different sources:

  - Diversifiable default loss: some corporate bonds will default and investors require a higher promised payment to compensate for the expected loss.
  - Non-diversifiable risk: the return on corporate bonds is riskier than the return on government bonds, and investors should require a premium for higher non-diversifiable risk.

- To be consistent with the determination of BAA's equity beta, the equivalent of a CAPM regression analysis on debt data should be carried out. EE does this, but does not report fully the outcome of this analysis (e.g. what are the confidence intervals, and what is the effect of broadening the market portfolio).

- EE are not clear about the conceptual and empirical difficulties of measuring debt betas. Conceptually, the problem arises because of the asymmetric nature of bond returns. Stocks, which have potentially unlimited upside potential as well as significant downside potential, have much more symmetric returns than bonds. They tend, therefore, to fit better the mean-variance framework used by the CAPM than do bonds. Corporate bonds have some upside potential, but it is limited by the fact that bonds can at best become default-free. Thus, the upside potential for an AA rated bond is fairly limited. Consequently, the risk measure used is a "downside" risk measure: default risk and ratings. This fits much less well within the standard mean-variance framework.

In summary, our concern over the use of non-zero debt betas is that CAA has adopted an unproven approach with little regulatory precedent as part of an approach that delivers a cost of equity that is inconsistent with market evidence.

4.3.4. Other

Finally, we note that the observed gearing used by CAA to estimate the asset beta (at the time that the BAA was de-listed) was 37.5%, based on BAA's 2004/05 Annual Report. However, by January 2006 (when the last reliable equity betas were observed prior to takeover speculation) BAA's debt and D:D+E had significantly increased (largely as a result of the acquisition of Budapest). Our estimates suggest that it was around 45%.

Even if the Competition Commission accepts CAA's approach, we believe that there are questions as to the appropriate gearing assumption, which itself would have a significant impact on the estimated betas, and the cost of equity.

4.4. Market evidence and the CAA's estimate of the cost of equity

In this final section on the cost on equity we draw the attention of the Competition Commission to market evidence on the appropriate aggregate cost of equity.

CEPA (April 2007) looks specifically at the evidence of the cost of equity contained within the MR ratio. In summary, the methodology involves observing the difference between the market's valuation of regulated assets and the RAB. This gives an indication of differences between the allowed WACC by the regulator and the actual WACC required by investors. By substituting in an actual cost of debt (which is observable in the market at the time) it is possible to identify an implied cost of equity.

The evidence that we have looked at comes from three main sources:

- Analyst views of the value of regulated businesses implied by the market. Looking at various water company acquisitions (which show MR ratios in excess of 1.2) the actual costs of equity at the time of the transactions was in the range 6.2% – 7.2%. Evidence from the sale of the gas distribution network companies (GDNs) points to slightly higher required returns, in the range 6 – 7.3% [30].
- Analyst views of the MR ratio of listed utilities, which point to implied costs of equity in the range 6.5-7.0%.
- Evidence on rates of return required by infrastructure funds at the moment (as evidenced by their bid prices). From a number of sources, we understand that infrastructure funds are looking for a pre-tax nominal return on equity of around 12.0% (at high gearing levels, e.g. up to 85%). This converts to an implied, real post tax cost of equity (at 60% gearing) of less than 6.0% (i.e. around 5.5%)

We have carried out similar analysis for Ferrovial's acquisition of BAA Group, which suggests that the MR ratio is in the range 1.2 to 1.35. However, the range of estimates of the implied cost of equity from this analysis are too wide to place particular weight on. This reflects uncertainty about the view that Ferrovial took of how the WACC might change in Q5 (not least because of the change in gearing). This is in contrast to analysis of energy and water utilities, where we believe that the evidence is relatively robust.

Given this, we believe there is good evidence to suggest that the actual returns on equity required by investors in current market conditions has been in the range 5.5% - 7.0%. The

[30] The analysis of both water and GDN acquisitions assume actual costs of debt in the range 2 – 2.5%. The lower end of the range for the GDN acquisitions assume that the market expected a further reduction in the allowed cost of debt by the regulator from the 4.1% allowed in DPCR 2004 to 3.75%

issue for the Competition Commission and for the CAA, as we have already noted, is how to take account of the possibility that current market conditions could change over Q5 resulting in an increase in the average cost of equity over the period. Our judgement is that an appropriate cost of equity, which provides significant headroom is in the range 6.5% - 7.0% for BAA (and by extension for Heathrow, with Gatwick commensurately higher[31]).

4.5. Conclusion

In summary, we believe that the proposed cost of equity set by CAA for Heathrow and for Gatwick are excessive. Key arguments are as follows:

- The derived cost of equity is excessively high due to the CAA's approach to determining the equity beta. We know of no sound arguments to support an equity beta of airport infrastructure assets greater than 1.0, at optimal gearing. If the maximum plausible equity beta of 1.0 is used (the standard regulatory default position) then, based on CAA's other assumptions, the cost of equity is reduced to 6.5%.
- The use of a lower equity beta despite increased gearing is justified. There is strong evidence of an observed downward trend in equity beta values over time despite increasing gearing in all regulated utility industries including BAA.
- There is clear evidence of a downward trend over time in calculated implied asset beta values. Taken at face value this suggests that asset risk and the asset risk premium have fallen over time. If correct, then this would argue for a reduction in the allowed WACC to reflect this.
- There is clear evidence in the global securities markets of a trend decline in the price of risk bearing (the risk premia) in debt and equity markets.

We understand that the CAA has concerns over the use of a lower implied asset beta value in Q5 (compared to the implied asset beta used by CAA in Q4) raising questions about regulatory inconsistency. We do not think that it would create any such inconsistency. The methodology for determining the allowed WACC has evolved in all regulated industries over the last 5 years. The consistent application of evolving regulatory 'best practice' in this area has led other regulators to further develop and improve their own approach in light of new evidence. CAA would be no different in this regard. We believe the markets clearly understand the approach being adopted by regulators (and recommended by CEPA) and are content with it. If CAA built on regulatory best practice and the result was a change in the cost of capital parameters, this would neither surprise not disturb the financial markets (as it has not in other regulated industries, e.g. energy networks).

[31] See footnote 15

The introduction of regulatory innovation by CAA by assuming a sectoral change in the value of the debt beta and a constant asset beta value would, however, raise issues in the minds of investors. There is no UK regulatory precedent for such an approach nor are we aware of any robust empirical evidential underpinning for such an approach.

It is important to note that the implied asset beta value is a theoretical construct which plays no direct part in determining the WACC of the optimally financed business. It is the cost of equity of a company with optimal gearing that is being estimated and, using the CAPM framework, it is the estimated ex ante equity beta at the optimal gearing that determines the cost of equity.

CEPA has consistently recommended an approach to determining the allowed WACC that draws on CAPM and wider market evidence. We note that there is a large body of evidence that risk premia on debt, equity and assets have fallen sharply in recent years. This is evident from the values placed on regulated assets (e.g. by Ferrovial and private equity buyers), on debt securities (where risk premia on new issues are at a very low level) and on equities (reflected in historically high prospective P:E ratios). We would strongly argue that this needs to be taken explicitly into account and have proposed an approach for the current CAA review, supported by Smithers & Co recent work for Ofgem, which does take a coherent and consistent approach.

Market evidence points towards a post-tax cost of equity for comparable utilities in the range of 5.5 - 7.0%. Allowing for the accepted higher relative risk of airports compared to energy networks and water, and allowing significant headroom to take account of possible mean reversion over Q5, we believe the appropriate cost of equity for Heathrow would be in the range 6.5 – 7.0% for Heathrow.

5. TREATMENT OF TAXATION

This section discusses CAA's proposed treatment of tax. This section is structured as follows:

- Section 5.1 provides a summary of our understanding of CAA's proposed approach.
- Section 5.2 provide some background to the treatment of taxation in setting the cost of capital and allowed revenues.
- Section 5.3 illustrates the likely magnitude of the NPV benefits that BAA shareholders receive (and airline users pay) as a result of the approach that CAA has taken in the past and expects to take in the future.
- Section 5.4 restates the case for using an 'actual' as opposed to 'notional' calculation of allowed revenue for tax, seeking to address some of the concerns raised by CAA and its advisers.

5.1. CAA's proposed approach

The CAA's proposed approach is to continue to set allowable revenues using a pre-tax WACC calculated with tax-wedge adjustment based on the statutory rate of taxation. This approach reflects:

- The view expressed by the Competition Commission (for Q4) that the impact of using statutory rather than effective tax rates would not be significant in the long-run.
- Concerns about the complexity of switching to the use of an effective rate.
- Concerns about the possibility that users would, in effect pay twice for tax liabilities that they have already funded on past capital expenditure.

At an earlier stage the CAA also considered that there might be a case for adjusting for the NPV benefit associated with timing effects. However, in the referral they indicate that they no longer believe that this would be appropriate because of concerns expressed by BAA about regulatory consistency, given that they had invested on the basis of the existing regulatory approach.

5.2. Allowing for taxation in the price review

When determining the allowed revenues for BAA, the CAA can either set the cost of capital using:

- A **post-tax vanilla WACC** (i.e. the average cost of debt and equity after tax)[32]. If this concept is used then CAA needs to make an additional provision for taxation costs expected to be paid in the price control period, taking account of the deductibility of debt interest payments.
- A **pre-tax WACC** which 'grosses-up' the post-tax WACC. This is the approach currently used by CAA.

Whichever of these approaches is used[33] CAA needs to decide whether to set the allowance for tax based on the statutory rate (i.e. 30%) or an estimate of BAA's effective or actual rate of tax. There are two distinct reasons why the statutory and effective rate may differ:

- The first reason is that the actual amount of the interest tax shield (arising from the deductibility of interest on debt) may be different from the amount funded in the price control period. Unlike the second effect (discussed below), these effects are permanent and do not have any timing element to them. CAA has the choice of setting the tax allowance based on the 'optimal' gearing assumption used in the WACC or BAA's actual projected gearing.
- The second reason arises from the fact that the capital allowances that may be deducted for tax purposes differ from regulatory depreciation allowances. There is also an effect that arises from a difference between the regulatory and tax treatment of capitalised interest. CAA has the choice of using a 'notional' tax rate (i.e. the statutory rate) or an estimate of the 'effective rate'[34].

Table 5.1 below summarises the terms that we use for the alternative approaches that CAA might use. It also provides a high-level summary of the way that the decisions impact on: (i) whether the allowed funding is more than is required to meet actual taxation costs; and (ii) the incentives that the regulated company has to increase its gearing above the 'optimal' rate of gearing used in the WACC calculation.

CAA's current approach (highlighted in Table 5.1) is to set the allowed revenues using an optimal-notional approach, which involves assuming that (i) for tax purposes BAA's actual gearing is the same as the optimal gearing assumption in the allowed pre-tax WACC (i.e. 60%); and (ii) that BAA's effective tax rate is the same as the statutory rate.

[32] Note that CEPA's terminology as set out in our paper 'Setting the weighted average cost of capital for BAA in Q5, (CEPA, July 2006) is slightly different from that used by EE in Supporting Paper XII.

[33] However, it is arguably easier to present the reasons for differences between the actual and statutory tax rates if allowed revenues are set on a post-tax vanilla WACC basis and tax costs are then added back.

[34] The effective rate of tax is measured as the ratio of actual tax paid to accounting profit before tax.

Table 5.1 – Summary of approaches to tax treatment

<table>
<tr><th>Approach</th><th>Gearing assumption (Tax shield)</th><th>Tax rate used</th><th>Impact on BAA</th></tr>
<tr><td>Optimal-Notional (CAA Approach)</td><td>Use the 'optimal' gearing assumption from the WACC calculation.</td><td>Revenue allowed for tax is based on the statutory rate and ignores timing effects.</td><td>• BAA keeps the tax savings that arise from higher gearing – giving incentives to gear up.
• BAA benefits from the NPV impact of timing differences.</td></tr>
<tr><td>Optimal-Actual</td><td>Use the 'optimal' gearing assumption from the WACC calculation.</td><td>Revenue allowed for tax is based on actual timing of tax payments.</td><td>• BAA keeps the tax savings that arise from higher gearing – giving incentives to gear up.
• Allowed revenue matches the timing of tax payments.</td></tr>
<tr><td>Actual-Notional</td><td>Uses CAA's 'actual' gearing to calculate the tax shield.</td><td>Revenue allowed for tax is based on the statutory rate and ignores timing effects.</td><td>• BAA does not benefit from differences in tax shield – reducing incentives to gear up.
• BAA benefits from the NPV impact of timing differences.</td></tr>
<tr><td>Actual-Actual</td><td>Uses CAA's 'actual' gearing to calculate the tax shield.</td><td>Revenue allowed for tax is based on actual timing of tax payments.</td><td>• BAA does not benefit from differences in tax shield – reducing incentives to gear up.
• Allowed revenue matches the timing of tax payments.</td></tr>
</table>

5.3. Quantifying the impact of CAA's proposed approach

CAA and its advisers refer to the Competition Commission view in Q4 that the [difference] between a statutory and effective rate to the treatment of tax approach was not significant. In this section we provide some illustrative calculations which suggest that the impact in Q5 is likely to be very significant. This is true even after we take account of the changes to tax allowances announced by the Chancellor in the last Budget.

Section 5.3.1 calculates the size of the incentives (in the form of lower tax bills) of higher gearing if CAA uses an 'optimal' gearing assumption. Section 5.3.2 considers the impact of setting BAA's allowed revenue for tax on a 'notional' basis (ignoring the timing effects that arise from the different treatment of depreciation).

5.3.1. Tax shield differences

Tax shield differences arise because the actual amount of the interest tax shield (arising from the deductibility of interest on debt) may be different from the value funded in the price control period. Table 5.2 below illustrates this using the basic calculations set out in Appendix A of CEPA (July 2006).

The top half of the table sets out a common set of calculations of BAA's WACC for the four scenarios presented in the columns using CAA's high assumptions. The bottom half of the table shows first the calculation of the revenue allowed for tax in the different scenarios, and then the actual outturn position of BAA assuming that revenues, operating costs and depreciation are exactly as allowed for by the CAA. This means that the earnings before interest and tax (EBIT) in each scenario is exactly equal to the amount that the CAA allows for the combination of (a) the BAA return on capital; and (b) BAA tax payments. The four scenarios are as follows:

Column A shows the current situation in which CAA plans to set allowed revenues using the Pre-Tax WACC and the statutory rate. It also assumes that BAA's actual gearing remains at 60%, the level assumed in the calculation of the WACC.

Column B shows the same situation as Column A in terms of CAA's approach, but, in this scenario, BAA is assumed to increase its level of gearing to 85%[35]. The key point to note is that even though CAA has allowed £114m for tax, BAA will as a result of the increased tax shield only pay £94m. This is a permanent difference of around £20m per annum, and means that BAA's actual post tax return on equity is 17% as opposed to the 7.7% allowed in CAA's WACC calculations. The NPV of this additional allowed revenue over Q5 is £82m[36].

Column C shows the situation in which CAA uses an actual-notional approach to setting the allowed revenue to cover BAA's tax costs, again assuming that BAA's actual gearing turns out to be 60% (the level assumed in the calculation of the WACC). The bottom half of the table shows that in this case EBIT is made up of the post tax return on capital plus a separate allowance for tax (still calculated a notional / statutory rate). This column shows that the BAA is in exactly the same position as in Column A.

Column D shows the position when CAA uses an actual-notional approach to setting the allowed revenue, but BAA's actual gearing is 85%. It shows that allowed post-tax return is the same as in Column B (since it is based on an optimal gearing of 60%). But the tax allowed is significantly lower reflecting the higher levels of debt and the larger tax shield[37] and that, in consequence, total allowed revenues by CAA are lower. The result is that the

[35] We use this value given our understanding that Ferrovial intend to use a whole business securitisation in their refinancing of BAA.

[36] Discounted at 4.9% real, which is CAA's estimate of BAA's post tax WACC.

[37] Note that allowed revenue for tax doesn't equal the actual tax in column D. This is because a proportion of the allowed post-tax return of £443m is actually used to pay tax on the difference between the allowed post-tax return at optimal gearing and allowed revenues at actual gearing.

actual post-tax return on equity is reduced to 13.2% compared to the comparable situation in Column B (i.e. 17.0%)[38].

In summary, the simulations in Table 5.2 show the importance of the actual gearing rate in assessing the appropriate choice of tax treatment. The key point is that, assuming a tax treatment that gives BAA an incentive to increase its gearing rate and not incorporating that higher gearing rate into the tax calculations cause significant differences in BAA returns relative to the allowed WACC. An actual-notional approach reduces this effect and reduces the extent to which the regulator rewards higher gearing.

[38] The reason that the post-tax return on equity is still higher than is allowed for by CAA in the WACC is that BAA retains the post-tax benefits of higher gearing – i.e. its actual post-tax cost of capital at 85% gearing is 3.7%.

Table 5.2 – Illustration of tax savings of higher gearing

Assumptions for WACC and tax calcs:	Column A Optimal-notional Actual g=60%	Column B Optimal-notional Actual g=85%	Column C Actual-Notional Actual g=60%	Column D Actual-Notional Actual g=85%
Gearing level (D:RAB) for WACC	60%	60%	60%	60%
Average Q5 RAB [Avge(ORAB,CRAB)]	8,625	8,625	8,625	8,625
Debt (D)	5,175	5,175	5,175	5,175
Cost of Debt (CoD)	3.0%	3.0%	3.0%	3.0%
Post-tax Cost of Equity	7.7%	7.7%	7.7%	7.7%
Pre-tax Cost of Equity	11.0%	11.0%	11.0%	11.0%
Vanilla WACC			4.9%	4.9%
Pre-tax WACC	6.2%	6.2%	6.2%	6.2%
Taxation rate (T)	30%	30%	30%	30%
BAA outturn:				
Actual Gearing	60%	85%	60%	85%
(Vanilla WACC*RAB)			421	421
Allowed revenue for tax (1) (CoE.E).t/(1-t)			114	43
EBIT (Pre-tax WACC * RAB)	535	535	535	464
Interest (Actual D*CoD)	(155)	(220)	(155)	(220)
Taxable Profit	380	315	380	244
Taxation Cost (Taxable profit*T) ACTUAL	**(114)**	**(94)**	**(114)**	**(73)**
Profit	266	220	266	171
Actual post tax return to equity (Profit/E)	7.7%	17.0%	7.7%	13.2%
Annual tax 'overfunding' (Difference of Actual tax Column A and B)				19
NPV over 5 years (£m)				£82

5.3.2. Differences between regulatory / book tax and taxable profit

The other source of differences between the statutory tax rate and effective (or actual) rate of tax paid by BAA are timing effects, and reflect:

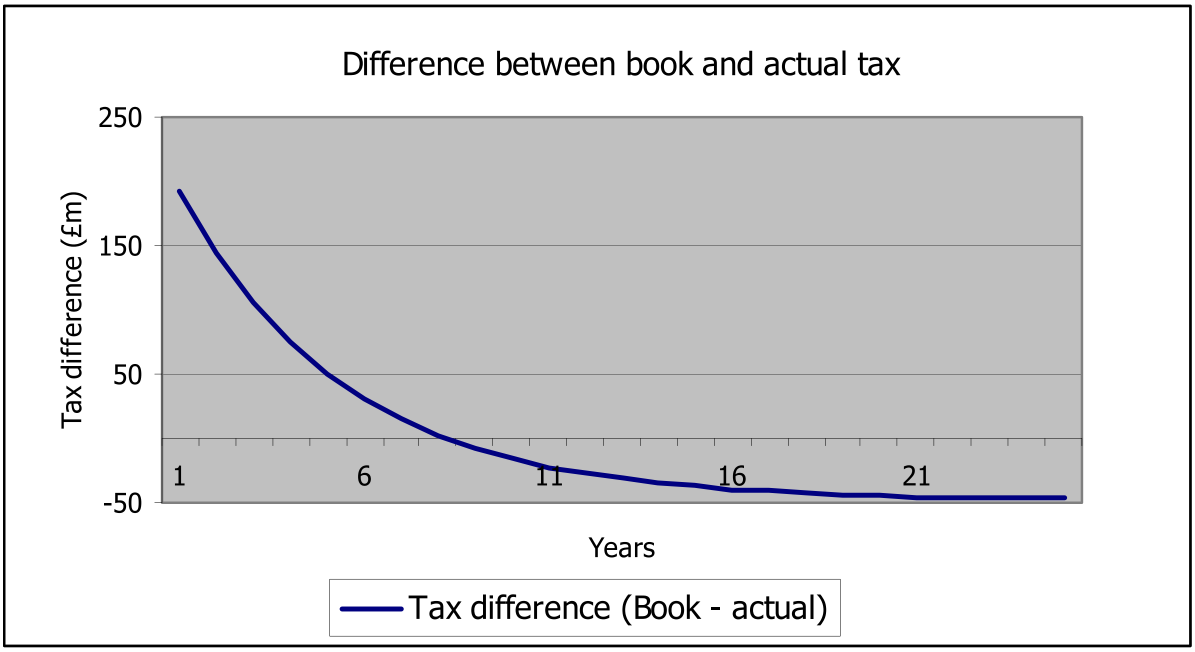
- The difference between the capital allowances that may be deducted for tax purposes and the amount of book depreciation funded in the price control.
- Differences in the tax and regulatory treatment of capitalised interest.

We discuss these in turn.

Depreciation / capital allowances

Figure 5.1 below compares actual tax and 'book tax'[39] arising just from differences in capital allowances for tax purposes and book depreciation for an illustrative £4bn asset addition[40] (i.e. of the magnitude of T5 at Heathrow). It shows that the amounts of book tax are significantly higher than actual tax paid in the early years, but are then lower for the remaining period.[41]

Figure 5.1 – Illustration of difference between book and actual tax



[39] 'Book tax' is the tax payable as shown in the companies profit and loss (and reflects accounting treatment of depreciation and capitalised interest).
[40] The illustration does not take account of the differences in the treatment of tax and regulatory treatment of capitalised interest.
[41] Calculations assume that book depreciation is on a straight line basis over 25 years and tax depreciation is at 20% on a declining rate basis.

The NPV benefit of these cashflows to BAA from Heathrow is around £300m[42]. This is calculated as the discounted present value of the cashflow benefits that BAA makes arising from its Heathrow deferred tax balances[43] (i.e. the cumulative difference between the actual and book tax) over 30 years. There will also be an NPV benefit available to BAA for asset additions in Q5 that are over and above T5. We have not included these in our illustrative calculations above.

Note that these timing effects do not occur until the assets are brought onto the balance sheet and book depreciation begins – which means that they are directly relevant for Q5.

Treatment of Depreciation / capital allowances

The above illustrative calculations do not take account of the benefit received by BAA from the treatment of interest on assets under construction. Unlike the depreciation effects discussed above, these effects occur *before* the asset is added to the balance sheet. This means that BAA has already received the timing benefits for capital that it has incurred (including T5). We have not provided an illustration of the benefits arising from capitalised interest on Q5 capital expenditure, but could do so if requested. We would be happy to provide an illustration of this for the CC should that be helpful.

5.4. Why use the effective rate of tax in setting allowed revenues?

5.4.1. Actual-Actual

The main case for using the effective rate (on an Optimal-Actual, or Actual-Actual basis) is that allowed revenues should be set to cover actual tax payments – so that users pay only the amounts that are required: (a) to remunerate the providers of capital; and (b) to fund the expected tax bill. This approach is consistent with recent regulatory precedent and is most likely to meet the Airport Act requirement to act in the reasonable interests of users. We regard a move to an Optimal-Actual to the minimum necessary for the CAA to be operating in line with the Airports Act. In our view such an approach is self-evidently fair and transparent.

A second reason for CAA to use an effective rate is to reduce the incentive that BAA has to increase leverage beyond that implied by the optimal gearing used in the WACC calculations (as discussed in section 3.1 above). This implies using an Actual-Actual approach rather than a Optimal-Actual approach; the latter allows BAA to retain the tax benefits of higher gearing.

For the water and gas sectors, CEPA have argued in the past that the regulator should allow the regulated company to define its own capital structure – and therefore should set the calculation of tax using optimal gearing. However, in water and gas the regulated companies operate under licence conditions which include requirements on them to retain an investment grade rating. This provides a reasonable degree of comfort as to the appropriateness of the capital structure. Furthermore the

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[42] Discounted at 4.9% real, which is CAA's estimate of BAA's post tax WACC.
[43] Assumed to be 6% real, i.e. CAA's estimate of BAA's pre-tax WACC

regulators have the power to limit dividend distributions in the event that the credit rating falls below an acceptable threshold.

However, in the absence of these powers for airports, there is a case for the Competition Commission and the CAA to consider the case for using *actual* gearing in the tax calculation to temper the incentive to gear excessively. This should be as part of wider consideration of the need to put in place protections for users from the risks of excessive gearing, e.g. through the use of the Section 41 powers.

The CAA has expressed concerns that, should it move to using actual gearing as the basis for its calculation of allowed tax, it may be exposing users to the increased risks associated with a higher level of gearing[44]. Our understanding is that this concern is based on the belief that should users share the benefits of higher gearing they could also reasonably be expected to share in the downside risks. The validity of this argument relies on the assumption that under present arrangements airport users are completely protected from the risks attached to particular financing arrangements decided upon by the airport owners. Notwithstanding the statements made by CAA, we do not regard this as wholly plausible.

Our view is that, whilst users are provided with some protection (e.g. through CAA's proposed ex post capital expenditure review) they ultimately bear the risk that BAA will cut discretionary investment and cut back on service quality. Therefore, although we understand the CAA's concern, we think that it is important to recognise the reality of the current allocation of risk, and that there is case for considering 'actual' gearing (as part of the tax calculations) alongside other measures to mitigate the risks that remain with users.

5.4.2. Tax incentives

EE argue that one reason why CAA should not move to use the effective rather than the statutory tax rate in its calculations is that it removes the investment incentives that have been put in place by the tax regime. We do not believe that this argument is relevant for two reasons:

- There is no obligation on the regulator under the Airports Act to have regard to the incentive properties of the general tax incentives. Rather, as noted above, the regulator is required to provide sufficient post-tax revenue to allow BAA to remunerate its capital.
- In any event, we believe that these general tax incentives are more relevant to competitive markets, which do not have the relative certainty of return that a regulated environment offers. Indeed, HM Revenue & Customs are quite specific when listing the assets or sorts of companies that it is seeking to encourage investment in through taxation policy incentives introduced by the Chancellor since 1997[45]. These do not include regulated utilities where significant incentives are already inherent in RPI – X regulation.

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[44] CAA, *"Airport price control review – CAA recommendations to the Competition Commission for Heathrow and Gatwick Airports"*, March 2007 p 132.

[45] See http://www.hmrc.gov.uk/capital_allowances/investmentschemes.htm for a discussion on this.

5.4.3. Practical concerns

CAA and its advisers have expressed a number of practical concerns about moving to an actual tax approach. These include: (i) the complexity and degree of intrusiveness implied by an actual tax approach; and (ii) the need to avoid asking users to pay twice.

We believe that these concerns are overstated, especially given the regulatory precedent in this area. Points to note are as follows.

Complexity

The approach taken by other regulators has been to ask the company to provide an estimate of the tax which is then checked by the regulator's specialist tax advisers. This is no different from other parts of the review process, and means that the onus would be on BAA not on CAA and it is something that BAA would, in any event, have to do as part of their work during the regulatory review. In addition the information that CAA needs to project 'actual tax' is already largely contained in the regulatory building block projections.

In this section we provide two illustrations of the calculations that need to be made. The first illustration in Table 5.3 shows how CAA would calculate the appropriate 'effective rate' to gross-up the post-tax cost of equity. It uses CAA's initial proposal numbers for BAA in 2007/08[46]. It shows that once provided with details of the projected tax allowances (or the information necessary to calculate this), the ex ante / projected tax position and therefore the 'effective' tax rate is easy to calculate.

Column A shows the calculation of BAA's projected tax position assuming that the tax allowances are identical to regulatory depreciation. In this case, the 'effective' rate is the same as the statutory rate. Column B shows CAA's current approach (which is the same as Column A, by assumption). Column C illustrates the case in which actual tax allowances are higher than depreciation (as is expected to be the case). It shows that if tax allowances are £600m[47] in 2008/09 the effective tax rate falls to 15%.

Note that this illustration assumes *either* that CAA uses a Optimal-Actual approach to tax; *or* that BAA does not gear up above the 60% assumed in the WACC. The effective rate (or allowed revenue for tax) would be even lower if CAA uses an Actual-Actual approach to tax as discussed above in Section 5.3.1.

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[46] Although note that the calculations have not been done using a cost of capital 'yield' approach rather than the 'average balance' – so the net revenue requirement does not exactly match Table 20-1 of the CAA's December 2006 document.

[47] £600m is entirely illustrative, and does not reflect a view by CEPA about the actual tax allowance in 2007/08.

Table 5.3 – Illustration of the calculation of BAA's effective tax rate

2008/09 Illustration	Formula	Column A	Column B	Column C
		Post-tax Approach	**CAA Approach**	**Post-tax Approach**
Operating Costs	OC	716	716	716
Regulatory Depreciation	D	383	383	383
Tax Allowances	TA	383	-	600
Commercial revenue and other adjustments	CR	905	905	905
Post-tax WACC		4.76%		4.76%
Pre-Tax WACC			6.01%	
RAB (Average)		8,625	8,625	8,625
Gearing (in WACC and actual)		60%	60%	60%
Post tax cost of Equity	POTCOE	7.4%		7.4%
Post-Tax allowed revenue for COC	POTCOC	411		411
Pre-Tax allowed revenue for COC	PRTCOC		519	
Statutory tax rate (t)	t	30%	30%	30%
Tax Payable (T)	T=t (D + (CoE*E)/(1-t) - TA)	109.62		44.52
Allowed revenue (excluding tax)	REX = OC + D - CR + POTCOC	605		605
Allowed revenue (Post-tax approach)	R = REX + T	714		649
Allowed Revenue (Pre-tax approach)	R = OC + D - CR +PRTCOC		713	
Tax rate for Grossing up		**30%**	n/a	**15%**

Double payment

CAA have expressed the concern that moving across to use of actual tax might result in the airlines effectively paying for tax twice. It is correct that there is such a risk. However, in our view, this can be easily corrected for by separating the calculation of tax allowances for assets put onto the balance sheet in Q5 differently from those added in Q4 and earlier. This would readily avoid the possible tax double payment by users.

5.5. Summary and conclusion

This section argues that the size of the NPV benefits that BAA's shareholder (Ferrovial) will receive (and airline users pay) will indeed be significant in Q5. Part of this reflects the major impact that T5 will have on BAA's effective tax rate. Our view is that an approach to tax which sets the pre-tax WACC based on the actual tax paid by BAA is clearly better suited to meeting the requirements of the Airports Act.

Our analysis suggest that CAA should as a minimum consider using a **Notional-Actual** approach to tax, and the Competition Commission may also wish to consider the possibility of moving to an Actual-Actual approach.

We also consider the practicalities of the calculations necessary to use a different approach to taxation. We do not believe that the concerns raised by CAA and its advisers are sufficient grounds to not change its approach – should it be convinced of the case made in this paper for the alternatives.

The CAA's approach to tax also has the effect of rewarding BAA for increasing gearing above the optimal or 'notional' rate assumed in the WACC calculations. In the absence of licence conditions that protect users from excessive levels of gearing, we believe that there is a strong case for the CAA to consider setting the allowance for tax on the basis of actual gearing.